Rockhopper 1/ST1

T/18P Offshore Bass Basin
Well Completion Report
Basic Data

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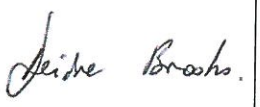
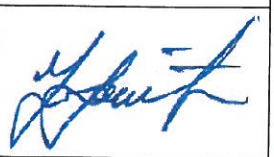
Deidre Brooks	Geoscience Team leader Offshore Australia	19/5/11	
James Lauritsen	Principal Drilling Engineer	22/6/11	
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GENERAL DATA

Surface Location:	Latitude:	39°47'34.18"S
(GDA 94)	Longitude:	145°26'21.47"E
(UTM Zone 55)	Easting:	366 374.031m E
	Northing:	5 594 071.423m N
Elevation:	WD:	74.3 m
	RT:	26.0 m
Spudded:	19/01/2010	03:00 hours
TD reached:	03/02/2010	14:30 hours
Rig release:	17/02/2010	11:30 hours

Status:	Plugged & Abandoned	
Total Depth:	Driller:	3482 mMDRT
	Logger:	3480.5 mMDRT
Cement Plugs:	#1: 3482-3002 mMDRT	
	#2: 2768-2915 mMDRT	
	#3: 1905-2015 mMDRT	
Casing:	Size:	Shoe:
Surface	30"	157 mMDRT
Intermediate	13 $^{3}/_{8}$"	961 mMDRT
	9 $^{5}/_{8}$"	1965 mMDRT

LWD LOGS

Hole Size (inches)	Interval (mMDRT)	MWD Services	LWD Services
8 ½	1990.0 – 2112.0	DWD	NA
8 ½	2112.0 - 2112.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	2112.0 – 3158.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	3158.0 – 3196.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	3212.5 – 3283.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	3309.0 – 3482.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT

WIRELINE LOGS

Log	Run	Interval (mRT)	BHT / Time
SP-HRLA-PEX-HNGS-CMR+	1	1965.0 – 3475.9	131°C / after 19 hrs 16 mins
XPT-GR (ECRD)	2	2135.5 – 3410.5	137°C / after 51 hrs 54 mins
MDT(Quicksilver)-GR	3	2766.7 – 3410.2	140°C / after 76 hrs 25 mins
FMI-DSI-GR	4	1965.0 – 3458.5	141°C / after 122 hrs 51 mins
VSI-GR	5	1615.2 – 3431.7	138°C / after 133 hrs 51 mins
MSCT-GR	6	3137.0 – 3410.5	141°C / after 144 hrs 21 mins
MDT-Dual Packer-GR	7	3110.0 – 3394.2	138°C / after 10 hrs 10 mins

PRESSURE TESTING AND FLUID SAMPLING

Suite #	Run #	Type	Interval (mRT)	Total Tests	Valid Tests	Super-charged	Tight Tests	Failed Tests	Pump Outs	Samples Collected
1	2	XPT	2135.5 – 3410.5	66	26	1	37	2	0	0
1	3	MDT	2941.2 – 3410.2	53	11	0	27	14+1*	8	5
1	7	MDT (Dual Packer)	3081.8 – 3330.8	12	6	4	2	0	12	2

* failed tests include seal failure and software failure during testing

CONVENTIONAL CORES

No.	Interval (mRT)	Formation (Reservoir)	Cut (m)	Recovered	
				(m)	(%)
1	3196.0-3212.5	Eastern View Coal Measures (RL40-RL50)	16.5	13.2	80
2	3283.0-3298.5	Eastern View Coal Measures (RL90-RL100)	15.5	14.08	91
3	3298.5-3309.0	Eastern View Coal Measures (RL100-RL110)	10.5	9.5	90

SIDEWALL CORES (MSCT)

No.	Depth (mRT)	Lithology	No.	Depth (mRT)	Lithology
1	3410.5	*Not Recovered*	15	3304.9	Sandstone
2	3409.3	*Not Recovered*	16	3301.8	Sandstone
3	3408.5	*Not Recovered*	17	3260.3	*Not Recovered*
4	3332.4	Sandstone	18	3258.0	Sandstone
5	3331.3	Sandstone	19	3238.9	Sandstone
6	3330.3	Sandstone	20	3216.5	*Not Recovered*
7	3328.2	Sandstone	21	3212.9	Sandstone
8	3323.3	*Not Recovered*	22	3205.2	Sandstone
9	3316.4	Sandstone	23	3191.5	Sandstone
10	3315.2	Sandstone	24	3184.7	Sandstone
11	3313.7	*Not Recovered*	25	3182.8	Sandstone
12	3312.6	Sandstone	26	3139.5	*Not Recovered*
13	3311.1	Sandstone	27	3137.0	Sandstone
14	3309.4	Sandstone			

1. WELL SUMMARY SHEET

Well Name:	Rockhopper 1/ST1		
Permit:	T/18P, Offshore Bass Basin		
Well Path:	Directional (maximum deviation of 36.74^{o})		
Top Hole Location:	Latitude:	39°47'34.18" South	
	Longitude:	145°26'21.47" East	
	Easting:	366 374.03 metres East	
	Northing:	5 594 071.42 metres North	
	(GDA 94; AMG Zone 55, Central Meridian 147^{o} East)		
Seismic Location:	Inline 1261 and Crossline 2364 on the 2005 Shearwater 3D seismic		
Bottom Hole Location:	Easting:	366 356.04 meters East	
	Northing:	5 593 338.85 meters North	
Elevation:	26m (RT-LAT)		
Water Depth:	74.3 m LAT		
Total Depth Driller:	3482.0 mMDRT		
(TVD) Driller:	3257.74 mTVDRT/3231.74mTVDSS		
Rig on tow:	01:00 hrs	29/11/2009	
Rig on Location:	05:46 hrs	29/11/2009	
Spud:	03:00 hrs	19/01/2010	
Reached TD:	14:30 hrs	03/02/2010	
Rig Released	11:30 hrs	17/02/2010	
(back to Rockhopper 1)			
Total Rig Days:	28.75 days		
Well Status:	Plugged and abandoned		
Permit Interests:	Origin Energy Resources Ltd*	39.0%	(*OPERATOR)
	AWE Petroleum Pty Ltd	35.0%	
	ARC (Bass Gas) Pty Ltd	12.5%	
	CalEnergy Gas (Australia) Ltd	8.5%	
	Innamincka Petroleum Ltd	5.0%	
Rig Name:	Kan Tan IV (Semi-submersible Rig)		
Drilling Contractor:	Australian Drilling Associates Pty Ltd		
Approx. Well Cost:	A$36.8 million		

2. FINAL DRILLING REPORT

By Mark Nasarczyk, Australian Drilling Associates Pty Ltd (ADA)

2.1 Executive Summary

The Maersk semi-submersible drilling rig "*Kan Tan IV*" came on contract to Origin Energy for the Rockhopper 1/ST1 well at 17:30hrs on 19 January 2010 when a kick off BHA was made-up to drill the sidetrack. A separate End of Well Drilling Report has been issued detailing the events on Rockhopper 1 and is included in the basic data volume of the Rockhopper 1 Well Completion Report. Rockhopper 1/ST1 was drilled to a TD of 3482mMDRT (3231.74mTVDSS). Following wireline logging operations the 8.5in hole section on Rockhopper 1/ST1 was plugged and abandoned in accordance with regulatory requirements. The sidetrack ended at 11:30hrs on 17 February 2010 when an abandonment plug was successfully set across the 9.625in shoe. The total time spent on Rockhopper 1/ST1 was 28.75 days and the final tracked cost for the sidetrack is estimated to be US$21.9 million against the AFE estimate of US$22.4 million which is US$0.5 million (2%) under AFE.

The main highlights during Rockhopper 1/ST1 were as follows:

- Many lessons from Trefoil 2 were successfully implemented on Rockhopper 1/ST1 such as the use of roller blocks to make-up BHA components offline.
- The well design was a success as the 9.625in production string was set deep enough to isolate problematic zones of the Demons Bluff Formation but shallow enough to allow conventional wireline logging (as opposed to pipe conveyed logging) to be carried out on Rockhopper 1/ST1.

The main lowlight during Rockhopper 1/ST1 was the fact that a total of five NCR's were issued during the sidetrack operations. Refer to section 4.6 for further details.

The following points should be noted in regards to the HSE performance on Rockhopper 1/ST1:

- No LTIs occurred during the well.
- On 9 February 2010 the Kan Tan IV achieved 100 LTI free days.
- No alternate duties injuries occurred during the well.
- No medical treatment injuries occurred during the well.
- No hydrocarbon / chemical spills were recorded during the well.
- No incidents were recorded that breached the performance objective for the Origin T/18P Environment Plan.

2.2 Well Summary and Overview

2.2.1 Well Summary Sheet

Well Name	**Rockhopper 1/ST1**
Country	Australia
Designation	Appraisal Well
Field Name	Rockhopper
License/Permit	T/18P
Rig Name/Type	Kan Tan IV (KTIV) / Semi-Submersible
Well Operator	Origin Energy Resources Ltd
Participants	AWE Petroleum Ltd Cal Energy Gas (Australia) Ltd Arc (Bass Gas) Pty Ltd Innamincka Petroleum Limited
Well Type	Directional
Water Depth	74.3m
RT Above MSL	26m
Rig Heading	316.62°
Geocentric Datum	GDA94
Surface UTM	UTM Zone 55
Surface Latitude	39º 47' 34.18" S
Surface Longitude	145º 26' 21.47" E
Surface Easting	366 374.03m E
Surface Northing	5 594 071.42m N
Rig on Contract (from Rockhopper 1)	19 January, 2010 @ 17:30hrs
Spud Date	19 January, 2010 @ 03:00hrs
TD Reached	3 February, 2010 @ 14:30hrs
Rig off Contract	17 February, 2010 @ 11:30hrs
Total Days on Operations	28.75 days
Total Depth (LAT)	3231.74mTVDSS / 3257.74mTVDRT / 3482.00mMDRT
Maximum Deviation Angle	36.74°
Bottom Hole Location: Easting	366 356.04m E
Bottom Hole Location: Northing	5 593 338.85m N

2.3 Casing and Cementing Summary

2.3.1 Casing Summary

No casing was run in Rockhopper 1/ST1.

2.3.2 Cementing Summary

String (in) / Plug	Cmt Type	Cement Additives	Mix Water (gal/sk)	Slurry Vol (bbls)	Slurry Density (ppg)	Cmt to / from (mMDRT)	Test Press (psi)
Plug #1A	Class G	SCR 100-L Freshwater NF-6	5.12	40.4	15.8	3322 - 3482	n/a
Plug #1B	Class G	SCR 100-L Freshwater NF-6	5.12	40.4	15.8	3162 - 3322	n/a
Plug #1C	Class G	SCR 100-L Freshwater NF-6	5.12	38	15.8	3002 - 3162	n/a
Plug #2	Class G	SCR 100-L Freshwater NF-6	5.12	38	15.8	2768 - 2915 (Tagged)	n/a
Plug #3	Class G	SCR 100-L Freshwater NF-6	5.11	25	15.8	1978 – 2015 (Tagged)	n/a
Plug #3A	Class G	SCR 100-L Freshwater NF-6	5.11	18.7	15.8	1905 - 1978	2000

Table 1 Cementing summary

Additional cementing details are included in Appendix 17.

2.4 Operations Summary

2.4.1 Drilling and Coring Rockhopper 1/ST1

A sidetrack (ST1) kick-off BHA was made up comprising a Hughes MXL-1X milled tooth bit, a mud motor set at 1.15° and an MWD tool. The BHA was RIH to the 1970mMDRT and cement was drilled down to 1990mMDRT at which point the sidetrack was kicked off. Drilling in both rotary and sliding mode continued to 2112mMDRT where a hole inclination of 9.9° was achieved on an azimuth of 180.8°. The kick-off BHA was POOH and the milled tooth bit was graded as 2-3-WT-A-E-I-ER-BHA at surface.

A Reed Hycalog RSX616M PDC bit was made up to a BHA comprising the following DD/MWD/LWD tools: Geopilot, RLL, EWR, DGR, ALD, CTN and BAT-Sonic and DIR. The BHA was RIH and the previously drilled section of hole was re-logged from 1970m to 2112mMDRT. New hole was drilled from 2112m to 2926mMDRT at which point the saver sub top connection broke out on a connection. A new saver sub was installed and the pipe handler dies were replaced. A total of 1.5hrs of rig time were lost due to this event.

Drilling of the 8.5in sidetrack continued towards core point #1. At 3158mMDRT the at-bit GR and MWD GR sensors dropped out. Fully functioning GR sensors were critical as the GR trace was required to pick the core point. Given the fact that both sensors failed it was decided to POOH and change-out same. On the trip out of hole tights spots were washed and reamed with a maximum drag of 30klbs being recorded. On surface the RSX616M was graded at 2-1-CT-C-X-I-NO-DTF and was replaced with a Halliburton FMF3653Z PDC bit. A total of 36hrs were lost due to this down hole tool failure and NCR010 was issued to Halliburton.

The sidetrack was drilled ahead from 3158m to core point #1 at 3196mMDRT. The hole inclination at this depth was 35.7° on an azimuth of 178.5°. The BHA was POOH (bit grade 0-0-NO-A-X-I-NO-CP) and a 30m coring BHA was made up and RIH. Core #1 was cut from 3196m to 3212.5mMDRT at which point the core head jammed. The core was cut at an average ROP of 4m/hr. The coring BHA was POOH and upon inspection at surface 13.4m of the 16.5m of core cut had been recovered (81%). The FMF3653Z PDC bit was rerun and drilling continued from 3212.5m to core point #2 at 3283mMDRT. The BHA was POOH and a 30m coring BHA was made up and RIH. Core #2 was cut from 3283m to 3298.5mMDRT at which point the core head jammed. The coring BHA was POOH and upon inspection at surface 14.08m of the 15.5m of core cut had been recovered (91%). A decision was made to cut a further core at this depth. Core #3 was cut from 3298.5m to 3309mMDRT when once again the core head jammed. The coring BHA was POOH and upon inspection at surface 9.5m of the 11.5m of core cut had been recovered (90%).

The FMF3653Z PDC bit was rerun on the Geopilot tool and MWD/LWD suite and drilling continued from 3309m to the sidetrack TD at 3482mMDRT (3231.74mTVDSS) which was 139mMD shallower than the planned TD of 3621mMDRT. The inclination at TD was 35.47° on an azimuth of 179.36°. The BHA was POOH and the maximum drag recorded during this operation was 30klbs. The bit was graded as 0-0-RR-A-X-I-NO-TD and the sidetrack was drilled with mud weights varying from 9.3 – 9.45ppg.

Conclusions and Recommendations

(i) The continued addition of Radiagreen (<3%) proved to be successful with high torque not being an issue in drilling mode.
(ii) The KCl/PHPA/ClaySeal Plus mud formulation proved to be successful as the 8.5in section remained in very good condition throughout the drilling and coring operations.
(iii) At the time of writing this report an investigation was being carried out on the reasons for the three jammed coring runs. One of the possible reasons for the jamming is the increased shale observed in the cored intervals when compared to the successful coring operations Trefoil 2. Also the well inclination of +/-35° may have had an effect on the coring performance.

The failure of the GR sensors above core point #1 was extremely disappointing. On future wells were GR is required to pick core points the back-up sensor should be rigged up in such a way to operate run independently of one another – this was not the case on the sidetrack.

2.4.2 Rockhopper 1/ST1 Wireline Logging

Four wireline logging runs were made with the following tool configurations:

- Run #1: SP-HRLA-HNGS-CMR
- Run #2: XPT-GR
- Run #3: MDT-GR
- Run #4: FMI-DSI-GR

During logging run #4 the tool string could not pass 3458.5mMDRT. The wellbore was logged from this depth upwards and the logging string was POOH. The logging programs continued with the following tool configurations:

- Run #5: VSI-GR-LEHQT
- Run #6: MSCT-GR
- Run #7: MDT-Dual Packer-GR

At core depth 3137mMDRT on the MSCT run the tool became stuck. Attempts were made to free the tool via overpulls of up to 8.5klbs. A further attempt was made to break the weak link with the wireline unit. This proved to be unsuccessful and a T-bar was connected to the wireline cable and installed in the elevators. The draworks applied a 10klb overpull on the cable and the weak link parted leaving the top of fish at 3124mMDRT. An overshot assembly was RIH and the fish was successfully recovered to surface. A total of 31hrs of rig time were lost due to this stuck-in-hole incident.

The BOP stack was fully tested and a decision was made to conduct a wiper trip given the extensive logging program planned. Tight spots were washed and reamed and at TD low and high weight pills were pumped to clean the hole. The wiper trip BHA was POOH and the final logging run was made.

During the wireline logging program several hours were lost due to various Schlumberger equipment failures (surface and downhole). These failures were captured in a single note and issued to Schlumberger as NCR012.

Conclusions and Recommendations

(i) Given the length of time the deviated wellbore remained open the hole conditions were very good throughout the extended logging program. The mud weight of +/-9.3ppg was sufficient to maintain wellbore stability and negate differential sticking events.

2.4.3 Rockhopper 1/ST1 Well Abandonment

MWD/LWD and wireline logging data indicated that there were several zones of moveable hydrocarbon below 2810mMDRT. The data also showed that there were no freshwater zones above this depth. Based on this information a 2.875in cement stinger and mule shoe was made up to 5in drill pipe and RIH to TD at 3482mMDRT. Cement plugs were set as per the following sequence:

- Cement plug #1A was pumped from 3482m to 3322mMDT (160m, 40.4bbls of 15.8ppg Class G cement) and the stinger was POOH to the top of the plug.
- Cement plug #1B was pumped from 3322m to 3162mMDRT (160m,

40.4bbls of 15.8ppg Class G cement) and the cement stinger was POOH to the top of the plug.

- Cement plug #1C was pumped from 3162m to 3002mMDRT (160m, 40.4bbls of 15.8ppg Class G cement) and the cement stinger was POOH to the top of the plug.
- The cement stinger was POOH to 2965mMDRT and a 12bbl Hi-Vis pill was pumped down hole and displaced with 164bbl of mud. The stinger was pulled to the top of the pill.
- Cement plug #2 was pumped from 2915m to the theoretical depth of 2765mMDRT (150m, 38bbls of 15.8ppg Class G cement) and the cement stinger was POOH ten stands above the top of cement.
- Following wait on cement the stinger was RIH and the top of cement plug #2 was tagged at 2768mMDRT with 5klbs (42mMD above moveable hydrocarbon).
- The cement stinger was POOH to 2115mMDRT and a 100m (25bbl) Hi-Vis pill was spotted.
- The cement stinger was POOH to 2015mMDRT and cement plug #3 (100m, 25bbls of 15.8ppg Class G cement) was set with a theoretical top at 1915mMDRT.
- Whilst waiting on cement BHA components were laid down from the mast.
- Following wait on cement the stinger was RIH and the top of cement plug #3 was tagged at 1978mMDRT with 5klbs (13m below the 9.625in shoe).
- Cement plug #3A was pumped from 1978m to the theoretical depth of 1905mMDRT (73m, 18.7bbls of 15.8ppg Class G cement) and the cement stinger was POOH ten stands above the top of cement.

Rockhopper 1/ST1 ended at 11:30hrs on 17 February 2010.

Conclusions and Recommendations

(i) Review the use of the 2.875in stinger on future abandonment operations. If 3.5in drill pipe is used on future wells ensure there is sufficient clearance between the tool joints and the wellbore. If 3.5in tubing is used on future wells ensure handling equipment is available. The advantage of 3.5in drill pipe and tubing is that both can be stood back in the mast as stands.

2.5 Bit Record

Well: Rockhopper-1/ST1

Date In	Date Out	IADC	Bit#	Size (in)	Ser #	Mfr	Type	Jets	TFA	D.In (m)	D.Out (m)	Prog (m)	Hrs IADC	ROP (ft/hr)	SPP (psi)	Flow (gpm)	WOB (klb)	RPM	MW (ppg)	I	O1	D	L	B	G	O2	R
11 Feb 2010	12 Feb 2010	117	5 RR1	8.50	6076381	Baker Huhes C	8 1/2 GT-1	3 x 20	0.92	3482.0	3482.0	0	0		2450	570		60	9.39	2	2	WT	A	E	1	NO	BHA
02 Feb 2010	04 Feb 2010	M423	3 RR1	8.50	11374625	Security DBS	FMF3653Z	3 x 12 3 x 15	0.849	3309.0	3482.0	173	19.5	8.87	2293	591	9.90	165	9.39	0	0	RR	A	X	I	NO	TD
01 Feb 2010	02 Feb 2010	M233	4 RR1	8.50	83691	CORPRO	MCP 572		0	3298.5	3309.0	10.5	1.5	7	797	237	9.70	79	9.37	0	0	NO	A	X	I	NO	PR
30 Jan 2010	31 Jan 2010	M233	4 RR	8.50	83691	CORPRO	MCP 572		0	3283.0	3298.5	15.5	3	5.17	635	215	6.50	79	9.37	0	0	NO	A	X	I	NO	PR
29 Jan 2010	30 Jan 2010	M423	3 RR	8.50	11374625	Security DBS	FMF3653Z	3 x 12 3 x 15	0.849	3212.5	3283.0	70.5	9.5	7.42	2190	572	7.30	152	9.38	0	0	ER	A	X	I	NO	CP
28 Jan 2010	29 Jan 2010	M233	4	8.50	83691	CORPRO	MCP 572		0	3196.0	3212.5	16.5	4	4.12	625	216	16.90	67	9.37	0	0	NO	A	X	I	NO	BHA
26 Jan 2010	27 Jan 2010	M423	3	8.50	11374625	Security DBS	FMF3653Z	3 x 12 3 x 15	0.849	3158.0	3196.0	38	5	7.6	2454	599	12.10	72	9.38	0	0	NO	A	X	I	NO	CP
21 Jan 2010	26 Jan 2010	M422	2	8.50	220126	Reed Hycalog	RSX616M	6 x 18	1.491	2112.0	3158.0	1046	78.5	13.32	1851	543	17.70	120	9.40	2	1	CT	C	X	I	NO	DTF
19 Jan 2010	21 Jan 2010	117	1	8.50	6062641	Baker Christe	MXL-1X	3 x 22	1.114	1990.0	2112.0	122	22.5	5.42	1972	540	14.00	55	9.40	2	3	WT	A	E	I	ER	BHA

Table 2 Bit summary

2.6 Health, Safety and Environment

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
SAFETY				
Manhours (ADA / Client / Maersk / TPC onboard Kan Tan IV)	67308	33036	hrs	29th Nov 2009 – 0745 22nd Feb 2010, with the following approvals: • Rockhopper 1/ST1 Drilling Program application approval (ADA Letter 21st August 2009) received from MRT, DIER dated 12th October 2009. • Rockhopper 1/ST1 Plug and Abandonment Program approval received from MRT, DIER on 17th Feb 2010.
Stop Cards Generated	2292	1424	ea	From 30th Nov 2009 – 22nd Feb 2010 Overall participation from the Crew, Client and TPC's was satisfactory whilst the "quality" of the cards submitted was very high indicating good commitment to the scheme.
Safe Observation	1191	693	ea	51% of safe behaviour cards were deemed safe (Rockhopper 1 and Rockhopper 1/ST1).
Unsafe Observation	1101	731	ea	49% of safe behaviour cards were deemed unsafe (Rockhopper 1 and Rockhopper 1/ST1).
Total MODU Proactive Safety Efforts	6559	2117	ea	Include Work Permits / JSA / Toolbox Meeting / Time Out For Safety / Area Authority Audits / Hazard Hunts / STOP Cards 29th Nov 2009-0745 - 22nd Feb 2010
AUDIT				
Environmental Regulatory Audit	1	0	ea	DPI Auditors attended the rig on 16 – 18 Dec 2009.

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
MODU Mini HSE Audits	8	4	ea	Outstanding efforts by the ADA HSE Advisor in conducting the following audits: **During Rockhopper 1/ST1:** • 22nd Jan 2010 Waste Management • 7th Feb 2010 Roles & Responsibilities • 17th Feb 2010 Maintenance Management System • 13th Feb 2010 PUWER All identified actions from Action Tracker have been reviewed and closed.
MODU Environmental Inspection / Internal EP Compliance Audit	7	4	ea	Internal environmental inspections carried out by the ADA Offshore HSE Advisor The inspections were held on the following dates; **During Rockhopper 1/ST1:** • 24th Jan 2010; • 31st Jan 2010; • 7th Feb 2010; 14th Feb 2010; At the time of the completion all actions identified have been closed.
TRAINING				
ADA ERG Exercise	0	0		A live exercise was held earlier during Trefoil 2 well. No ERG exercise held during Rockhopper 1/ST1.
Environment Plan Training	Compliant	Compliant		Communications on campaign's environmental obligations including Environmental Objectives were made by

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
				ADA HSE Advisor via MODU Induction.
MODU Emergency Drill	6 6 2 6 0 1	4 4 2 4 0 0		The following drills were held: The following drills were held: • Fire drill • Abandon • MOB • First Aid • ISPS • SOPEP (Shipboard Marine Pollution Emergency Plans) Objectives have been met and there are no outstanding actions required. Objectives have been met and there are no outstanding actions required.
REPORTABLE INCIDENT (NOPSA)				
Lost Time Injury	0	0	ea	Zero LTI occurred during the operation.
Alternate Duties Injury (ADI)	0	0	ea	Zero alternative duties injuries occurred.
Medical Treatment Injury (MTI)	0	0	ea	Zero medical treatment injuries occurred.
NON REPORTABLE INCIDENT (NOPSA)				
First Aid Case (FAC)	1	1	ea	• 05/02/2010 - Welder burned forearm on hot metal. Note: Corrective / preventive actions have been closed out.
Near Miss (NM)	1	2	ea	• 28/01/2010 - Dropped object, sheared bolt off cheek plates on travelling block starboard crane, potential LTI; and • 03/02/10 - Dropped object, shackle pin from mast, potential MTI Note: Corrective / preventive actions have been closed out.

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
Property Damage	2	1	ea	• 31/01/2010 - Walkway on starboard crane damaged; similar to incident on 19/12/2010. Note: Corrective / preventive actions have been closed out.
RECORDABLE INCIDENT (DIER)				
Spills – occurrence	0	0	ea	No hydrocarbon or chemical spills occurred
Spills – quantity	0	0	ea	As above
Sewerage Disposal				
Problems with sewerage plant resulted in discharge of untreated sewage to the marine environment	0	0	ea	No concerns identified.
WASTE				
Hazardous waste	2	2	IBC	All wastes are properly packed, stored and sent onshore to Oil Patch Containers (OPC) and disposed accordingly through an approved waste disposal company, an EPA approved permit holder to transport various wastes including waste from offshore.
	5	0	Drums	
Total	4500	4000	Litres	
Non-hazardous waste	57	42	skips	Skips of solid waste and scrap metal sent ashore for disposal through Cleanaway.
MARINE USER INTERACTION				
Cetacean sightings	2	0	ea	
Errant vessel interaction	0	0	ea	No interactions recorded
Potential Impacts from Fishing Operations	0	0	ea	No impacts identified. Pre and post seabed survey was made by Fugro Survey, the ROV

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
				contractor. Copies of DVD recording & seabed clearance certificates were sent to Tasmania DIER.
Biofouling mgt activity	1	0	ea	
WATER BASED MUDS (WBM)				
Volume water based drilling fluid dispose into the ocean (m^3) *Note: This number is taken from the mud report. In a well where drilling occurs in the lost circulation zone, sweeps etc are lost down hole, not to the ocean. This column is for mud lost at the shale shakers or dumped.*	1419.8	688.4	m^3	No recordable incident arising from: • Rockhopper 1/ST1 (19th Jan – 17th Feb 2010) drilling activities that breach the performance objective for the ADA Origin Energy T/18P Environment Plan.
Volume of drill cuttings using WBM disposed to the seabed (m^3) Note: *This data is basically the volume of rock excavated from the well. When drilling top hole, cuttings are lost down*	243.4	59.4	m^3	

PARAMETER	Rockhopper 1	Rockhopper 1/ST1	UNITS	COMMENTS
hole and should not be included.				
Volume of drill cuttings using WBM injected into the annulus (m^3)	0	0	m^3	
Oil / Chemical spills discharged to the marine environment	0	0	m^3	No hydrocarbon or chemical spills occurred.

Table 3 Health, safety and environment record

2.7 Well Highlights and Lowlights

2.7.1 Highlights

The main highlights during Rockhopper 1/ST1 were as follows:

- No LTIs occurred during the well.
- On 9 February 2010 the Kan Tan IV achieved 100 LTI free days.
- No alternate duties injuries occurred during the well.
- No medical treatment injuries occurred during the well.
- No hydrocarbon / chemical spills were recorded during the well.
- No incidents were recorded that breached the performance objective for the Origin T/18P Environment Plan.
- A total of 1424 Stop cards (693 safe and 731 unsafe observations) were submitted during the well.
- A total of 2117 proactive safety efforts were recorded during the well.
- Many lessons from Trefoil 2 were successfully implemented on Rockhopper 1/ST1 such as the use of roller blocks to make-up BHA components offline.
- Whilst at times problematic the use of the rotary steerable tool in the 8.5in section on Rockhopper 1/ST1 proved to be successful as all targets were intersected and a smooth wellbore was drilled allowing logging objectives to be met.
- The well design was a success as the 9.625in production string was set deep enough to isolate problematic zones of the Demons Bluff Formation but shallow enough to allow conventional wireline logging (as opposed to pipe conveyed logging) to be carried out on Rockhopper 1/ST1.
- The KCl/PHPA/ClaySeal Plus mud formulation proved to be successful particularly in the 8.5in hole sections were the wellbores remained stable after several days of drilling and logging.
- The well was successfully plugged and abandoned in accordance with Regulatory requirements.

2.7.2 Lowlights

The main lowlights during Rockhopper 1/ST1 were as follows:

- Five NCR's were issued during Rockhopper 1/ST1. Refer to section 4.6 for further details.
- The inability to cut and recover 30m of core at two separate locations due to the coring BHA jamming off.

2.8 Non-conformance Report Summary

A total of 5 NCR's were issued during Rockhopper 1/ST1. The total recorded lost time in the daily reports attributed to these NCR's was 47.5hrs. The total cost impact of the NCR events was US$1,436,000 and an overview of these events is summarised in Table 4.

NCR	Description	Recorded NPT	Unplanned Activity	Cost Impact (US$)
008	A Geopilot RSS BHA was RIH to drill Rockhopper 1/ST1. A shallow test was conducted on same and the MWD failed to obtain a correct survey. The BHA was POOH and inspected at surface. It was found that the PCDC probe in the NM flex joint had failed. A new PCDC probe and back-up flex joint was made up to the BHA and the entire assembly RIH.	5		$ 145,000.00
009	Between 18:00hrs on 21/1/10 and 03:00hrs on 22/1/10 the Geoservices computer system crashed 3 times. Even after changing out the main computer to the backup computer the problem continued to occur. It required all the drilling sensors to be recalibrated which was very time consuming for the Geoservices crew. Fortunately this happened while Sperry were dealing with a directional probe failure which necessitated a POOH of the BHA. If this computer failure occurred during drilling operations the consequences would have been very significant and may have even required drilling to be halted. As a contingency a special helicopter flight was required to send a Geoservices technician out to the rig to make sure that the problem was fully resolved. No rig time lost but an US$8,000 helicopter flight was required.			$ 8,000.00
010	While drilling ahead on Rockhopper 1 ST/1 to core point #1 the at-bit GR and MWD/LWD GR sensors dropped out. Fully functioning GR sensors were critical as the GR trace was required to pick the core point. For this reason two sensors were RIH in the event that one of the sensors failed to transmit real-time GR data. However as both sensors failed simultaneously the BHA has to be tripped to ensure the correct core point was chosen.	36		$ 1,050,000.00
011	For the Rockhopper 1 ST1 well there were several instances when GWEB/VISEAN has gone down at crucial times. At around 06:30hrs on both the 28th January and again on the 30th January, VISEAN went down at coring points #1 and #2. Both times it necessitated the Operations Geologist having to get real time LWD data directly from the Wellsite Geologist at the rig via conventional emailing and phone calls. This slowed down the process of selecting and confirming the coring points. Both times it was pinpointed to a problem at the VISEAN end. Initially the time difference between actual drilling activity at the rig, and the VISEAN display was around 40 minutes behind time, and 24 hrs later (overnight) it had increased to 80 minutes. Whilst no direct lost time was recorded due to these failures a total of 1hr additional rig time was incurred picking the x2 core points due to the unavailability of the real time data. This equates to US$30,000 additional cost.			$ 30,000.00
012	During the wireline logging program on Rockhopper 1/ST1 several problems were encountered with Schlumberger surface and downhole equipment. Some of these problems were classed as non-productive time and others affected the overall efficiency and performance of the logging operation itself. Rather than issuing several NCR's on all the problems encountered a single NCR was issued to capture all the down time events.	6.5		$ 203,000.00
	Total	**47.5**		$ 1,436,000.00

Table 4 Non-conformance report summary

2.9 Time Analysis

2.9.1 Breakdown by Well Phase

Table 5 summarises the planned versus actual time breakdown by operational phase for Rockhopper 1/ST1.

Rockhopper 1/ST1 Operation Phase	Time (days)				
	Planned	Actual	Programmed	Unprogrammed	NPT
8.5in Hole (P17)	15.46	15.60	13.83	0.00	1.77
Log 8.5in Hole (P17)	2.98	10.88	9.44	0.00	1.44
Abandon Well (P21)	2.03	2.27	1.83	0.00	0.44
Total	**20.46**	**28.75**	**25.10**	**0.00**	**3.65**

Table 5 Breakdown by operational phase

Figure 1 presents the data in Table 5 in graphical format.

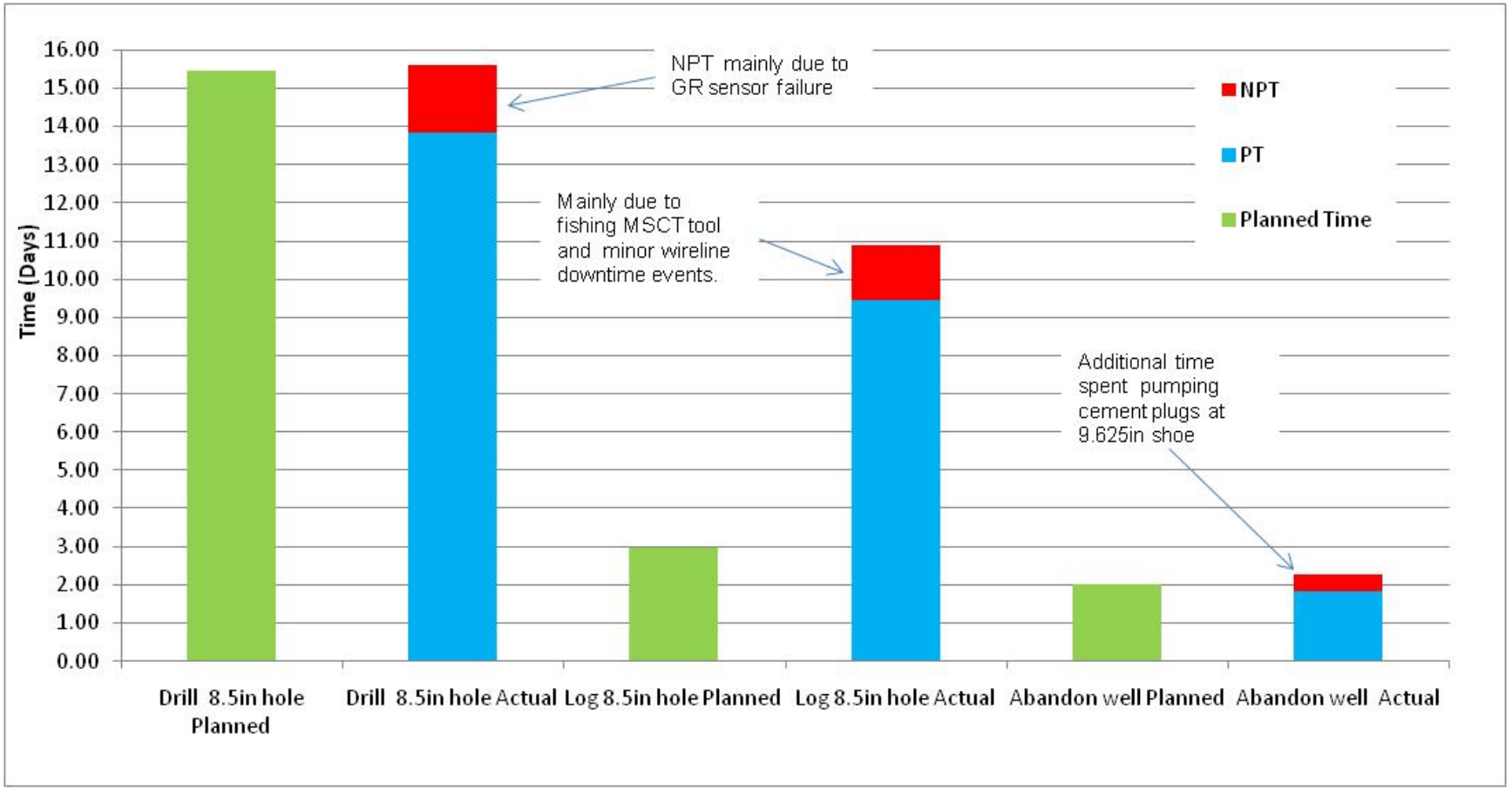


Figure 1 Breakdown by operational phase

2.9.2 Non-productive Time Analysis

Total time spent on Rockhopper 1/ST1 was 28.75 days compared with the total AFE time for the sidetrack of 20.46 days. The sidetrack duration was 8.29 days (40.5%) over the AFE. Of the 28.75 days spent on Rockhopper 1/ST1 a total of 3.65 days (12.7%) were recorded as non-productive time. Figure 1 highlights the main NPT events on Rockhopper 1/ST1 and Figure 2 summarises the NPT events by root cause as entered into the IDS system. The following points should be noted in regards to the NPT on ST1:

- A total of 1.5 days were lost when a round trip was required to replace GR sensors when drilling ahead to core point #1.
- A total of 1.29 days were lost when fishing the MSCT tool.

The overall NPT percentage of 12.7% is well within the 20% allowance in the AFE.

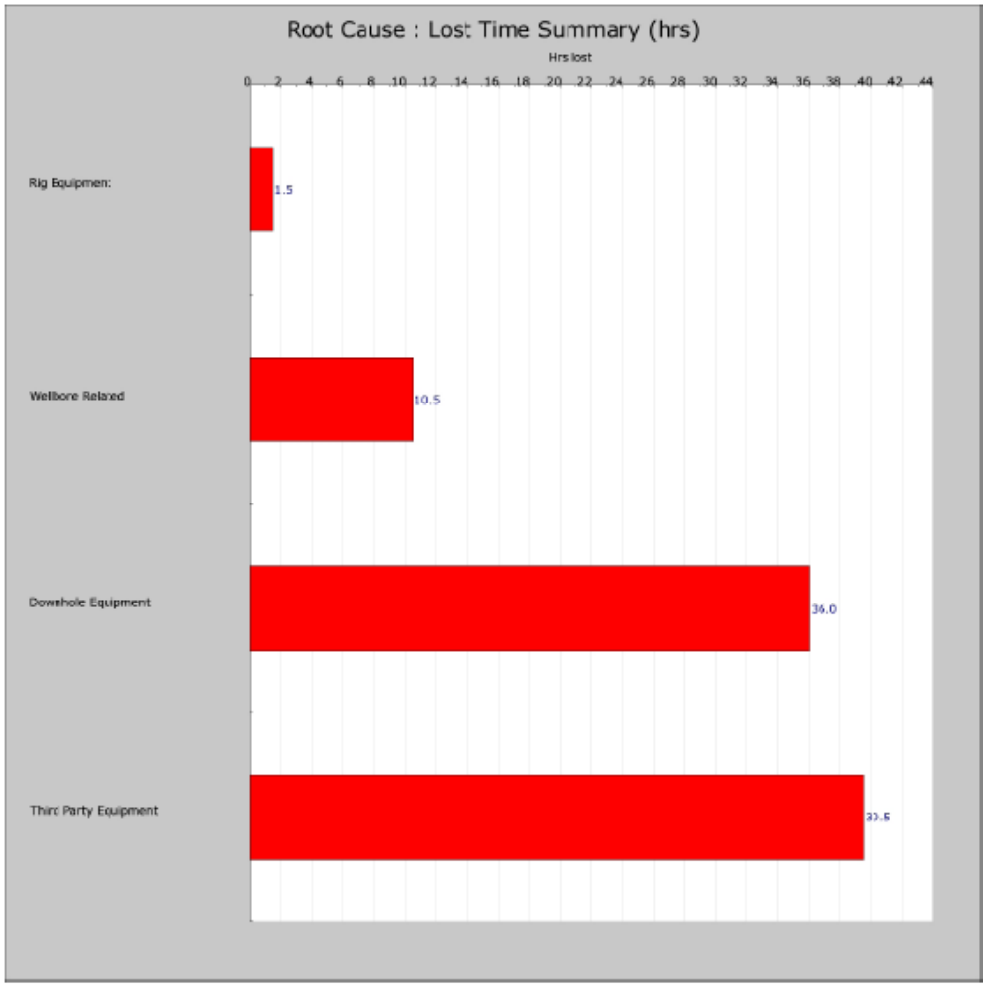


Figure 2 Lost time summary

A complete listing of all the NPT events on Rockhopper 1/ST1 is located in Appendix 15.

2.9.3 Time vs. Depth Curve

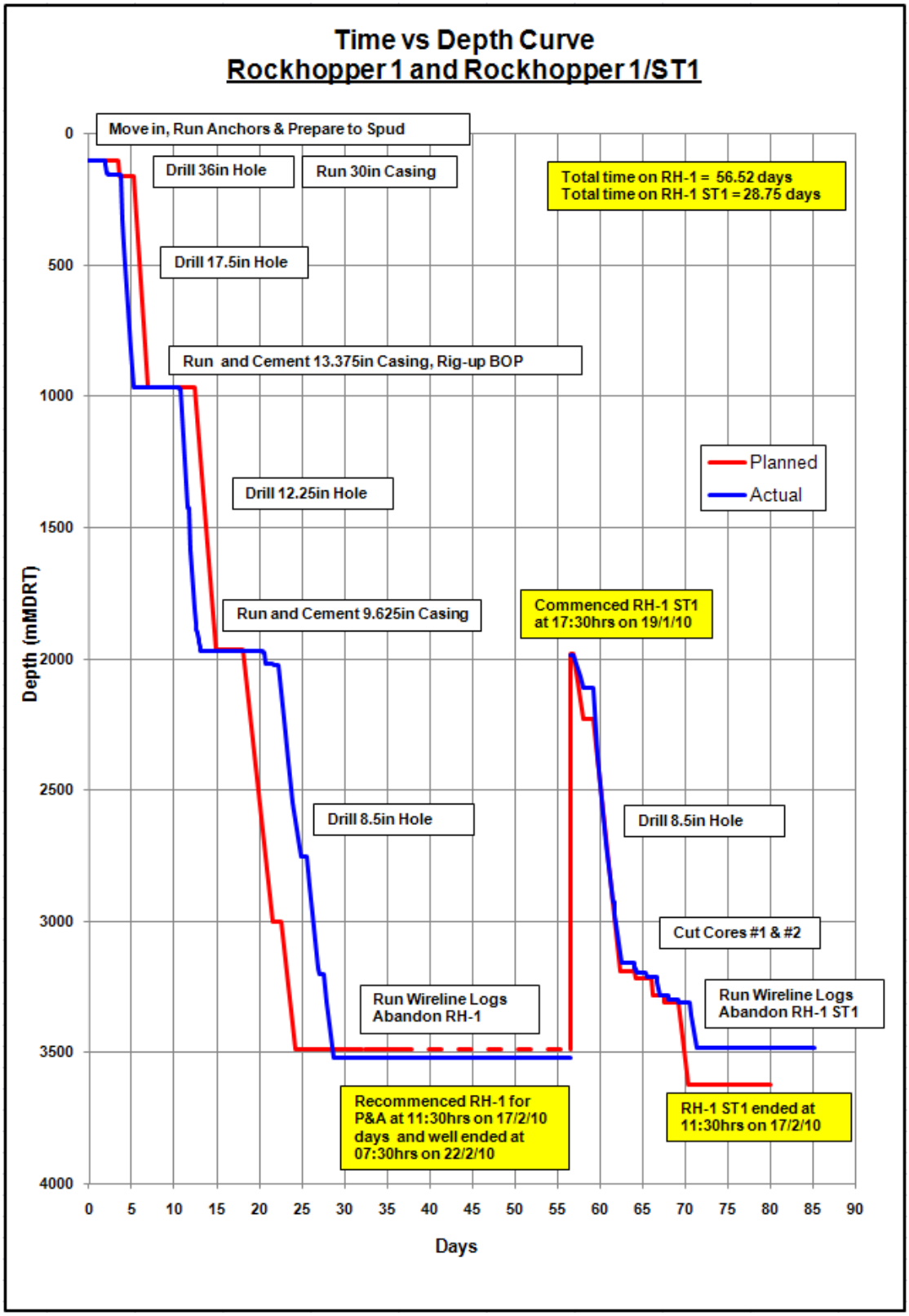


Figure 3 Time vs. Depth Curve

2.10 Plug and Abandonment Well Schematic

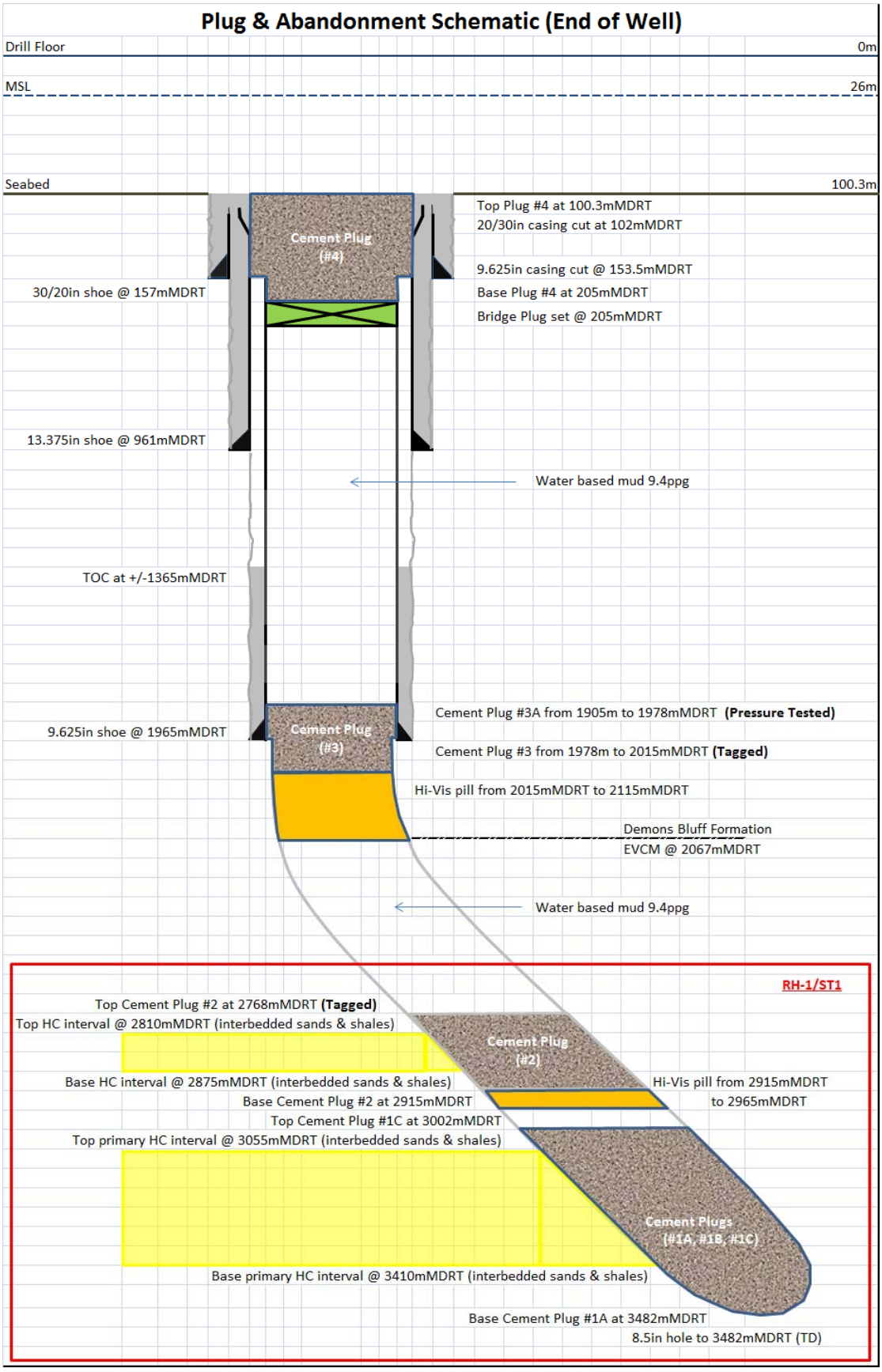


Figure 4 Plug and Abandonment Well Schematic

2.11 Lessons Learnt Register

A total of 64 new lessons were captured during Rockhopper 1 and Rockhopper 1/ST1 operations. The lessons learnt register below (Table 6) lists the most relevant technical and operational lessons captured during Rockhopper 1/ST1.

LL #	Lesson Learned / Opportunity	Action Results
163	Geoservices system crashed three times during the well.	A technician was mobilised to the rig and all faults were repaired.
166	Drilled 8.5in hole from 2112m to 3196m. When POOH had to back ream out. It was felt a wiper trip may be an option when circa 1000m is drilled in this hole section to ensure the hole is as clean as possible.	On future wells will need to look at having greater allowance for extra circulating and wiper trips to assist with hole cleaning and conditioning.
167	Three core runs were required due to the cutting head jamming in the formation. Core #1 jammed after only 16.5m cut. The second jammed after 15.5m cut and the second core from core point #2 jammed after 10.5m cored.	At the time of writing the end of well report Corpro were reviewing the coring performance, inspecting the core and compiling an investigation report.

Table 6 Lessons learnt register

2.12 Daily Activity Report

The Daily Activity Report is included as Appendix 14.

3. FORMATION SAMPLING & ANALYSIS

3.1 Cuttings

Cuttings were collected over the interval 1985 – 3482mMDRT. The sampling intervals were as follows:

1985 – 2050 mMDRT: 5 metre intervals (plus spot samples)
2050 – 3482 mMDRT: 3 to 6 metre intervals (plus spot samples)

Cuttings were very poor during the cored interval and descriptions through this zone are generated from a combination of cutting samples & core chip descriptions (Appendix 3).

A detailed collection and distribution list for all cutting samples collected from Rockhopper 1/ST1 is included in the Geoservices End of Well Report (Appendix 8). Lithological descriptions for the cutting samples are presented in Appendix 1. A complete set of Daily Geological Reports, which include cuttings description summaries, are included in Appendix 19.

3.2 Sidewall Cores

One run of mechanical sidewall cores were acquired in Rockhopper 1/ST1. The MSCT was run 6 of logging suite 1 and of the 27 cores attempted, 19 were accepted. The recovery factor and condition of each core was variable. Table 7 summarises the cores acquired from the MSCT logging run with detailed descriptions and photographs supplied in Appendix 5 and 6 respectively.

No.	Depth (mRT)	Core Acceptance	Recovery (mm)	Lithology
1	3410.5	Rejected	NA	*Not Recovered*
2	3409.3	Rejected	NA	*Not Recovered*
3	3408.5	Rejected	NA	*Not Recovered*
4	3332.4	Accepted	45	Sandstone
5	3331.3	Accepted	35	Sandstone
6	3330.3	Accepted	45	Sandstone
7	3328.2	Accepted	10	Sandstone
8	3323.3	Rejected	NA	*Not Recovered*
9	3316.4	Accepted	10	Sandstone
10	3315.2	Accepted	32	Sandstone
11	3313.7	Rejected	NA	*Not Recovered*
12	3312.6	Accepted	45	Sandstone
13	3311.1	Accepted	15	Sandstone
14	3309.4	Accepted	35	Sandstone
15	3304.9	Accepted	30	Sandstone
16	3301.8	Accepted	45	Sandstone
17	3260.3	Rejected	NA	*Not Recovered*
18	3258.0	Accepted	15	Sandstone
19	3238.9	Accepted	27	Sandstone
20	3216.5	Rejected	NA	*Not Recovered*
21	3212.9	Accepted	25	Sandstone
22	3205.2	Accepted	30	Sandstone
23	3191.5	Accepted	45	Sandstone
24	3184.7	Accepted	30	Sandstone
25	3182.8	Accepted	37	Sandstone
26	3139.5	Rejected	NA	*Not Recovered*
27	3137.0	Accepted	9	Sandstone

Table 7 Summary of mechanical sidewall cores acquired in Rockhopper 1/ST1

3.3 Conventional Cores

Three conventional cores were cut in Rockhopper 1/ST1. A summary of the cored intervals is included in Table 8 below. Detailed core chip descriptions are in Appendix 3 and routine core analysis and core photographs are supplied in Appendix 4.

No.	Interval (mRT)	Formation (Reservoir)	Cut (m)	Recovered	
				(m)	(%)
1	3196.0-3212.5	Eastern View Coal Measures (RL40-50)	16.5	13.2	80
2	3283.0-3298.5	Eastern View Coal Measures (RL90-100)	15.5	14.08	91
3	3298.5-3309.0	Eastern View Coal Measures (RL100-110)	10.5	9.5	90

Table 8 Summary of conventional cores acquired in Rockhopper 1/ST1

3.4 Palynology

Six cutting samples and one core sample were selected from Rockhopper 1ST/1 for palynological analysis. This analysis was conducted by Morgan Palaeo Associates. The results of the palynological analysis and the accompanying basic data report are included in Appendix 12 and a summary of the basic data resulting from this work is presented in Table 9. The complete palynology report is presented in the interpretive volume of the Rockhopper 1 Well Completion Report as Appendix 4.

Depth (mMDRT)	Sample Type	Yield			Preservation	
		kerogen	dinocysts	spore-pollen	dinocysts	spore-pollen
3102-3105	Cuttings	very high	trace	low	poor	poor
3249-3258	Cuttings	medium	low	medium	very poor	very poor
3264-3267	Cuttings	very high	trace	high	poor	very poor
3293.0	Core	medium	-	medium	-	very poor
3345-3348	Cuttings	medium	trace	medium	fair	poor
3378-3381	Cuttings	very high	trace	medium	fair	poor
3414-3417	Cuttings	very high	trace	medium	fair	poor

Table 9 Basic palynological data summary

3.5 Geochemistry

One oil sample, sourced from wireline run 3 with the MDT-GR toolstring, was selected for geochemical analysis. Details of this sample and the analyses conducted on it are listed in Table 10. Results of the geochemical analyses are presented in the interpretive volume of the Rockhopper 1/ST1 Well Completion Report in Appendix 3.

Depth (mMDRT)	Sample Type	Analyses
2941.2	MDT (oil)	Whole-oil GC-MS, Saturate-fraction GC-MS, Branched/Cyclic GC-MS, Aromatics GC-MS

Table 10 Rockhopper 1 geochemical analyses sample summary

3.6 Petrology

Detailed petrological analysis was undertaken on six MSCT samples and nine core plug ends between the depths of 3137.0 – 3332.4mMDRT by Reservoir Solutions Pty Ltd. Analytical techniques included thin-section analysis, qualitative fine-fraction X-ray diffraction analysis, and scanning electron microscopy. The thin-section analysis undertaken includes modal analysis, grain size analysis and photomicroscopy/energy dispersive spectroscopy. The samples selected for the analyses are summarised in Table 11. The results of the analyses can be found in the interpretive volume of the Rockhopper 1/ST1 Well Completion Report in Appendix 5.

Sample #	Depth (mMDRT)	Sample Type	Petrological Analysis				Core Analysis		
			MA	XRD	SEM	PM	Por. (%)	Perm. (mD)	GD (g/cm^3)
27	3137.0	MSCT	X	X	X	X	18.1	-	2.63
25	3182.8	MSCT	X	-	-	X	18.1	16.0	2.67
9	3198.96	core	X	-	-	X	17.2	1.35	2.65
30	3206.8	core	X	X	X	X	16.8	6.3	2.65
32	3207.4	core	X	-	-	X	13.6	1.85	2.65
19	3238.9	MSCT	X	-	-	X	19.0	-	2.63
18	3258.0	MSCT	X	-	-	X	14.5	-	2.64
38	3288.25	core	X	X	X	X	15.1	2.05	2.68
51	3295.90	core	X	-	-	X	13.2	4.83	2.64
53	3296.42	core	X	-	-	X	17.7	25.7	2.63
58	3299.70	core	X	-	-	X	13.5	1.01	2.66
74	3304.80	core	X	X	X	X	12.4	2.29	2.65
82	3307.79	core	X	-	-	X	14.8	8.0	2.63
9	3316.4	MSCT	X	-	-	X	-	-	-
4	3332.4	MSCT	X	-	-	X	14.4	1.55	2.63

Table 11 Summary of samples selected

Samples for MA (modal analysis), XRD (fine-fraction X-ray diffraction analysis), SEM (scanning electron microscopy), PM (photomicroscopy) and RCA (core analysis)

3.7 Core Analysis

Routine Core Analysis (RCA) was performed by Weatherford Laboratories Pty Ltd. The conventional core RCA report is presented in Appendix 4 and the MSCT RCA report is included in Appendix 6.

4. FORMATION EVALUATION

4.1 Mudlogging

Mudlogging was provided by Geoservices Australasia Pty Ltd over the interval 1990.0 – 3482.0 mMDRT. Geoservices End of Well Report can be found in Appendix 8.

4.2 Logging While Drilling

Sperry-Sun Drilling Services provided Logging while drilling (LWD) services for Rockhopper 1/ST1. The 8 ½" sidetrack was drilled in seven bit runs using a Geopilot rotary steerable system (RSS) Bottom Hole Assembly (BHA) in conjunction with a motor BHA. The LWD tools included in this BHA were comprised of Drillstring Dynamic Dual Gamma Ray (DDSr-DGR) tool for drilling optimisation, Electromagnetic Wave Resistivity (EWR-P4) tool, Compensated Thermal Neutron (CTN) tool, Azimuthal Litho-Density (ALD) tool and Bi-Modal Acoustic (BAT) tool. Additionally an Acoustic Caliper (ACAL) was run in recor82ded mode to determine hole size and a PCDC was utilised for wellbore surveyin9g. Sperry Drilling Services also provided a Measurement While Drilling (MWD) tool throughout the course of the sidetrack in order to collect directional data. A summary of each MWD and LWD run is shown in Table 12. Sperry Drilling Services End of Well Report detailing the LWD and MWD operations is presented in Appendix 9.

Hole Size (inches)	Interval (mMDRT)	MWD Services	LWD Services
8 ½	1990.0 – 2112.0	DWD	NA
8 ½	2112.0 - 2112.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	2112.0 – 3158.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	3158.0 – 3196.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	3212.5 – 3283.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT
8 ½	3309.0 – 3482.0	Quad GP	DDSr-DGR—EWR-P4—CTN—ALD—BAT

Table 12 Summary of LWD & MWD runs in Rockhopper 1/ST1

4.3 Wireline Logging

The following wireline logs, shown in Table 13, were run at Rockhopper 1/ST1 by Schlumberger Oilfield Australia Pty Ltd. A summary of the logging parameters and the recorded temperature data can be found in tables 14 and 15 respectively. The Wireline Service Quality Report by Schlumberger is presented in Appendix 10.

Suite #	Run #	Log	Interval (mMDRT)
1	1	SP-HRLA-PEX-HNGS-CMR+	1965.0 – 3475.9
1	2	XPT-GR (ECRD)	2135.5 – 3410.5
1	3	MDT(Quicksilver)-GR	2766.7 – 3410.2
1	4	FMI-DSI-GR	1965.0 – 3458.5
1	5	VSI-GR	1615.2 – 3431.7
1	6	MSCT-GR	3137.0 – 3410.5
		WIPER TRIP	
1	7	MDT-Dual Packer-GR	3110.0 – 3394.2

Table 13 Wireline logs run in Rockhopper 1/ST1

Suite #	Run #	Bit Size (inches)	Fluid Type	Density (lbm/gal)	Viscosity (s)	Fluid Loss (cm^3)	pH	RM @ measured Temp (ohm.m@^oC)	RMF @ measured Temp (ohm.m@^oC)	RMC @ measured Temp (ohm.m@^oC)
1	1	8 ½	KCl/Polymer	9.4	68	4.3	9.0	0.1001 @ 24.1	0.0854 @ 23.9	0.217 @ 24.0
1	2-6	8 ½	KCl/Polymer	9.4	68	4.3	9.0	0.1001 @ 24.0	0.0854 @ 24.0	0.217 @ 24.0
1	7	8 ½	KCl/Polymer	9.5	X	X	9.0	0.1104 @ 20.0	0.1003 @ 20.0	0.481 @ 20.0

Table 14 Logging Parameters in Rockhopper 1/ST1

Suite #	Run #	Maximum Recorded Temperature (^oC)	Bottom Hole Depth (mDRT)	Time Circulation Stopped	Time Logger On Bottom
1	1	131	3475.9	03/02/10 17:39	04/02/10 12:55
1	2	137	3410.5	03/02/10 17:39	05/02/10 21:33
1	3	140	3410.2	03/02/10 17:39	06/02/10 22:04
1	4	141	3458.5	03/02/10 17:39	08/02/10 19:30
1	5	138	3431.7	03/02/10 17:39	09/02/10 06:30
1	6	141	3410.5	03/02/10 17:39	09/02/10 17:00
WIPER TRIP					
1	7	138	3394.2	12/02/10 02:45	12/02/10 12:55

Table 15 Temperature data recorded during wireline logging Rockhopper 1/ST1

4.4 Hydrocarbon Indications

Gas shows from cuttings are presented in Appendix 7 and fluorescence shows in cuttings, conventional core chips and sidewall cores are detailed in Appendices 1, 3 and 5 respectively.

4.5 Velocity Survey

A rig source VSP survey was acquired over the interval 3431.7-1615.2 mMDRT using the Versatile Seismic Imager (VSI-4) tool and 149 shots were recorded. Checkshot data and VSP charts are included in Appendix 11.

5. FORMATION TESTING

5.1 MDT Formation Pressure Testing & Fluid Sampling

The Rockhopper 1/ST1 MDT programme consisted of one logging run utilising the XPT-GR (ECRD) logging assembly and one logging run with the MDT(Quicksilver)-GR assembly. A final run (logging run #7) was conducted with the MDT-Dual Packer-GR assembly. The first MDT run (logging run #2) was RIH to 2135.5mMDRT and pre-tests were conducted from 2135.5mMDRT to 3410.2mMDRT. In total, 66 pre-tests were attempted of which 26 were valid tests, 37 were tight, 1 test was supercharged and 2 tests failed.

The second MDT run (logging run #3), utilising the MDT(Quicksilver)-GR logging assembly, was RIH to 2941.2mMDRT and encountered tight hole conditions between 2900mMDRT and 3010mMDRT becoming hung up at 3010MDRT and 2980mMDRT. After freeing the tool pre-tests were conducted between 2941.2mMDRT and 3410.2mMDRT. Eight samples were collected at 2941.2 (x 2), 2766.7mMDRT (x 2), 3313.0mMDRT, 3140.0mMDRT and 3135.0mMDRT (x 2). In total, 53 pre-tests were attempted of which 11 were valid tests, 27 were tight and 15 tests failed.

The third MDT run (logging run #3), utilising the MDT-Dual Packer-GR logging assembly, was RIH to 3400.0mMDRT and encountered tight hole conditions between and severe cable drag between 2795.0mMDRT and 3400.0mMDRT. Pump-outs were conducted between 3081.8mMDRT and 3330.8mMDRT. Four samples were collected at 3183.4mMDRT (x 2), 3140.0mMDRT (x 2) and 3313mMDRT. In total, 12 tests were attempted of which 6 were valid tests, 2 were tight and 4 were supercharged.

A summary of the MDT data is shown in Table 16 and more details are included in Appendix 13.

Suite #	Run #	Type	Interval (mRT)	Total Tests	Valid Tests	Super-charged	Tight Tests	Failed Tests	Pump Outs	Samples Collected
1	2	XPT	2135.5 – 3410.5	66	26	1	37	2	0	0
1	3	MDT	2941.2 – 3410.2	53	11	0	27	14+1*	8	5
1	7	MDT (Dual Packer)	3081.8 – 3330.8	12	6	4	2	0	12	2

* failed tests include seal failure and software failure during testing

Table 16 Summary of MDT pre-tests and sampling taken in Rockhopper 1/ST1.

5.2 Drill Stem Testing

No DST's were conducted at Rockhopper 1/ST1.

APPENDIX 1: CUTTINGS DESCRIPTIONS

Depth mRT	% of Rock	Main Lithology	Modifier >20%	Lithological Descriptions
1985.0	100			CEMENT
1990.0	100			CEMENT
1992.0	75			CEMENT
1992.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, greenish black, very soft to firm, blocky to sub-blocky, 25% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace lithic fragments.
1994.0	35	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, greenish black, very soft to firm, blocky to sub-blocky, 25% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace lithic fragments.
1994.0	65			CEMENT
1995.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, greenish black, very soft to firm, blocky to sub-blocky, 30% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace lithic fragments.
1995.0	40			CEMENT
1996.0	40			CEMENT
1996.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, greenish black, very soft to firm, blocky to sub-blocky, 30% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace lithic fragments.
1997.0	2			CEMENT
1997.0	98	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, greyish black, greenish black in part, very soft to firm, blocky to sub-blocky, 25% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace lithic fragments.
1998.0	2			CEMENT
1998.0	98	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, greyish black, greenish black in part, very soft to firm, blocky to sub-blocky, 25% siliceous clay, 5% very fine quartz grains, trace carbonaceous material, trace mica, trace lithic fragments.
1999.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, greyish black, greenish black in part, very soft to firm, blocky to sub-blocky, 20% siliceous clay, 5% very fine quartz grains, trace carbonaceous

				material, trace lithic fragments.
2000.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, greyish black, greenish black in part, very soft to firm, blocky to sub-blocky, 20% siliceous clay, 5% very fine quartz grains, trace coal.
2005.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black, olive black in part, very soft to firm, blocky to sub-blocky, 25% siliceous clay, 5% very fine quartz grains, trace coal, trace lithic fragments.
2010.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, very soft to soft, amorphous to sub-blocky, 35% siliceous clay, trace fine sand grains, trace lithic fragments.
2015.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, very soft to soft, amorphous to sub-blocky, 35% siliceous clay, trace fine sand grains, trace lithic fragments.
2020.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, light grey to medium grey in part, very soft to friable, amorphous to sub-blocky, 25% siliceous clay, 5% fine sand grains, trace lithic fragments.
2025.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, light grey to medium grey in part, very soft to friable, amorphous to sub-blocky, 25% siliceous clay, 5% fine sand grains, trace lithic fragments.
2030.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, light grey to medium grey in part, very soft to friable, amorphous to sub-blocky, 25% siliceous clay, trace lithic fragments.
2035.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, light grey to medium grey in part, very soft to friable, amorphous to sub-blocky, 25% siliceous clay, trace lithic fragments.
2035.0	30	CLAYSTONE		CLAYSTONE: brownish black to dark grey, very soft to soft, amorphous.
2040.0	20	CLAYSTONE		CLAYSTONE: brownish black brownish grey, dark grey, very soft to soft, amorphous
2040.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, very soft to firm, blocky to sub-

				blocky, 25% siliceous clay, 5% very fine siliceous sand, trace carbonaceous material, trace lithic fragments, trace skeletal fragments.
2045.0	40	CLAYSTONE		CLAYSTONE: brownish black brownish grey, dark grey, very soft to soft, amorphous
2045.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, very soft to firm, blocky to sub-blocky, 25% siliceous clay, 5% very fine siliceous sand, trace carbonaceous material, trace lithic fragments, trace skeletal fragments.
2050.0	20	CLAYSTONE		CLAYSTONE: brownish black brownish grey, dark grey, very soft to soft, amorphous
2050.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, very soft to firm, blocky to sub-blocky, 25% siliceous clay, 5% very fine siliceous sand, trace carbonaceous material, trace lithic fragments, trace skeletal fragments.
2052.0	30	CLAYSTONE		CLAYSTONE: brownish black brownish grey, dark grey, very soft to soft, amorphous
2052.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish black to dark grey, olive black in part, trace white quartz grains, very soft to soft, blocky to sub-blocky, 20% siliceous clay, trace carbonaceous material, trace lithic fragments.
2055.0	20	CLAYSTONE		CLAYSTONE: brownish black greyish black, dark grey, very soft to soft, amorphous.
2055.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, brownish black to dark grey in part, very soft to soft, blocky to sub-blocky, 25% siliceous clay, trace very fine siliceous sand, trace carbonaceous material, trace lithic fragments, trace mica.
2058.0	30	CLAYSTONE		CLAYSTONE: brownish black greyish black, dark grey, very soft to soft, amorphous.
2058.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, brownish black to dark grey in part, very soft to soft, blocky to sub-blocky, 25% siliceous clay, trace very fine siliceous sand, trace carbonaceous material, trace lithic fragments, trace mica.
2061.0	30	CLAYSTONE		CLAYSTONE: brownish black greyish

				black, dark grey, very soft to soft, amorphous.
2061.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, brownish black to dark grey in part, very soft to soft, blocky to sub-blocky, 25% siliceous clay, trace very fine siliceous sand, trace carbonaceous material, trace lithic fragments, trace mica.
2064.0	40	CLAYSTONE		CLAYSTONE: brownish black greyish black, dark grey, very soft to soft, amorphous, trace mica.
2064.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, brownish black to dark grey in part, very soft to soft, blocky to sub-blocky, 30% siliceous clay, trace carbonaceous material, trace lithic fragments, trace mica.
2067.0	60	CLAYSTONE		CLAYSTONE: brownish black greyish black, dark grey, very soft to soft, amorphous, trace mica.
2067.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black, brownish black to dark grey in part, very soft to soft, blocky to sub-blocky, 30% siliceous clay, trace carbonaceous material, trace mica.
2070.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to brownish black, olive grey in part, very soft, amorphous to sub-blocky, 35% siliceous clay, trace very fine siliceous sand, trace carbonaceous material, trace mica, trace lithic fragments.
2070.0	40	CLAYSTONE		CLAYSTONE: olive black, brownish black in part, very soft, amorphous.
2073.0	40	SANDSTONE		SANDSTONE: light olive grey, olive grey, opaque, clear, friable to loose, blocky, 10% white siliceous clay matrix, 90% very fine siliceous sand, well to very well sorted, sub-rounded to sub-angular, sub-spherical, 10% silica cement, trace mica, trace lithic fragments, trace carbonaceous material, poor inferred visual porosity, no hydrocarbon fluorescence.
2073.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to brownish black, olive grey in part, very soft, amorphous to sub-blocky, 35% siliceous clay, trace very fine siliceous sand, trace carbonaceous material, trace mica, trace lithic fragments.
2076.0	85	SANDSTONE		SANDSTONE: light olive grey, olive grey, opaque, clear, friable to loose,

				blocky, 10% white siliceous clay matrix, 90% siliceous sand, 75% very fine grained, 15% fine grained, 10% medium grained, well to very well sorted, sub-rounded to sub-angular, sub-spherical, 10% silica cement, trace mica, trace lithic fragments, trace carbonaceous material, poor inferred visual porosity, no hydrocarbon fluorescence.
2076.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to brownish black, olive grey in part, very soft, amorphous to sub-blocky, 35% siliceous clay, trace very fine siliceous sand, trace carbonaceous material, trace mica, trace lithic fragments.
2079.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to brownish black, olive grey in part, very soft, amorphous to sub-blocky, 35% siliceous clay, trace very fine siliceous sand, trace carbonaceous material, trace mica, trace lithic fragments.
2079.0	85	SANDSTONE		SANDSTONE: light olive grey, olive grey, opaque, clear, friable to loose, blocky, 10% white siliceous clay matrix, 90% siliceous sand, 75% very fine grained, 15% fine grained, 10% medium grained, well to very well sorted, sub-rounded to sub-angular, sub-spherical, 10% silica cement, trace mica, trace lithic fragments, trace carbonaceous material, poor inferred visual porosity, no hydrocarbon fluorescence.
2082.0	5	CLAYSTONE		CLAYSTONE: olive black, brownish black in part, very soft, amorphous.
2082.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to brownish black, olive grey in part, very soft, amorphous to sub-blocky, 35% siliceous clay, trace very fine siliceous sand, trace carbonaceous material, trace mica, trace lithic fragments.
2082.0	10	SANDSTONE		SANDSTONE: light olive grey, olive grey, opaque, clear, friable to loose, blocky, 10% white siliceous clay matrix, 90% siliceous sand, 75% very fine grained, 15% fine grained, 10% medium grained, well to very well sorted, sub-rounded to sub-angular, sub-spherical, 10% silica cement, trace mica, trace lithic fragments, trace

				carbonaceous material, poor inferred visual porosity, no hydrocarbon fluorescence.
2085.0	5	CLAYSTONE		CLAYSTONE: olive black, brownish black in part, very soft, amorphous.
2085.0	10	SANDSTONE		SANDSTONE: light olive grey, olive grey, opaque, clear, friable to loose, blocky, 10% white siliceous clay matrix, 90% siliceous sand, 75% very fine grained, 15% fine grained, 10% medium grained, well to very well sorted, sub-rounded to sub-angular, sub-spherical, 10% silica cement, trace mica, trace lithic fragments, trace carbonaceous material, poor inferred visual porosity, no hydrocarbon fluorescence.
2085.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to brownish black, olive grey in part, very soft, amorphous to sub-blocky, 35% siliceous clay, trace very fine siliceous sand, trace carbonaceous material, trace mica, trace lithic fragments.
2088.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, to light olive grey, medium grey in part, very soft to soft, blocky to sub-blocky, 20% siliceous clay, trace mica, trace lithic fragments.
2088.0	5	SANDSTONE		SANDSTONE: light olive grey, olive grey, opaque, clear, friable to loose, blocky, 10% white siliceous clay matrix, 90% siliceous sand, 75% very fine grained, 15% fine grained, 10% medium grained, well to very well sorted, sub-rounded to sub-angular, sub-spherical, 10% silica cement, trace mica, trace lithic fragments, trace carbonaceous material, poor inferred visual porosity, no hydrocarbon fluorescence.
2091.0	100	SILTSTONE		SILTSTONE: olive grey to light olive grey, medium grey in part, firm, blocky, 5% siliceous clay, trace mica, trace lithic fragments.
2094.0	100	SILTSTONE		SILTSTONE: olive grey, to light olive grey, medium grey in part, very soft to soft, blocky to sub-blocky, 5% siliceous clay, trace mica, trace lithic fragments.
2097.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: medium grey to medium dark grey, olive grey to olive black in part, very soft to soft, amorphous to sub-blocky, 25% siliceous clay, trace very fine

				siliceous sand, trace mica, trace lithic fragments.
2097.0	15	CLAYSTONE		CLAYSTONE: olive black, brownish black and greyish black in part, very soft, amorphous, trace mica.
2100.0	15	CLAYSTONE		CLAYSTONE: olive black, brownish black and greyish black in part, very soft, amorphous, trace mica.
2100.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: medium grey to medium dark grey, olive grey to olive black in part, very soft to soft, amorphous to sub-blocky, 25% siliceous clay, trace very fine siliceous sand, trace mica, trace lithic fragments.
2103.0	100	SILTSTONE		SILTSTONE: olive grey to olive black, dark grey to greyish black in part, soft to firm, blocky to sub-blocky, 15% siliceous clay, trace very fine siliceous sand, trace mica, trace lithic fragments.
2106.0	95	SANDSTONE		SANDSTONE: very light grey to light grey, white to yellowish grey, 100% siliceous sand, 5% very fine grained, 5% fine grained, 50% medium grained, 40% coarse grained, friable to moderately hard, moderately to well sorted, rounded to sub-angular, sub-spherical to spherical, trace calcareous cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2106.0	5	SILTSTONE		SILTSTONE: medium dark grey to brownish black, very soft to friable, blocky to sub-blocky, 15% siliceous clay, trace lithic fragments.
2109.0	5	SILTSTONE		SILTSTONE: medium dark grey to brownish black, very soft to friable, blocky to sub-blocky, 15% siliceous clay, trace lithic fragments.
2109.0	95	SANDSTONE		SANDSTONE: very light grey to light grey, white to yellowish grey, 5% white siliceous clay matrix, 95% siliceous sand, 5% very fine grained, 10% fine grained, 50% medium grained, 35% coarse grained, friable to moderately hard, moderately to well sorted, rounded to sub-angular, sub-spherical to spherical, trace calcareous cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2112.0	10	SILTSTONE		SILTSTONE: medium dark grey to brownish black, very soft to friable,

				blocky to sub-blocky, 15% siliceous clay, trace lithic fragments.
2112.0	90	SANDSTONE		SANDSTONE: very light grey to light grey, white to yellowish grey, 5% white siliceous clay matrix, 95% siliceous sand, 5% very fine grained, 10% fine grained, 50% medium grained, 35% coarse grained, friable to moderately hard, moderately to well sorted, rounded to sub-angular, sub-spherical to spherical, trace calcareous cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2115.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: grey, very light grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 5% very fine siliceous sand, trace lithic fragments, trace medium grained quartz, trace carbonaceous material.
2115.0	5	CLAYSTONE		CLAYSTONE: olive grey, white, very soft to soft, amorphous.
2118.0	5	CLAYSTONE		CLAYSTONE: olive grey, white, very soft to soft, amorphous.
2118.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: grey, very light grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 5% fine sand, trace lithic fragments, trace medium grained quartz, trace coal.
2121.0	10	CLAYSTONE		CLAYSTONE: olive grey, white, very soft to soft, amorphous.
2121.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: grey, very light grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 5% very fine siliceous sand, trace lithic fragments, trace medium grained quartz, trace carbonaceous material, trace fine grained pyrite.
2124.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 5% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2124.0	10	CLAYSTONE		CLAYSTONE: olive grey, white, very

				soft to soft, amorphous.
2127.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2130.0	40	SANDSTONE		SANDSTONE: very light grey to light grey, white to yellowish grey, 5% white siliceous clay matrix, 95% siliceous sand, 5% very fine grained, 10% fine grained, 50% medium grained, 35% coarse grained, friable to moderately hard, moderately to well sorted, rounded to sub-angular, sub-spherical to spherical, trace calcareous cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.
2130.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2133.0	40	SANDSTONE		SANDSTONE: clear to opaque, white and pale yellow in part, 10% very fine grained, 15% fine grained, 70% medium grained, 5% coarse grained, very poorly sorted, sub-rounded to sub-angular, sub-elongated to sub-spherical, good inferred visual porosity, common fractured grains, trace inclusions, no hydrocarbon fluorescence.
2133.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2136.0	20	SANDSTONE		SANDSTONE: clear to opaque, white and pale yellow in part, 100% siliceous sand, 10% very fine grained, 15% fine grained, 70% medium grained, 5%

				coarse grained, very poorly sorted, sub-rounded to sub-angular, sub-elongated to sub-spherical, good inferred visual porosity, common fractured grains, trace inclusions, no hydrocarbon fluorescence.
2136.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2139.0	10	SANDSTONE		SANDSTONE: clear to opaque, white and pale yellow in part, 100% siliceous sand, 10% very fine grained, 15% fine grained, 70% medium grained, 5% coarse grained, very poorly sorted, sub-rounded to sub-angular, sub-elongated to sub-spherical, good inferred visual porosity, common fractured grains, trace inclusions, no hydrocarbon fluorescence.
2139.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2139.0	10	CLAYSTONE		CLAYSTONE: olive black to dark grey, soft to firm, sub-blocky to blocky, trace pyrite, trace carbonaceous material.
2142.0	30	SANDSTONE		SANDSTONE: clear to opaque, white and pale yellow in part, 100% siliceous sand, 10% very fine grained, 15% fine grained, 70% medium grained, 5% coarse grained, very poorly sorted, sub-rounded to sub-angular, sub-elongated to sub-spherical, good inferred visual porosity, common fractured grains, trace inclusions, no hydrocarbon fluorescence.
2142.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace

				carbonaceous material, trace fine grained pyrite.
2145.0	10	SANDSTONE		SANDSTONE: clear to opaque, white and pale yellow in part, 100% siliceous sand, 10% very fine grained, 15% fine grained, 70% medium grained, 5% coarse grained, very poorly sorted, sub-rounded to sub-angular, sub-elongated to sub-spherical, good inferred visual porosity, common fractured grains, trace inclusions, no hydrocarbon fluorescence.
2145.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2148.0	10	SANDSTONE		SANDSTONE: clear to opaque, white and pale yellow in part, 100% siliceous sand, 10% very fine grained, 15% fine grained, 70% medium grained, 5% coarse grained, very poorly sorted, sub-rounded to sub-angular, sub-elongated to sub-spherical, good inferred visual porosity, common fractured grains, trace inclusions, no hydrocarbon fluorescence.
2148.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2151.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material.
2151.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2157.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to

				brown, rarely white, very soft to firm, occasionally moderately hard, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material.
2157.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coarse quartz grains, trace carbonaceous material, trace fine grained pyrite.
2160.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, rarely white, very soft to firm, occasionally moderately hard, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material.
2160.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 5% very fine to fine sand grains, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2163.0	60	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, trace pyrite and carbonaceous material.
2163.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2166.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2166.0	70	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2169.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE:

				brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2169.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2172.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2172.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2175.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2175.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2178.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2178.0	95	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2181.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm,

				amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2181.0	95	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2184.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2184.0	95	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2187.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2187.0	95	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2190.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace carbonaceous material, trace fine grained pyrite, trace mica.
2190.0	95	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2193.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments,

				trace coal, trace fine grained pyrite, trace mica.
2193.0	85	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2196.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace coal, trace fine grained pyrite, trace mica, trace very fine siliceous sand.
2196.0	85	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2199.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace coal, trace fine grained pyrite, trace mica, trace very fine siliceous sand.
2199.0	95	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2202.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace coal, trace fine grained pyrite, trace mica, trace very fine siliceous sand.
2202.0	75	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2202.0	5	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: light brown to yellowish brown, friable to firm, 20% siliceous clay, 80% siliceous sand, 80% very fine grained, 20% fine

				grained, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace mica, trace pyrite, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2205.0	5	SANDSTONE	Argillaceous	SANDSTONE: clear to opaque, white and pale yellow in part, 100% siliceous sand, 10% very fine grained, 15% fine grained, 70% medium grained, 5% coarse grained, very poorly sorted, sub-rounded to sub-angular, sub-elongated to sub-spherical, good inferred visual porosity, common fractured grains, trace inclusions, no hydrocarbon fluorescence.
2205.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace coal, trace fine grained pyrite, trace mica, trace very fine siliceous sand.
2205.0	75	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2208.0	30	SANDSTONE		SANDSTONE: white to yellowish grey, friable to firm, 100% siliceous sand, 80% very fine grained, 20% fine grained, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace mica, trace pyrite, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2208.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, trace lithic fragments, trace coal, trace fine grained pyrite, trace mica, trace very fine siliceous sand.
2208.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2211.0	70	SANDSTONE		SANDSTONE: white to yellowish grey, friable to firm, 100% siliceous sand, 80% very fine grained, 20% fine

				grained, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace mica, trace pyrite, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2211.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2214.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2214.0	70	SANDSTONE		SANDSTONE: white to yellowish grey, friable to firm, 100% siliceous sand, 80% very fine grained, 20% fine grained, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace mica, trace pyrite, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2223.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2223.0	70	SANDSTONE		SANDSTONE: white to yellowish grey, friable to firm, 100% siliceous sand, 80% very fine grained, 20% fine grained, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2226.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2226.0	95	SANDSTONE		SANDSTONE: white to yellowish grey, friable to firm, 100% siliceous sand, 80% very fine grained, 20% fine grained, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon

				fluorescence.
2226.0	0.1	COAL		COAL: black to dark greenish black, shiny, vitreous lustre, firm to hard, conchoidal fracture, commonly observed as angular fragments.
2229.0	0.1	COAL		COAL: black to dark greenish black, shiny, vitreous lustre, firm to hard, conchoidal fracture, commonly observed as angular fragments.
2229.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2229.0	95	SANDSTONE		SANDSTONE: white to yellowish grey, friable to firm, 100% siliceous sand, 80% very fine grained, 20% fine grained, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace mica, trace pyrite, 20% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2232.0	0.1	COAL		COAL: black to dark greenish black, shiny, vitreous lustre, firm to hard, conchoidal fracture, commonly observed as angular fragments.
2232.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2232.0	90	SANDSTONE		SANDSTONE: white to yellowish grey, friable to firm, 100% siliceous sand, 80% very fine grained, 20% fine grained, trace coarse grains, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace mica, trace pyrite, 20% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2238.0	0.1	COAL		COAL: black to dark greenish black, shiny, vitreous lustre, firm to hard, conchoidal fracture, commonly observed as angular fragments.
2238.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.

2238.0	90	SANDSTONE		SANDSTONE: white to yellowish grey, friable to firm, 100% siliceous sand, 80% very fine grained, 20% fine grained, trace coarse grains, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace mica, trace pyrite, 20% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2244.0	0.1	COAL		COAL: black to dark greenish black, shiny, vitreous lustre, firm to hard, conchoidal fracture, commonly observed as angular fragments.
2244.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to brown, white in part, very soft to firm, moderately hard in part, amorphous to sub-blocky, 20% siliceous silt, trace pyrite and carbonaceous material, calcareous in part.
2244.0	95	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 60% very fine grained, 10% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2250.0	100	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 60% very fine grained, 10% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2256.0	100	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 60% very fine grained, 10% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2262.0	100	SANDSTONE		SANDSTONE: clear, translucent,

				white, pale yellow, 100% siliceous sand, 60% very fine grained, 10% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2268.0	100	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 60% very fine grained, 10% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2274.0	99	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 40% very fine grained, 30% fine grained, 20% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2274.0	1	COAL		COAL: black to olive black, angular to conchoidal fracture, firm to moderately hard, shiny to vitreous lustre.
2280.0	100	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 40% very fine grained, 30% fine grained, 20% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, trace coal, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2286.0	100	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 40% very fine grained, 30% fine grained, 20% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, trace coal, common fractured

				grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2292.0	100	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 40% very fine grained, 30% fine grained, 20% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, trace coal, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2298.0	95	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 40% very fine grained, 30% fine grained, 20% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, trace coal, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2298.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
2304.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
2304.0	95	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 40% very fine grained, 30% fine grained, 20% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, trace coal, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2310.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
2310.0	70	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 40% very fine grained, 25% fine

				grained, 20% medium grained, 5% coarse grained, 5% very coarse grained, 5% granules, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, trace coal, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2316.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
2316.0	15	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 40% very fine grained, 25% fine grained, 20% medium grained, 5% coarse grained, 5% very coarse grained, 5% granules, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, trace coal, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2316.0	5	COAL		COAL: black to greyish black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre.
2322.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, 20% siliceous silt, trace mica and pyrite.
2322.0	5	SANDSTONE		SANDSTONE: clear, translucent, white, pale yellow, 100% siliceous sand, 40% very fine grained, 25% fine grained, 20% medium grained, 5% coarse grained, 5% very coarse grained, 5% granules, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, trace coal, common fractured grains, common inclusions, good inferred visual porosity, no hydrocarbon fluorescence.
2322.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
2325.0	20	SANDSTONE		SANDSTONE: white, soft to firm in aggregates, 100% siliceous sand, 40% very fine grained, 40% fine grained, 10% medium grained, 5% coarse

				grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-elongated to sub-spherical, trace pyrite, fair inferred visual porosity, no hydrocarbon fluorescence.
2325.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, 20% siliceous silt, trace mica and pyrite.
2325.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
2328.0	10	SANDSTONE		SANDSTONE: white, soft to firm in aggregates, 100% siliceous sand, 40% very fine grained, 40% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-elongated to sub-spherical, trace pyrite, fair inferred visual porosity, no hydrocarbon fluorescence.
2328.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, 20% siliceous silt, trace mica and pyrite.
2328.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
2331.0	60	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, 20% siliceous silt, trace mica and pyrite.
2331.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
2334.0	10	COAL		COAL: black, firm to hard, angular to conchoidal, shiny to vitreous lustre, occasionally hackly in appearance, trace calcite veinlets.
2334.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, 20% siliceous silt, trace mica and pyrite.
2337.0	90	COAL		COAL: black, firm to hard, angular to conchoidal, shiny to vitreous lustre, occasionally hackly in appearance, trace calcite veinlets.
2337.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish

				grey to light olive grey, very soft to soft, amorphous to dispersive, 30% siliceous silt, trace mica and pyrite.
2340.0	85	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, 20% siliceous silt, trace mica and pyrite.
2340.0	15	COAL		COAL: black, firm to hard, angular to conchoidal, shiny to vitreous lustre, occasionally hackly in appearance, trace calcite veinlets.
2343.0	10	COAL		COAL: black, firm to hard, angular to conchoidal, shiny to vitreous lustre, occasionally hackly in appearance, trace calcite veinlets.
2343.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, 20% siliceous silt, trace mica and pyrite.
2346.0	3	COAL		COAL: black, firm to hard, angular to conchoidal, shiny to vitreous lustre, occasionally hackly in appearance, trace calcite veinlets.
2346.0	97	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, 20% siliceous silt, trace mica and pyrite.
2349.0	5	COAL		COAL: black, firm to hard, angular to conchoidal, shiny to vitreous lustre, occasionally hackly in appearance, trace calcite veinlets.
2349.0	95	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, 30% siliceous silt, trace mica and pyrite.
2352.0	100	CLAYSTONE		CLAYSTONE: yellowish grey to light olive grey, light brownish grey in part, amorphous to dispersive, 15% siliceous silt, trace mica, trace lithic fragments, trace coal.
2355.0	90	CLAYSTONE		CLAYSTONE: yellowish grey to light olive grey, light brownish grey in part, amorphous to dispersive, 15% siliceous silt, trace mica, trace lithic fragments.
2355.0	10	COAL		COAL: black, firm to hard, angular to conchoidal, shiny to vitreous lustre, occasionally hackly in appearance, trace calcite veins.
2358.0	100	CLAYSTONE		CLAYSTONE: yellowish grey to light olive grey, light brownish grey in part, amorphous to dispersive, 15% siliceous silt, trace mica, trace lithic fragments, trace coal.

2361.0	100	CLAYSTONE		CLAYSTONE: light olive grey to olive grey, yellowish grey in part, very soft, amorphous, 10% siliceous silt, trace lithic fragments, trace coal.
2364.0	100	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, brownish grey in part, very soft to soft, amorphous to sub-blocky, 5% siliceous clay, 5% very fine quartz sand, trace lithic fragments, trace coal.
2367.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown, light brownish grey, brownish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 5% very fine siliceous sand, trace lithic fragments, trace coal.
2370.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown, light brownish grey, brownish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 10% very fine siliceous sand, trace lithic fragments, trace coal.
2373.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown, light brownish grey, brownish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 5% very fine siliceous sand, trace lithic fragments, trace coal.
2376.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown, light brownish grey, brownish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% siliceous clay, 5% very fine siliceous sand, trace lithic fragments, trace coal.
2379.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brown, light brownish grey, brownish grey and white in part, very soft to firm, amorphous to sub-blocky, 30% siliceous clay, 5% very fine siliceous sand, trace lithic fragments, trace coal, trace pyrite.
2382.0	20	CLAYSTONE		CLAYSTONE: yellowish grey to light olive grey, light brownish grey to white in part, amorphous to dispersive, trace carbonaceous material.
2382.0	50	SILTSTONE		SILTSTONE: light brownish grey, brownish grey and olive grey in part, very soft to soft, amorphous to sub-blocky, 10% siliceous clay, 5% fine grained sand, trace lithic fragments, trace carbonaceous material.
2382.0	30	SANDSTONE		SANDSTONE: colourless, opaque, white, pale yellow, loose to friable, sub-blocky, 50% very fine grained, 40%

				fine grained, 10% medium grained, moderate to well sorted, angular to sub-rounded, sub-elongate to sub-spherical, trace white clay matrix, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2385.0	30	CLAYSTONE		CLAYSTONE: yellowish grey to light olive grey, light brownish grey to white in part, amorphous to dispersive, trace carbonaceous material.
2385.0	60	SILTSTONE		SILTSTONE: olive grey to dark greenish grey, brownish grey in part, very soft to soft, amorphous to sub-blocky, 5% siliceous clay, 5% very fine quartz sand, trace lithic fragments, trace coal.
2385.0	10	COAL		COAL: black, firm to hard, angular to conchoidal, shiny to vitreous lustre, trace calcite veins, trace pyrite.
2388.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, yellowish grey and brownish grey in part, very soft, amorphous, 20% siliceous silt, trace very fine siliceous sand, trace lithic fragments, trace mica, trace pyrite.
2391.0	100	CLAYSTONE		CLAYSTONE: light olive grey to brownish grey, very soft, amorphous, 10% siliceous silt, trace lithic fragments, trace mica, trace pyrite.
2394.0	100	CLAYSTONE		CLAYSTONE: olive grey to light olive grey, yellowish grey and brownish grey in part, very soft, amorphous, 20% siliceous silt, trace very fine siliceous sand, trace lithic fragments, trace mica, trace pyrite, trace carbonaceous material.
2397.0	100	CLAYSTONE		CLAYSTONE: light olive grey to brownish grey, very soft, amorphous, 10% siliceous silt, trace lithic fragments, trace mica, trace pyrite.
2400.0	90	SILTSTONE		SILTSTONE: olive black to olive grey, greenish black in part, soft to firm, blocky to sub-blocky, 10% siliceous clay, trace fine grained sand, trace lithic fragments, trace coal.
2400.0	10	CLAYSTONE		CLAYSTONE: olive grey to olive black, very soft, amorphous to dispersive, 5% siliceous silt.
2403.0	10	CLAYSTONE		CLAYSTONE: olive grey to olive black, very soft, amorphous to dispersive, 5% siliceous silt.
2403.0	90	SILTSTONE		SILTSTONE: olive black to olive grey, greenish black in part, soft to firm, blocky to sub-blocky, 10% siliceous

				clay, trace fine grained sand, trace lithic fragments, trace coal.
2406.0	10	CLAYSTONE		CLAYSTONE: olive grey to olive black, very soft, amorphous to dispersive, 5% siliceous silt.
2406.0	90	SILTSTONE		SILTSTONE: olive black to olive grey, greenish black in part, soft to firm, blocky to sub-blocky, 10% siliceous clay, trace fine grained sand, trace lithic fragments, trace coal.
2409.0	10	CLAYSTONE		CLAYSTONE: olive grey to olive black, very soft, amorphous to dispersive, 5% siliceous silt.
2409.0	90	SILTSTONE		SILTSTONE: olive black to olive grey, greenish black in part, soft to firm, blocky to sub-blocky, 10% siliceous clay, trace fine grained sand, trace lithic fragments, trace coal.
2412.0	15	SILTSTONE		SILTSTONE: olive black to olive grey, light brownish grey in part, firm, blocky, 5% siliceous clay, with occasional sharp based interlaminations.
2412.0	85	SANDSTONE		SANDSTONE: colourless, opaque, white to yellowish grey, loose, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, moderately sorted, angular to sub-rounded, sub-elongate to sub-spherical, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2415.0	15	SILTSTONE		SILTSTONE: olive black to olive grey, light brownish grey in part, firm, blocky, 5% siliceous clay, trace coal, occasional sharp based interlaminations.
2415.0	60	SANDSTONE		SANDSTONE: colourless, opaque, white to yellowish grey, loose, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, moderately sorted, angular to sub-rounded, sub-elongate to sub-spherical, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2415.0	25	CLAYSTONE		CLAYSTONE: olive grey to light olive grey, yellowish grey in parts, very soft, amorphous
2418.0	10	SILTSTONE		SILTSTONE: olive black to olive grey, light brownish grey in part, soft to firm, sub-blocky to blocky, occasional sharp based interlaminations.

2418.0	90	CLAYSTONE		CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous, trace coal.
2421.0	10	SILTSTONE		SILTSTONE: olive black to olive grey, light brownish grey in part, soft to firm, sub-blocky to blocky, occasional sharp based interlaminations.
2421.0	90	CLAYSTONE		CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous, trace coal.
2424.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2424.0	80	CLAYSTONE		CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous, trace coal.
2427.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2427.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2430.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2430.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2433.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2433.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2436.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2436.0	60	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2436.0	10	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-

				rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2439.0	10	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2439.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2439.0	60	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2442.0	20	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2442.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2442.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2445.0	20	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2445.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, yellowish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2445.0	75	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20%

				siliceous clay.
2448.0	5	COAL		COAL: black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre.
2448.0	20	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2448.0	75	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2451.0	1	COAL		COAL: black, firm to hard, angular to conchoidal fracture, hackly texture in part, shiny to vitreous lustre, trace calcite micro-veinlets.
2451.0	20	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2451.0	79	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2454.0	1	COAL		COAL: black, firm to hard, angular to conchoidal fracture, hackly texture in part, shiny to vitreous lustre, trace calcite micro-veinlets.
2454.0	20	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2454.0	79	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.

2457.0	0.1	COAL		COAL: black, firm to hard, angular to conchoidal fracture, hackly texture in part, shiny to vitreous lustre, trace calcite micro-veinlets.
2457.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2457.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2460.0	10	CLAYSTONE		CLAYSTONE: light brown to yellowish grey, very soft to soft, amorphous to dispersive.
2460.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2460.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2463.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2463.0	10	CLAYSTONE		CLAYSTONE: light brown to yellowish grey, very soft to soft, amorphous to dispersive.
2463.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2469.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand,

				40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2469.0	1	COAL		COAL: black, firm to hard, angular to conchoidal fracture, hackly texture in part, shiny to vitreous lustre, trace calcite veins.
2469.0	94	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2475.0	30	SANDSTONE	cal	CALCAREOUS SANDSTONE: white to yellowish grey, firm to hard, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 20% calcareous cement, poor inferred visual porosity, no hydrocarbon fluorescence.
2475.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2481.0	30	SANDSTONE	cal	CALCAREOUS SANDSTONE: white to yellowish grey, firm to hard, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 20% calcareous cement, poor inferred visual porosity, no hydrocarbon fluorescence.
2481.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous clay.
2487.0	10	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.

2487.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2493.0	10	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2493.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2499.0	10	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2499.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2505.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2505.0	85	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2505.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black

				carbonaceous material.
2511.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2511.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2511.0	50	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2517.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2517.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
2517.0	50	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2523.0	25	SANDSTONE		SANDSTONE: white to yellowish grey, friable to loose, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace mica, trace pyrite, 5% rock flour, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2523.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to olive grey, soft to firm, sub-blocky to blocky, 20% siliceous

				clay, trace mica, trace pyrite, trace coal.
2523.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2529.0	100	SANDSTONE		SANDSTONE: loose grains, clear, white, light yellow, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured quartz grains, moderate inferred visual porosity, no hydrocarbon fluorescence.
2532.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2532.0	95	SANDSTONE		SANDSTONE: loose grains, clear, white, light yellow, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured quartz grains, moderate inferred visual porosity, no hydrocarbon fluorescence.
2535.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2535.0	95	SANDSTONE		SANDSTONE: loose grains, clear, white, light yellow, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured quartz grains, moderate inferred visual porosity, no hydrocarbon fluorescence.
2538.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
2538.0	80	SANDSTONE		SANDSTONE: loose grains, clear, white, light yellow, 100% siliceous

				sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured quartz grains, moderate inferred visual porosity, no hydrocarbon fluorescence.
2541.0	100	SANDSTONE		SANDSTONE: loose grains, clear, white, light yellow, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured quartz grains, moderate inferred visual porosity, no hydrocarbon fluorescence.
2544.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
2544.0	90	SANDSTONE		SANDSTONE: loose grains, clear, white, light yellow, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured quartz grains, moderate inferred visual porosity, no hydrocarbon fluorescence.
2547.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2547.0	90	SANDSTONE		SANDSTONE: loose grains, clear, white, light yellow, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured quartz grains, moderate inferred visual porosity, no hydrocarbon fluorescence.
2550.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2550.0	90	SANDSTONE		SANDSTONE: loose grains, clear,

				white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2553.0	35	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to olive grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
2553.0	65	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2556.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2556.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2559.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2559.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2562.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2562.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2565.0	30	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-

				angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, 20% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2565.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2565.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2568.0	70	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, 20% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2568.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2571.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2571.0	10	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, 20% rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2574.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2574.0	69	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite,

				trace carbonaceous material.
2574.0	1	COAL		COAL: black, firm to hard, angular to conchoidal fracture, hackly texture in part, shiny to vitreous lustre, trace calcite veins.
2577.0	5	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, trace rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2577.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2577.0	25	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2580.0	5	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, trace rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2580.0	25	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2580.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2583.0	10	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, trace rock flour, fair inferred visual porosity, no

				hydrocarbon fluorescence.
2583.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2583.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2586.0	10	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, trace rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2586.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2586.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2586.0	30	COAL		COAL: black, firm to hard, angular to conchoidal fracture, hackly texture in part, shiny to vitreous lustre, trace calcite veins.
2589.0	10	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, trace rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2589.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2589.0	1	COAL		COAL: black, firm to hard, angular to conchoidal fracture, hackly texture in part, shiny to vitreous lustre, trace calcite veins.

2589.0	49	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2592.0	1	COAL		COAL: black, firm to hard, angular to conchoidal fracture, hackly texture in part, shiny to vitreous lustre, trace calcite veins.
2592.0	10	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, trace rock flour, fair inferred visual porosity, no hydrocarbon fluorescence.
2592.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite, trace carbonaceous material.
2592.0	49	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2595.0	5	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2595.0	70	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite and carbonaceous material.
2595.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2598.0	10	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-

				angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2598.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2598.0	60	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite and carbonaceous material.
2601.0	30	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2601.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite and black carbonaceous material.
2601.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite and carbonaceous material.
2604.0	40	SANDSTONE		SANDSTONE: loose grains, clear, white, opaque, 100% siliceous sand, 20% very fine grained, 60% fine grained, 10% medium grained, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, fair inferred visual porosity, no hydrocarbon fluorescence.
2604.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite and carbonaceous material.
2604.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace pyrite

				and black carbonaceous material.
2607.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, firm to friable, sub-blocky to blocky, 20% siliceous clay, trace pyrite, trace mica.
2607.0	45	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in part, very soft, amorphous to dispersive, 20% siliceous silt, trace mica.
2607.0	25	COAL		COAL: black, firm to hard, angular to conchoidal, trace pyrite.
2610.0	30	COAL		COAL: black, firm to hard, angular to conchoidal, trace pyrite.
2610.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, firm to friable, sub-blocky to blocky, 20% siliceous clay, trace pyrite, trace mica.
2610.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in part, very soft, amorphous to dispersive, 20% siliceous silt, trace mica.
2613.0	5	COAL		COAL: black, firm to hard, angular to conchoidal, trace pyrite.
2613.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, firm to friable, sub-blocky to blocky, 20% siliceous clay, trace pyrite, trace mica.
2613.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in part, very soft, amorphous to dispersive, 20% siliceous silt, trace mica.
2616.0	10	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, angular to sub-blocky, 100% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium grains, sub-angular to sub-rounded, moderately to well sorted, sub-elongate to sub-spherical, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2616.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, firm to friable, sub-blocky to blocky, 25% siliceous clay, trace pyrite, trace mica, trace coal.
2616.0	65	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in part, very soft, amorphous to dispersive, 20% siliceous silt, trace mica.
2619.0	35	SANDSTONE		SANDSTONE: white, yellowish grey,

				loose to friable, angular to sub-blocky, 100% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium grains, sub-angular to sub-rounded, moderately to well sorted, sub-elongate to sub-spherical, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2619.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, firm to friable, sub-blocky to blocky, 25% siliceous clay, trace pyrite, trace mica, trace coal.
2619.0	25	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in part, very soft, amorphous to dispersive, 20% siliceous silt, trace mica.
2622.0	25	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in part, very soft, amorphous to dispersive, 20% siliceous silt, trace mica.
2622.0	10	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, angular to sub-blocky, 100% siliceous sand, 20% very fine grained, 70% fine grained, 10% medium grains, sub-angular to sub-rounded, moderately to well sorted, sub-elongate to sub-spherical, 20% rock flour, poor inferred visual porosity, no hydrocarbon fluorescence.
2622.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, firm to friable, sub-blocky to blocky, 25% siliceous clay, trace pyrite, trace mica, trace coal.
2625.0	75	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in part, very soft, amorphous to dispersive, 20% siliceous silt, trace mica.
2625.0	25	SILTSTONE		SILTSTONE: olive black to olive grey, light olive grey in part, soft to moderately hard, sub-blocky to angular, 10% siliceous clay, trace pyrite, trace mica, trace coal.
2628.0	40	SILTSTONE		SILTSTONE: olive black to olive grey, light olive grey in part, soft to moderately hard, sub-blocky to angular, 10% siliceous clay, trace pyrite, trace mica, trace coal.
2628.0	60	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in

				part, very soft, amorphous to dispersive, 20% siliceous silt, trace mica.
2631.0	40	SILTSTONE		SILTSTONE: olive black to olive grey, light olive grey in part, soft to moderately hard, sub-blocky to angular, 10% siliceous clay, trace pyrite, trace mica, trace coal.
2631.0	60	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in part, very soft, amorphous to dispersive, 20% siliceous silt, trace mica.
2634.0	25	COAL		COAL: black, firm to hard, angular to conchoidal, sub-vitreous to vitreous lustre, trace pyrite.
2634.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, yellowish grey in part, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace pyrite, trace mica.
2634.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey, brownish grey, very light grey in part, very soft to soft, amorphous to dispersive, 25% siliceous silt.
2637.0	65	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to very light grey, very soft to soft, amorphous to dispersive, 20% siliceous silt.
2637.0	5	COAL		COAL: black, firm to hard, angular to conchoidal, sub-vitreous to vitreous lustre, trace pyrite.
2637.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, yellowish grey in part, soft to firm, sub-blocky to blocky, 30% siliceous clay, trace pyrite, trace mica.
2640.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, yellowish grey in part, soft to firm, sub-blocky to blocky, 30% siliceous clay, trace pyrite, trace mica, trace coal.
2640.0	75	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to very light grey, very soft to soft, amorphous to dispersive, 20% siliceous silt.
2643.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, yellowish grey in part, soft to firm, sub-blocky to blocky, 30% siliceous clay, trace pyrite, trace mica, trace coal.
2643.0	75	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to very light grey, very soft to soft, amorphous to dispersive, 20%

				siliceous silt.
2646.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, yellowish grey in part, soft to firm, sub-blocky to blocky, 30% siliceous clay, trace pyrite, trace mica, trace coal.
2646.0	55	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to very light grey, very soft to soft, amorphous to dispersive, 20% siliceous silt.
2649.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, yellowish grey in part, soft to firm, sub-blocky to blocky, 30% siliceous clay, trace pyrite, trace mica, trace coal.
2649.0	55	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to very light grey, very soft to soft, amorphous to dispersive, 20% siliceous silt.
2652.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: brownish grey, light brownish grey, yellowish grey in part, soft to firm, sub-blocky to blocky, 30% siliceous clay, trace pyrite, trace mica, trace coal.
2652.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: light brownish grey to very light grey, very soft to soft, amorphous to dispersive, 20% siliceous silt.
2655.0	100	SILTSTONE		SILTSTONE: olive black to light olive grey, medium light grey to medium grey in part, firm to hard, sub-blocky to angular, 15% siliceous clay, trace pyrite, trace coal.
2658.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, medium light grey to medium grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace pyrite, trace coal, trace mica.
2661.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, medium light grey to medium grey in part, soft to firm, sub-blocky to blocky, 25% siliceous clay, trace pyrite, trace coal, trace mica, trace very fine grained quartz grains.
2664.0	100	SILTSTONE		SILTSTONE: olive black to light olive grey, medium light grey to medium grey in part, firm to hard, sub-blocky to angular, 15% siliceous clay, trace pyrite, trace coal, trace lithic fragments, trace very fine grained quartz grains.
2667.0	15	SANDSTONE		SANDSTONE: white, yellowish grey, very light grey, 100% siliceous sand,

				25% very fine grained, 70% fine grained, 5% medium grains, sub-rounded, well sorted, sub-spherical, poor inferred visual porosity, no hydrocarbon fluorescence.
2667.0	85	SILTSTONE		SILTSTONE: olive black to light olive grey, medium light grey to medium grey in part, firm to hard, sub-blocky to angular, 15% siliceous clay, trace pyrite, trace coal, trace lithic fragments.
2670.0	45	SANDSTONE		SANDSTONE: white, yellowish grey, very light grey, 100% siliceous sand, 25% very fine grained, 70% fine grained, 5% medium grains, sub-rounded, well sorted, sub-spherical, poor inferred visual porosity, no hydrocarbon fluorescence.
2670.0	55	SILTSTONE		SILTSTONE: olive black to light olive grey, medium light grey to medium grey in part, firm to hard, sub-blocky to angular, 15% siliceous clay, trace pyrite, trace coal, trace lithic fragments.
2673.0	45	SANDSTONE		SANDSTONE: white, yellowish grey, very light grey, 100% siliceous sand, 25% very fine grained, 70% fine grained, 5% medium grains, sub-rounded, well sorted, sub-spherical, poor inferred visual porosity, no hydrocarbon fluorescence.
2673.0	55	SILTSTONE		SILTSTONE: olive black to light olive grey, medium light grey to medium grey in part, firm to hard, sub-blocky to angular, 15% siliceous clay, trace pyrite, trace coal, trace lithic fragments.
2676.0	10	SANDSTONE		SANDSTONE: white, yellowish grey, very light grey, 100% siliceous sand, 25% very fine grained, 70% fine grained, 5% medium grains, sub-rounded, well sorted, sub-spherical, poor inferred visual porosity, no hydrocarbon fluorescence.
2676.0	90	SILTSTONE		SILTSTONE: olive black to light olive grey, medium light grey to medium grey in part, firm to hard, sub-blocky to angular, 15% siliceous clay, trace pyrite, trace coal, trace lithic fragments.
2679.0	70	SANDSTONE		SANDSTONE: white, yellowish grey, very light grey, firm to friable, 100% siliceous sand, 25% very fine grained, 60% fine grained, 5% medium grained,

				10% coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to sub-elongate, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2679.0	30	SILTSTONE		SILTSTONE: olive black to light olive grey, medium light grey to medium grey in part, firm to hard, sub-blocky to angular, 15% siliceous clay, trace pyrite, trace coal, trace lithic fragments.
2682.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish black and brownish grey in part, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace coal, trace lithic fragments.
2682.0	40	SANDSTONE		SANDSTONE: white, yellowish grey, very light grey, firm to friable, 100% siliceous sand, 25% very fine grained, 60% fine grained, 5% medium grained, 10% coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to sub-elongate, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2685.0	10	SANDSTONE		SANDSTONE: white, yellowish grey, very light grey, firm to friable, 100% siliceous sand, 25% very fine grained, 60% fine grained, 5% medium grained, 10% coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to sub-elongate, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2685.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish black and brownish grey in part, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace coal, trace lithic fragments.
2688.0	5	COAL		COAL: black, firm, angular to conchoidal, sub-vitreous to vitreous lustre, trace pyrite.
2688.0	25	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, brownish grey to light brownish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2688.0	5	SANDSTONE		SANDSTONE: white, yellowish grey, loose, 100% siliceous sand, 25% very fine grained, 65% fine grained, 10% medium grains, sub-rounded to sub-angular, moderately to well sorted,

				sub-spherical to sub-elongate, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2688.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish black and brownish grey in part, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace lithic fragments.
2691.0	10	COAL		COAL: black, firm, angular to conchoidal, sub-vitreous to vitreous lustre, trace pyrite.
2691.0	40	SANDSTONE		SANDSTONE: white, yellowish grey, loose, 100% siliceous sand, 25% very fine grained, 65% fine grained, 10% medium grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to sub-elongate, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2691.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, brownish grey to light brownish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2691.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish black and brownish grey in part, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace lithic fragments.
2694.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, brownish grey to light brownish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2694.0	1	COAL		COAL: black, firm, angular to conchoidal, sub-vitreous to vitreous lustre, trace pyrite.
2694.0	40	SANDSTONE		SANDSTONE: white, yellowish grey, loose, 100% siliceous sand, 25% very fine grained, 65% fine grained, 10% medium grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to sub-elongate, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2694.0	54	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish black and brownish grey in part, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace lithic fragments.
2697.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, brownish grey to light brownish grey in part, very soft, amorphous to dispersive, 20%

				siliceous silt.
2697.0	10	COAL		COAL: black, firm, angular to conchoidal, sub-vitreous to vitreous lustre, trace pyrite.
2697.0	40	SANDSTONE		SANDSTONE: white, yellowish grey, loose, 100% siliceous sand, 25% very fine grained, 65% fine grained, 10% medium grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to sub-elongate, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2697.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish black and brownish grey in part, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace lithic fragments.
2700.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish black and brownish grey in part, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace lithic fragments, trace coal.
2700.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, brownish grey to light brownish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2703.0	15	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, brownish grey to light brownish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2703.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish black and brownish grey in part, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace lithic fragments, trace coal.
2706.0	15	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to light olive grey, brownish grey to light brownish grey in part, very soft, amorphous to dispersive, 20% siliceous silt.
2706.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish black and brownish grey in part, very soft to firm, amorphous to sub-blocky, 25% siliceous clay, trace lithic fragments, trace coal.
2709.0	75	SANDSTONE		SANDSTONE: white to yellowish grey, colourless and opaque in part, loose to friable, 100% siliceous sand, 15% very fine grained, 30% fine grained, 40%

				medium grained, 15% coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, good inferred visual porosity, no hydrocarbon fluorescence.
2709.0	25	SILTSTONE		SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 15% siliceous clay, trace coal, trace lithic fragments.
2712.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments.
2715.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments.
2721.0	5	CLAYSTONE		CLAYSTONE: olive grey to light olive grey, brownish grey to light brownish grey, medium light grey in part, very soft, amorphous to dispersive, 10% siliceous silt, trace mica.
2721.0	20	SILTSTONE		SILTSTONE: olive grey to brownish grey, light olive grey in part, soft to firm, blocky to sub-blocky, 15% siliceous clay, trace coal, trace lithic fragments.
2721.0	75	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 15% very fine grained, 30% fine grained, 40% medium grained, 10% coarse grained, 5% very coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, good inferred visual porosity, no hydrocarbon fluorescence.
2724.0	25	SILTSTONE		SILTSTONE: olive grey to brownish grey, light olive grey in part, soft to firm, blocky to sub-blocky, 15% siliceous clay, trace coal, trace lithic fragments.
2724.0	75	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 10% very fine grained, 30% fine grained, 40% medium grained, 10% coarse grained, 10% very coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, good inferred visual porosity, no hydrocarbon fluorescence.
2727.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive

				grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments.
2727.0	50	SILTSTONE		SILTSTONE: olive grey to brownish grey, light olive grey in part, soft to firm, blocky to sub-blocky, 15% siliceous clay, trace coal, trace lithic fragments.
2727.0	10	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 10% very fine grained, 30% fine grained, 40% medium grained, 10% coarse grained, 10% very coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, good inferred visual porosity, no hydrocarbon fluorescence.
2730.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 10% very fine grained, 30% fine grained, 40% medium grained, 10% coarse grained, 10% very coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, good inferred visual porosity, no hydrocarbon fluorescence.
2730.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 30% siliceous clay, trace coal, trace lithic fragments.
2730.0	30	SILTSTONE		SILTSTONE: olive grey to brownish grey, light olive grey in part, soft to firm, blocky to sub-blocky, 15% siliceous clay, trace coal, trace lithic fragments.
2733.0	30	SILTSTONE		SILTSTONE: olive grey to brownish grey, light olive grey in part, soft to firm, blocky to sub-blocky, 15% siliceous clay, trace coal, trace lithic fragments.
2733.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 10% very fine grained, 30% fine grained, 40% medium grained, 10% coarse grained, 10% very coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, good inferred visual porosity, no hydrocarbon fluorescence.
2733.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm,

				blocky to sub-blocky, 30% siliceous clay, trace coal, trace lithic fragments.
2736.0	10	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 20% very fine grained, 50% fine grained, 30% medium grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2736.0	25	SILTSTONE		SILTSTONE: olive grey to brownish grey, light olive grey in part, soft to firm, blocky to sub-blocky, 15% siliceous clay, trace coal, trace lithic fragments.
2736.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 30% siliceous clay, trace coal, trace lithic fragments.
2739.0	10	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 20% very fine grained, 50% fine grained, 30% medium grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2739.0	25	SILTSTONE		SILTSTONE: olive grey to brownish grey, light olive grey in part, soft to firm, blocky to sub-blocky, 15% siliceous clay, trace coal, trace lithic fragments.
2739.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 30% siliceous clay, trace coal, trace lithic fragments.
2742.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments.
2745.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments.
2748.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments.
2751.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments,

				trace very fine grained quartz aggregates.
2754.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments, trace very fine grained quartz aggregates.
2757.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments, trace very fine grained quartz aggregates.
2757.0	75	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 20% very fine grained, 40% fine grained, 30% medium grained, 10% coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2760.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments, trace very fine grained quartz aggregates.
2760.0	75	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 20% very fine grained, 40% fine grained, 30% medium grained, 10% coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
2763.0	85	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 20% very fine grained, 20% fine grained, 40% medium grained, 20% coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, 15% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2763.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments,

				trace very fine grained quartz aggregates.
2766.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments, trace very fine grained quartz aggregates.
2766.0	85	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 20% very fine grained, 20% fine grained, 40% medium grained, 20% coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, 15% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2769.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace coal, trace lithic fragments, trace very fine grained quartz aggregates.
2769.0	85	SANDSTONE		SANDSTONE: white to yellowish grey, opaque and colourless in part, loose to friable, 100% siliceous sand, 20% very fine grained, 20% fine grained, 40% medium grained, 20% coarse grains, sub-rounded to sub-angular, moderately to well sorted, sub-spherical to spherical, 15% rock flour, fair to good inferred visual porosity, no hydrocarbon fluorescence.
2772.0	100	CLAYSTONE		CLAYSTONE: olive grey to light olive grey, light yellow grey in part, very soft, amorphous to dispersive, trace very fine and fine sand, trace lithic fragments, trace coal.
2775.0	100	CLAYSTONE		CLAYSTONE: olive grey to light olive grey, light yellow grey in part, very soft, amorphous to dispersive, trace very fine and fine sand, trace lithic fragments, trace coal.
2778.0	100	SILTSTONE		SILTSTONE: olive black to olive grey, light olive grey in part, soft to firm, sub-blocky to blocky, 5% siliceous clay, trace coal, trace lithic fragments, trace very fine to fine grained quartz.
2781.0	100	SILTSTONE		SILTSTONE: olive black to olive grey, light olive grey in part, soft to firm, sub-blocky to blocky, 5% siliceous clay, trace coal, trace lithic fragments, trace very fine to fine grained quartz.

2784.0	100	SILTSTONE		SILTSTONE: olive black to olive grey, light olive grey in part, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace coal, trace lithic fragments, trace very fine to fine grained quartz.
2787.0	100	SILTSTONE		SILTSTONE: olive black to olive grey, light olive grey in part, soft to firm, sub-blocky to blocky, 15% siliceous clay, trace coal, trace lithic fragments, trace very fine to fine grained quartz.
2790.0	100	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to olive grey, light olive grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace coal, trace lithic fragments.
2793.0	5	CLAYSTONE		CLAYSTONE: olive grey to olive black, very soft, amorphous, 5% siliceous silt.
2793.0	95	SILTSTONE		SILTSTONE: olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to angular, trace very fine quartz sand, trace coal, trace lithic fragments.
2796.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silt, trace pyrite, trace carbonaceous material.
2796.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2799.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2799.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silty, trace pyrite, trace carbonaceous material.
2802.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2802.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silty, trace pyrite, trace carbonaceous material.
2805.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive

				black, very soft to soft, sub-blocky, 20% siliceous silty, trace pyrite, trace carbonaceous material.
2808.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silty, trace pyrite, trace carbonaceous material.
2814.0	60	SANDSTONE		SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace carbonaceous material.
2814.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2820.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2820.0	50	SANDSTONE		SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace carbonaceous material.
2826.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silty, trace pyrite, trace carbonaceous material.
2826.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2826.0	30	SANDSTONE		SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-

				rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace coal.
2832.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silty, trace pyrite, trace carbonaceous material.
2832.0	10	SANDSTONE		SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace coal.
2832.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2838.0	5	SANDSTONE		SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace coal.
2838.0	50	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silty, trace pyrite, trace carbonaceous material.
2838.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2844.0	20	SANDSTONE		SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace carbonaceous material.
2844.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-

				blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2844.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silt, trace pyrite, trace carbonaceous material.
2850.0	40	SANDSTONE		SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace carbonaceous material.
2850.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silt, trace pyrite, trace carbonaceous material.
2850.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2853.0	30	SANDSTONE	Argillaceous	SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace carbonaceous material.
2853.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2856.0	30	SANDSTONE	Argillaceous	SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace carbonaceous material.
2856.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay,

				trace mica, trace carbonaceous material and pyrite.
2859.0	5	SANDSTONE	Argillaceous	SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace carbonaceous material.
2859.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2862.0	70	CLAYSTONE		CLAYSTONE: light olive grey, olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica.
2862.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2865.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2865.0	70	CLAYSTONE		CLAYSTONE: light olive grey, olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica.
2871.0	5	SANDSTONE		SANDSTONE: white to light brown, loose to friable, 100% siliceous sand, 30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace carbonaceous material.
2871.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2871.0	65	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silt, trace pyrite, trace carbonaceous material.
2877.0	15	SANDSTONE		SANDSTONE: white to light brown, loose to friable, 100% siliceous sand,

				30% very fine grained, 40% fine grained, 20% medium grained, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace mica, trace pyrite, trace carbonaceous material.
2877.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2877.0	55	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silt, trace pyrite, trace carbonaceous material.
2883.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, very soft to soft, sub-blocky, 20% siliceous silt, trace pyrite, trace carbonaceous material.
2889.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, sub-blocky to blocky, 20% siliceous clay, trace mica, trace carbonaceous material and pyrite.
2889.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
2892.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
2895.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
2898.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
2901.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, 30% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
2904.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, 30%

				siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
2907.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, 30% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
2910.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, 30% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
2913.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, angular to sub-blocky, 20% siliceous silt, trace pyrite, trace mica, trace carbonaceous material.
2916.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, angular to sub-blocky, 30% siliceous silt, trace pyrite, trace mica, trace carbonaceous material.
2919.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, angular to sub-blocky, 30% siliceous silt, trace pyrite, trace mica, trace carbonaceous material.
2922.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, angular to sub-blocky, 30% siliceous silt, trace pyrite, trace mica, trace carbonaceous material.
2925.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, angular to sub-blocky, 30% siliceous silt, trace pyrite, trace mica, trace carbonaceous material.
2928.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, angular to sub-blocky, 30% siliceous silt, trace pyrite, trace mica, trace carbonaceous material, trace very fine quartz grains.
2931.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, angular to sub-blocky, 30% siliceous silt, trace pyrite, trace mica, trace carbonaceous material, trace very fine quartz grains.
2934.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, angular to sub-blocky, 30% siliceous silt, trace pyrite, trace mica, trace carbonaceous material, trace

				very fine quartz grains.
2937.0	80	SANDSTONE		SANDSTONE: white, light olive grey, yellowish grey, friable to firm, 100% siliceous sand, 5% white siliceous clay matrix, 30% very fine grained, 50% fine grained, 15% medium grained, 5% coarse grains, sub-angular to sub-rounded, poor to moderately sorted, sub-elongate to sub-spherical, trace silica cement, trace mica, poor to fair inferred visual porosity, poor hydrocarbon fluorescence.
2937.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace mica, trace coal.
2940.0	60	SANDSTONE		SANDSTONE: white, light olive grey, yellowish grey, friable to firm, 100% siliceous sand, 5% white siliceous clay matrix, 30% very fine grained, 50% fine grained, 15% medium grained, 5% coarse grains, sub-angular to sub-rounded, poor to moderately sorted, sub-elongate to sub-spherical, trace silica cement, trace mica, poor to fair inferred visual porosity, poor hydrocarbon fluorescence.
2940.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace mica, trace coal.
2943.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace mica, trace coal.
2943.0	35	SANDSTONE		SANDSTONE: white, light olive grey, yellowish grey, friable to firm, 100% siliceous sand, 5% white siliceous clay matrix, 30% very fine grained, 50% fine grained, 15% medium grained, 5% coarse grains, sub-angular to sub-rounded, poor to moderately sorted, sub-elongate to sub-spherical, trace silica cement, trace mica, poor to fair inferred visual porosity, poor hydrocarbon fluorescence.
2946.0	40	SANDSTONE		SANDSTONE: white, light olive grey, yellowish grey, friable to firm, 100% siliceous sand, 5% white siliceous clay matrix, 30% very fine grained, 50% fine grained, 15% medium grained, 5% coarse grains, sub-angular to sub-rounded, poor to moderately sorted, sub-elongate to sub-spherical, trace

				silica cement, trace mica, poor to fair inferred visual porosity, poor hydrocarbon fluorescence.
2946.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace mica, trace coal.
2949.0	30	SANDSTONE		SANDSTONE: white, light olive grey, yellowish grey, friable to firm, 5% white siliceous clay matrix, 95% siliceous sand, 25% very fine grained, 55% fine grained, 20% medium grains, sub-angular to sub-rounded, poor to moderately sorted, spherical to sub-spherical, trace silica cement, trace mica, poor inferred visual porosity, poor hydrocarbon fluorescence.
2949.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace mica, trace coal.
2952.0	35	SANDSTONE		SANDSTONE: white, light olive grey, yellowish grey, friable to firm, 5% white siliceous clay matrix, 95% siliceous sand, 40% very fine grained, 45% fine grained, 15% medium grains, sub-angular to sub-rounded, poor to moderately sorted, spherical to sub-spherical, trace silica cement, trace mica, poor inferred visual porosity, no hydrocarbon fluorescence.
2952.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 30% siliceous clay, trace mica, trace coal.
2955.0	35	SANDSTONE		SANDSTONE: white, light olive grey, yellowish grey, friable to firm, 5% white siliceous clay matrix, 95% siliceous sand, 40% very fine grained, 45% fine grained, 15% medium grains, sub-angular to sub-rounded, poor to moderately sorted, spherical to sub-spherical, trace silica cement, trace mica, poor inferred visual porosity, no hydrocarbon fluorescence.
2955.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 30% siliceous clay, trace mica, trace coal.
2958.0	5	SANDSTONE		SANDSTONE: white, light olive grey, yellowish grey, friable to firm, 5% white siliceous clay matrix, 95% siliceous sand, 80% very fine grained, 20% fine grained, sub-angular to sub-rounded,

				poor to moderately sorted, spherical to sub-spherical, trace silica cement, trace mica, poor inferred visual porosity, no hydrocarbon fluorescence.
2958.0	95	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace mica, trace coal.
2961.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, angular to sub-blocky, 25% siliceous clay, trace mica, trace coal.
2961.0	60	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace pyrite, trace mica, trace coal.
2964.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, angular to sub-blocky, 25% siliceous clay, trace mica, trace coal.
2964.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, very soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace pyrite, trace mica, trace coal.
2967.0	95	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 25% siliceous silt, trace very fine grained quarts sand, trace pyrite, trace mica, trace coal.
2967.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, angular to sub-blocky, 25% siliceous clay, trace mica, trace coal.
2970.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, angular to sub-blocky, 25% siliceous clay, trace mica, trace coal.
2970.0	95	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 25% siliceous silt, trace very fine grained quarts sand, trace pyrite, trace mica, trace coal.
2973.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 25% siliceous silt, trace very fine grained quarts sand, trace pyrite, trace mica, trace coal.
2976.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey,

				olive grey, brownish grey, soft to firm, blocky to sub-blocky, 25% siliceous silt, trace pyrite, trace mica, trace coal.
2979.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 30% siliceous silt, trace mica, trace coal.
2982.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 25% siliceous silt, trace very fine grained quarts sand, trace pyrite, trace mica, trace coal.
2985.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 20% siliceous silt, trace mica, trace coal, trace pyrite.
2988.0	100	CLAYSTONE		CLAYSTONE: light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 15% siliceous silt, trace mica, trace coal, trace pyrite.
2991.0	100	CLAYSTONE		CLAYSTONE: light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 15% siliceous silt, trace mica, trace coal, trace pyrite.
2994.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica, trace coal, trace pyrite.
2997.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, olive black, firm, angular to sub-blocky, 30% siliceous clay, trace mica, trace coal.
2997.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica, trace coal, trace pyrite.
3000.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, olive black, firm, angular to sub-blocky, 30% siliceous clay, trace mica, trace coal.
3000.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica, trace coal, trace pyrite.
3003.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3006.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black and brownish grey in part, firm to soft, blocky to sub-blocky, 20% siliceous silt, trace mica.
3009.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive

				black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3012.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, olive black, firm, angular to sub-blocky, 30% siliceous clay, trace mica, trace coal.
3012.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite.
3015.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite.
3018.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3021.0	100	CLAYSTONE		CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 15% siliceous silt, trace very fine grained quartz sand, trace coal, trace mica, trace pyrite.
3024.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 30% siliceous silt, trace coal, trace mica, trace pyrite.
3027.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 30% siliceous silt, trace coal, trace mica, trace pyrite.
3030.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 30% siliceous silt, trace coal, trace mica, trace pyrite.
3033.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 30% siliceous silt, trace coal, trace mica, trace pyrite.
3036.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 30% siliceous silt, trace coal, trace mica, trace pyrite.
3039.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3042.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.

3045.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3048.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3051.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3054.0	100	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3057.0	70	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3057.0	10	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3057.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material.
3060.0	30	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3060.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace

				carbonaceous material.
3060.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3063.0	60	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3063.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material.
3063.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3066.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3066.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material.
3066.0	80	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3069.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3069.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine

				grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3069.0	30	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3072.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3072.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material, trace very fine siliceous sand.
3072.0	30	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3075.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3075.0	40	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3075.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive

				grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material, trace very fine siliceous sand, trace calcareous cement.
3078.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3078.0	10	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3078.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material, trace very fine siliceous sand, trace calcareous cement.
3081.0	10	SANDSTONE		SANDSTONE: white to yellowish grey, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, weak hydrocarbon fluorescence from trace aggregates, moderately bright white direct UV fluorescence, very slow bluish white streaming cut, thin dull bluish-green residual ring.
3081.0	15	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3081.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material, trace very fine siliceous sand, trace calcareous cement.
3084.0	10	SANDSTONE		SANDSTONE: white to yellowish grey,

				100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, weak hydrocarbon fluorescence from trace aggregates, moderately bright white direct UV fluorescence, very slow bluish white streaming cut, thin dull bluish-green residual ring.
3084.0	15	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3084.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material, trace very fine siliceous sand, trace calcareous cement.
3087.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, weak hydrocarbon fluorescence from trace aggregates, moderately bright white direct UV fluorescence, very slow bluish white streaming cut, thin dull bluish-green residual ring.
3087.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3087.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material, trace very fine siliceous sand, trace calcareous cement.
3090.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical,

				poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, weak hydrocarbon fluorescence from trace aggregates, moderately bright white direct UV fluorescence, very slow bluish white streaming cut, thin dull bluish-green residual ring.
3090.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3090.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material, trace very fine siliceous sand, trace calcareous cement.
3093.0	5	SANDSTONE		SANDSTONE: white to yellowish grey, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, weak hydrocarbon fluorescence from trace aggregates, moderately bright white direct UV fluorescence, very slow bluish white streaming cut, thin dull bluish-green residual ring.
3093.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz.
3093.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace mica, trace carbonaceous material, trace very fine siliceous sand, trace calcareous cement.
3096.0	5	COAL		COAL: black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, trace calcite veins
3096.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3096.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive

				grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3099.0	1	COAL		COAL: black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, trace calcite veins
3099.0	34	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3099.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3102.0	20	SANDSTONE		SANDSTONE: white to yellowish grey, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, weak hydrocarbon fluorescence from trace aggregates, moderately bright white direct UV fluorescence, very slow bluish white streaming cut, thin dull bluish-green residual ring.
3102.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3102.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3105.0	20	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3105.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace

				mica, trace pyrite.
3105.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations.
3108.0	60	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous sand, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3108.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3108.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3111.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3111.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3111.0	20	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3114.0	20	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-

				rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3114.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3117.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3117.0	5	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3117.0	75	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3120.0	5	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3120.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3120.0	75	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3123.0	5	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white

				to yellowish grey, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous material, trace mica, fair inferred visual porosity, no hydrocarbon fluorescence.
3123.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3123.0	75	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3126.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3126.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3129.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3129.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3132.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3132.0	90	SANDSTONE		SANDSTONE: loose, white, clear, light yellow, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, fair to good inferred

				visual porosity, no hydrocarbon fluorescence.
3132.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3135.0	1	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3135.0	1	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3135.0	98	SANDSTONE		SANDSTONE: loose, white, clear, light yellow, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, trace quartz overgrowths, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3138.0	100	SANDSTONE		SANDSTONE: loose, white, clear, light yellow, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, trace quartz overgrowths, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3141.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3141.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3141.0	85	SANDSTONE		SANDSTONE: loose, white, clear, light yellow, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-

				angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, trace quartz overgrowths, trace white siliceous clay matrix, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3144.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3144.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3144.0	10	SANDSTONE		SANDSTONE: loose, white, clear, light yellow, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, trace quartz overgrowths, trace white siliceous clay matrix, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3147.0	5	SANDSTONE		SANDSTONE: loose, white, clear, light yellow, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, trace quartz overgrowths, trace white siliceous clay matrix, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3147.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3147.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3150.0	10	SANDSTONE		SANDSTONE: loose, white, clear, light yellow, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and

				fractured grains, trace quartz overgrowths, trace white siliceous clay matrix, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3150.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3150.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3153.0	5	SANDSTONE		SANDSTONE: loose, white, clear, light yellow, 100% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, trace quartz overgrowths, trace white siliceous clay matrix, fair to good inferred visual porosity, no hydrocarbon fluorescence.
3153.0	35	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3153.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3156.0	5	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, light yellowish grey, light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix, fair inferred visual porosity, no hydrocarbon fluorescence.
3156.0	35	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3156.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey,

				soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3158.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3158.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3159.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to firm, sub-blocky to blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3159.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material and laminations, 5% rock flour.
3162.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3162.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3165.0	10	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, light yellowish grey, light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix, fair inferred visual porosity, no hydrocarbon fluorescence.
3165.0	5	COAL		COAL: black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, trace calcite veins
3165.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.

3168.0	1	COAL		COAL: black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, trace calcite veins
3168.0	14	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, light yellowish grey, light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix, fair inferred visual porosity, no hydrocarbon fluorescence.
3168.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3171.0	30	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, light yellowish grey, light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix, fair inferred visual porosity, no hydrocarbon fluorescence.
3171.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3174.0	30	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, light yellowish grey, light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix, fair inferred visual porosity, no hydrocarbon fluorescence.
3174.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3177.0	80	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous

				clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, fair inferred visual porosity, no hydrocarbon fluorescence.
3177.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3180.0	100	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, fair inferred visual porosity, no hydrocarbon fluorescence.
3183.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3183.0	80	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, fair inferred visual porosity, no hydrocarbon fluorescence.
3186.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3186.0	60	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous

				clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, fair inferred visual porosity, no hydrocarbon fluorescence.
3189.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3189.0	55	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, fair inferred visual porosity, no hydrocarbon fluorescence.
3192.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3192.0	20	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, fair inferred visual porosity, no hydrocarbon fluorescence.
3196.4	20	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and

				fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, fair inferred visual porosity, no hydrocarbon fluorescence.
3196.4	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3197.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3197.0	1	COAL		COAL: black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre.
3197.0	30	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, poor inferred visual porosity, no hydrocarbon fluorescence.
3197.0	39	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3198.0	45	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3198.0	30	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, poor inferred visual porosity, no hydrocarbon fluorescence.
3198.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey,

				soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3199.0	45	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3199.0	10	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, poor inferred visual porosity, no hydrocarbon fluorescence.
3199.0	45	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3200.0	10	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, poor inferred visual porosity, no hydrocarbon fluorescence.
3200.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3200.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3201.0	10	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical

				to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, poor inferred visual porosity, no hydrocarbon fluorescence.
3201.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3201.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3202.0	10	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, poor inferred visual porosity, no hydrocarbon fluorescence.
3202.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3202.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3213.0	20	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, poor inferred visual porosity, no hydrocarbon fluorescence.
3213.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.

3213.0	50	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3216.0	5	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white to light yellowish grey and light grey, soft to firm aggregates, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous material, rare carbonaceous laminae, poor inferred visual porosity, no hydrocarbon fluorescence.
3216.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% siliceous silt, trace mica.
3216.0	55	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, 20% siliceous clay, trace pyrite, trace mica, trace carbonaceous material.
3222.0	5	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, yellowish grey, soft to firm, 30% siliceous clay, 70% siliceous sand, 40% very fine grained, 40% fine grained, 15% medium grained, 5% coarse grains, angular to sub-rounded, very poorly to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3222.0	65	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3222.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3225.0	5	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, yellowish grey, soft to firm, 30% siliceous clay, 70% siliceous sand, 40% very fine grained, 40% fine grained, 15% medium grained, 5% coarse grains, angular to sub-rounded,

				very poorly to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3225.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3225.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3228.0	10	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, yellowish grey, light olive grey, soft to firm, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 15% medium grained, 5% coarse grains, angular to sub-rounded, very poorly to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3228.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3231.0	75	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3231.0	5	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, yellowish grey, light olive grey, soft to firm, 20% siliceous clay, 80% siliceous sand, 40% very fine grained, 40% fine grained, 15% medium grained, 5% coarse grains, angular to sub-rounded, very poorly to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3231.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.

3234.0	80	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, yellowish grey, light olive grey, soft to firm, 25% siliceous clay, 75% siliceous sand, 50% very fine grained, 30% fine grained, 20% medium grains, sub-angular to sub-rounded, moderately to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3234.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3234.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3237.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3237.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3237.0	65	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, yellowish grey, light olive grey, soft to firm, 25% siliceous clay, 75% siliceous sand, 50% very fine grained, 30% fine grained, 20% medium grains, sub-angular to sub-rounded, moderately to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3240.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3240.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3240.0	20	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, yellowish grey, light olive grey,

				soft to firm, 25% siliceous clay, 75% siliceous sand, 50% very fine grained, 30% fine grained, 20% medium grains, sub-angular to sub-rounded, moderately to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3243.0	25	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3243.0	75	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3246.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3246.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3249.0	35	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3249.0	65	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3252.0	65	SANDSTONE		SANDSTONE: white, yellowish grey, light olive grey, firm, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 20% fine grained, 50% medium grained, 5% coarse grained, 5% very coarse grains, angular to sub-rounded, very poor to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, fair inferred visual porosity, no hydrocarbon fluorescence.
3252.0	35	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite,

				trace coal.
3255.0	35	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3255.0	65	SANDSTONE		SANDSTONE: white, yellowish grey, light olive grey, firm, 10% siliceous clay, 90% siliceous sand, 20% very fine grained, 20% fine grained, 50% medium grained, 5% coarse grained, 5% very coarse grains, angular to sub-rounded, very poor to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, fair inferred visual porosity, no hydrocarbon fluorescence.
3258.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3258.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% siliceous clay, trace mica, trace pyrite, trace coal.
3261.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
3261.0	80	CLAYSTONE		CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 15% siliceous silt, trace coal, trace mica, trace pyrite.
3264.0	35	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
3264.0	65	CLAYSTONE		CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 15% siliceous silt, trace coal, trace mica, trace pyrite.
3267.0	35	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
3267.0	65	CLAYSTONE		CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 15% siliceous silt, trace coal, trace mica, trace pyrite.

3270.0	100	CLAYSTONE		CLAYSTONE: olive grey to olive black, brownish grey, soft to very soft, amorphous to sub-blocky, 15% siliceous silt, trace coal, trace mica, trace pyrite.
3273.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
3273.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3276.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
3276.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3279.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
3279.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3282.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
3282.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica, trace pyrite.
3283.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace coal.
3283.0	80	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace coal, trace mica,

				trace pyrite.
3285.0	1	SANDSTONE		SANDSTONE: white, yellowish grey, light olive grey, firm to friable aggregates, 15% siliceous clay, 85% siliceous sand, 30% very fine grained, 50% fine grained, 20% medium grains, angular to sub-rounded, poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz overgrowths, poor inferred visual porosity, no hydrocarbon fluorescence, weak mineral fluorescence only.
3285.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
3285.0	69	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3286.0	1	SANDSTONE		SANDSTONE: white, yellowish grey, light olive grey, firm to friable aggregates, 15% siliceous clay, 85% siliceous sand, 30% very fine grained, 50% fine grained, 20% medium grains, angular to sub-rounded, poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz overgrowths, poor inferred visual porosity, no hydrocarbon fluorescence, weak mineral fluorescence only.
3286.0	35	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
3286.0	64	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3287.0	1	SANDSTONE		SANDSTONE: white, yellowish grey, light olive grey, firm to friable aggregates, 15% siliceous clay, 85% siliceous sand, 30% very fine grained, 50% fine grained, 20% medium grains, angular to sub-rounded, poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz overgrowths, poor inferred visual porosity, no hydrocarbon fluorescence, weak mineral fluorescence only.

3287.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
3287.0	59	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3288.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
3288.0	60	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3289.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
3289.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3290.0	5	SANDSTONE		SANDSTONE: white, yellowish grey, light olive grey, firm to friable aggregates, 15% siliceous clay, 85% siliceous sand, 30% very fine grained, 50% fine grained, 20% medium grains, angular to sub-rounded, poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz overgrowths, poor inferred visual porosity, no hydrocarbon fluorescence, weak mineral fluorescence only.
3290.0	55	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
3290.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3300.0	1	SANDSTONE		SANDSTONE: white, yellowish grey, light olive grey, firm to friable aggregates, 15% siliceous clay, 85%

				siliceous sand, 30% very fine grained, 50% fine grained, 20% medium grains, angular to sub-rounded, poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz overgrowths, poor inferred visual porosity, no hydrocarbon fluorescence, weak mineral fluorescence only.
3300.0	44	CLAYSTONE	Silty	SILTY CLAYSTONE: olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% siliceous silt, trace carbonaceous material, trace mica, trace pyrite.
3300.0	55	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive grey, brownish grey, soft to firm, amorphous to blocky, 20% siliceous clay, trace mica, trace pyrite, trace carbonaceous material.
3312.0	90	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 10% fine grained, 55% medium grained, 25% coarse grained, 10% very coarse grains, angular to sub-rounded, poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz cement, trace very fine quartz grains, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3312.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3315.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3315.0	90	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 10% fine grained, 20% medium grained, 50% coarse grained, 20% very coarse grains, angular to sub-rounded, poorly sorted, sub-elongate to sub-spherical, trace quartz cement, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3318.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.

3318.0	85	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 30% very fine grained, 45% fine grained, 10% medium grained, 10% coarse grained, 5% very coarse grains, angular to sub-rounded, poorly sorted, sub-elongate to sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3321.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3321.0	80	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 35% very fine grained, 50% fine grained, 10% medium grained, 5% coarse grains, angular to sub-rounded, poorly sorted, sub-elongate to sub-spherical, trace quartz cement, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3324.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3324.0	80	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 35% very fine grained, 50% fine grained, 10% medium grained, 5% coarse grains, angular to sub-rounded, poorly sorted, sub-elongate to sub-spherical, trace quartz cement, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3327.0	15	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, brownish grey in part, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3327.0	85	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 20% very fine grained, 35% fine grained, 30% medium grained, 15% coarse grains, angular to sub-rounded, poorly sorted, sub-elongate to sub-spherical, trace quartz cement, poor to fair inferred visual porosity, no hydrocarbon

				fluorescence.
3330.0	15	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, brownish grey in part, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3330.0	85	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 20% very fine grained, 35% fine grained, 30% medium grained, 15% coarse grains, angular to sub-rounded, poorly sorted, sub-elongate to sub-spherical, trace quartz cement, poor to fair inferred visual porosity, no hydrocarbon fluorescence.
3333.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, brownish grey in part, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3333.0	10	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 35% very fine grained, 45% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grains, angular to sub-rounded, poorly sorted, sub-elongate to sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3336.0	15	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 35% very fine grained, 45% fine grained, 10% medium grained, 5% coarse grained, 5% very coarse grains, angular to sub-rounded, poorly sorted, sub-elongate to sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3336.0	75	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, brownish grey in part, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3336.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3339.0	5	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 10% very

				fine grained, 60% fine grained, 30% medium grains, sub-rounded to rounded, moderately sorted, sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3339.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3339.0	65	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3342.0	5	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 10% very fine grained, 60% fine grained, 30% medium grains, sub-rounded to rounded, moderately sorted, sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3342.0	30	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3342.0	65	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3345.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3345.0	75	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3348.0	25	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine quartz sand, trace mica, trace pyrite.
3348.0	75	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3351.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey

				in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine quartz sand, trace mica, trace pyrite.
3351.0	85	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3354.0	15	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 25% very fine grained, 60% fine grained, 15% medium grains, sub-angular to rounded, moderately sorted, sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3354.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3354.0	15	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3357.0	75	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 25% very fine grained, 60% fine grained, 15% medium grains, sub-angular to rounded, moderately sorted, sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3357.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3357.0	20	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3360.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3360.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3360.0	80	SANDSTONE		SANDSTONE: white, yellowish grey,

				loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 30% very fine grained, 50% fine grained, 20% medium grains, sub-angular to rounded, moderately sorted, sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3363.0	25	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3363.0	70	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 25% siliceous clay, trace mica, trace pyrite.
3363.0	5	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 40% very fine grained, 55% fine grained, 5% medium grains, sub-rounded to rounded, moderately sorted, sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3366.0	10	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 40% very fine grained, 60% fine grained, sub-rounded to rounded, moderately to well sorted, sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3366.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3369.0	15	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay matrix, 95% siliceous sand, 40% very fine grained, 60% fine grained, sub-rounded to rounded, moderately to well sorted, sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3369.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3372.0	15	SANDSTONE		SANDSTONE: white, yellowish grey, loose to friable, 5% white siliceous clay

				matrix, 95% siliceous sand, 40% very fine grained, 60% fine grained, sub-rounded to rounded, moderately to well sorted, sub-spherical, trace quartz cement, poor inferred visual porosity, no hydrocarbon fluorescence.
3372.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3375.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 20% siliceous silt, trace mica, trace pyrite.
3375.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace mica, trace pyrite.
3378.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3378.0	90	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments.
3381.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3381.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments.
3384.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3384.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments.
3387.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to

				light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3387.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments.
3390.0	20	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3390.0	80	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments.
3393.0	15	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3393.0	85	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3396.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3396.0	40	SANDSTONE	Argillaceous	ARGILLACEOUS SANDSTONE: white, yellowish grey, soft to firm, 20% siliceous clay, 80% siliceous sand, 20% very fine grained, 60% fine grained, 20% medium grains, sub-rounded to rounded, moderately sorted, sub-spherical to spherical, trace quartz cement, common black carbonaceous laminae in parts, poor-fair inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3399.0	95	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay,

				95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3399.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3402.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3402.0	95	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3405.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3405.0	95	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from

				sandstone matrix.
3408.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3408.0	95	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3411.0	15	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3411.0	85	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3414.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3414.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3414.0	5	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60%

				medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3417.0	5	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3417.0	5	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3417.0	90	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3420.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3420.0	35	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3420.0	25	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.

3423.0	25	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3423.0	35	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3423.0	40	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3426.0	40	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3426.0	5	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3426.0	55	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3429.0	10	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor

				inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3429.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3429.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3432.0	10	VOLCANIC		WEATHERED VOLCANICS: white to bright green to light brownish grey, soft to firm in parts, amorphous to blocky, common remnant amygdaloidal texture visible, replaced by clay, trace quartz fragments, common chlorite, common brown kaolinite.
3432.0	30	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3432.0	60	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3435.0	80	VOLCANIC		WEATHERED VOLCANICS: white to bright green to light brownish grey, soft to firm in parts, amorphous to blocky, common remnant amygdaloidal texture visible, replaced by clay, trace quartz fragments, common chlorite, common brown kaolinite.
3435.0	10	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3435.0	10	SILTSTONE	Argillaceous	ARGILLACEOUS SILTSTONE: olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% siliceous clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.
3438.0	100	VOLCANIC		WEATHERED VOLCANICS: white to bright green to light brownish grey, soft to firm in parts, amorphous to blocky,

				common remnant amygdaloidal texture visible, replaced by clay, trace quartz fragments, common chlorite, common brown kaolinite.
3441.0	100	VOLCANIC		WEATHERED VOLCANICS: white to light green and occasionally dark green, firm to moderately hard in parts, angular to blocky, common remnant amygdaloidal texture visible, clay, trace quartz fragments, common white calcareous matrix, common light brown kaolinitic clay, occasional fresh chlorite crystals at the centre of the aggregates.
3444.0	100	VOLCANIC		WEATHERED VOLCANICS: white to light green and occasionally dark green, soft to moderately hard in parts, angular to blocky, trace amygdaloidal texture visible, trace quartz fragments, common white calcareous matrix, trace light brown kaolinitic clay, occasional fresh chlorite crystals at the centre of the aggregates.
3447.0	100	VOLCANIC		WEATHERED VOLCANICS: white to light green and occasionally dark green, soft to moderately hard in parts, angular to blocky, trace amygdaloidal texture visible, trace quartz fragments, common white calcareous matrix, trace light brown kaolinitic clay, occasional fresh chlorite crystals at the centre of the aggregates.
3450.0	100	VOLCANIC		WEATHERED VOLCANICS: white to light green and occasionally dark green, soft to moderately hard in parts, angular to blocky, trace amygdaloidal texture visible, trace quartz fragments, common white calcareous matrix, trace light brown kaolinitic clay, trace pyrite, trave haematite, occasional fresh chlorite crystals at the centre of the aggregates.
3453.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3453.0	95	VOLCANIC		WEATHERED VOLCANICS: white to light green and occasionally dark green, soft to moderately hard in parts, angular to blocky, trace amygdaloidal texture visible, trace quartz fragments, common white calcareous matrix, trace light brown kaolinitic clay, trace pyrite, trave haematite, occasional fresh

				chlorite crystals at the centre of the aggregates.
3456.0	1	SANDSTONE		SANDSTONE: white, yellowish grey, firm to friable, 5% calcareous clay, 95% siliceous sand, 20% very fine grained, 20% fine grained, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous material, poor inferred visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.
3456.0	5	CLAYSTONE	Silty	SILTY CLAYSTONE: olive black to light olive grey, soft to firm, amorphous to sub-blocky, 25% siliceous silt, trace mica, trace pyrite.
3456.0	94	VOLCANIC		WEATHERED VOLCANICS: white to light green and occasionally dark green, soft to moderately hard in parts, angular to blocky, trace amygdaloidal texture visible, trace quartz fragments, common white calcareous matrix, trace light brown kaolinitic clay, trace pyrite, trave haematite, occasional fresh chlorite crystals at the centre of the aggregates.
3459.0	100	VOLCANIC		WEATHERED VOLCANICS: as above, dominantly hard dark green crystalline fragments with abundant chlorite, trace amygdaloidal texture visible, trace pyrite, trace quartz grains visible in part.
3462.0	100	VOLCANIC		WEATHERED VOLCANICS: as above, dominantly hard dark green crystalline fragments with abundant chlorite, trace amygdaloidal texture visible, trace pyrite, trace quartz grains visible in part.
3465.0	5	SANDSTONE		SANDSTONE: dark green, dark greenish grey, friable to firm, 100% siliceous sand, 40% very fine. 40% fine grained, 20% medium grains, sub-angular to angular, sub-elongate to sub-spherical, common green chlorite crystals, mildly calcareous in part, trace pyrite, no hydrocarbon fluorescence.
3465.0	95	VOLCANIC		WEATHERED VOLCANICS: dominantly hard dark green crystalline fragments with abundant chlorite, trace remnant amygdaloidal texture, trace pyrite.

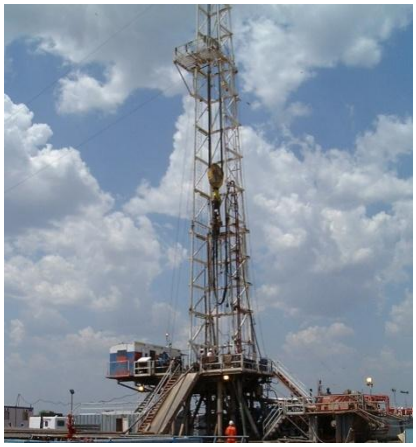
3468.0	30	SANDSTONE		SANDSTONE: dark green, dark greenish grey, friable to firm, 100% siliceous sand, 40% very fine grained, 60% fine grains, sub-angular to angular, sub-elongate to sub-spherical, common green chlorite colouration, mildly calcareous in part, trace pyrite, no hydrocarbon fluorescence.
3468.0	70	VOLCANIC		WEATHERED VOLCANICS: dominantly hard dark green crystalline fragments with abundant chlorite, trace remnant amygdaloidal texture, trace pyrite.
3471.0	15	SANDSTONE		SANDSTONE: dark green, dark greenish grey, friable to firm, 100% siliceous sand, 40% very fine grained, 60% fine grains, sub-angular to angular, sub-elongate to sub-spherical, common green chlorite colouration, mildly calcareous in part, trace pyrite, no hydrocarbon fluorescence.
3471.0	85	VOLCANIC		WEATHERED VOLCANICS: dominantly hard dark green crystalline fragments with abundant chlorite, trace remnant amygdaloidal texture, trace pyrite.
3474.0	10	SANDSTONE		SANDSTONE: dark green, dark greenish grey, friable to firm, 100% siliceous sand, 40% very fine grained, 60% fine grains, sub-angular to angular, sub-elongate to sub-spherical, common green chlorite colouration, mildly calcareous in part, trace pyrite, no hydrocarbon fluorescence.
3474.0	90	VOLCANIC		WEATHERED VOLCANICS: dominantly hard dark green crystalline fragments with abundant chlorite, trace remnant amygdaloidal texture, trace pyrite.
3477.0	5	SANDSTONE		SANDSTONE: dark green, dark greenish grey, friable to firm, 100% siliceous sand, 40% very fine grained, 60% fine grains, sub-angular to angular, sub-elongate to sub-spherical, common green chlorite colouration, mildly calcareous in part, trace pyrite, no hydrocarbon fluorescence.
3477.0	95	VOLCANIC		WEATHERED VOLCANICS: dominantly hard dark green crystalline fragments with abundant chlorite, trace remnant amygdaloidal texture, trace pyrite.
3480.0	1	SANDSTONE		SANDSTONE: dark green, dark greenish grey, friable to firm, 100%

				siliceous sand, 40% very fine grained, 60% fine grains, sub-angular to angular, sub-elongate to sub-spherical, common green chlorite colouration, mildly calcareous in part, trace pyrite, no hydrocarbon fluorescence.
3480.0	99	VOLCANIC		WEATHERED VOLCANICS: dominantly hard dark green crystalline fragments with abundant chlorite, common clay, trace remnant amygdaloidal texture, trace pyrite.
3482.0	100	VOLCANIC		WEATHERED VOLCANICS: light green, dark green and greenish black, firm to moderately hard, angular to blocky, trace remnant basaltic texture (replaced by clay), trace quartz fragments (vesicles), common white calcareous matrix, common light brown to white kaolinitic clay, occasional fresh chlorite crystals, trace pyrite.

APPENDIX 2: CONVENTIONAL CORING REPORT

CORING REPORT

WELL
Rockhopper - 1



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FEBRUARY 2010

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PERFORMANCE SUMMARY

Coring on ADA's Kan Tan 4 rig for the Rockhopper-1 well was safely carried out according to a carefully designed core acquisition programme. In this report we evaluate the coring performance and specific experience gained during the operation in order to provide continued development and improvement for future projects.

Overall Performance

Core #	Serial #	Corehead	Core Barrel Size	Length	Type	Inner Tube	Depth In (m)	Cut (m)	Recovery (m)	Recovery (%)	Hrs	ROP (m/hr)
1	83691	MCP 572	7" x4"	30m	TSS	ALU	3196	16.5	13.2	80	3.45	4.8
2	83691	MCP 572	7" x4"	30m	TSS	ALU	3283	15.5	14.08	91	2.25	6.9
3	83691	MCP 572	7" x4"	30m	TSS	ALU	3298.5	10.5	9.5	90	1.25	8.4
							Overall Performance	42.5	36.78	87	6.95	20.1

On Rockhopper-1 a total of 42.5 was cut in 3 runs, across the reservoir zone, with core 1 being cut at a depth of 3196m to 3212.5m, core 2 from 3283m to 3298.5m and core 3 from 3298.5 to 3309m.

The core barrel length and coring intervals were optimised to maximize the coring performance and on performance experienced on Trefoil. The core runs were made using 30m of core barrel with a conventional core catcher system.

All coring parameters were determined from previous experience in similar formations and depths in the area.

KEY OBSERVATIONS

2.1 CORE 1

Date: 28/01/2010

Depth In (m)	Depth Out (m)	Cored (m)	Coring Hrs	ROP (m/hr)	Recovered (m)	Recovery (%)	Comment
3196	3212.5	16.5	3.5	4.8	13.2	80	

The Coring Program plan for core 1 was to run in hole with a 30m core barrel and core selected reservoir formation as directed by ADA. The formation that was cored was consolidated sand stone with larger amounts of claystone than previously expected, and the 13.2m of the reservoir target was recovered.

After tagging bottom and calibrating the exact well depth, the diverter ball was dropped. Once the calibration was completed and all of the necessary parameters being taken, bottom was tagged and coring started with the following parameters:

- weight on bit 5 k/lbs
- 220GPM
- 70 RPM

The first metre of core took 24mins to cut the rest of the operation varied in time from the range of 5-25mins per m interval of core. Throughout the coring run the WOB and flow rate remained constant for the entire 16.5m. WOB ranged from 10k/lklbs after 2m and then was increased to 18k/lklbs for the 3rd and all other metres. Flow rates remained constant at 220 and stand pipe pressure ranged throughout the coring run between 630psi and 710psi and there were no abnormal changes.

Once at surface there was 80% of core in the barrel and the catcher was engaged.

Review of Core 1

The coring run appears to have jammed off after approximately 14m the remaining core was milled. After seeing pictures of the core it shows that there is rather more than expected claystone than anticipated, which would have increased the risk of jamming. The gamma showed that there were more clays as do the pictures taken at ACS of the Rockhopper-1 cores. Core 1 was in relatively good shape with no evidence of undergauge core which is usually induced with whirling of the corehead or a stabilisation issue. The core cutting operation went smoothly from this point of view, showing that both the corehead and operation of the BHA including parameters was in line with procedures for high quality retrieval of core.

The 20% of Core that was lost was milled after jamming. The core had jammed in the inner barrel as there were many breaks in the clay had started to slow the movement of core entering in the barrel until this movement ceased. Three factors can be identified as causes of the eventual jam:

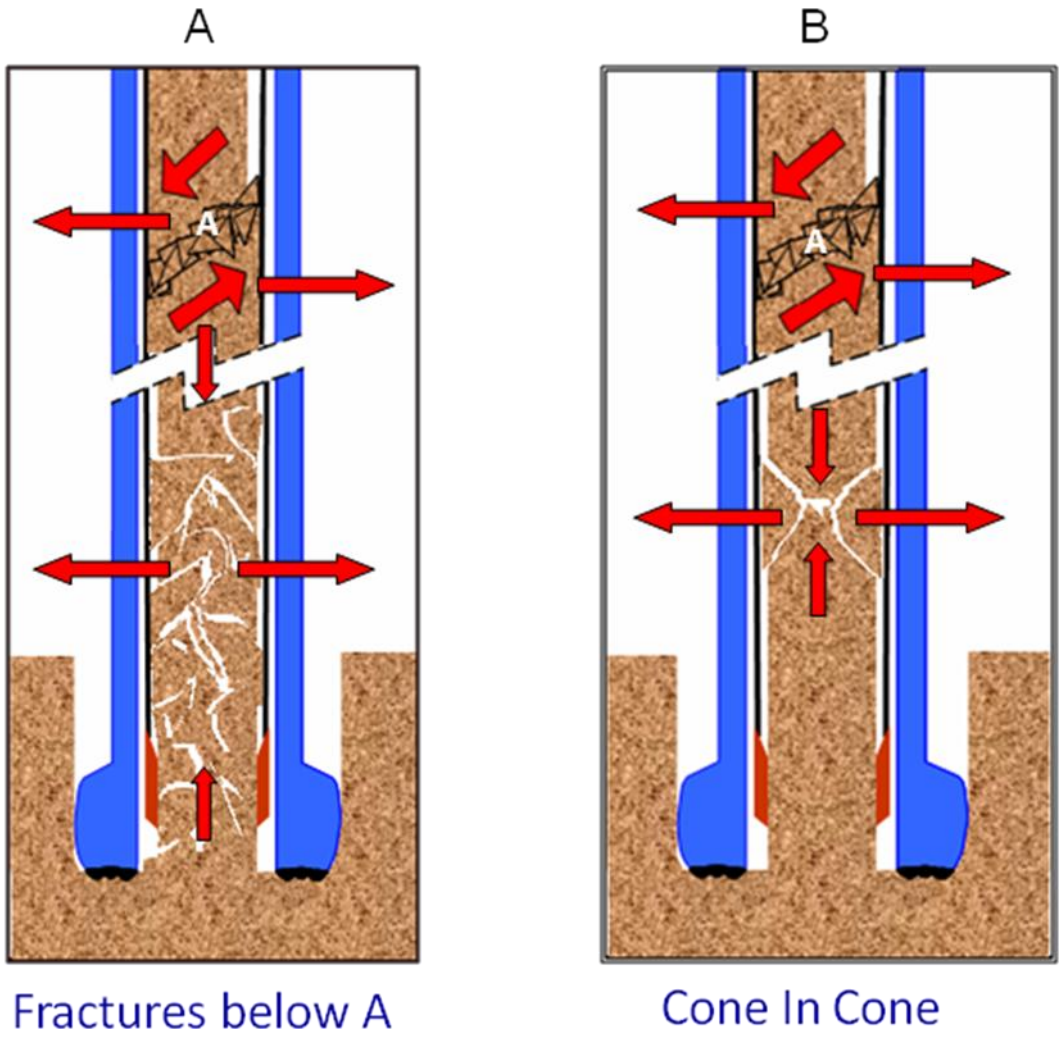
1. The core also had many vertical fracture lines at or more than 45 degrees
2. Thin fracture lines
3. Sections of less consolidated formation which would have had then started to press against the inner barrel.

All of the three combined would have combined and compressed together creating more friction on core entering the barrel. This pressure would have slowed the core entering considerably and increased the chance of the eventual jams.

The gamma readings also provided that there appears to be thicker sections of clay. Whereas on Trefoil 2 there was not the same range of clays to cut through, which did not impede the movement of core into the barrel, to the same degree allowing for longer core lengths to be cut.

Indications of Jamming

There is evidence of both of these types of damage and is an indication of slippages above the final core jam. The slippages at A apply forces to the inner barrel and increase friction to a point which ultimately overcomes the formation strength of more fragile core at or below the restriction. The core will ‘pack off’ at that point, which is the final stage of the core jam.



Fractures below A

Cone In Cone

2.2 CORE 2

Date: 31/01/2010

Depth In (m)	Depth Out (m)	Cored (m)	Coring Hrs	ROP (m/hr)	Recovered (m)	Recovery (%)	Comment
3283	3298.5	15.5	2.3	6.9	14.08	91	

The Coring Program plan for core 2 was to continue running in hole with a 30m core barrel and core the selected reservoir formation as directed by ADA. The formation that was cored was consolidated sand stone and claystone, and 15.5m of the target formation was acquired with a 91% recovery. The ROP averaged 6.9m/hr.

After tagging bottom and calibrating the exact well depth, the diverter ball was dropped. Once the calibration was completed and all of the necessary parameters being taken, bottom was tagged and coring started with the following parameters:

- weight on bit 5 k/lbs
- 220 GPM
- 60 RPM

The first metre of core was cut after 12 minutes and the rest of the operation varied from 4 minutes to 12 minutes per metre section. Throughout the coring run the WOB and flow rate remained constant. WOB ranged from 10k/lklbs. Flow rates remained constant at 220 and stand pipe pressure ranged throughout the coring run between 640 and 710psi and there were no abnormal changes.

Once at surface there was 14.8m of core in the barrel a recovery of 91% and the catcher was engaged.

Review of Core 2

The coring run appears to have jammed off after approximately 14.08m the remaining core was milled. After seeing pictures of the core it shows that there is rather more than expected claystone than anticipated, which would have increased the risk of jamming. The gamma showed that there were more clays as in Core 1. Core 2 was in relatively good shape consistent with results of Core 1. From this point of view the high quality of the retrieved of core was successful.

The 9% of Core that was lost was milled after jamming. The core had jammed in the inner barrel as there were also the same factors present as in the last run (and in fact across all 3 runs).These factors were supported by the gamma readings, and they were:

1. The core also had many vertical fracture lines at or more than 45 degrees
2. Thin fracture lines
3. Sections of less consolidated formation which would have had then started to press against the inner barrel.

All of the three combined would have combined and compressed together creating more friction on core entering the barrel. This pressure would have slowed the core entering considerably and increased the chance of the eventual jams.

2.3 CORE 3

Date: 01/01/10

Depth In (m)	Depth Out (m)	Cored (m)	Coring Hrs	ROP (m/hr)	Recovered (m)	Recovery (%)	Comment
3298.5	3309	10.5	1.3	8.4	9.5	90	

The Coring Program plan for core 3 was to continue running in hole with a 30m core barrel and core the selected reservoir formation as directed by ADA. The formation that was cored was consolidated sand stone and claystone, and 10.5m of the target formation was acquired with a 90% recovery. The ROP averaged 8.4m/hr.

After tagging bottom and calibrating the exact well depth, the diverter ball was dropped. Once the calibration was completed and all of the necessary parameters being taken, bottom was tagged and coring started with the following parameters:

- weight on bit 5 k/lbs
- 220 GPM
- 60 RPM

The first metre of core was cut after 18 minutes and the rest of the operation vaired from 4minutes to 20minutes per metre section. Throughout the coring run the WOB and flow rate remained constant. WOB ranged from 10k/lklbs. Flow rates remained constant at 220 and stand pipe pressure ranged throughout the coring run between 710 and 770psi and there were no abnormal changes.

Review of Core 3

Core 2 jammed off after 10.5m, and as with Core 1 more than the anticipated amount of claystone was encountered. The gamma showed that there were more clays as in Core 1. Core 2 was in relatively good shape consistent with results of Core 1. From this point of view the high quality of the retrieved of core was successful.

The 10% of Core that was lost was milled after jamming. The core had jammed in the inner barrel as there were also the same factors present as in the last run (and in fact across all 3 runs).These factors were supported by the gamma readings, and they were:

1. The core also had many vertical fracture lines at or more than 45 degrees
2. Thin fracture lines
3. Sections of less consolidated formation which would have had then started to press against the inner barrel.

All of the three combined would have combined and compressed together creating more friction on core entering the barrel. This pressure would have slowed the core entering considerably and increased the chance of the eventual jams.

CORING LESSONS LEARNED & RECOMMENDATIONS FOR FUTURE JOBS

The Corehead design MCP 572 was the ideal primary corehead for this formation type with its uneven blade structure, 13mm cutters and parabolic profile. The corehead is a lighter set corehead ideal for cutting friable to medium formation and recovering high quality of core that is usable. The MCP572 preformed well in terms of the condition of the recovered core and there was limited wear downhole while coring. It is recommended for future operations to use the MCP572 as the primary corehead.

3.1 CORE HEAD DESIGN

The core head design MCP 572's cutting structure provided acceptable performance in terms of ROP in the sandstone even with the presence of more than expected claystone at an average of 6.7m Per Hour. The corehead suffered no additional wear after 42.5m.

3.2 CORING EQUIPMENT & PARAMETERS

We would continue running conventional catcher coring system as it is continuing to provide us with excellent results and is our recommendation for future jobs. In terms of the standard Aluminium Liner we would like to recommend that no changes be made to this system due to the excellent recovery.

While soft pro was not utilised on this job it would be still recommended to have as a contingency if a more friable or less competent formation is encountered while coring. This option can be assessed on a well by well basis with discussion between ADA, Origin and Corpro.

3.3 CORE BARREL LENGTH

We would advise to carry on utilizing the 30m coring assembly if sands are predicted, however if there is a higher chance of clays or more clays are encountered then lowering the barrel length to 24m could help in this application. Providing less vibration to be encountered by the bit and barrel a shorter length of barrel may significantly improve the opportunity to retrieve a higher length of core.

It may be advisable to add extra stabilisation above the coring BHA. The BHA currently runs HW Drill Pipe, DC's and Drilling Jars. It would well be advisable to run roller reamers at either 60-90foot above the coring BHA. The extra stabilisation may give more the coring system more WOB, reducing the torque fluctuations and string vibration on the core barrel. Therefore helping improve the penetration of the corehead when encountering claystone and hopefully improving the lengths of core being cut.

Roller reamers impede string vibrations and side forces to transfer to the core barrel. Overall, torque fluctuations are greatly reduced due to the roller reamer‘s stabilizing influence as reamers effectively behave as bearing within the lower portion of the drill string.

The resultant benefits is a reduction of nuisances such as vibrations, axial weight variations (WOB), and slip & stick phenomenon all this resulting in a smoother coring operation with far less incidence of core breakage and jamming. It is important to remind that any movement of the barrel is directly registered by the core and again the consequence is often core poor quality or jamming and loss of reservoir data

Below is an image of a roller reamer.

Due to the amount of breaks and friction inside the inner barrel, Corpro recommend that the use of the “On Ice” half-moon liners be applied in this application. Reducing the friction inside the inner barrel will allow the core to have a better chance of entering the inner barrel. The half-moon liners will enable the core to pass with less friction and hopefully helping extend the length of core cut.

“On Ice” is an innovative technology designed by Corpro to combat the serious problem of core barrel jamming.

Core Barrel jamming is a major cause of the early termination of a core run, which not only increases operations costs but can also compromise core quality.
Embarking on a comprehensive research program to achieve the lowest practicable coefficient of friction between the core & inner barrel, Corpro developed the breakthrough “On Ice” inner barrel system, built on the proven “HalfMoon™” platform.

"On Ice" uses a proprietary technology & is a major step towards significantly reducing the friction forces that inhibit smooth entry of core into the inner barrel.

Applications

The use of "On Ice" is invaluable in problematic & difficult applications, where the frequency of jamming is high & when the frictional forces result in excessive stresses that cause core damage. Typical applications include:

- Swelling clays combined with water-based mud system
- Highly deviated & horizontal coring
- Low mechanical strength formations
- Excessive build-up of mud filter cake
- Fractured formations

The common factor in each case is nominal increase in effective core diameter that results in additional contact between the core & the inner barrel. This contact results in an additional resistance to entry of the core into the inner barrel.

Once the formation has been found to have more than expected clays then running slightly higher flow rates in the clays could be worthwhile. Doing so may help the overall chances of a higher run length by increasing the performance of the cutters as it encounters the claystone. The flow rates of around 250 to 270gpm could be used at the start of the run, and if parameters start to show signs of the increased flow rates having little or no effect then these can be safely lowered back to the 220gpm range.

4.1 PRE-PLANNING

We would recommend for future wells that the same attention to detail is given to make sure any other operations have the same success. The addition of extra personnel on an operation of this size helped with the overall operation smoothness.

4.2 CORING OPERATION AND SAFETY

The coring operation was safely completed.

All coring and handling operations were successfully carried out according to a programme designed to minimize opportunities for core damage. Corpro included the addition of one extra core handler at the request of ADA for Rockhopper-1 and this helped minimize the amount of overtime individuals had to put in on this operation. In an operation of this size in the future it would while utilising this option again.

Thorough equipment checks were performed by our Senior Engineer and Corpro's technicians and all equipment required for the job was onboard at the start of the operation.

4.3 OVERALL PERFORMANCE

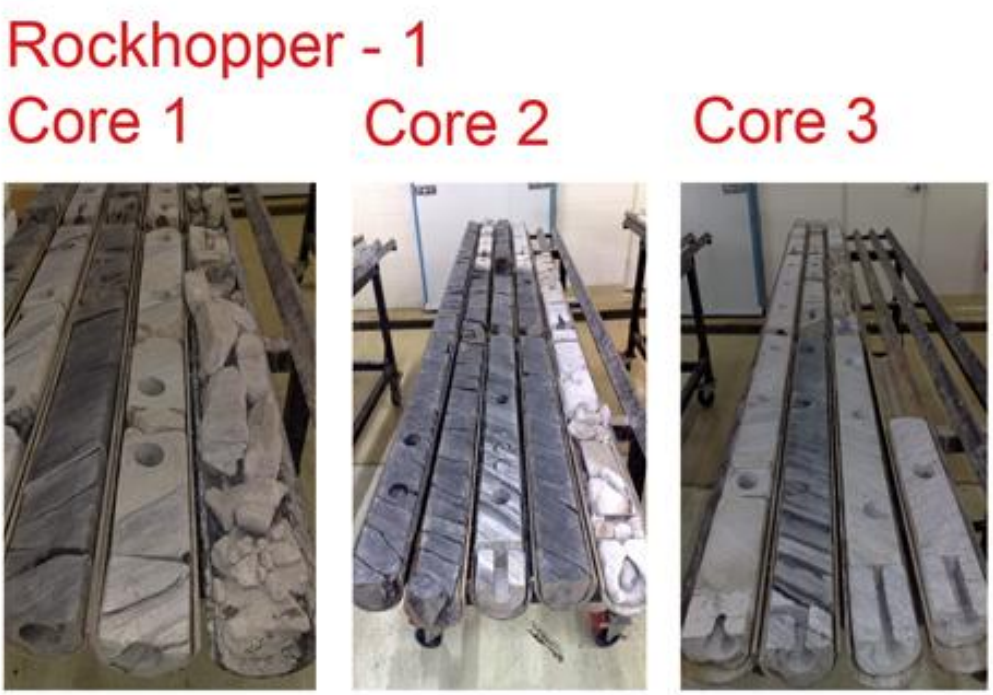
Ada's Rockhopper-1 performance could be summarised as follows:

Cored (m)	Rec. (m)	Coring Hrs	Recovery (%)
42.5	36.78	6.95	87

Table 2: Overall Performance

4.4 CORE QUALITY

A total of 42.5 metres of core was cut across the reservoir zone, recovering 36.78m at 87%, using a 30m core barrel assembly. There were no visible signs of detrimental core damage. Overall the coring operation was largely successful in terms of recovery of the core cut. Inserted below are the pictures. They show the core is in a relatively good condition, some of the core looks like it has not been placed back properly in the inner barrels after the core has been examined.



The corehead and stabilisation performed well delivering a usable core and the wear suffered was minimal. Virtually all coring handling operations were carried out safely according to the detailed coring programme. .

4.5 CORE PROCESSING

The core was laid down using lay down cradles, TSS lift subs and IT TSS Clamps holding the TSS in place. This operation was completed safely with Corpro's standard handling kit and well trained personnel on the Kan Tan 4.

4.6 CORE HEAD CONDITION AFTER 3 RUNS

Core 3

Corehead Condition	At Run Start	**New**								
	At Run End	**1**	**1**	**no**	**a**	**x**	**I**	**no**	**PR**	
Previous Footage	**32**	**m**	**Run Footage**		**10.5**	**m**	**Total Footage**		**42.5**	**m**

At the end of the 3 runs the corehead suffered no considerable wear to any of the cutters, ID/OD gauge profile, or throat area after operation. It is therefore recommended to use the MCP 572 as the primary corehead for future runs.

4.7 LESSONS LEARNED

There were no major lessons learned that could be improved for future operations in terms of core handling, processing and personnel. The job was successful and the experience of a qualified coring engineer meant that the operation was handled successfully in these aspects right from the start to finish.

5. CORE REPORTS

Core 1

Coring Data

Job # 47370

Well information	
Operator	ADA / ORIGIN
Contractor	MEARSK
Rig	Kan Tan IV
Well #	Rockhopper 1
Country	Australia
Area	Offshore

Core #	1	
Date	28/01/2010	
Well angle	33	
Stat. temp.	85	° C
Drive	Top Drive	
Torq off b	3	ft-lbf
Offbtm Press	620	psi

Core barrel	
Size	7 1/8x4
Length	30 m
Direct.Bar	Yes
TSS	4 3/4 x 4 1/8
IT Type	Alu
Vented IT	

Core head	
Type	MCP572
Size	8 1/2 x 4
S/N	083691
IADC	M233
TFA (sq in)	1.310
% Worn	

Mud properties		
Type	Water Base	
WT	9.35	ppg
PV	19	cP
YP	37	
GEL	10/14/17	
% sand	0.2	%
% Solid	3	%
Viscosity	19	cP

Corehead Condition	At Run Start	New						
	At Run End	as	new					
Previous Footage m	Run Footage	16.5 m		Total Footage	16.5 m			

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BHA	
1	Corehead
2	Core Barrel
3	6X DC 6 3/4
4	Drilling Jar
5	2x DC 6 3/4
6	15 x 5"HWDP
7	
8	
9	
10	

Background Parameters								
String Weight	lb	Torque OffBottom			Bottom Pressure			Ball Valve Information		
⇧	400	60	rpm	640 ft-lbf	Flow Rate	220 gpm		Flow Rate	300	gpm
↷	390	80	rpm	65 ft-lbf	On Bottom	670 psi		SPP Ref 1	670	psi
⇩	380	100	rpm	620 ft-lbf	Off Bottom	620 psi		SPP Ref 2	830	psi
								Pres. Incr.	160	psi
								Time	15	Min

Overpull Connection	1	2	3	4	5	6	7
lb	0						

Starting Date : 28/01/2010

Timing

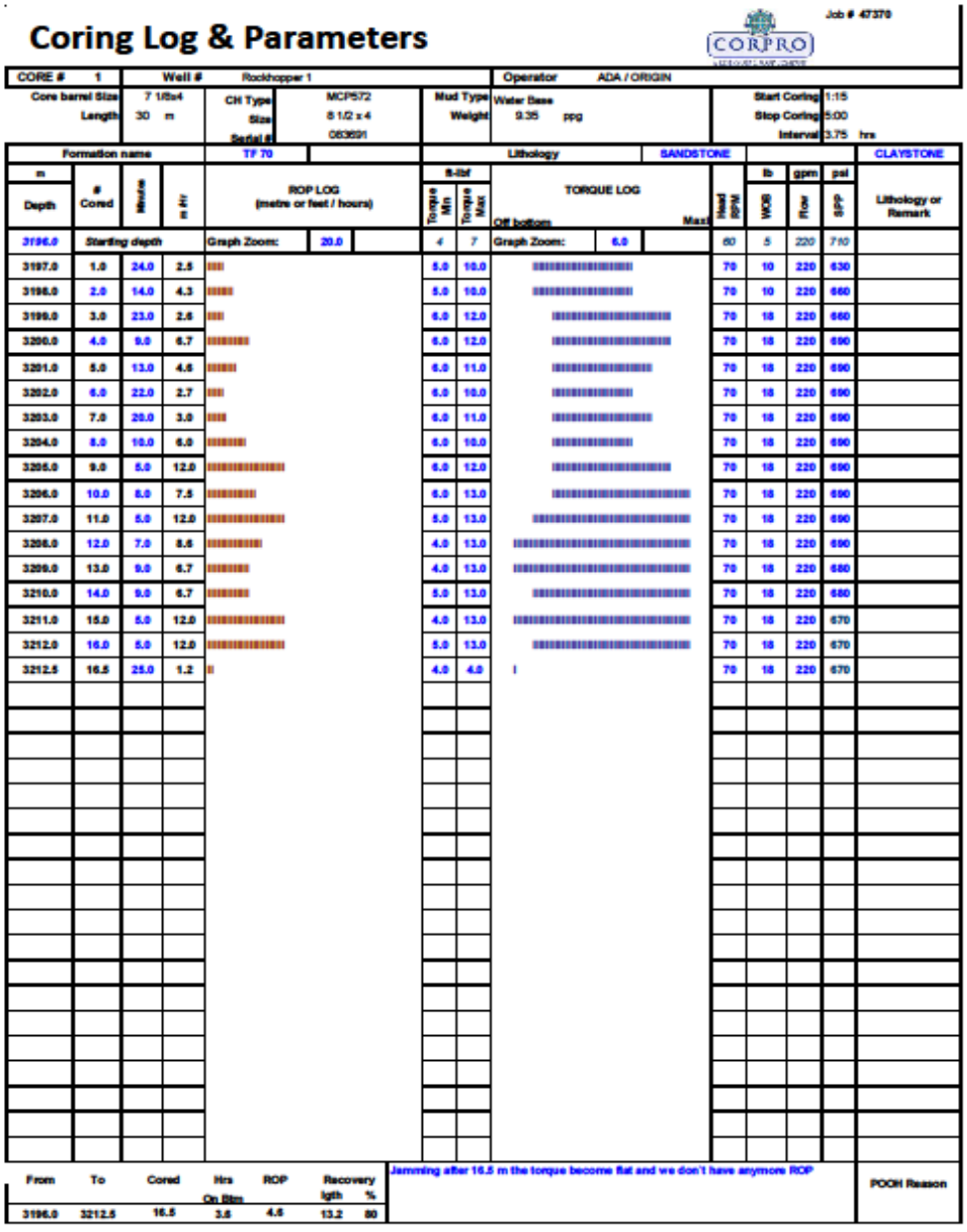
Pickup Barrel			Start in Hole			Coring			POOH			Core Rec./LD Brl		
Start	1:00		Start	4:00		Start	1:15		Start	5:30		Start	5:00	
Stop	3:45		Stop	12:15		Stop	5:00		Stop	5:00		Stop	7:00	
Interval	2.75	hrs	Interval	8.25	hrs	Interval	3.75	hrs	Interval	23.50	hrs	Interval	2.00	hrs

Performance							
Depth In	Depth Out	Cored m	Rec. m	Rec. %	Eff. %	Hours hrs	ROP m/hrs
3196.0	3212.5	16.5	13.20	80%	55%	3.5	4.8

Customer	Compro
Bryan HOUSTON	Christian CABANNE

ADA Client

Core 1 Coring Log & Parameters



Coring Log & Parameters

Job # 47370

| | | |

Core 2

Coring Data

Job # 47370

Well information	
Operator	ADA / ORIGIN
Contractor	MEARSK
Rig	Kan Tan IV
Well #	Rockhopper 1
Country	Australia
Area	Offshore

Core #	2
Date	31/01/2010
Well angle	33
Stat. temp.	85 °C
Drive	Top Drive
Torq off b	4 ft-lbf
OffBTM Press	650 psi

Core barrel	
Size	7 1/8x4
Length	30 m
Direct.Bar	Yes
TSS	4 3/4 x 4 1/8
IT Type	Alu
Vented IT	

Core head	
Type	MCP572
Size	8 1/2 x 4
S/N	083691
IADC	M233
TFA (sq in)	1.310
% Worn	

Mud properties		
Type	Water Base	
WT	9.35	ppg
PV	19	cP
YP	37	
GEL	10/14/17	
% sand	0.2	%
% Solid	3	%
Viscosity	19	cP

Corehead Condition									
	At Run Start	New							
	At Run End	asnew							

Previous Footage	16.5 m	Run Footage	15.5 m	Total Footage	32 m

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BHA	
1	Corehead
2	Core Barrel
3	6X DC 6 3/4
4	Drilling Jar
5	2x DC 6 3/4
6	15 x 5"HWDP
7	
8	
9	
10	

Background Parameters

String Weight	lb
⇧	415
⇜	400
⇩	390

Torque OffBottom			
60	rpm	5	ft-lbf
80	rpm	6	ft-lbf
100	rpm	6	ft-lbf

Bottom Pressure		
Flow Rate	220	gpm
On Bottom	700	psi
Off Bottom	650	psi

Ball Valve Information		
Flow Rate	350	gpm
SPP Ref 1	930	psi
SPP Ref 2	1,020	psi
Pres. Incr.	90	psi
Time	13	Min

Overpull Connection	1	2	3	4	5	6	7
lb	0						

Starting Date : 31/01/2010

Timing

Pickup Barrel		
Start	19:45	
Stop	20:45	
Interval	1.00	hrs

Start in Hole		
Start	21:00	
Stop	5:00	
Interval	8.00	hrs

Coring		
Start	5:45	
Stop	8:00	
Interval	2.25	hrs

POOH		
Start	8:30	
Stop	23:00	
Interval	14.50	hrs

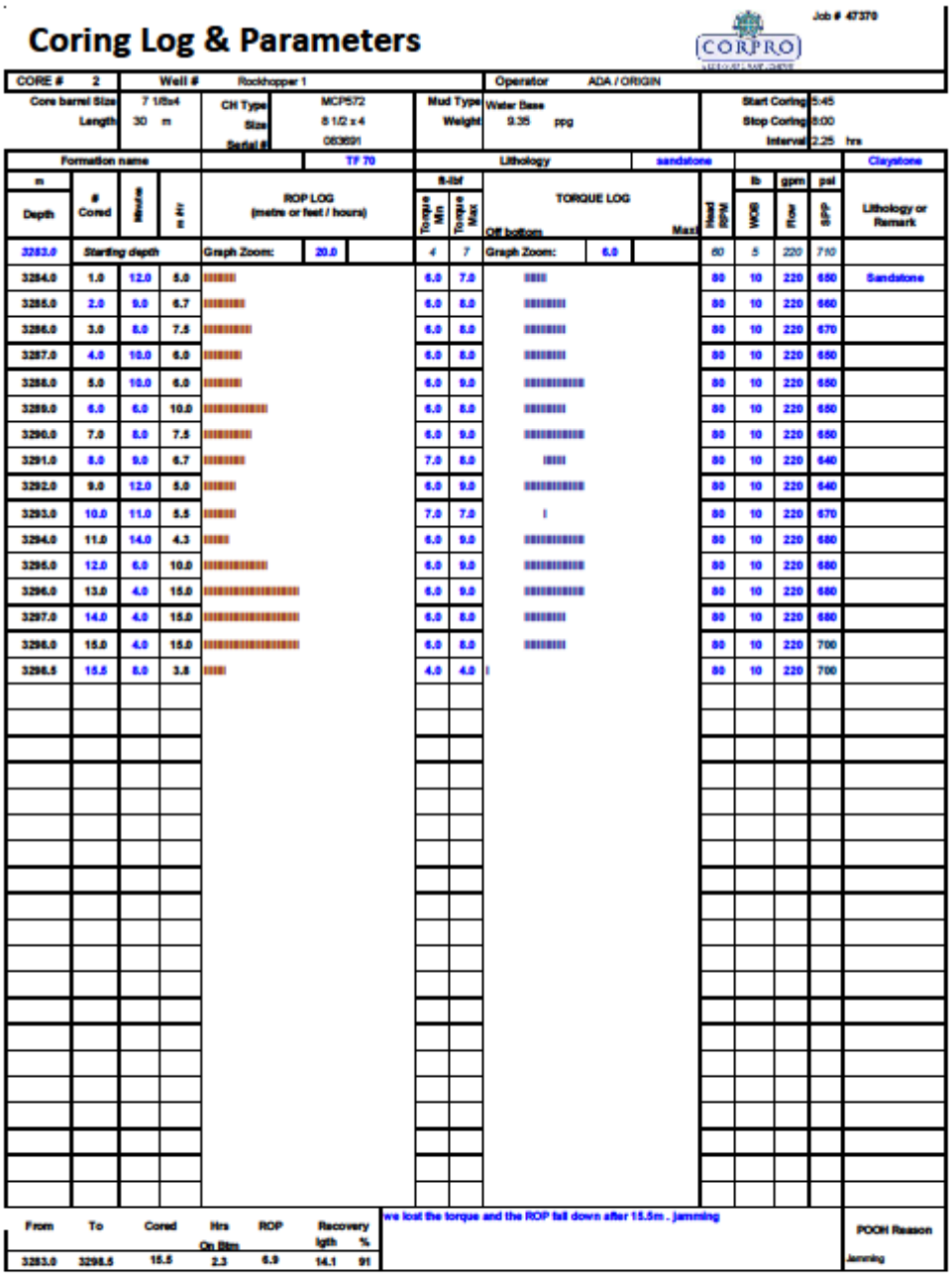
Core Rec./LD Brl		
Start	23:00	
Stop	1:00	
Interval	2.00	hrs

Performance							
Depth In	Depth Out	Cored m	Rec. m	Rec. %	Eff. %	Hours hrs	ROP m/hrs
3283.0	3298.5	15.5	14.08	91%	52%	2.3	6.9

Customer	Corpro
Bryan HOUSTON	Christian.CABANNE

ADA Client

Core 2 Coring Log & Parameters



Coring Log & Parameters

Job # 47370

CORE #	2	Well #	Rockhopper 1		Operator	ADA / ORIGIN	
Core barrel Size	7 1/8in4	CH Type	MCP572	Mud Type	Water Base	Start Coring	5:45
Length	30 m	Size	8 1/2 x 4	Weight	9.35 ppg	Stop Coring	8:00
		Serial #	083691			Interval	2.25 hrs

Formation name				TF 70		Lithology	sandstone					Claystone
m					ft-lbf				lb	gpm	psi	
Depth	# Cored	Minutes	m /Hr	ROP LOG (metre or feet / hours)	Torque Min	Torque Max	TORQUE LOG Off bottom / Max	Head RPM	WOB	Flow	SPP	Lithology or Remark
3283.0	Starting depth			Graph Zoom: 20.0	4	7	Graph Zoom: 6.0	60	5	220	710	
3284.0	1.0	12.0	5.0		6.0	7.0		80	10	220	650	Sandstone
3285.0	2.0	9.0	6.7		6.0	8.0		80	10	220	660	
3286.0	3.0	8.0	7.5		6.0	8.0		80	10	220	670	
3287.0	4.0	10.0	6.0		6.0	8.0		80	10	220	650	
3288.0	5.0	10.0	6.0		6.0	9.0		80	10	220	650	
3289.0	6.0	6.0	10.0		6.0	8.0		80	10	220	650	
3290.0	7.0	8.0	7.5		6.0	9.0		80	10	220	650	
3291.0	8.0	9.0	6.7		7.0	8.0		80	10	220	640	
3292.0	9.0	12.0	5.0		6.0	9.0		80	10	220	640	
3293.0	10.0	11.0	5.5		7.0	7.0		80	10	220	670	
3294.0	11.0	14.0	4.3		6.0	9.0		80	10	220	680	
3295.0	12.0	6.0	10.0		6.0	9.0		80	10	220	680	
3296.0	13.0	4.0	15.0		6.0	9.0		80	10	220	680	
3297.0	14.0	4.0	15.0		6.0	8.0		80	10	220	680	
3298.0	15.0	4.0	15.0		6.0	8.0		80	10	220	700	
3298.5	15.5	8.0	3.8		4.0	4.0		80	10	220	700	

From	To	Cored	Hrs On Btm	ROP	Recovery lgth	Recovery %	we lost the torque and the ROP fall down after 15.5m . jamming	POOH Reason
3283.0	3298.5	15.5	2.3	6.9	14.1	91		Jamming

ADA Clerk

Core 3

Coring Data

Job # 47370

Well information	
Operator	ADA / ORIGIN
Contractor	MEARSK
Rig	Kan Tan IV
Well #	Rockhopper 1
Country	Australia
Area	Offshore

Core #	3	
Date	1/02/2010	
Well angle	33	
Stat. temp.	85	° C
Drive	Top Drive	
Torq off b	4	ft-lbf
Off Btm Press	740	psi

Core barrel	
Size	7 1/8x4
Length	30 m
Direct.Bar	Yes
TSS	4 3/4 x 4 1/8
IT Type	Alu
Vented IT	

Core head	
Type	MCP572
Size	8 1/2 x 4
S/N	083691
IADC	M233
TFA (sq in)	1.310
% Worn	

Mud properties	
Type	Water Base
WT	9.35 ppg
PV	19 cP
YP	37
GEL	10/14/17
% sand	0.2 %
% Solid	3 %
Viscosity	19 cP

Corehead Condition									
At Run Start	New								
At Run End	1	1	no	a	x	I	no	PR	

Previous Footage	32 m	Run Footage	10.5 m	Total Footage	42.5 m

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BHA	
1	Corehead
2	Core Barrel
3	6X DC 6 3/4
4	Drilling Jar
5	2x DC 6 3/4
6	15 x 5"HWDP
7	
8	
9	
10	

Background Parameters									
String Weight	lb	Torque OffBottom			Bottom Pressure			Ball Valve Information		
⇧	406	60	rpm	6 ft-lbf	Flow Rate	220	gpm	Flow Rate	350	gpm
↷	380	80	rpm	7 ft-lbf	On Bottom	760	psi	SPP Ref 1	920	psi
⇩	385	100	rpm	8 ft-lbf	Off Bottom	740	psi	SPP Ref 2	1,040	psi
								Pres. Incr.	120	psi
								Time	20	Min

Overpull Connection	1	2	3	4	5	6	7
lb	0						

Starting Date : 1/02/2010

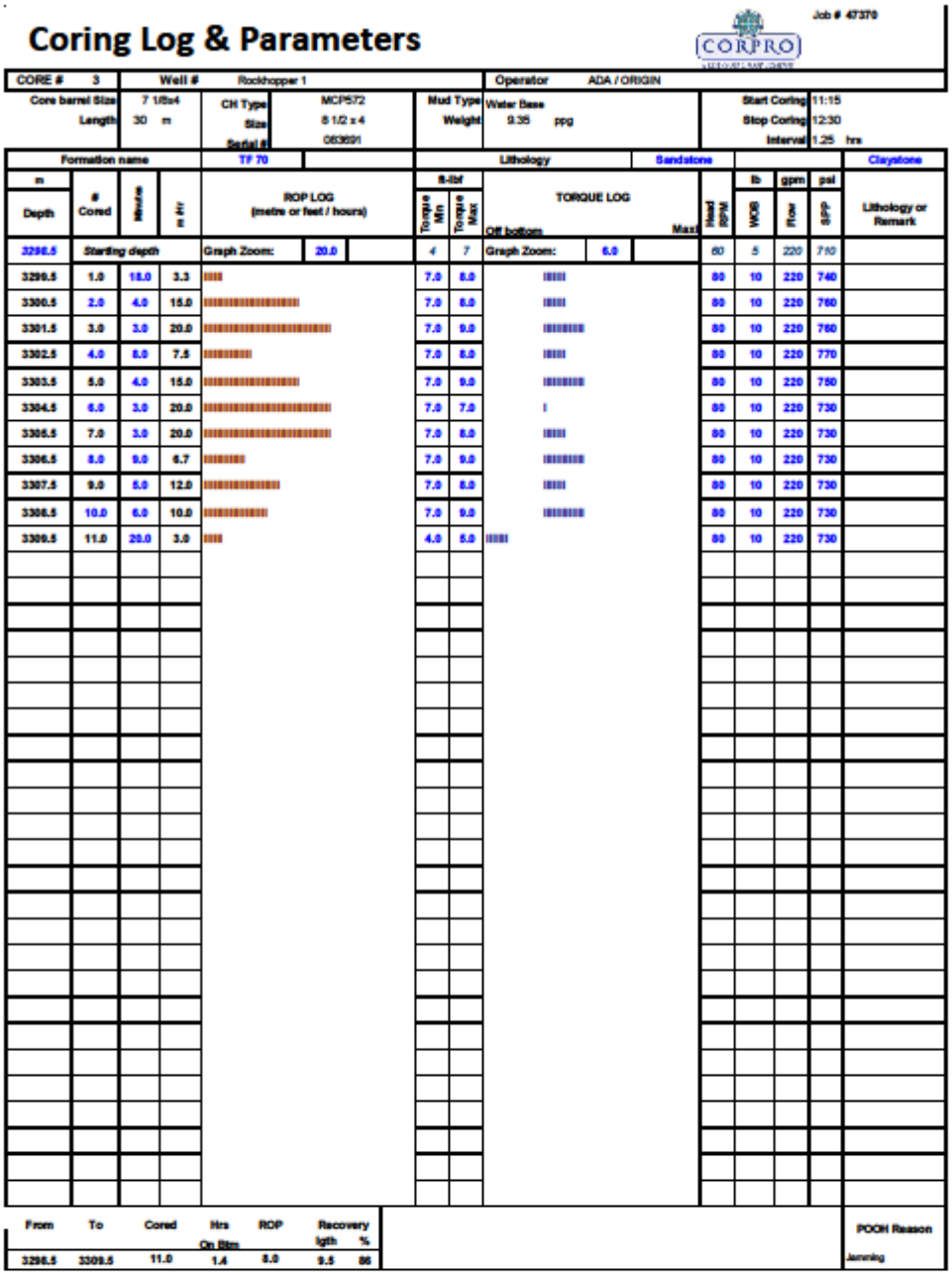
Timing

Pickup Barrel			Start in Hole			Coring			POOH			Core Rec./LD Brl		
Start	23:00		Start	1:00		Start	11:15		Start	13:00		Start	2:30	
Stop	1:00		Stop	10:00		Stop	12:30		Stop	2:00		Stop	5:00	
Interval	2.00	hrs	Interval	9.00	hrs	Interval	1.25	hrs	Interval	13.00	hrs	Interval	2.50	hrs

Performance								Customer	Corpro
Depth In	Depth Out	Cored m	Rec. m	Rec. %	Eff. %	Hours hrs	ROP m/hrs	Bryan HOUSTON	Christian CABANNE
3298.5	3309.0	10.5	9.50	90%	35%	1.3	8.4		

ADA Client

Core 3 Coring Log & Parameters



Coring Log & Parameters

Job # 47370

CORE #	3	Well #	Rockhopper 1	Operator	ADA / ORIGIN		
Core barrel Size	7 1/8x4	CH Type	MCP572	Mud Type	Water Base	Start Coring	11:15
Length	30 m	Size	6 1/2 x 4	Weight	9.35 ppg	Stop Coring	12:30
		Serial #	063691			Interval	1.25 hrs

Formation name				TF 70			Lithology	Sandstone						Claystone
m					ft-lbf					lb	gpm	psi		
Depth	# Cored	Meters	m /Hr	ROP LOG (metre or feet / hours)	Torque Min	Torque Max	TORQUE LOG Off bottom / Max	Head RPM	WOB	Flow	SPP	Lithology or Remark
3296.5	Starting depth			Graph Zoom: 20.0	4	7	Graph Zoom: 6.0	60	5	220	710	
3296.5	1.0	18.0	3.3		7.0	8.0		80	10	220	740	
3300.5	2.0	4.0	15.0		7.0	8.0		80	10	220	760	
3301.5	3.0	3.0	20.0		7.0	9.0		80	10	220	760	
3302.5	4.0	8.0	7.5		7.0	8.0		80	10	220	770	
3303.5	5.0	4.0	15.0		7.0	9.0		80	10	220	750	
3304.5	6.0	3.0	20.0		7.0	7.0		80	10	220	730	
3305.5	7.0	3.0	20.0		7.0	8.0		80	10	220	730	
3306.5	8.0	9.0	6.7		7.0	9.0		80	10	220	730	
3307.5	9.0	5.0	12.0		7.0	8.0		80	10	220	730	
3308.5	10.0	6.0	10.0		7.0	9.0		80	10	220	730	
3309.5	11.0	20.0	3.0		4.0	8.0		80	10	220	730	

From	To	Cored	Hrs On Btm	ROP	Recovery lgth	Recovery %	POOH Reason
3296.5	3309.5	11.0	1.4	8.0	9.5	86	Jamming

ADA Client

Coring Summary

Coring Summary

Operator	ADA / ORIGIN
Contractor	MEARSK
Rig	Kan Tan IV
Well	Rookhopper 1
Country	Australia
Area	Offshore

Hole size	8 1/2	
Casing dia	9"5/8	
Shoe depth	1965	m
Well angle	33	
Mud type	Water Base	
Mud WT	9.35	ppg

Total Cut	42.6	m
Total Recovered	38.8	m
Overall % Recovered	87	
Total Hours	7.0	
Overall ROP	6.1	

Job # 47370

Service eng. names	
Cabanne,Christian Ant	Stephens,Ashley
Ward,Elton	
Start Date / Finish Date	

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Core#	Corehead		Corebarrel				Core							
	SN	Type	Size	Lgth	TSS	IT type	Depth In	Cut lgth	Rec. lgth	%	Hrs	Rop	Lithology	Formation
1	083891	MCP572	7 1/8x4	30	NO	Alu	3196.0	16.5	13.2	80	3.5	4.8	SANDSTONE, CLAYSTONE	TF 70
2	083891	MCP572	7 1/8x4	30	NO	Alu	3283.0	16.5	14.08	91	2.3	6.9	sandstone, Claystone	TF 70
3	083891	MCP572	7 1/8x4	30	NO	Alu	3298.5	10.5	8.5	90	1.3	8.4	Sandstone, Claystone	TF 70
4														
5														
6														
7														
8														
9														
10														
11														
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30														

Remarks:

Customer	Corpro

6. CORE HEAD SPECIFICATION

- **MCP 572**

CORPRO

Technical Data Sheet

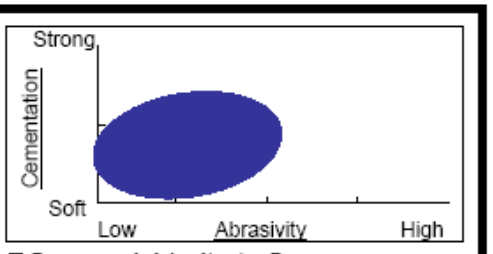
MCP 572

PART No CR007

Specifications

8 1/2" x 4" - MCP 572

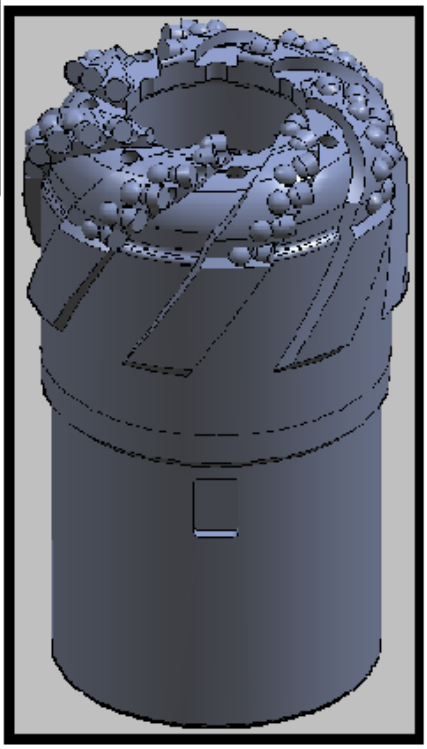
Cutter Type		PDC	
Primary Cutter Size		1/2	in.
Cutters	1/2 in.	38	
	3/8 in.	2	
Body Type		Matrix	
Profile		Short Parabolic	
Number of Blades		7	
Throat Discharge Ports		7	
IADC Code		M233	
Gauge Length	OD	2.6	in.
	ID	2/5	in.
TFA	Ports	1.07	sq. in.
	Inner Gauge	0.24	sq. in.
Junk Slot Area		5.3	sq. in.



Recommended Application Range

		Operating Range Min	Operating Range Max	To Motor Speed
Flow Rate	*gpm*	90	350	
Rotation	*rpm*	60	250	> 250
WOB	*klbs*	5	35	

Recommended Operative Parameters



- **30 m Core Barrel Assembly**

Core Barrel Assembly - 30 m Core

32.19 m
TOTAL LENGTH

Corebarrel Size 7 1/8x4

DATA			
	Hole Size	in	8 1/2
	Core Size	in	4

Job # 47370

OUTER BARREL			
	OD x ID	in	7 1/4 x 6 5/8
	Stabiliser Diameter	in	8 16/32 x 6 5/8
	Fishing Neck Length	in	11 1/2
	Outer Head Top Connection		4 1/2 IF
	Overpull	Klbf	880
	Make-up Torque	ft-lbf	26000
	Maximum Torque		
	Ball Size(larger one used)	in	1 1/4

COREHEAD			
	Type	MCP672	
	Size	in	8 1/2 x 4
	Serial Number	083691	
	IADC / TFA	M233	1.31 in²
	Make-up Torque	ft-lbf	20000

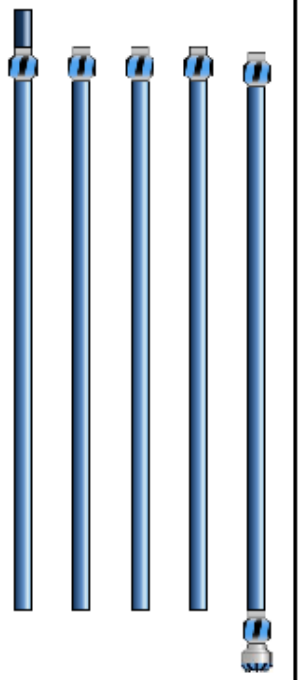
INNER BARREL			
	Inner Tube Type	Alu	
	OD x ID	in	5 x 4 1/2

RANGE			
	Weight On Bit Max	lb	26000
	Flow Rate Max	gpm	360
	Rotary Speed Max	RPM	100

Data	
Date :	28/01/2010
Operator:	ADA / ORIGIN
Country:	Australia
Well :	Rockhopper 1
Rig :	Kan Tan IV
Core# :	1
Run# :	

Additional ...	
Circulating Sub	N
Orientated	
Jar Serial #	N

Recommendation



Coring Bottom Hole Assembly

#	Description	Length	S/N	#	Description	Length	S/N
1	Top Head	0.61 m	W0186027				
2	Stabiliser	0.78 m	W1476014				
3	Outer Barrel	5.33 m	W0135110				
4	Stabiliser	0.78 m	W0137218				
5	Outer Barrel	5.33 m	W01356088				
6	Stabiliser	0.78 m	W0137318				
7	Outer Barrel	5.33 m	W0135184				
8	Stabiliser	0.78 m	W0137016				
9	Outer Barrel	5.33 m	W0135268				
10	Stabiliser	0.78 m	W0131372237				
11	Outer Barrel	5.33 m	W0135268				
12	Stabiliser	0.78 m	W0137268				
13	Corehead	0.37 m	083691				

Complete BHA

Description	Length
15 x 5" HWDP	
2x DC 6 3/4	
Drilling Jar	
6X DC 6 3/4	
Core Barrel	31.82 m
Corehead	0.37 m

ADA Client

APPENDIX 3: CONVENTIONAL CORE CHIP DESCRIPTIONS

Core #1: EVCM RL40-RL50 sands
Depth Interval Cored: 3196.0 – 3212.5 mMDRT
Cut: 16.5 m
Recovered: 13.2 m (80%)

Depth (mMDRT)	Description
3196.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks.
3196.54	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, trace large platy mica grains.
3197.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large platy mica grains on fracture planes.
3198.00	Interbedded SILTY CLAYSTONE and ARGILLACEOUS SANDSTONE. SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large platy mica grains on fracture planes. ARGILLACEOUS SANDSTONE: light olive grey, brownish grey, yellowish grey, very firm to hard, friable in part, laminated with claystone in part, very fine to granular, predominantly coarse-grained, very poorly sorted, common light brown argillaceous matrix, common quartz overgrowths and mica flakes, trace pyrite, poor visual porosity, no hydrocarbon fluorescence, no hydrocarbon odour, weak mineral fluorescence only.
3199.00	ARGILLACEOUS SANDSTONE: white to light yellowish grey with black specks, very firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace dark brown/black mica specks, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3200.00	LITHIC SANDSTONE: medium grey to dark olive grey, very firm to hard, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, trace argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, abundant dark brown/black/silvery grey mica specks (muscovite and biotite), poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3201.00	ARGILLACEOUS SILTSTONE: dark grey to olive black, blocky to sub-fissile, very firm to hard, abundant dark grey argillaceous matrix, common dark grey to black mica flakes, trace medium to coarse sand grains, very poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3202.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large dark grey-black platy mica grains on fracture planes.

3202.63	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common dark grey-black platy mica grains on fracture planes.
3203.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large dark grey-black platy mica grains on fracture planes.
3204.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large dark grey-black platy mica grains on fracture planes.
3205.00	LITHIC SANDSTONE: white to medium grey, firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, trace argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, abundant dark brown/black/silvery grey mica specks (muscovite and biotite) on some surfaces, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3206.00	LITHIC SANDSTONE: white to medium grey, firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, common dark brown/black/silvery grey mica specks (muscovite and biotite), poor inferred porosity, no hydrocarbon fluorescence, abundant bright white-yellow mineral fluorescence from quartz overgrowths and mica(?), no cut obtained.
3207.00	ARGILLACEOUS SANDSTONE: white to light yellowish grey with black specks, very firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace dark brown/black mica specks, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3208.00	ARGILLACEOUS SANDSTONE: white to light yellowish grey, very firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, common brown/black mica crystals, poor-fair inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3209.00	ARGILLACEOUS SANDSTONE: white to light yellowish grey, very firm to friable, 40% very fine, 50% fine, 10% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, common brown/black mica crystals, poor-fair inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.

3209.38	Interbedded SILTY CLAYSTONE and ARGILLACEOUS SANDSTONE. SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large platy mica grains on fracture planes. ARGILLACEOUS SANDSTONE: white, light olive grey, brownish grey, yellowish grey, very firm to hard, laminated with claystone, very fine to medium, predominantly fine-grained, poorly sorted, common argillaceous matrix, common quartz overgrowths and mica flakes, trace pyrite, poor visual porosity, no hydrocarbon fluorescence, no hydrocarbon odour, weak mineral fluorescence only.

Core #2: EVCM RL90-RL100 sands
Depth Interval Cored: 3283.0 – 3298.5 mMDRT
Cut: 15.5 m
Recovered: 14.08 m (91%)

Depth (mMDRT)	Description
3283.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3284.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3284.20	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3285.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3286.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3287.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black micromica flakes on fractured surfaces, trace pyrite.
3288.00	SANDSTONE: medium grey to dark olive grey, firm to moderately hard, occasionally friable, 20% very fine, 20% fine, 40% medium, 10% coarse, 10% very coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, abundant dark brown/black/silvery grey mica specks (muscovite and biotite), poor inferred porosity, no cut fluorescence, dull yellow mineral fluorescence, no hydrocarbon odour.
3289.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black and silvery grey mica flakes on fractured surfaces, trace pyrite.
3290.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 30% silt, non-calcareous, trace carbonaceous specks, common black and silvery grey mica flakes on fractured surfaces, trace pyrite, grading to micaceous siltstone in part.

3290.30	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 30% silt, non-calcareous, trace carbonaceous specks, common black mica flakes on fractured surfaces, trace pyrite, very silty in part grading to micaceous siltstone.
3291.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black mica flakes on fractured surfaces, trace pyrite.
3292.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black mica flakes on fractured surfaces, trace pyrite.
3293.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black mica flakes on fractured surfaces, trace pyrite.
3294.00	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 20% very fine, 40% fine, 30% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, common pinpoint bright yellow mineral fluorescence from quartz/clay matrix, no hydrocarbon odour.
3295.00	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 20% very fine, 40% fine, 30% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, dull yellow mineral fluorescence, no hydrocarbon odour.
3296.00	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 20% very fine, 20% fine, 40% medium, 20% coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, dull yellow mineral fluorescence, no hydrocarbon odour.
3296.61	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 10% very fine, 20% fine, 40% medium, 20% coarse, 10% very coarse grains, very poorly sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, no mineral fluorescence, no hydrocarbon odour.
3297.08	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 20% very fine, 40% fine, 30% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, no mineral fluorescence, no hydrocarbon odour.

Core #3: EVCM RL100-RL110 sands
Depth Interval Cored: 3298.5 – 3309.0 mMDRT
Cut: 10.5 m
Recovered: 9.5 m (90%)

Depth	Description

(mMDRT)	
3298.50	SANDSTONE: white to light yellowish grey, rarely light olive grey, firm to moderately hard, 20% very fine, 40% fine, 30% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace angular black grains, trace silvery mica flakes, poor inferred porosity, no cut fluorescence, dull yellow mineral fluorescence, no hydrocarbon odour.
3299.50	SANDSTONE: white to light yellowish grey, firm to moderately hard, 10% very fine, 40% fine, 40% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace angular black grains, trace silvery mica flakes, poor inferred porosity, no cut fluorescence, dull yellow mineral fluorescence, no hydrocarbon odour.
3300.50	SANDSTONE: white to light yellowish grey, firm to moderately hard, 10% very fine, 40% fine, 40% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace angular black grains, trace silvery mica flakes, trace pyrite, poor inferred porosity, no cut fluorescence, dull yellow mineral fluorescence, no hydrocarbon odour.
3301.36	SANDSTONE interbedded with SILTY CLAYSTONE SANDSTONE: white to light yellowish grey, firm to moderately hard, 10% very fine, 40% fine, 40% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace angular black grains, trace silvery mica flakes, trace pyrite, poor inferred porosity, no cut fluorescence, common uniform dull yellow mineral fluorescence, no hydrocarbon odour. SILTY CLAYSTONE: medium dark grey to dark grey, firm to moderately hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black mica flakes on fractured surfaces, trace pyrite.
3301.50	SANDSTONE: white to light yellowish grey, very firm to hard, 40% fine, 50% medium, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace angular black grains, common silvery mica flakes, trace pyrite, poor inferred porosity, no cut fluorescence, uniform dull yellow mineral fluorescence, no hydrocarbon odour.
3302.50	ARGILLACEOUS SILTSTONE: greyish black to olive black, hard to very hard, angular to sub-fissile, 30% clay, common black and silver mica flakes in laminations, common carbonaceous specks and laminae, trace coarse quartz grains floating in matrix and localised in patches, no hydrocarbon fluorescence.
3303.50	SANDSTONE: white to light yellowish grey, firm to friable, 30% fine, 50% medium, 10% coarse, 10% very coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongated to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace angular black grains, trace silvery mica flakes, trace pyrite, fair inferred porosity, no cut fluorescence, patchy dull yellow to white mineral fluorescence, no hydrocarbon odour.
3304.50	SANDSTONE: white to light yellowish grey, firm to friable, 30% fine, 30% medium, 30% coarse, 10% very coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace angular black grains, trace silvery mica flakes, trace pyrite, fair inferred porosity, no cut fluorescence, patchy dull yellow mineral fluorescence, no hydrocarbon odour.
3305.50	SANDSTONE: white to light yellowish grey, firm to friable, 30% fine, 50% medium, 10% coarse, 10% very coarse grains, very poorly sorted, sub-angular to sub-

	rounded, sub-elongated to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace angular black grains, trace silvery mica flakes, trace pyrite, fair inferred porosity, no cut fluorescence, patchy dull yellow mineral fluorescence, no hydrocarbon odour.
3306.50	SANDSTONE: white to light yellowish grey and olive grey, moderately hard to hard, 30% fine, 50% medium, 10% coarse, 10% very coarse grains, trace granules, very poorly sorted, sub-angular to sub-rounded, sub-elongated to sub-spherical grains, 20% white-brown non-calcareous argillaceous matrix and abundant quartz overgrowths cementing rock, trace angular black grains, trace silvery mica flakes, trace pyrite, poor inferred porosity, no cut fluorescence, patchy dull yellow mineral fluorescence, no hydrocarbon odour.
3307.34	SANDSTONE: white to light yellowish grey and olive grey, moderately hard to friable, 30% fine, 50% medium, 10% coarse, 10% very coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongated to sub-spherical grains, 10% white non-calcareous argillaceous matrix and abundant white quartz overgrowths cementing rock, trace angular black grains, trace silvery mica flakes, trace pyrite, poor inferred porosity, no cut fluorescence, patchy dull yellow-white mineral fluorescence, no hydrocarbon odour.
3307.50	SANDSTONE: white to light yellowish grey, moderately hard to friable, 30% fine, 50% medium, 10% coarse, 10% very coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongated to sub-spherical grains, 10% white non-calcareous argillaceous matrix, abundant white quartz overgrowths cementing rock, trace angular black grains, trace silvery mica flakes, trace pyrite, poor inferred porosity, no cut fluorescence, patchy dull yellow-white mineral fluorescence, no hydrocarbon odour.
3308.00	SANDSTONE: white to light yellowish grey, moderately hard to friable, 30% fine, 50% medium, 10% coarse, 10% very coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongated to sub-spherical grains, 10% white-brown non-calcareous argillaceous matrix, abundant white quartz overgrowths cementing rock, trace angular black grains, trace silvery mica flakes, trace pyrite, poor inferred porosity, no cut fluorescence, patchy dull yellow-white mineral fluorescence, no hydrocarbon odour.

APPENDIX 4: COVENTIONAL CORE RCA & PHOTOGRAPHS

Weatherford®
LABORATORIES

ROUTINE CORE ANALYSIS FINAL REPORT

of

ROCKHOPPER-1 ST-1

for

ORIGIN ENERGY RESOURCES LIMITED

by

WEATHERFORD LABORATORIES (AUSTRALIA) PTY LTD

Weatherford
LABORATORIES

23rd April, 2010

Origin Energy Resources Limited
135 Coronation Drive
MILTON QLD 4064

Attention: Deidre Brooks
Ted Surka

FINAL REPORT: 0472-02

CLIENT REFERENCE: Purchase Order # 16023588

MATERIAL: 4" Whole Core

LOCALITY: Rockhopper-1 ST-1

WORK REQUIRED: Routine Core Analysis

Please direct technical inquiries regarding this work to the signatory below under whose supervision the work was carried out.

KEVIN H FLYNN
General Manager
SCAL Technical Director

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CHAPTER 1

INTRODUCTION

1. INTRODUCTION

The following final report presents the details of a routine core analysis study performed by Weatherford Laboratories' Brisbane facility on behalf of Origin Energy Resources Limited.

The Rockhopper-1 ST-1 core was received at Weatherford Laboratories' Brisbane facility on 5th February 2010.

A routine core analysis study, including sample preparation was undertaken as per instructions received from Origin Energy Resources Limited.

The study included the following analyses:

- Core processing and sample preparation
- Continuous Spectral Core Gamma
- Ambient porosity, permeability & grain density
- Residual Fluid Saturation
- Probe Permeability
- Core Photography

The following report details the methods and procedures utilised in these analyses. Results are presented in both tabular and graphical formats.

CHAPTER 2

STUDY AIMS

2. STUDY AIMS

The analyses were performed with the following aims:

1. To provide depth correlation through the provision of a continuous spectral core gamma log over the cored interval.

2. To provide permeability, helium injection porosity and density data.

3. To provide a permanent record of the core through provision of 5 metre format core photography.

4. To provide a detailed permeability profile across core.

5. To measure pore fluid saturation on fresh state core plug samples.

CHAPTER 3

SAMPLING

3. SAMPLING

3.1 Routine Core Analysis Samples

Eighty seven (87) 1½" diameter horizontal plug samples were cut at 30 cm intervals throughout the sand sections of the core, using brine as the bit lubricant. Twenty eight (28) vertical core samples were drilled at 1 metre intervals. All plugs were trimmed to right cylinders. All off-cuts were labelled and bagged for possible future analysis.

Due to sample friability it was deemed necessary to place selected samples into lead sleeve to preserve sample integrity. A set of stainless steel mesh screens were placed at each end of the sample and a 2 mm fold of lead sleeve used to hold them in place. Samples were then compressed in a Hassler cell at 300 psi to allow the lead to conform to the sample surface.

3.2 Core Slabbing

Upon completion of the sampling, the core was slabbed longitudinally into three sections (1/3: 1/3: 1/3) using brine as the blade cooling and lubricating medium. At the time of writing this report we are still pending instructions to perform the final core slabbing.

CHAPTER 4

SAMPLE PREPARATION

4. SAMPLE PREPARATION

4.1 Soxhlet Cleaning

The samples were initially dried under humid conditions at 60°C for two hours to remove the majority of the water, aiding the efficiency of the extraction process. All samples were cleaned in a modified soxhlet system to remove the pore fluids. The solvent used was a 3:1 chloroform methanol azeotropic mixture. Cleaning continued until tests for oil (fluorescence under UV light) and salt (silver nitrate precipitation) showed negative.

4.2 Humidity Drying

After extraction, the samples were dried to constant weight in a humidity oven at 60°C and 40% relative humidity. Once dry, they were stored in an airtight container and allowed to cool to room temperature.

CHAPTER 5

TEST PROCEDURES

5. TEST PROCEDURES

5.1 Continuous Core Gamma

The core was laid out according to depth markings and analysed using gamma-ray spectrometry to measure potassium (K), gamma-equivalent uranium (eU) and gamma-equivalent thorium (eTh). The terms eU and eTh stand for 'gamma-equivalent' U and Th respectively and indicate that measurements are made of the gamma-ray emitting daughters of these two isotopes. The gamma-ray energy spectrum of each sample is measured with a 100 x 100 NaI (T1) detector housed in a lead shield. Measurements were made with the core on a conventional conveyor belt at much lower speeds than total gamma to ensure full detection of the spectrum.

5.2 Dean-Stark Residual Fluid Saturation

Selected samples underwent fluid saturation analysis. Each fresh state sample was placed in the Dean-Stark fluid extraction apparatus, where it is suspended above a reservoir of boiling toluene. The solvent vapours, together with the extracted pore fluids, are condensed at the top of the glassware and the water collected in a calibrated side arm. Oil and toluene are collected in the reservoir and continue boiling so that clean toluene vapour continues extracting pore fluids. The process is continued until the water production ceases.

From the collected water volume and the latter determined helium injection pore volume of the sample, water saturation is calculated as follows:

$$Sw = (\text{Pore Water Volume} / \text{Pore Volume}) \times 100\%$$

Oil saturations were calculated from the weight loss of sample during analysis and assumptions of 30,000 ppm brine composition and 0.8 g/cm^3 oil density.

5.3 Porosity

The clean and dry plugs were sealed in a matrix cup and a known volume of helium at 100 psi reference pressure was introduced to the cup. From the resultant pressure, the unknown volume, i.e. the grain volume, was calculated using Boyles Law.

The bulk volume of each plug was determined by Archimedes' Principle. The porosity is calculated as the volume percentage of pore space with respect to the bulk volume.

$$P_1 V_1 = P_2 V_2$$

$$\Rightarrow \quad P_1 Vr = P_2 (Vr + Vc - Vg)$$

$$Vp = Vb - Vg$$

$$\textit{Ambient Porosity \%} = \frac{Vp}{Vb} \times 100\%$$

where P_1 = *initial pressure (psig)*
P_2 = *final pressure (psig)*
Vr = *reference cell volume (cm^3)*
Vc = *matrix cup volume (cm^3)*
Vg = *grain volume (cm^3)*
Vp = *pore volume (cm^3)*
Vb = *bulk volume (cm^3)*

5.4 Permeability to Air

The plugs were placed in a Hassler cell at a confining pressure of 300 psig. This pressure was used to prevent bypassing of air around the sample when the measurement is made.

During the measurement, a known air pressure is applied to the upstream face of the sample, creating a flow of air through the sample. Permeability for each sample was then calculated using Darcy's Law, through knowledge of the upstream pressure and flow rate during the test, the viscosity of air and the plug dimensions.

$$Ka = \frac{2000.BP.\mu.q.L}{(P_1^2 - P_2^2).A}$$

where Ka = *air permeability (milliDarcy's)*
BP = *barometric pressure (atmospheres)*
μ = *gas viscosity (cP)*
q = *flow rate (cm^3/s) at barometric pressure*
L = *sample length (cm)*
P_1 = *upstream pressure (atmospheres)*
P_2 = *downstream pressure (atmospheres)*
A = *sample cross sectional area (cm^2)*

5.5 Apparent Grain Density

The apparent grain density is calculated by dividing the weight of the plug by the grain volume determined from the helium injection porosity measurement.

$$\rho = \frac{Wt}{Vg}$$

where ρ = *grain density (g/cm^3)*
Wt = *weight of sample (g)*
Vg = *grain volume (cm^3)*

5.6 Probe Permeability

A permeability profile was obtained across the core using a steady state probe permeameter. Probe permeability measurements were taken at 10 cm intervals along the slabbed core face.

A probe was pneumatically applied to the surface of the core at 100 psig. An 'O' ring on the tip of the probe was used to achieve a seal against the rock. Air was then forced to flow at a constant pressure through the probe tip into the core and back into the atmosphere.

The flow rate was measured by a series of precision flow meters which were selected to cover a wide range of flow rates. The measured flow rate (at a fixed injection pressure) was converted to permeability by comparison against measurements on core plugs with known permeabilities.

5.7 Core Photography

The core photography was carried out on the 2/3 slab of core. Photographs were taken in 5 metre format with a Nikon D100 6.1 megapixel digital SLR camera under UV and white light. The photographs have been digitally edited and printed.

CHAPTER 6

SAMPLE DISTRIBUTION AND STORAGE

6. SAMPLE DISTRIBUTION AND STORAGE

All slabbed core is currently stored at Weatherford Laboratories pending instructions. The final core slab is pending client approval.

All core plug samples and off-cuts are currently stored at Weatherford Laboratories' Brisbane facility.

APPENDIX I

AMBIENT TEST RESULTS

CORE ANALYSIS FINAL REPORT

Client : Origin Energy Resources Limited
Well : Rockhopper-1 ST-1
Core Int : 3196.00 to 3209.38 m
Core Int : 3283.00 to 3297.08 m
Core Int : 3298.50 to 3308.00 m

Date : 9/03/2010
File : 0472-02
Analysts : BW/AA/SC/AS

Sample Number	Depth (m)	Dir	Porosity Helium (percent)	Grain Density (g/cm^3)	Permeability to Air (mD)	Fluid Saturation So (percent)	Fluid Saturation Sw (percent)	Remarks
								Start C#1
1V	3196.00	V	2.6	2.65	< 0.01	2.5	94.1	Slt
1	3196.42	H	0.4	2.59				Frac; Slt
2	3196.76	H	0.9	3.05				Frac; Slt
2V	3197.00	V	2.4	2.65	< 0.01	1.4	97.8	Slt, S.P.
3	3197.35	H						Failed
4	3197.51	H	4.5	2.66				Lam; irreg, Slty
5	3197.85	H	1.6	3.06				Frac; Slt
3V	3198.00	V	3.5	2.67	0.02	1.9	95.8	Slt, Lam, H Frac
6	3198.11	H	2.2	3.09	0.45			Slty, Lam
7	3198.54	H	3.1	2.66	0.14			Lam
8	3198.70	H	9.2	2.64	0.29			Lam
9	3198.96	H	17.2	2.65	1.35			
4V	3199.00	V	13.2	2.65	0.29	0.6	90.9	Lam, S.P.
10	3199.34	H	11.5	2.67	0.26			
11	3199.64	H	9.0	2.71	0.14			Lam
12	3199.89	H	3.8	2.72	2.58			Lam
5V	3200.00	V	6.4	2.72	0.04	1.6	97.2	Lam
13	3200.20	H	7.2	2.72	0.11			Lam
14	3200.50	H	3.7	2.71	0.06			
15	3200.80	H	3.3	2.71	0.17			
6V	3201.00	V	3.0	2.72	0.01	3.3	96.4	Slt
16	3201.10	H	2.3	2.70	0.04			
17	3201.40	H	2.3	2.83	0.57			Slt, Lam
18	3201.70	H	1.0	2.67	0.03			Irr, Lam
19	3201.97	H	0.8	2.86				Frac; Slt
7V	3202.00	V	2.3	2.70	< 0.01	5.8	93.1	Slt
8V	3203.00	V						Failed
20	3203.75	H	0.4	2.63				Frac; Slt
24	3204.05	H	0.4	2.65	0.12			Slt; irreg, Frac?
23	3204.29	H	0.5	2.68				Frac; Slt
22	3204.55	H	1.5	2.68	0.44			Congl
21	3204.85	H	10.6	2.70	0.23			Lam
9V	3204.95	V	10.8	2.68	0.15	0.7	89.3	Lam
10V	3205.00	V	6.5	2.67		0.2	98.9	Irr, Lam
1C	3205.23	H	16.4	2.66	7.6	1.3	86.2	
25	3205.35	H	16.9	2.65	6.7			
26	3205.64	H	11.8	2.66	0.70			
27	3205.92	H	13.9	2.68	2.62			
11V	3206.00	V	15.1	2.67	7.6	0.2	90.4	H Frac
28	3206.20	H	13.9	2.67	7.0			crsg
29	3206.50	H	8.9	2.65	0.44			Lam
30	3206.80	H	16.8	2.65	6.3			
12V	3207.00	V	14.3	2.65	1.74	0.4	89.3	
31	3207.10	H	10.3	2.65	0.36			
32	3207.40	H	13.6	2.65	1.85			
33	3207.95	H	16.4	2.65	6.5			
13V	3208.00	V	15.9	2.66	3.90	0.2	88.3	End C#1
								Start C#2
34	3283.21	H						Failed,

Sample Number	Depth (m)	Dir	Porosity Helium (percent)	Grain Density (g/cm^3)	Permeability to Air (mD)	Fluid Saturation So (percent)	Fluid Saturation Sw (percent)	Remarks
								Start C#1
35	3283.38	H	0.3	2.69	0.01			Slt, Irr
36	3287.69	H						Failed
37	3287.93	H	14.7	2.66	2.95			Lam
14V	3288.00	V	13.6	2.66	1.04	0.6	97.2	Lam
38	3288.25	H	15.1	2.68	2.05			
39	3288.53	H	13.3	2.68	2.31			Lam
40	3288.85	H	5.9	2.71	0.16			Lam
15V	3289.00	V	7.1	2.72	0.14	0.3	99.3	Lam
41	3289.18	H	3.5	2.71	3.17			Lam
42	3289.56	H	0.5	2.73	0.62			Slt, Lam, Frac?
43	3293.50	H	0.3	2.66				Frac; Slt
44	3293.80	H	14.7	2.63	4.38			crsg
2C	3293.90	H	17.6	2.63	6.6	1.3	96.3	
16V	3294.00	V	14.9	2.65	3.33	0.1	96.4	crsg
45	3294.11	H	14.4	2.65	3.80			crsg
46	3294.39	H	8.7	2.70	1.27			crsg
47	3294.69	H	12.3	2.63	3.02			crsg
3C	3294.91	H	16.0	2.63	7.6	0.7	95.5	
48	3294.98	H	17.6	2.63	9.7			crsg
17V	3295.00	V	16.3	2.64	9.5	0.4	46.0	S.P.
49	3295.17	H						Failed
50	3295.47	H						Failed
51	3295.90	H	13.2	2.64	4.83			crsg
4C	3295.91	H						Failed
18V	3296.00	V	11.9	2.63	2.97	0.1	97.0	crsg
52	3296.20	H	10.0	2.65	0.97			crsg
53	3296.42	H	17.7	2.63	25.7			SL, S.P.
54	3296.92	H	8.6	2.66	1.86			crsg, End C#2
								Start C#3
19V	3298.50	V						Failed
55	3298.81	H	12.4	2.64	1.11			
56	3299.10	H	9.7	2.65	0.56			
57	3299.40	H	15.6	2.66	1.61			
20V	3299.50	V	16.0	2.66	1.12	0.1	87.8	
58	3299.70	H	13.5	2.66	1.01			
59	3300.00	H	14.3	2.65	1.43			
60	3300.30	H	15.3	2.67	1.57			
21V	3300.50	V	16.3	2.66	1.21	2.0	83.7	
61	3300.63	H	14.6	2.66	1.65			
62	3300.83	H	13.6	2.65	1.38			
63	3301.17	H	13.7	2.64	1.31			
64	3301.46	H	5.2	2.73	0.15			Lam
22V	3301.50	V	3.7	2.67	0.04	0.9	97.2	Slt, Lam, S.P.
65	3301.79	H	2.3	2.78	1.71			Lam, Frac?
66	3302.09	H	1.1	2.74	0.01			Slt, Lam
67	3302.39	H	0.8	2.79	1.93			Lam, Frac?
23V	3302.56	V	10.2	2.71	0.85	0.5	92.7	Slt, Lam
5C	3302.75	H	11.5	2.63	2.81	3.2	91.1	
68	3302.81	H	15.4	2.63	9.1			crsg
69	3303.06	H	14.0	2.64	5.1			crsg
70	3303.28	H	15.6	2.63	7.2			crsg
24V	3303.50	V	14.9	2.66	5.5	0.7	96.7	crsg, S.P.
71	3303.61	H	19.4	2.63	1379			S.P; SL, Irr
72	3303.90	H	14.7	2.64	5.7			crsg
73	3304.34	H	7.1	2.63	1.35			crsg
25V	3304.50	V	8.1	2.63	1.23	0.0	93.4	crsg
74	3304.80	H	12.4	2.65	2.29			crsg
75	3305.08	H	14.1	2.64	2.57			crsg
76	3305.39	H	15.9	2.64	4.26			crsg

Sample Number	Depth (m)	Dir	Porosity Helium (percent)	Grain Density (g/cm^3)	Permeability to Air (mD)	Fluid Saturation So (percent)	Fluid Saturation Sw (percent)	Remarks
								Start C#1
26V	3305.50	V	6.3	2.63	0.48	1.5	94.9	crsg
77	3305.60	H	8.6	2.68	1.68			crsg, S.P.
27V	3306.50	V	2.5	2.64	0.05	4.3	94.0	crsg
78	3306.62	H	8.0	2.64	0.94			crsg
79	3306.90	H	12.6	2.64	2.59			crsg
80	3307.21	H	13.8	2.64	3.67			crsg
81	3307.46	H	16.1	2.64	9.2			crsg
28V	3307.50	V	14.8	2.63	3.96	0.5	63.4	crsg
82	3307.79	H	14.8	2.63	8.0			crsg, End C#3

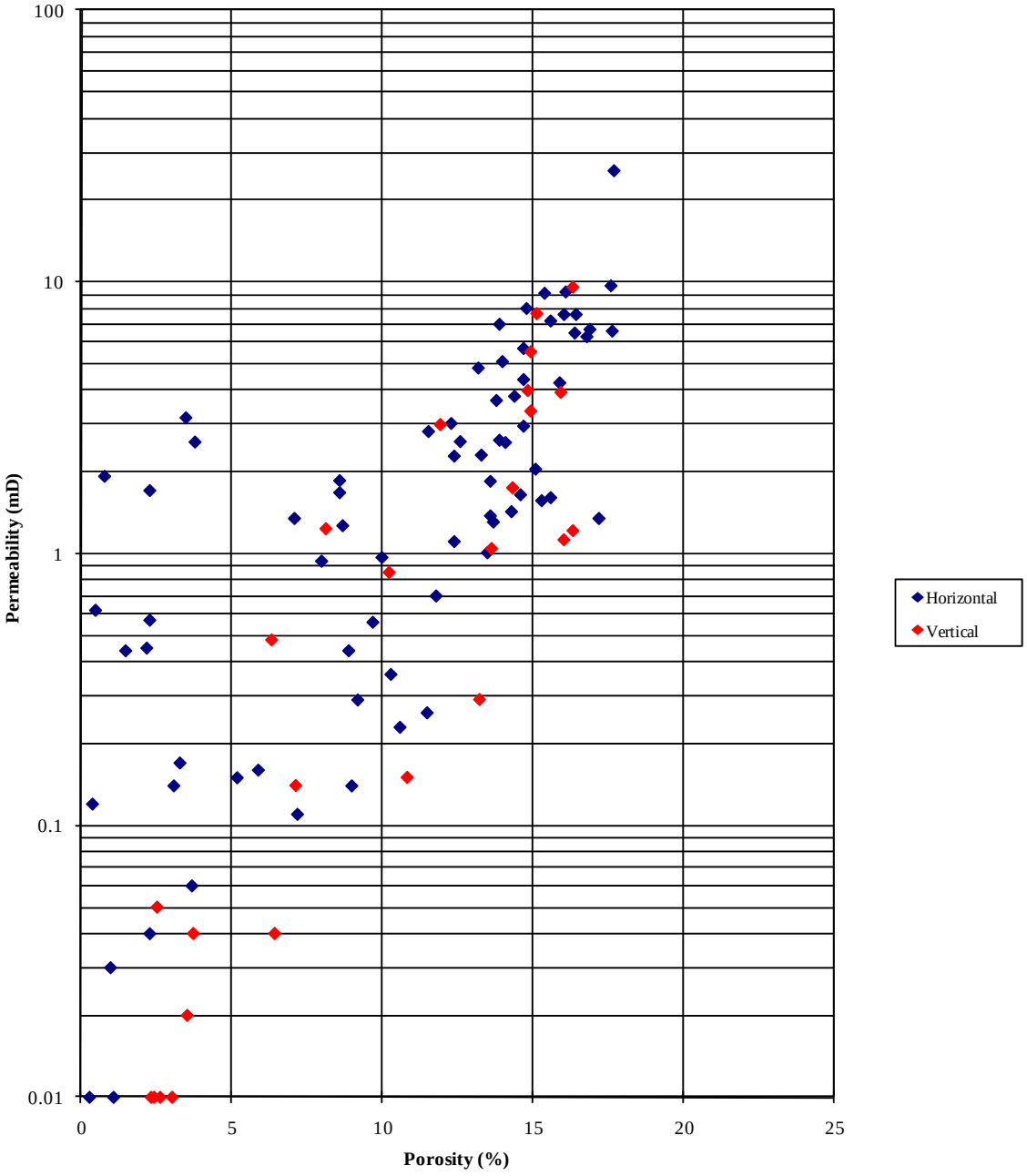
APPENDIX II

POROSITY vs PERMEABILITY

POROSITY vs PERMEABILITY
Ambient

Client: Origin Energy Resources Limited

Well: Rockhopper-1 ST-1



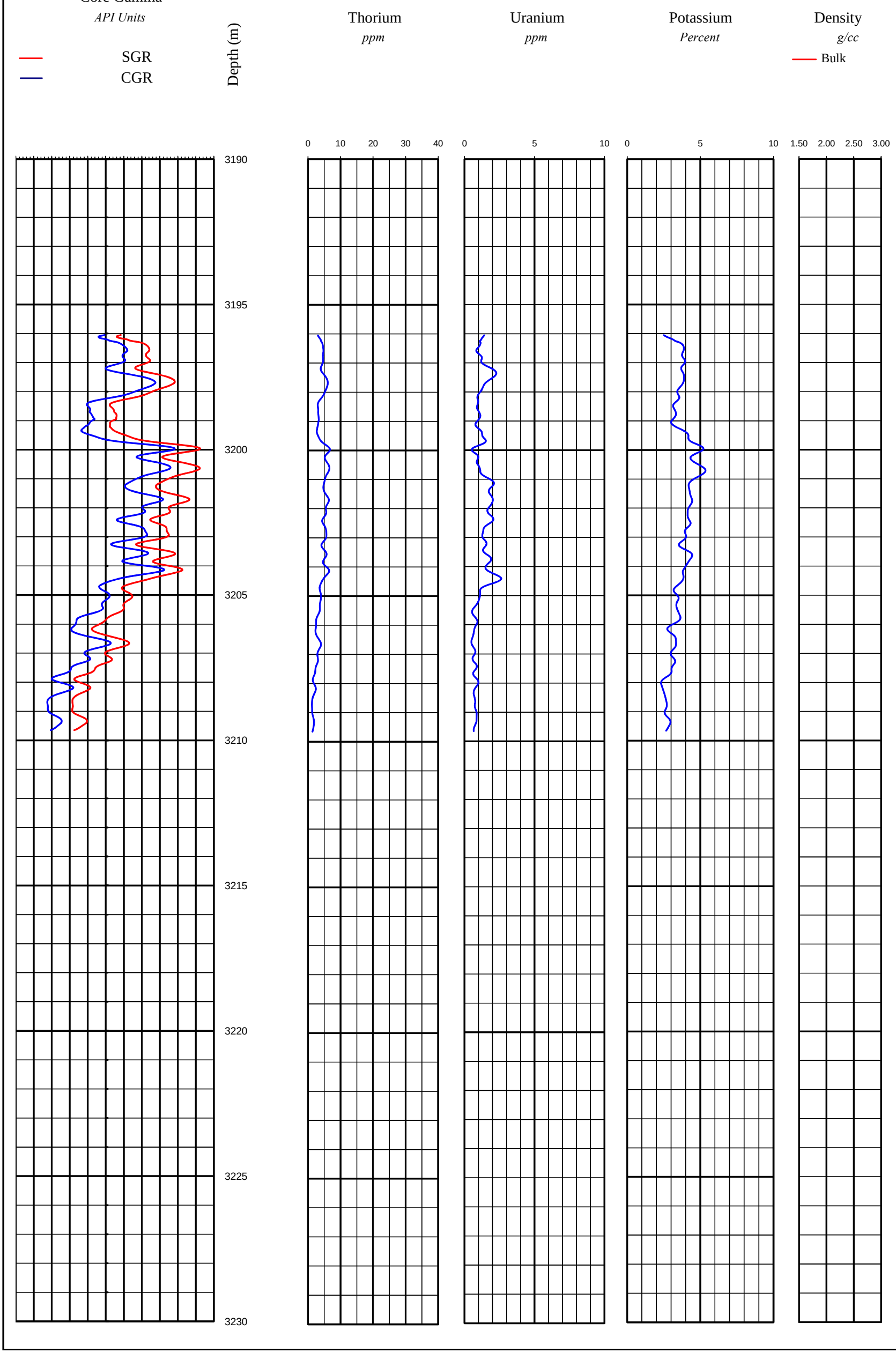
Weatherford Laboratories (Australia)
ABN: 81 008 273 005

APPENDIX III

SPECTRAL CORE GAMMA

CORE PLOT

Client: Origin Energy Resources Limited Core#1: 3196.00 to 3209.38 m
Well: Rockhopper-1 ST-1
File No.: 0472-02



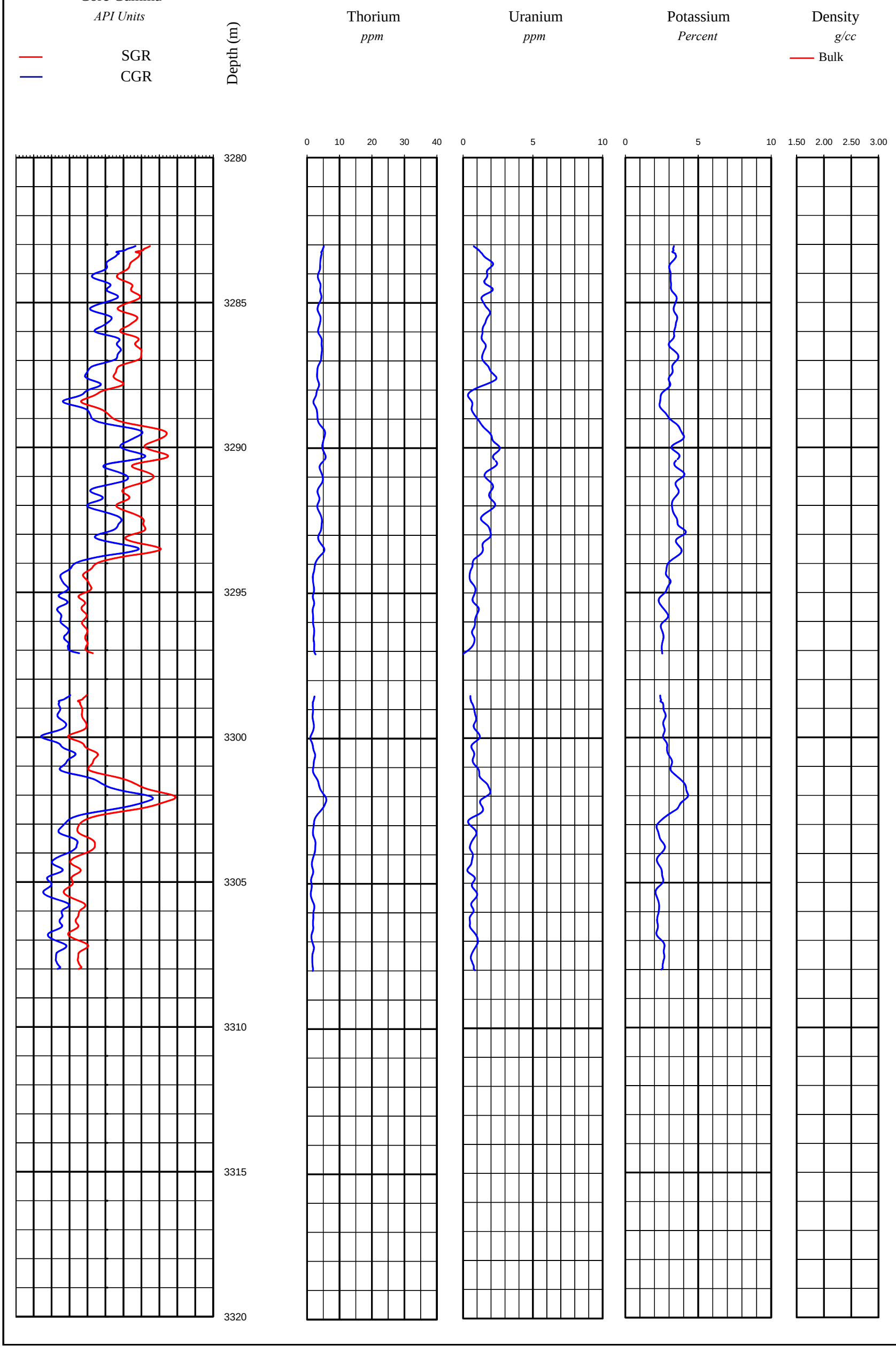
Weatherford Laboratories (Australia)
ABN: 81 008 273 005

CORE PLOT

Weatherford LABORATORIES

Client: Origin Energy Resources Limited
Well: Rockhopper-1 ST-1
File No.: 0472-02

Core#2: 3283.00 to 3297.08 m
Core#3: 3298.50 to 3308.00 m



Weatherford Laboratories (Australia)
ABN: 81 008 273 005

APPENDIX IV

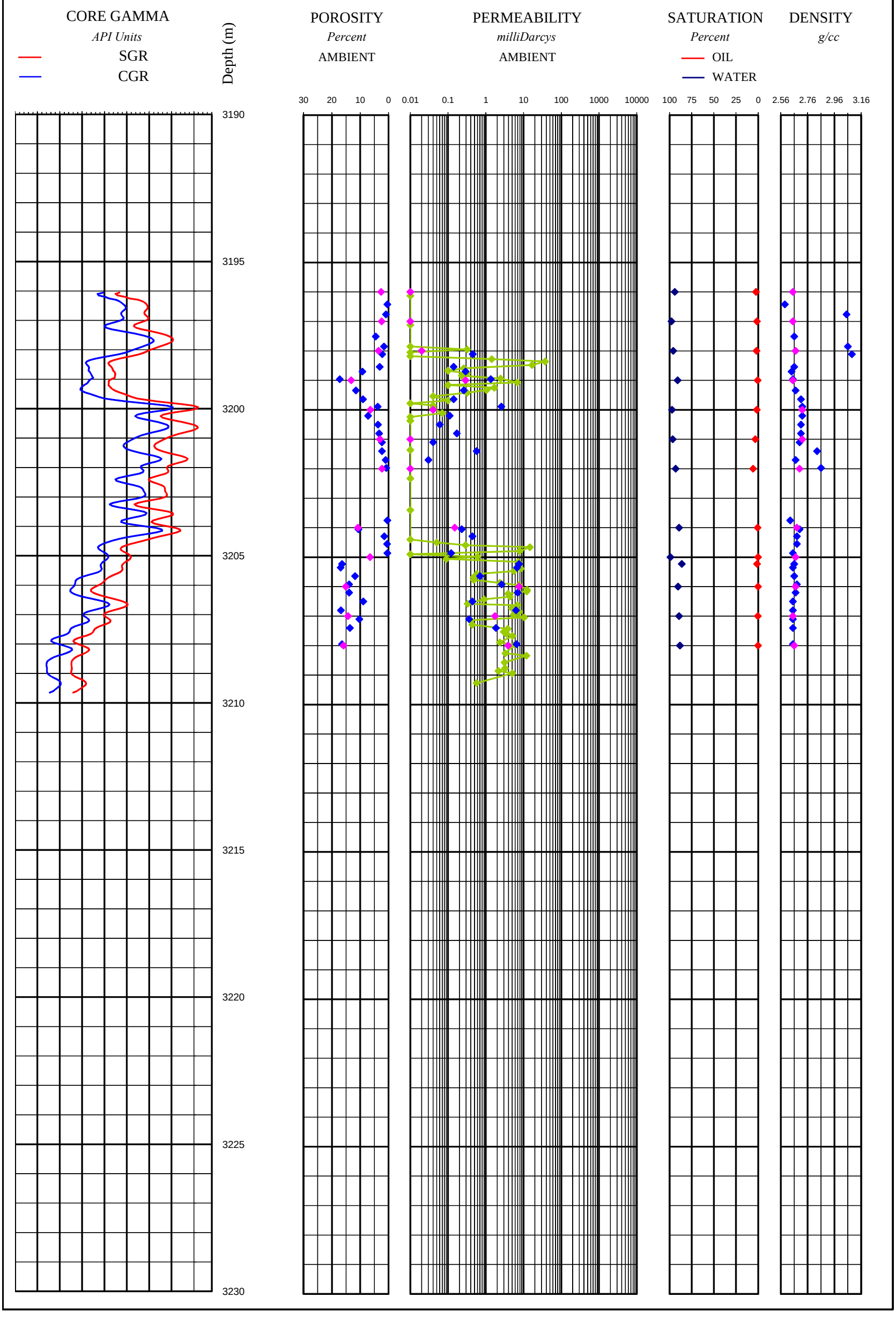
CORE LOG PLOTS

CORE PLOT

Weatherford LABORATORIES

Client: Origin Energy Resources Limited Core#1: 3196.00 to 3209.38 m
Well: Rockhopper-1 ST-1
File No.: 0472-02

Horizontal
Probe Perm
Vertical



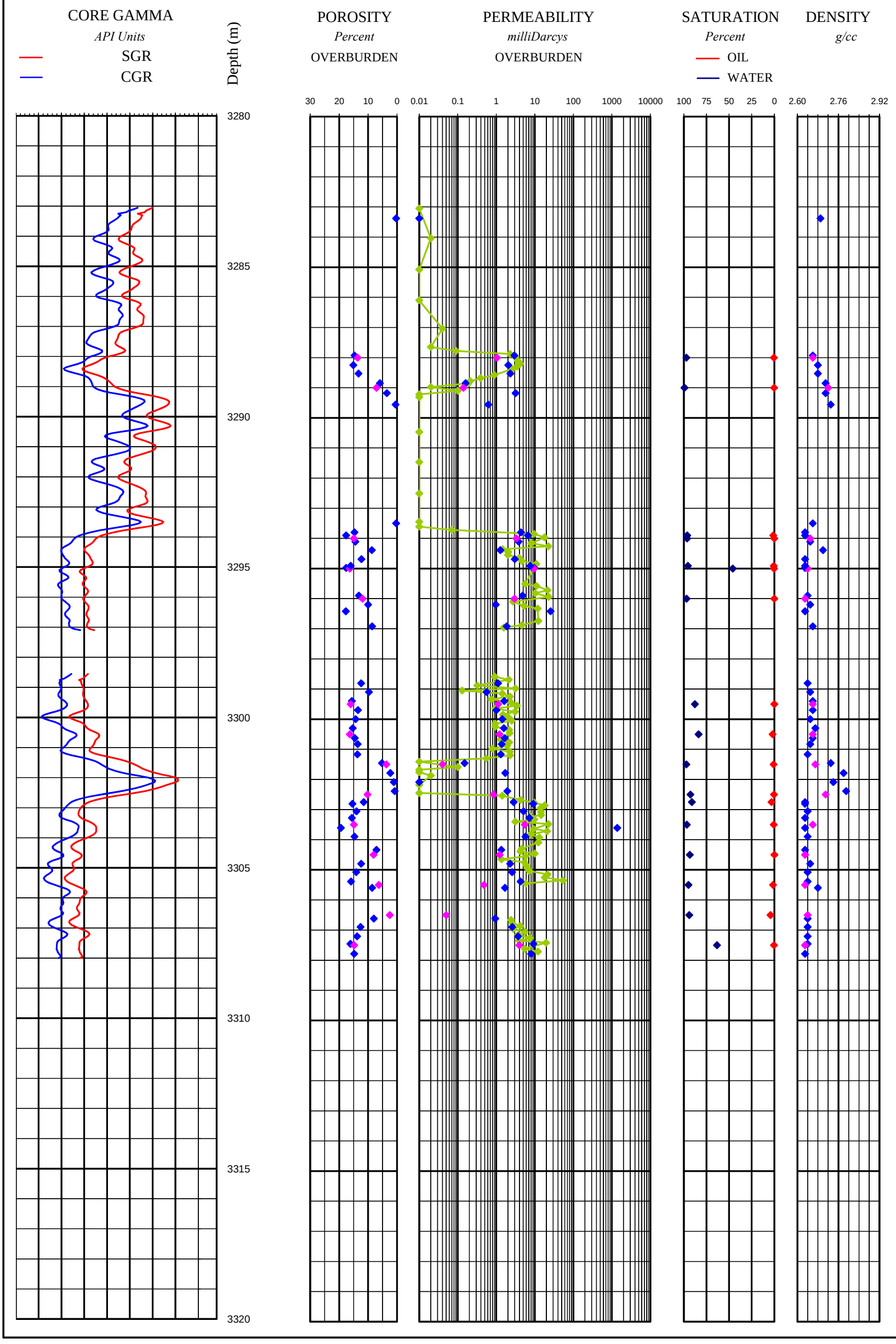
Weatherford Laboratories (Australia)
ABN: 81 008 273 005

CORE PLOT

Weatherford LABORATORIES

Client:	Origin Energy Resources Limited	Core#2:	3283.00 to 3297.08 m
Well:	Rockhopper-1 ST-1	Core#3:	3298.50 to 3308.00 m
File No.:	0472-02		

◆ Horizontal
◆ Probe Perm
◆ Vertical



Weatherford Laboratories (Australia)
ABN: 81 008 273 005

APPENDIX V

PROBE PERMEABILITY DATA

PROBE PERMEABILITY

Client Origin Energy Resources Limited
Well Rockhopper-1 ST-1

Depth *(metres)*	Probe Permeability *(mD)*	Comments	Depth *(metres)*	Probe Permeability *(mD)*	Comments
		Core#1			
3196.13	0.01	Slt	3204.59	0.29	Lam
3197.12	0.01	Slt	3204.66	14.7	Lam, Frac?
3197.85	0.01	Slt	3204.79	7.9	Lam
3197.95	0.32	sst lam	3204.90	0.01	Lam
3198.05	0.01	Slt	3204.98	0.61	Lam
3198.18	0.01	Slt	3205.06	0.09	Lam
3198.28	1.44		3205.16	7.3	
3198.36	37.4		3205.26	7.3	
3198.48	17.0	Lam	3205.39	8.5	
3198.59	0.26	Lam	3205.47	5.5	
3198.67	0.10	Lam	3205.57	0.58	Lam
3198.76	0.32	Lam	3205.68	0.48	
3198.84	0.23	Lam	3205.77	0.48	
3198.94	2.47	Lam	3205.87	2.36	Lam
3199.07	6.9	Lam	3205.95	7.7	
3199.16	0.10	Lam	3206.11	12.4	crsg, Lam
3199.25	1.68	Fracs	3206.16	12.1	crsg
3199.33	1.04	Lam	3206.24	3.91	crsg
3199.42	0.32	Lam	3206.34	4.35	crsg
3199.54	0.04		3206.43	0.90	Lam
3199.68	0.10		3206.58	0.33	
3199.78	0.01	Lam	3206.63	6.9	crsg
3199.85	0.04		3206.73	4.93	
3199.95	0.04		3206.85	7.7	
3200.11	0.07		3206.95	5.5	
3200.24	0.01		3207.04	10.4	
3200.37	0.01	Slt	3207.14	0.40	Lam
3201.36	0.01	Slt	3207.29	0.44	
3202.33	0.01	Slt	3207.43	3.80	
3203.40	0.01	Slt	3207.53	3.00	
3204.40	0.01	Slt	3207.60	3.51	
3204.50	0.05	Lam	3207.67	5.1	

PROBE PERMEABILITY

Client Origin Energy Resources Limited
Well Rockhopper-1 ST-1

Depth *(metres)*	Probe Permeability *(mD)*	Comments	Depth *(metres)*	Probe Permeability *(mD)*	Comments
3207.89	2.36	Lam	3288.98	0.02	Lam
3207.97	5.8		3289.10	0.10	Lam
		Rbl	3289.22	0.01	Slt
3208.26	3.31	Lam	3289.31	0.01	Slt
3208.34	11.9		3290.47	0.01	Slt
		Rbl	3291.47	0.01	Slt
3208.57	3.14		3292.51	0.01	Slt
		Rbl	3293.45	0.01	Slt
3208.77	3.24		3293.61	0.01	Slt
3208.86	2.16		3293.72	0.07	Lam
3208.94	5.0		3293.85	9.5	crsg
		Rbl	3293.97	17.9	crsg
3209.27	0.57	lam	3294.16	8.1	crsg, Lam
			3294.26	22.5	crsg
		Core#2	3294.36	1.46	
3283.05	0.01	Slt	3294.45	2.05	Lam
3284.04	0.02	Slt	3294.55	2.00	
3285.08	0.01	Slt	3294.65	3.95	
3286.10	0.01	Slt	3294.75	4.63	
3287.04	0.04	Slt	3294.85	10.9	crsg
3287.65	0.02	Slt			Rbl
3287.78	0.09	Lam	3295.51	5.6	crsg
3287.88	2.27	Lam	3295.58	11.1	crsg
3287.98	3.15	Lam	3295.72	21.3	crsg
3288.10	3.59	Lam	3295.82	10.2	crsg
3288.20	4.18	Lam	3295.94	23.0	crsg
3288.30	3.44	Lam	3296.10	2.73	crsg
3288.38	2.56	Lam	3296.24	5.3	crsg
3288.58	0.89	Lam	3296.33	11.9	crsg
3288.68	0.39	Lam	3296.74	12.4	crsg, Irreg
3288.78	0.21	Lam	3296.88	4.59	crsg, Lam
3288.85	0.19	Lam	3296.96	1.57	crsg

PROBE PERMEABILITY

Client Origin Energy Resources Limited
Well Rockhopper-1 ST-1

Depth *(metres)*	Probe Permeability *(mD)*	Comments	Depth *(metres)*	Probe Permeability *(mD)*	Comments
			3301.87	0.02	Intbd
		Core#3	3302.18	0.01	
3298.59	0.91		3302.45	0.01	
3298.69	2.11		3302.54	1.43	crsg
3298.88	0.32		3302.68	4.28	crsg
3298.98	3.13		3302.77	9.6	crsg
3299.05	0.13	Lam	3302.86	18.1	crsg
3299.15	1.43		3302.96	14.0	crsg
3299.25	2.27		3303.08	14.5	crsg
3299.34	0.75	Lam	3303.18	14.6	crsg
3299.45	2.42		3303.24	7.8	crsg
3299.55	3.44		3303.33	9.7	crsg
3299.65	0.94	Lam	3303.40	3.11	crsg
3299.75	3.07		3303.48	22.5	crsg
3299.85	1.49		3303.64	9.4	crsg
3299.95	2.09		3303.72	20.9	crsg
3300.05	2.51		3303.82	7.8	crsg
3300.15	0.94	Lam	3303.93	13.1	crsg
3300.25	0.94		3304.09	12.4	crsg
3300.35	2.15	Lam	3304.30	4.58	crsg
3300.46	2.22	Lam	3304.39	4.24	crsg
3300.68	1.31	Lam	3304.46	9.9	crsg
3300.77	2.16	Lam	3304.55	5.8	crsg
3300.88	1.90	Lam	3304.65	1.36	crsg
3300.98	0.79	Lam	3304.75	5.4	crsg
3301.08	2.24	Lam	3304.85	6.0	crsg
3301.20	2.29	Lam	3304.94	6.4	crsg
3301.30	0.55	Lam	3305.04	7.3	crsg, Lam
3301.41	0.01	Lam	3305.15	21.4	crsg
3301.59	0.10	Lam	3305.25	18.1	crsg
3301.68	0.01		3305.35	53.9	crsg
3301.76	0.01		3305.45	5.9	crsg

PROBE PERMEABILITY

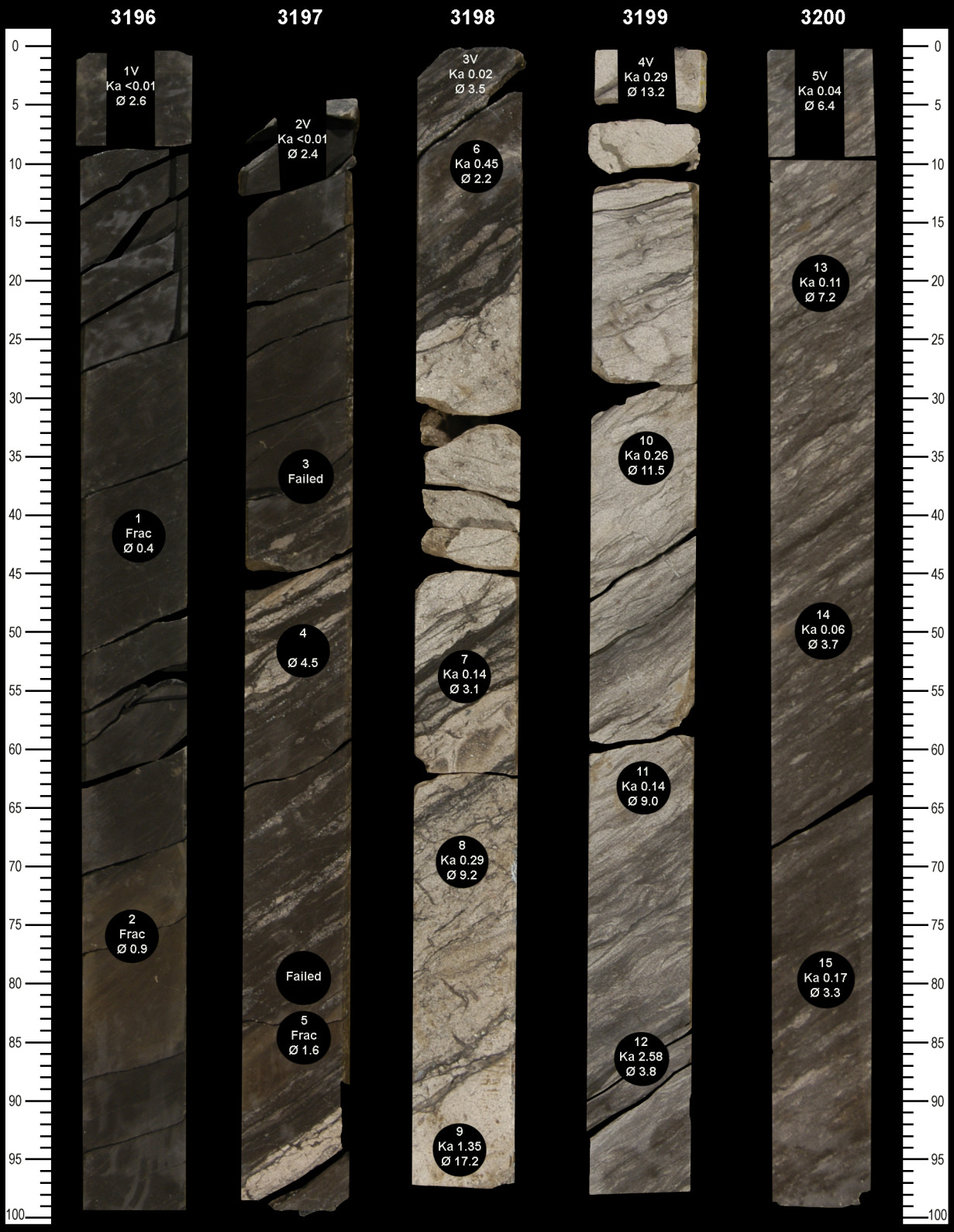
Client Origin Energy Resources Limited
Well Rockhopper-1 ST-1

Depth *(metres)*	**Probe Permeability** *(mD)*	**Comments**
	Rbl	
3306.66	2.41	N.B. 0.04mD is the limit of detection
3306.76	2.56	
3306.86	4.23	
3306.96	2.76	
3307.06	5.6	
3307.16	3.69	
3307.26	7.5	
3307.35	3.91	
3307.42	19.6	
3307.62	5.5	
3307.71	12.1	
3307.84	10.8	
3307.93	11.3	

APPENDIX VI

CORE PHOTOGRAPHY

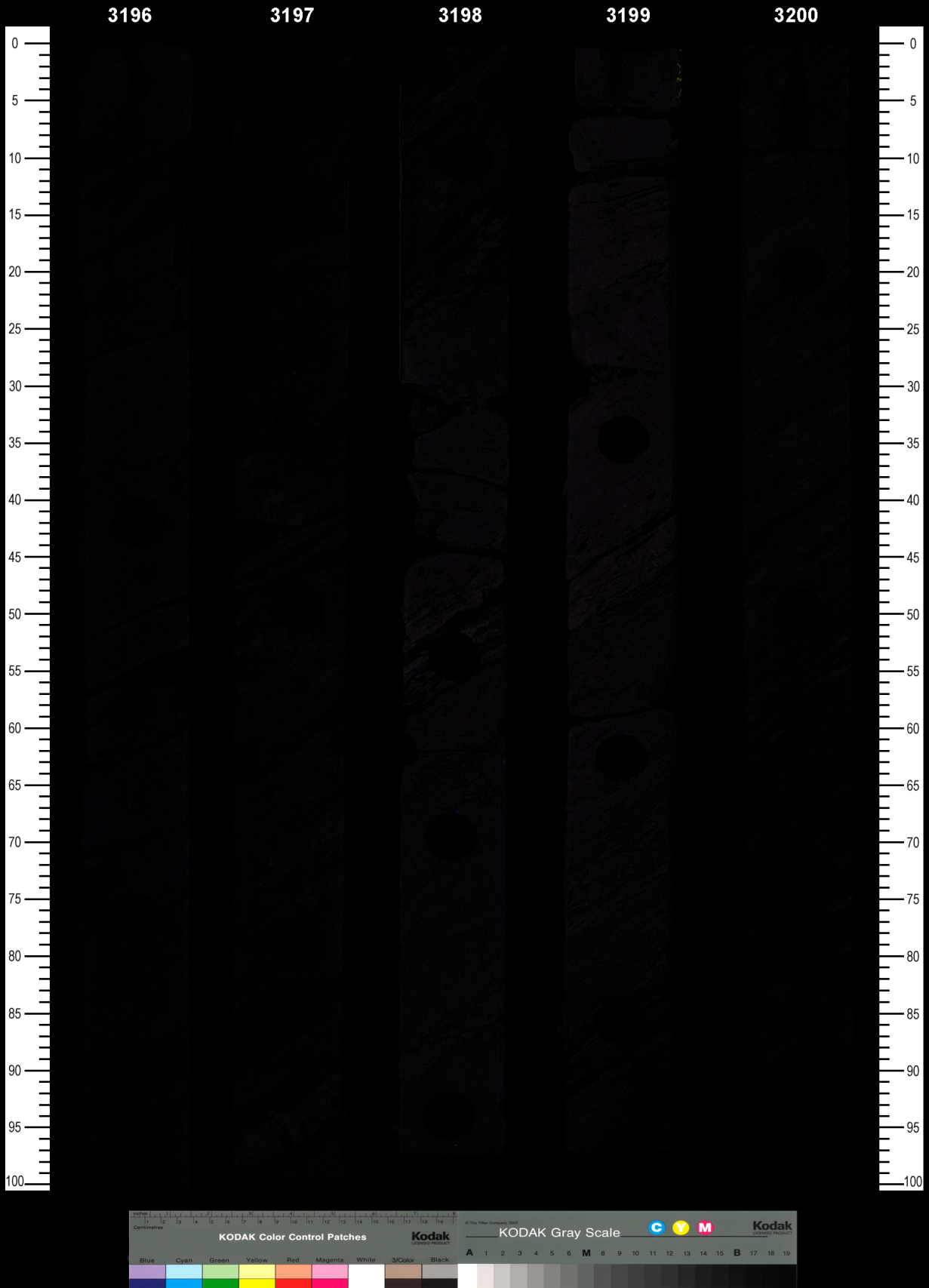
ROCKHOPPER-1 ST-1
Core 1



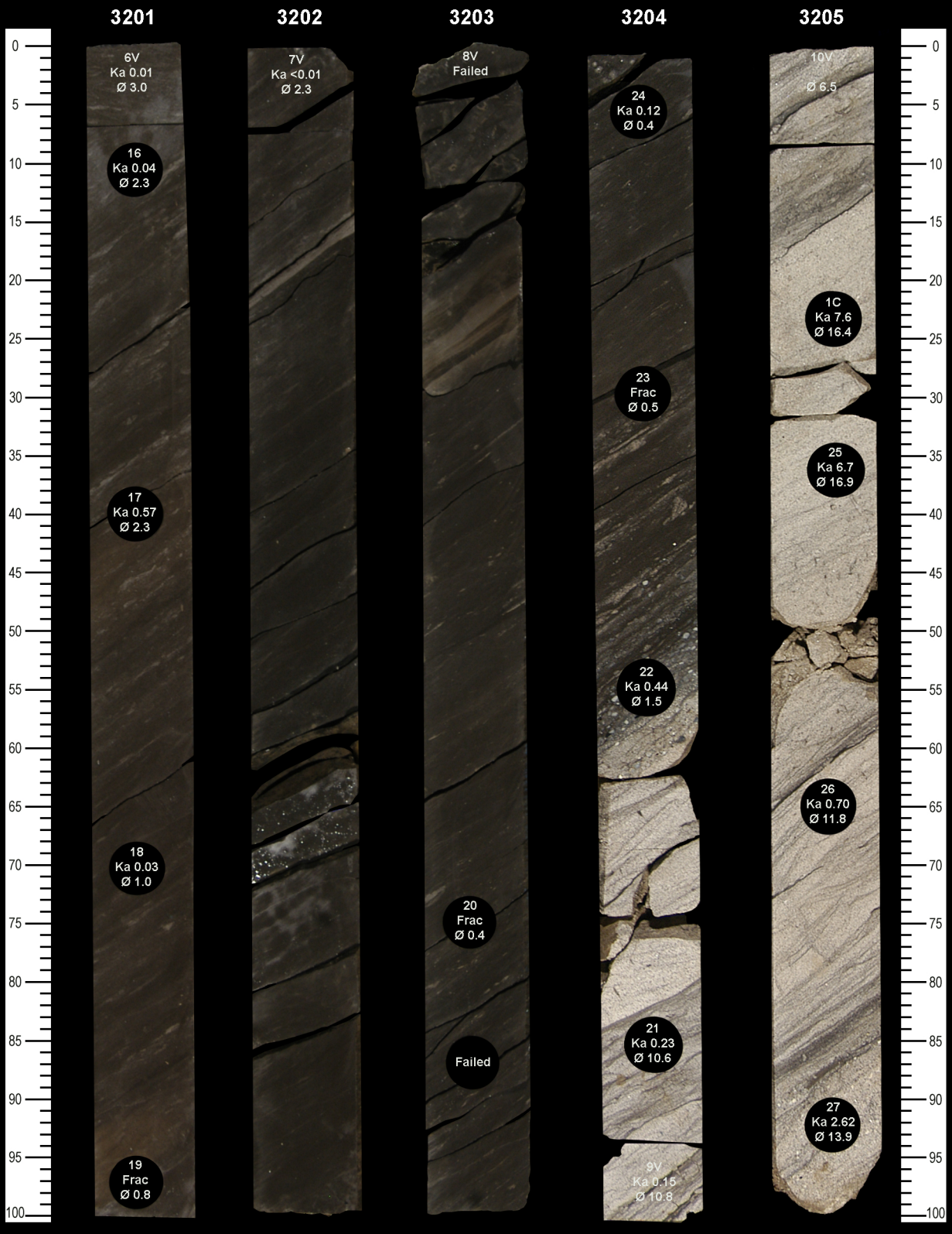
ROCKHOPPER-1 ST-1

Core 1

Ultra Violet



ROCKHOPPER-1 ST-1
Core 1



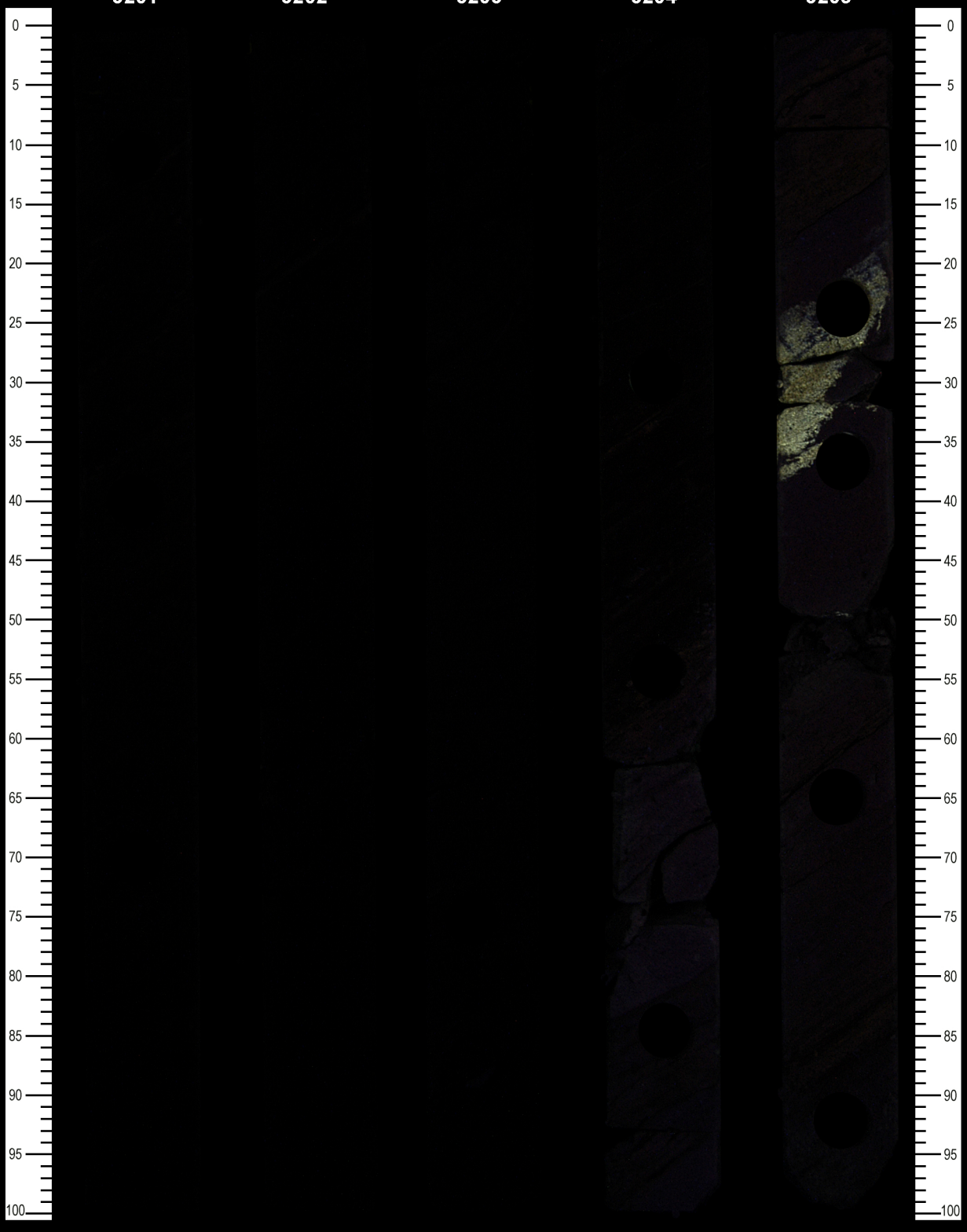
KODAK Color Control Patches

KODAK Gray Scale

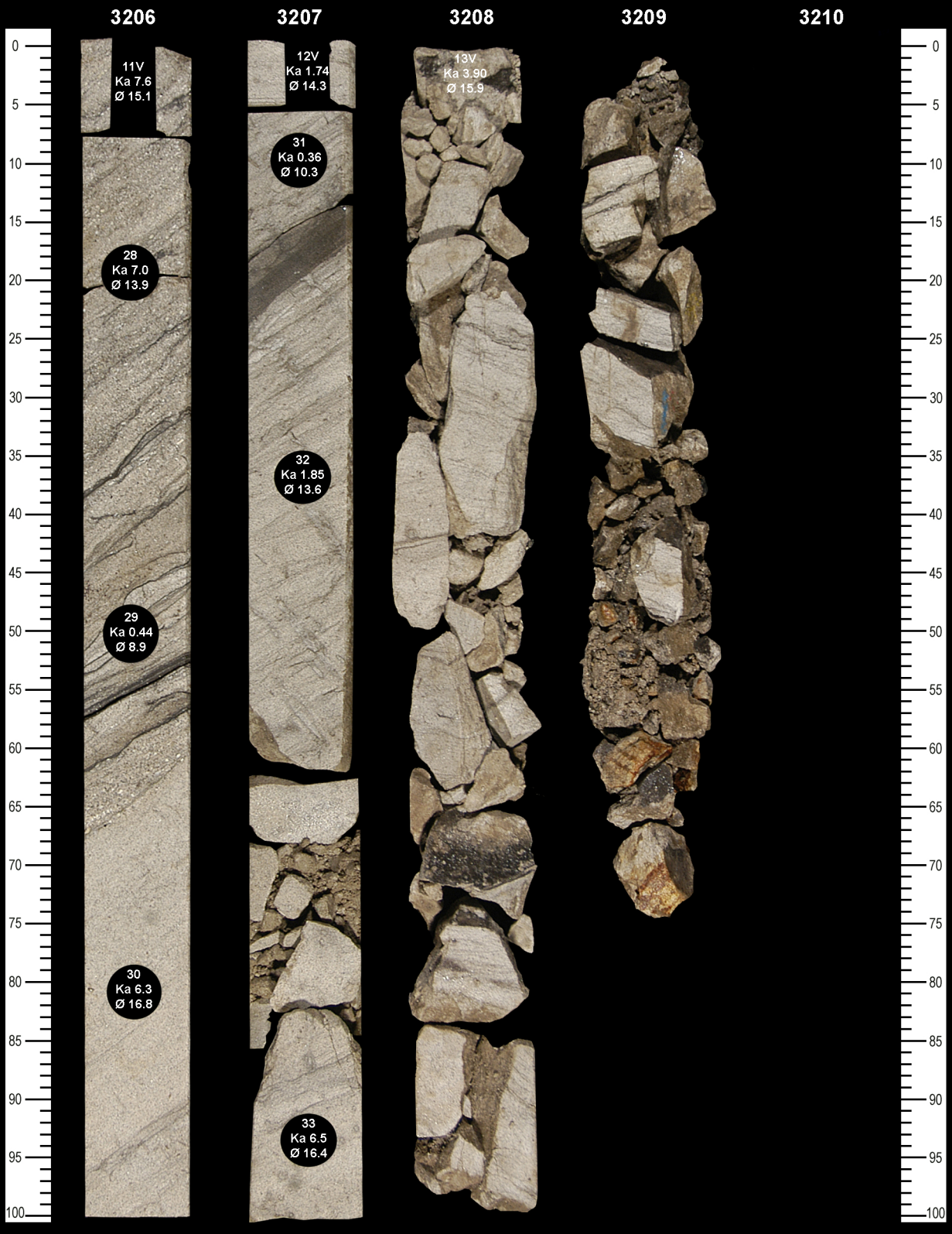
ROCKHOPPER-1 ST-1

Core 1

Ultra Violet



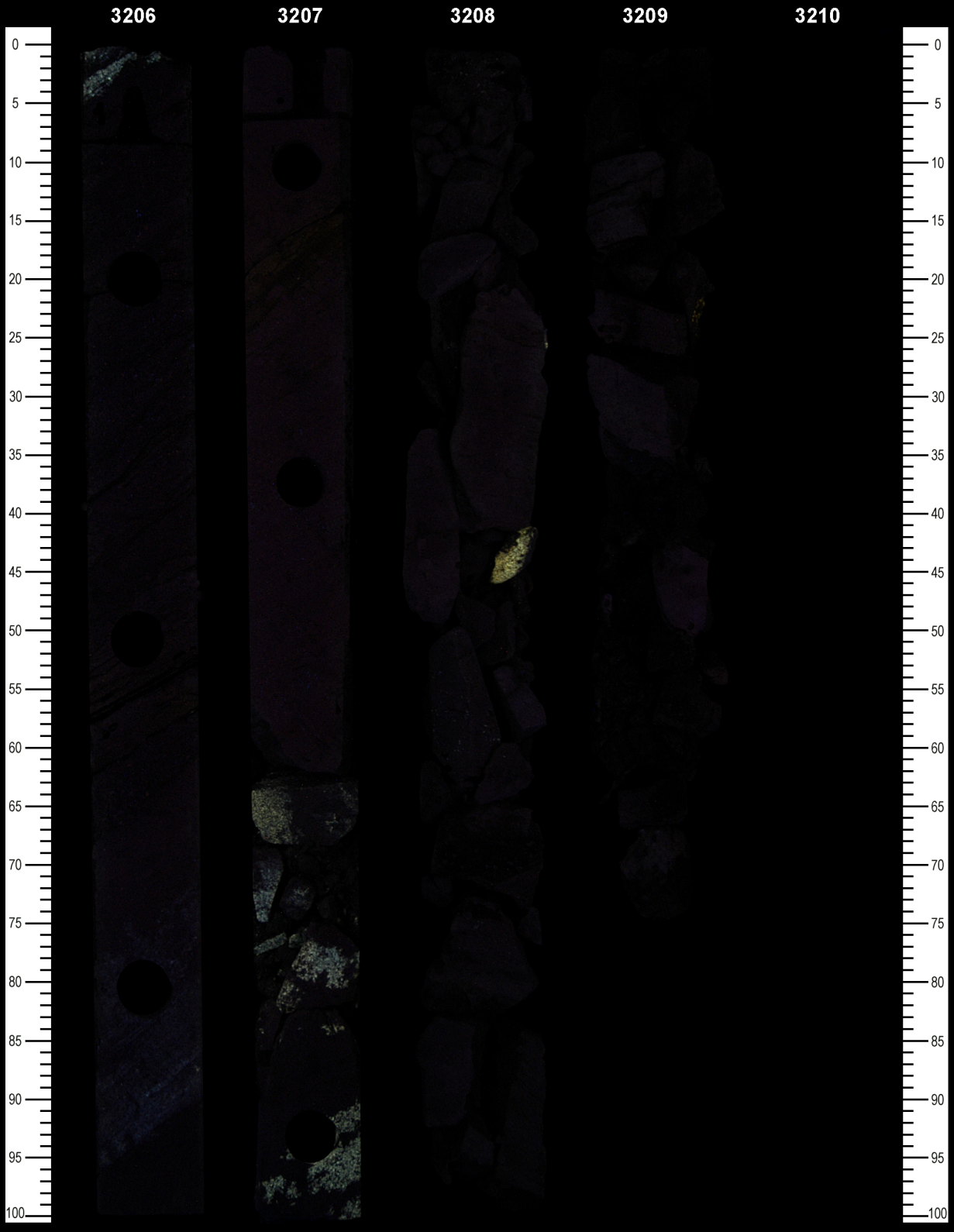
ROCKHOPPER-1 ST-1
Core 1



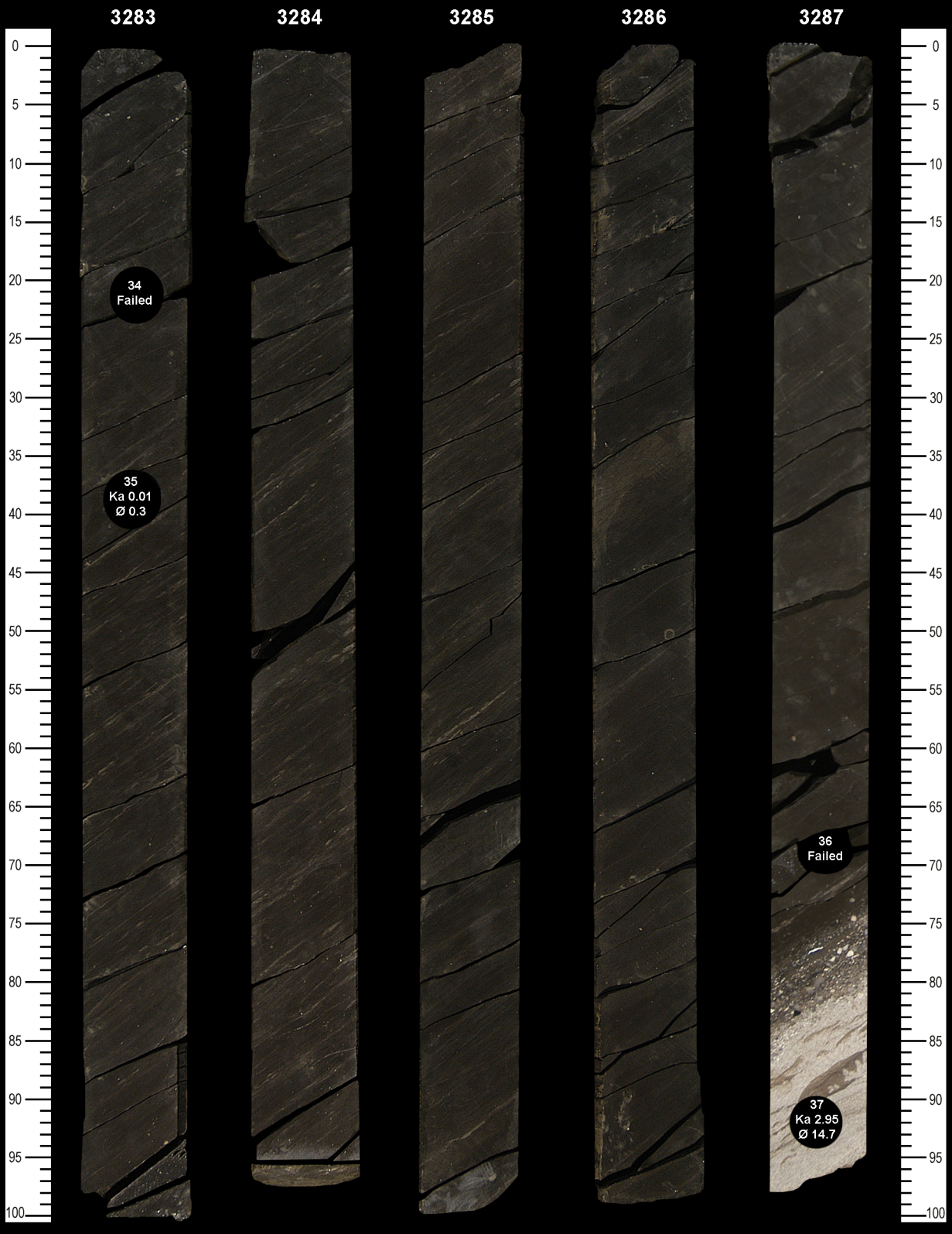
ROCKHOPPER-1 ST-1

Core 1

Ultra Violet



ROCKHOPPER-1 ST-1
Core 2



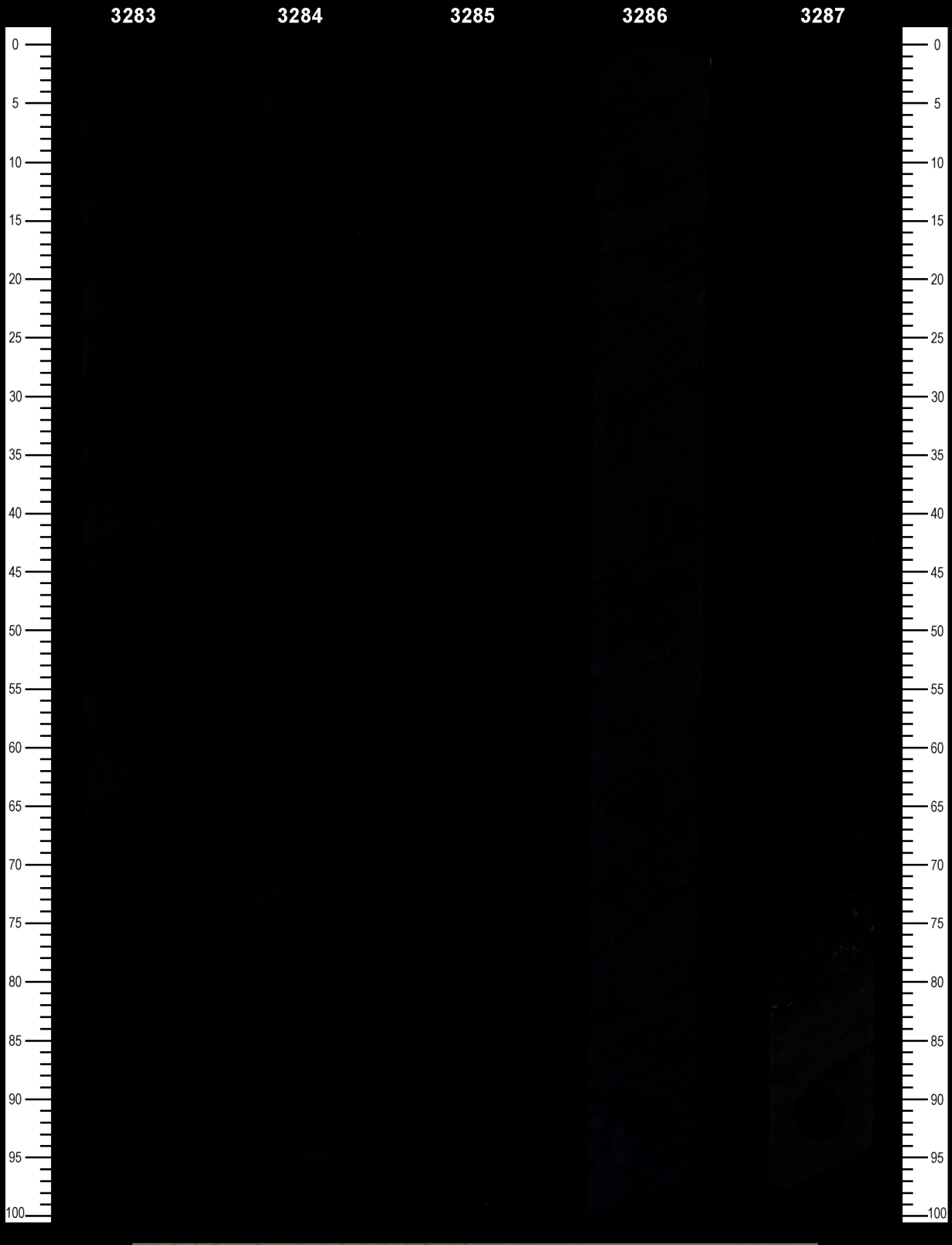
Origin energy

ROCKHOPPER-1 ST-1

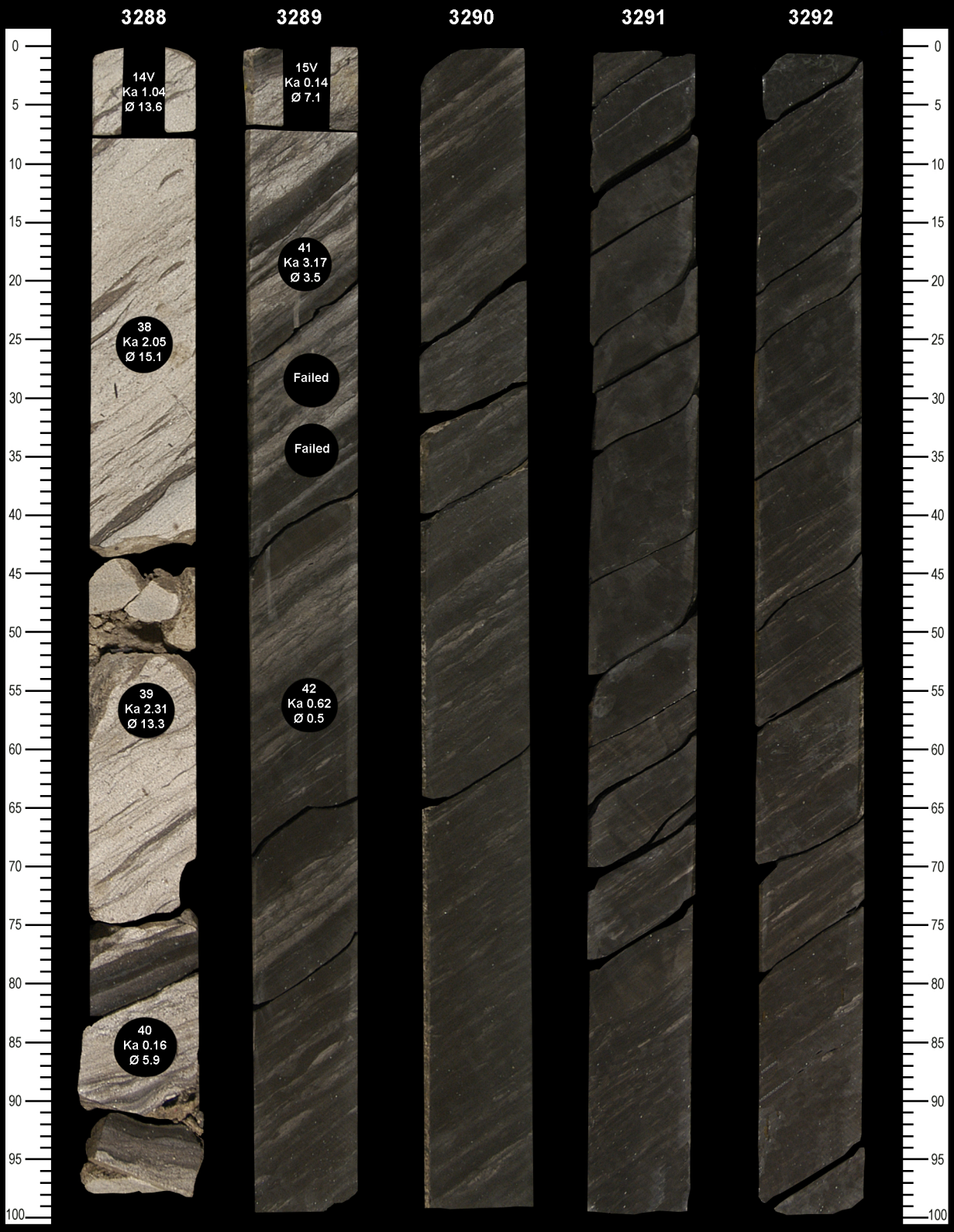
Core 2

Ultra Violet

Weatherford LABORATORIES



ROCKHOPPER-1 ST-1
Core 2



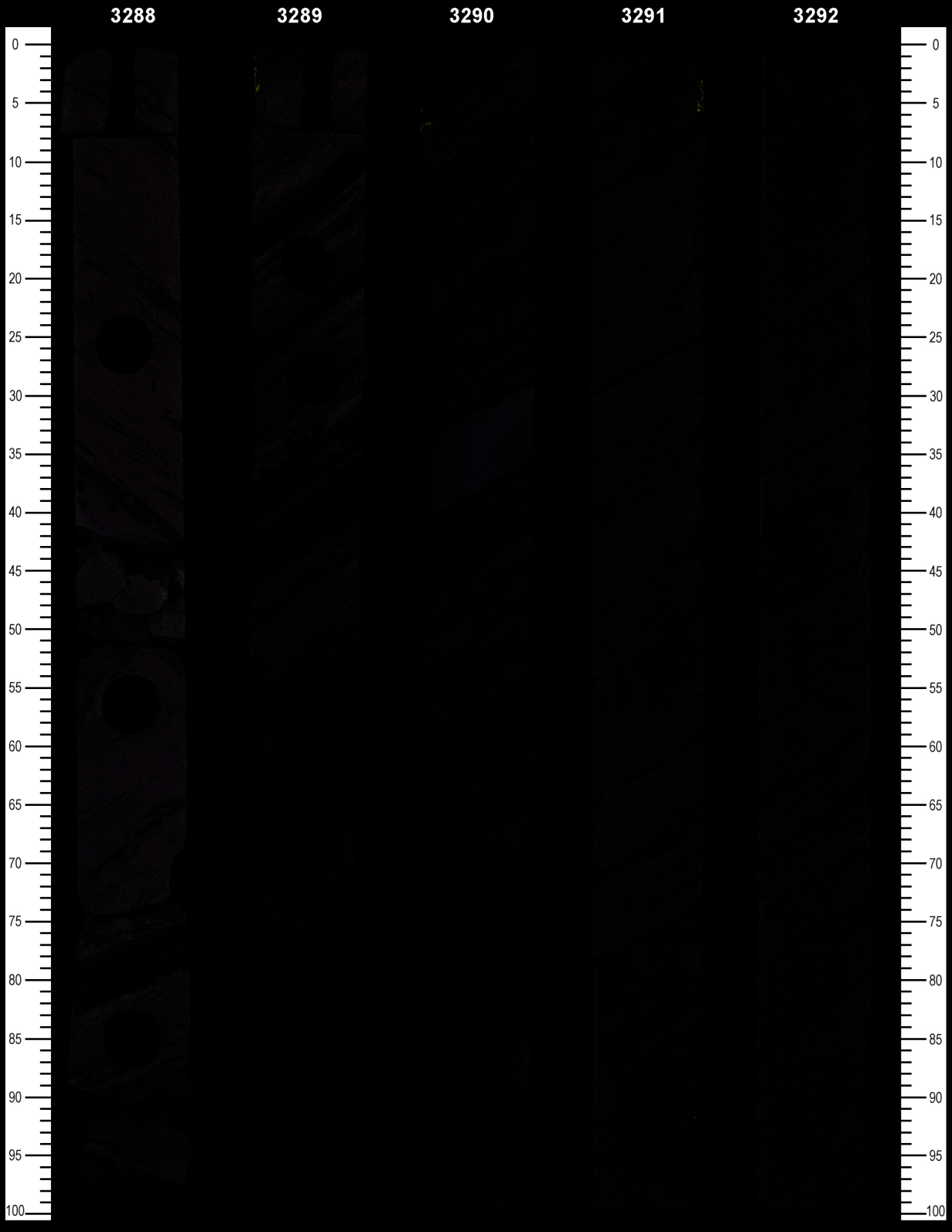
Origin energy

ROCKHOPPER-1 ST-1

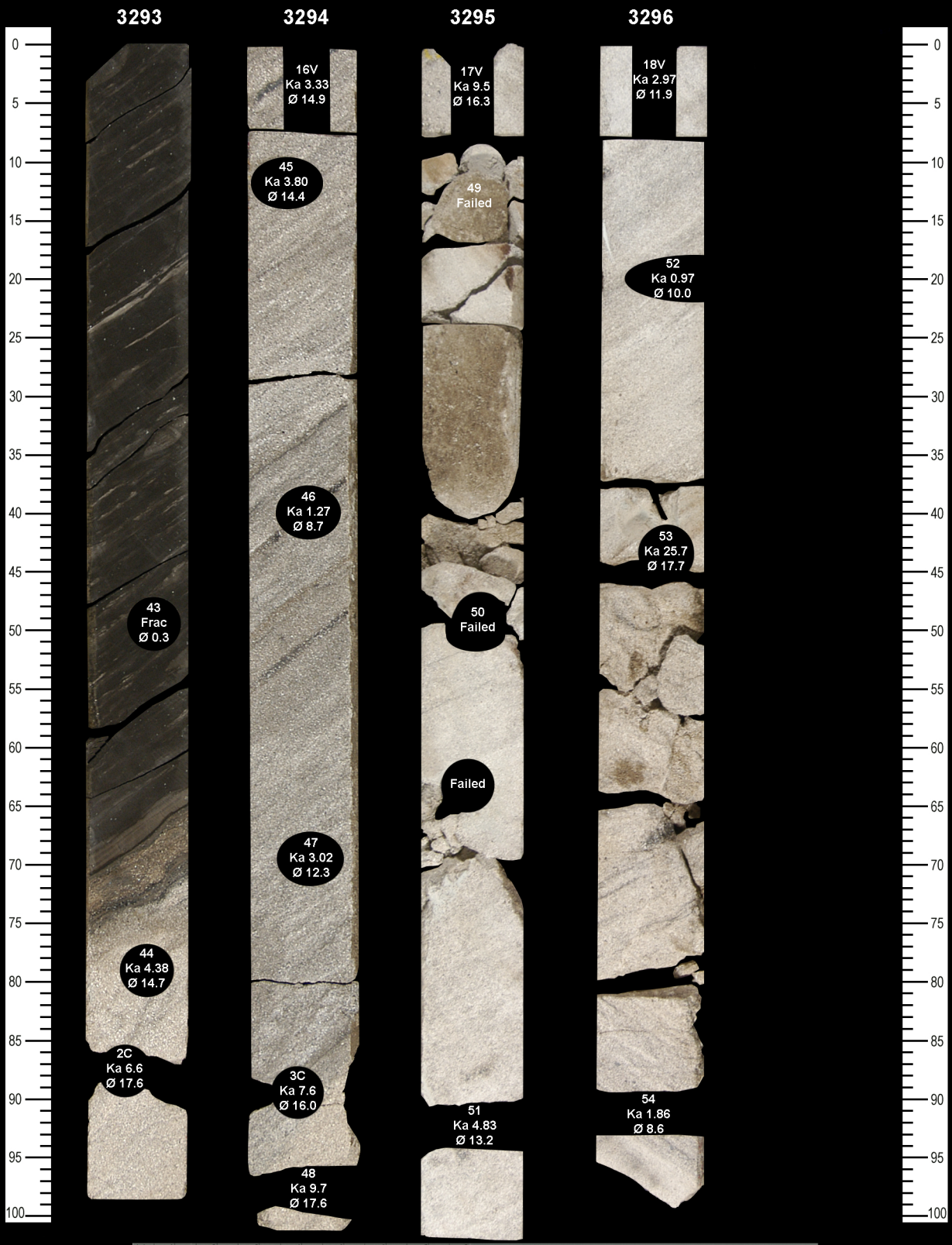
Core 2

Ultra Violet

Weatherford® LABORATORIES



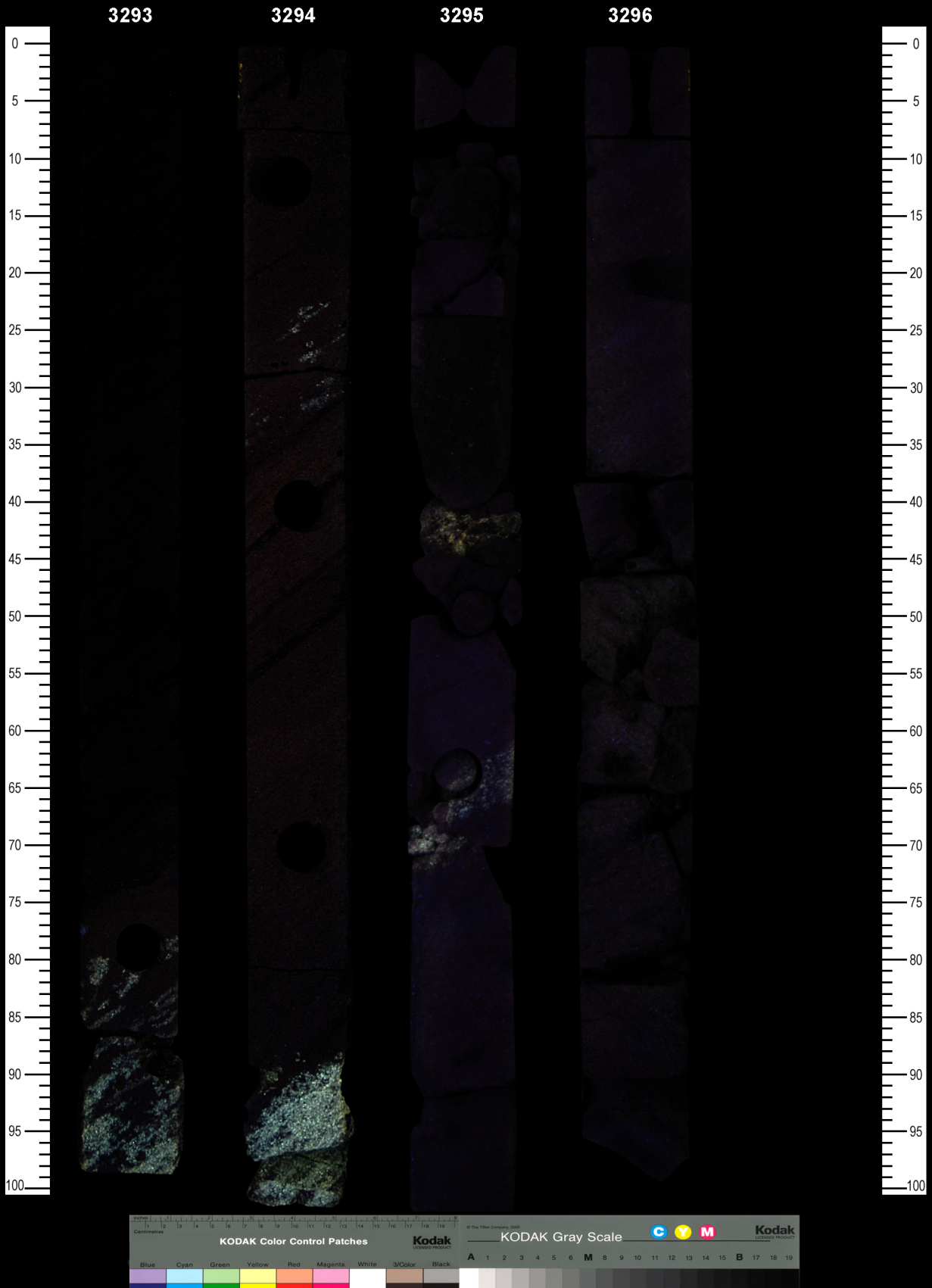
ROCKHOPPER-1 ST-1
Core 2



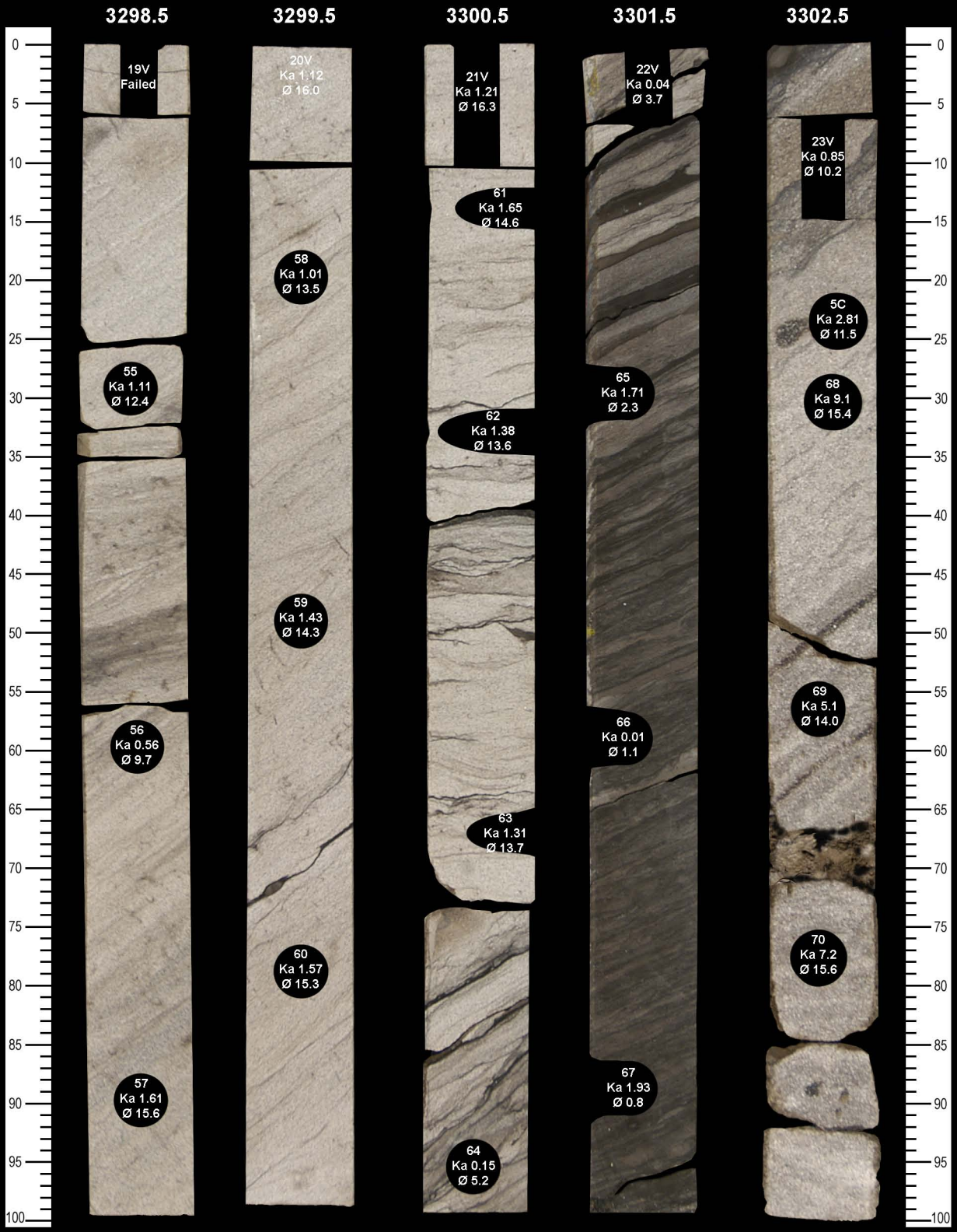
ROCKHOPPER-1 ST-1

Core 2

Ultra Violet



ROCKHOPPER-1 ST-1
Core 3

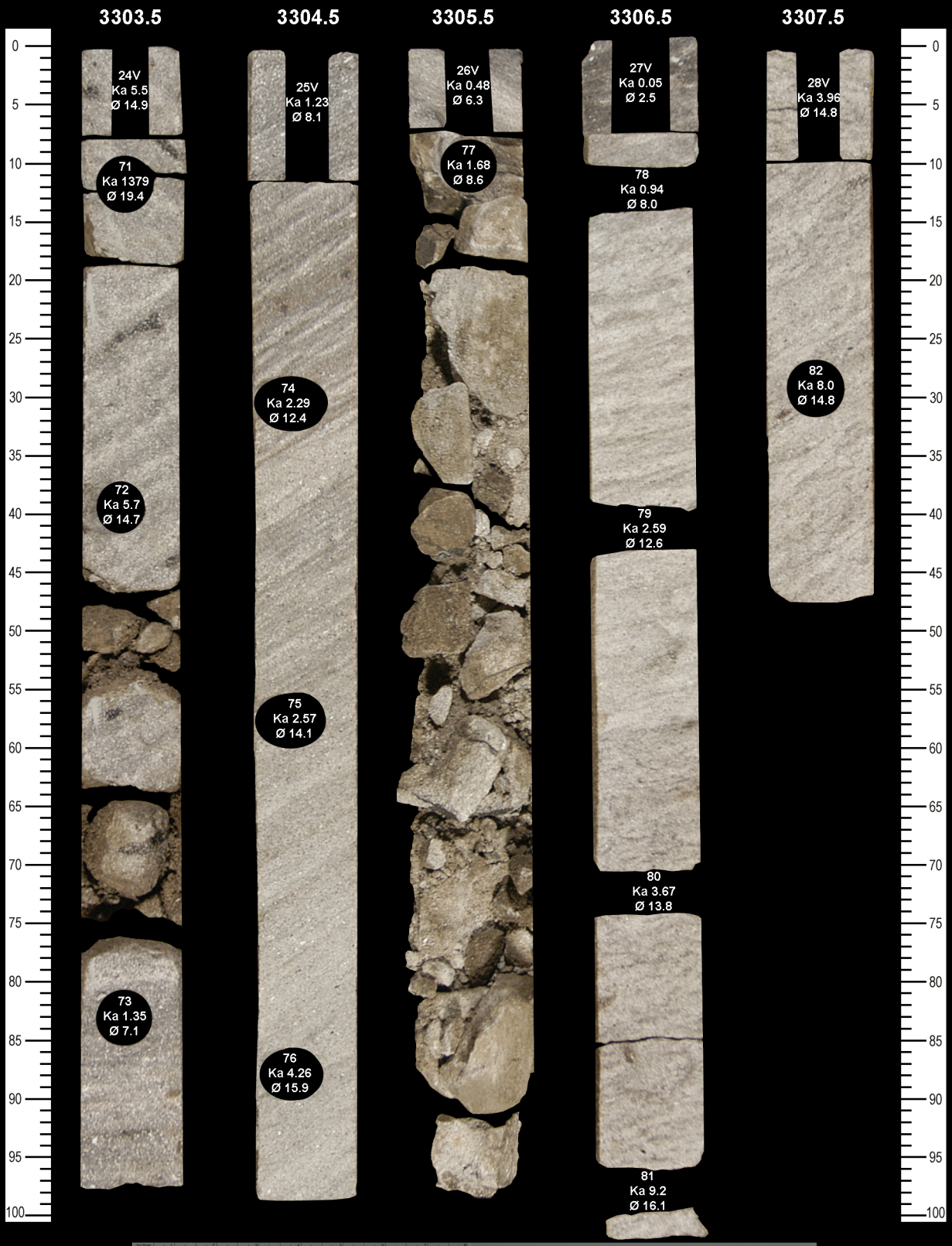


ROCKHOPPER-1 ST-1

Core 3

Ultra Violet

ROCKHOPPER-1 ST-1
Core 3



Origin energy

ROCKHOPPER-1 ST-1

Core 3

Ultra Violet

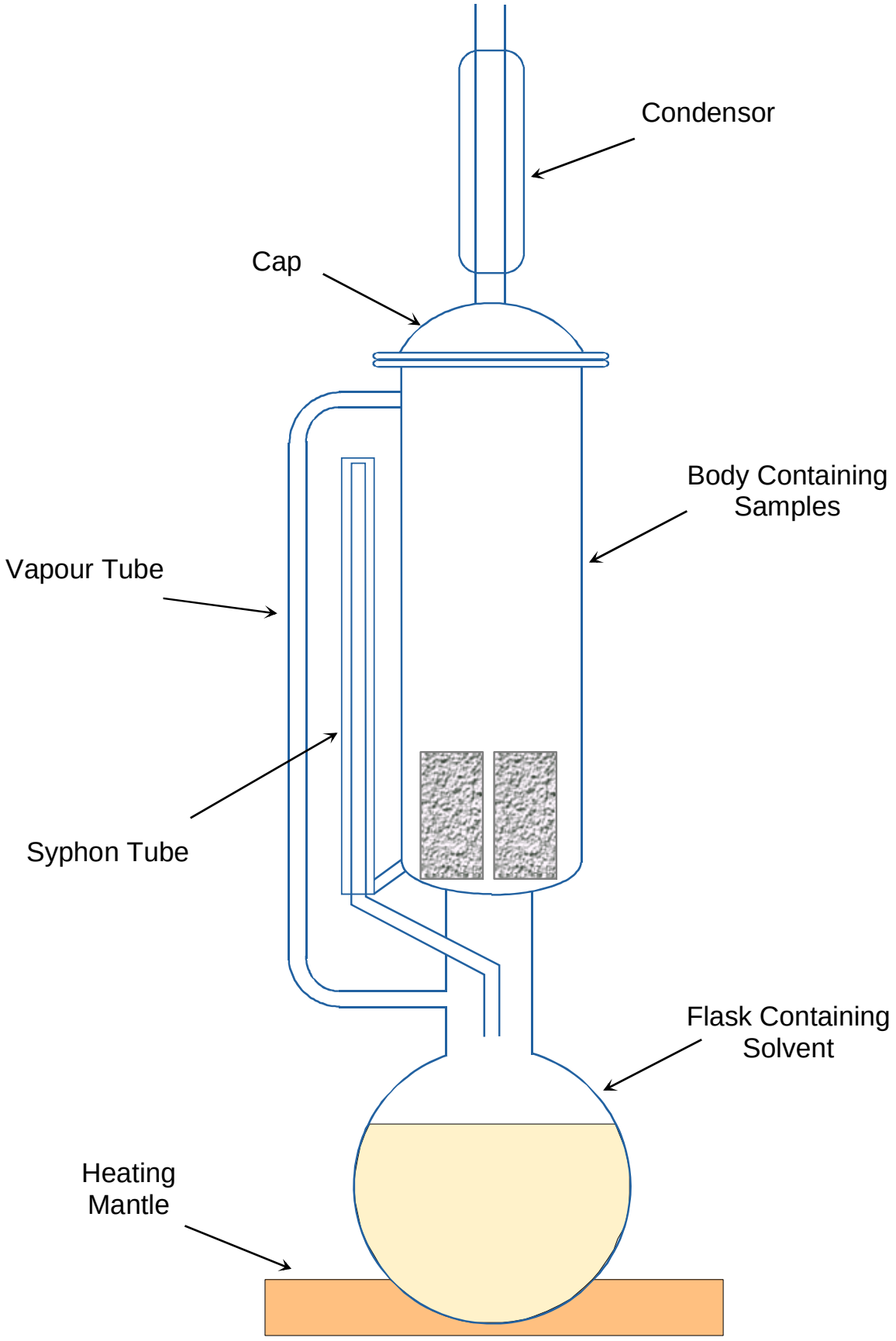
Weatherford® LABORATORIES

APPENDIX VII

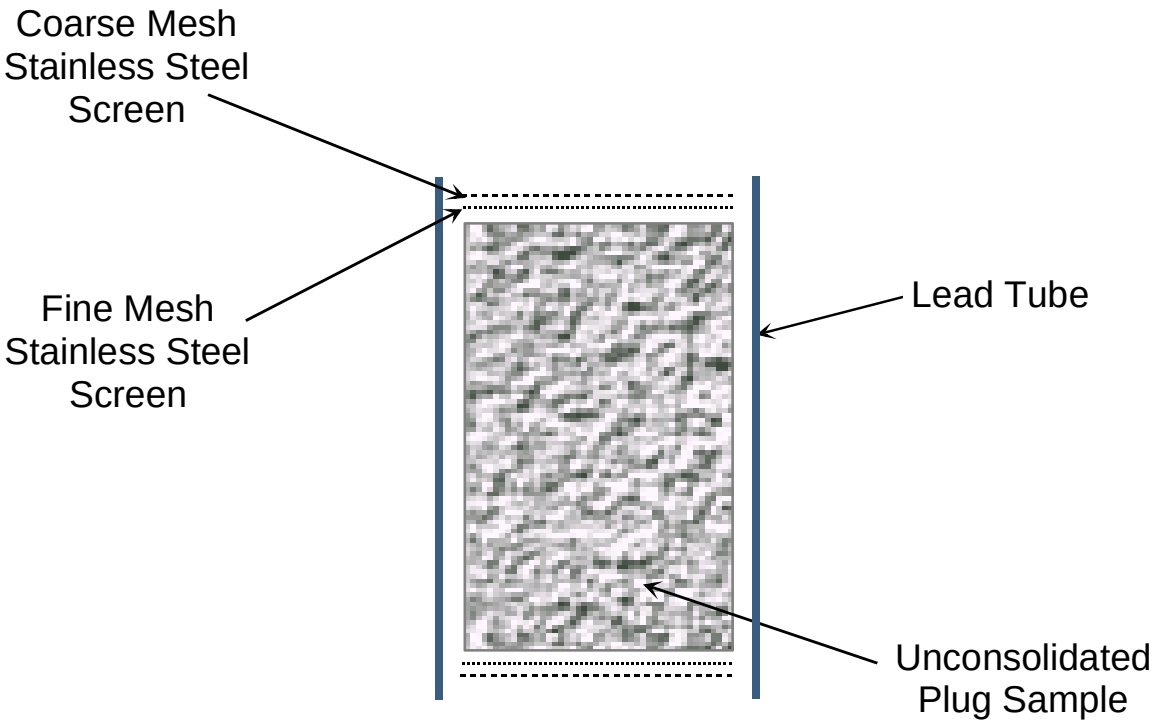
EQUIPMENT SCHEMATICS

SOXHLET CLEANING APPARATUS

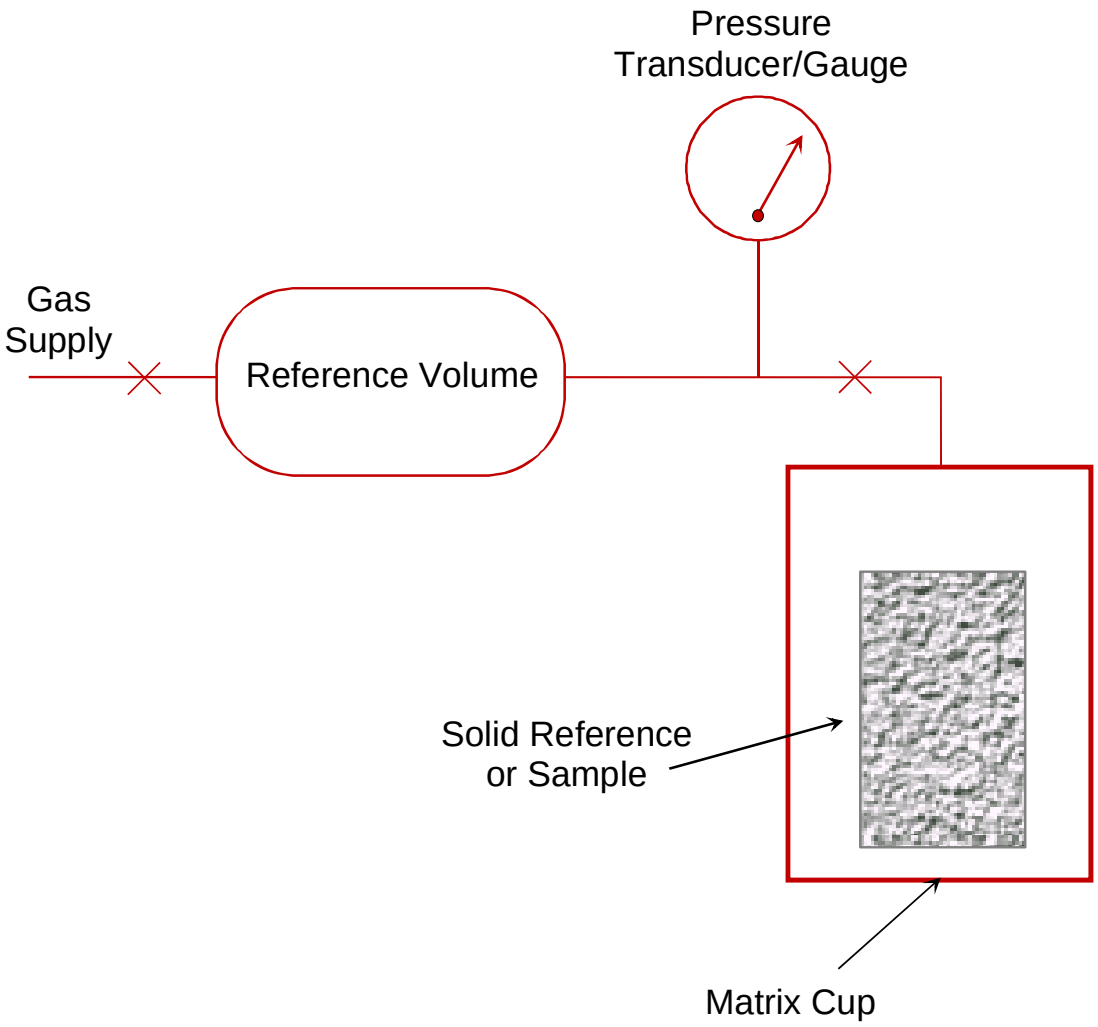
Weatherford LABORATORIES



LEAD SLEEVE SCHEMATIC (Exploded View)



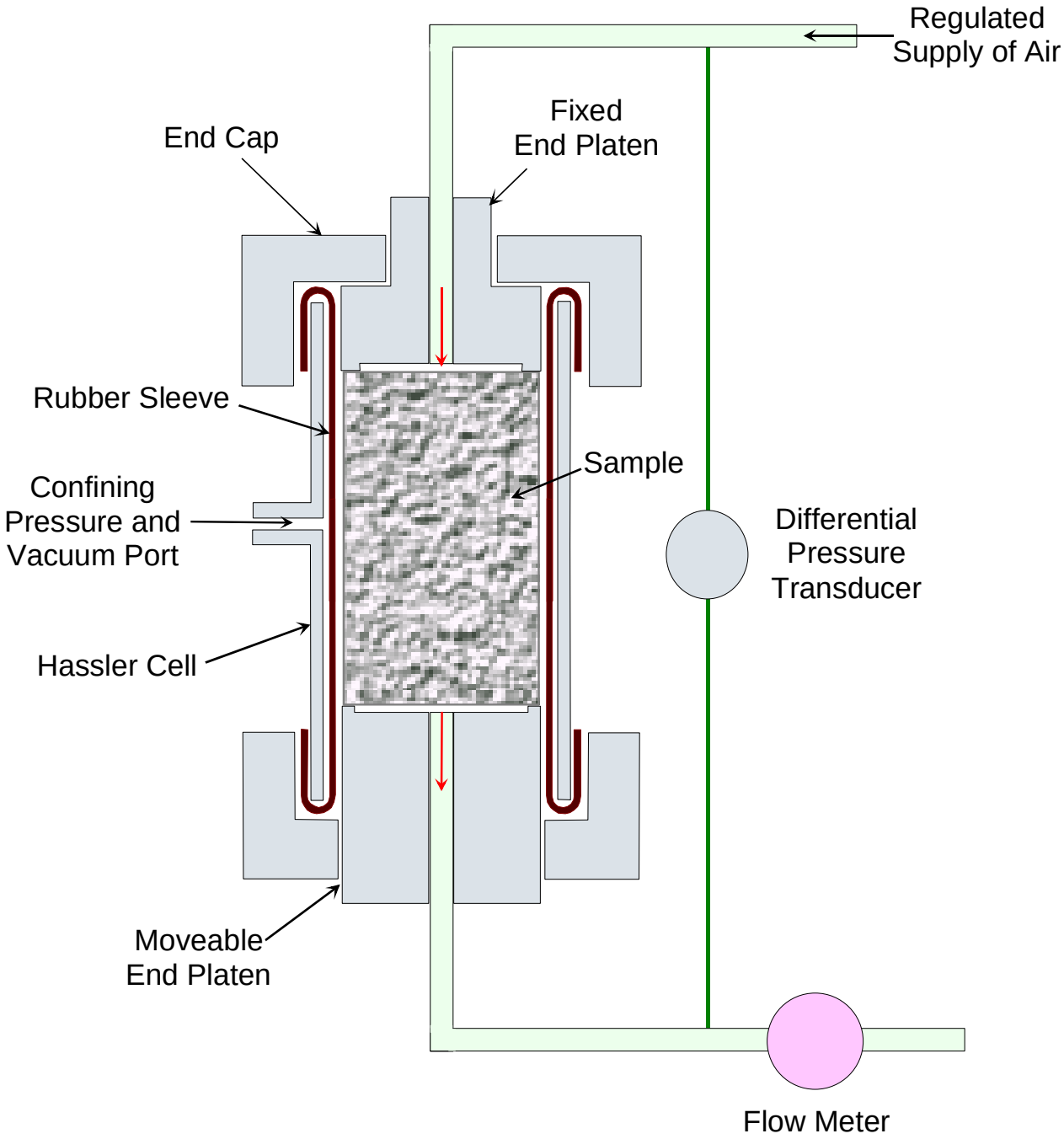
POROSIMETER SCHEMATIC



P1.V1 (reference) = P2.V2 (sample)

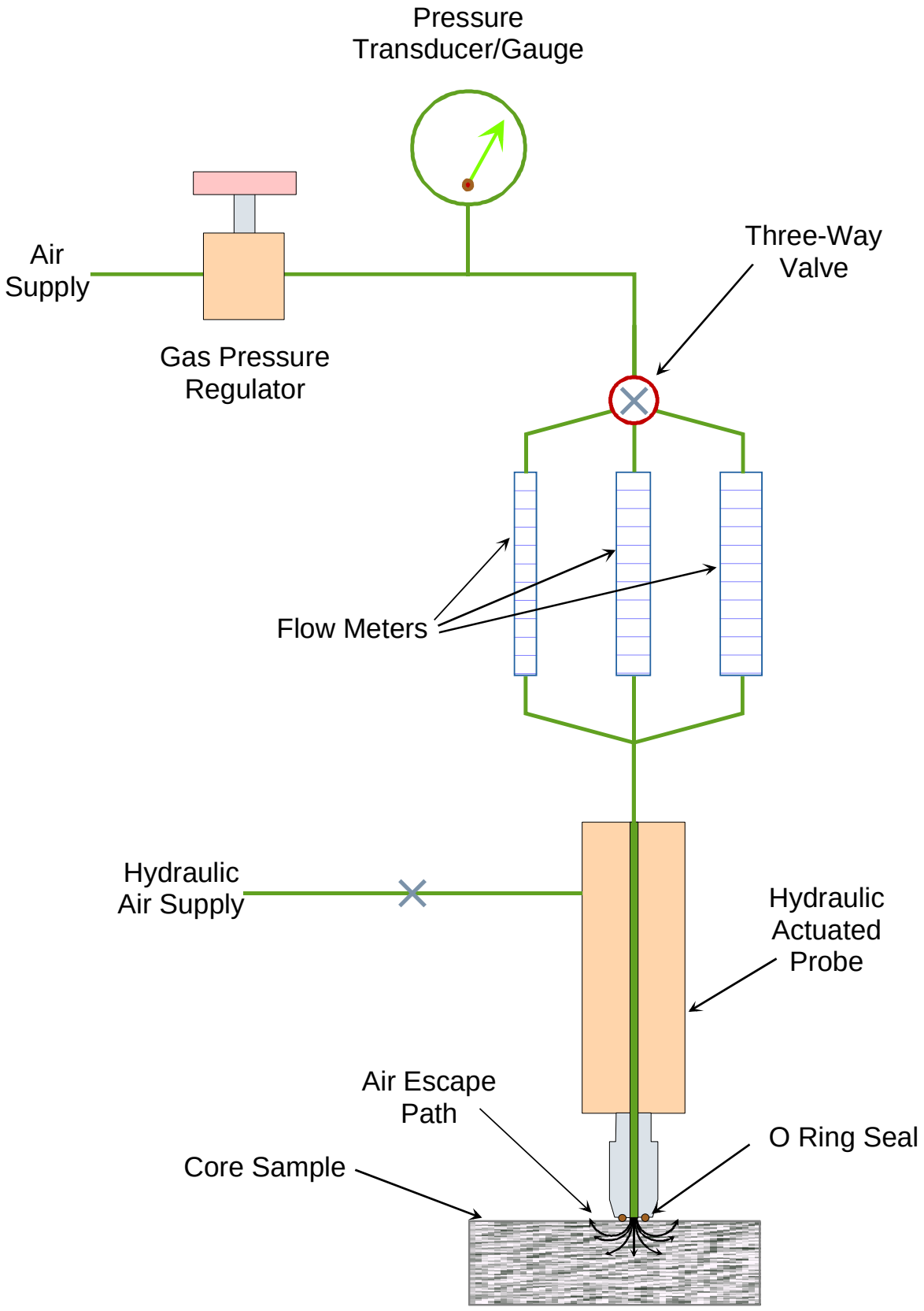
GAS PERMEAMETER SCHEMATIC (Hassler)

Weatherford LABORATORIES



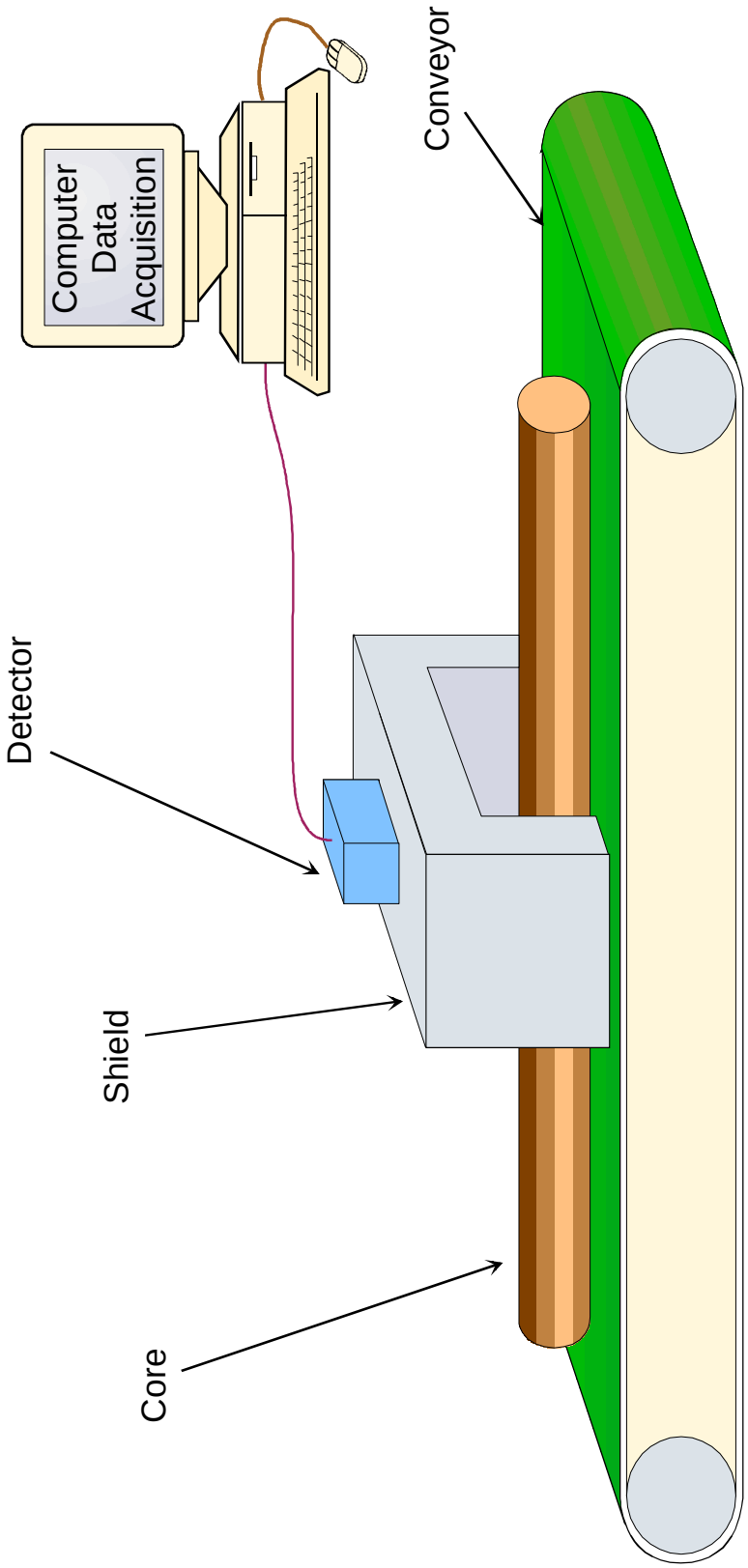
PROBE PERMEAMETER SCHEMATIC

Weatherford LABORATORIES



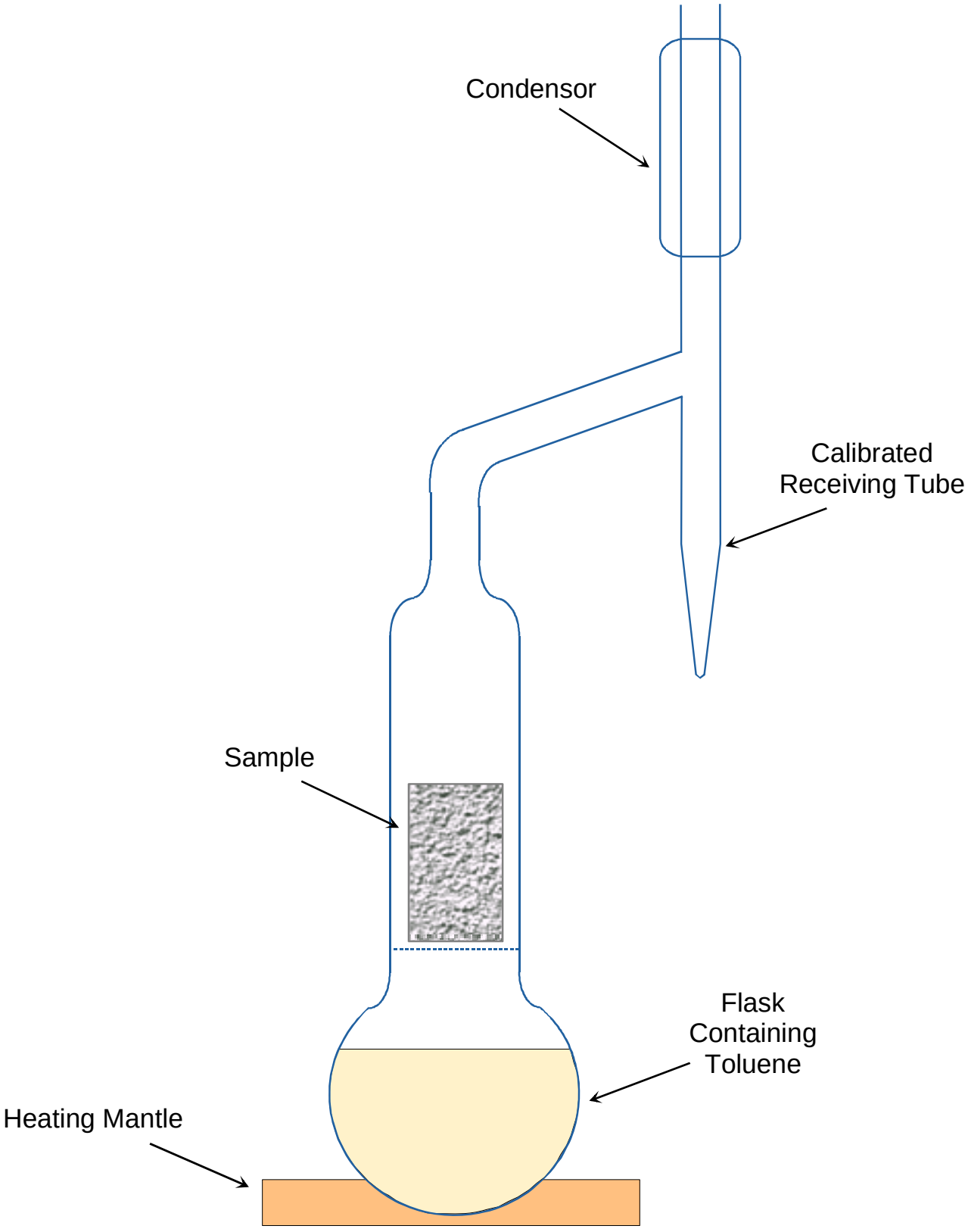
CONTINUOUS CORE GAMMA SCHEMATIC

Weatherford LABORATORIES



DEAN-STARK APPARATUS

Weatherford LABORATORIES



APPENDIX 5: MSCT DESCRIPTIONS

Core #	Depth (mMDRT)	Recovery (mm)	Formation	Hydrocarbon Fluorescence	Lithological Description
27	3137.0	9	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, very firm to hard, 20% very fine, 50% fine, 30% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, common quartz overgrowths and white argillaceous matrix, non-calcareous, common carbonaceous laminae, trace pyrite, very rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
25	3182.8	37	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, very firm to hard, 20% very fine, 50% fine, 30% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, common quartz overgrowths and white argillaceous matrix, non-calcareous, trace carbonaceous specks and laminae, trace pyrite, very rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
24	3184.7	30	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, very firm to hard, 20% very fine, 50% fine, 30% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, common quartz overgrowths and white matrix, non-calcareous, trace carbonaceous specks, trace pyrite, very rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
23	3191.5	45	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, very firm to hard, 20% very fine, 50% fine, 30% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, common quartz overgrowths and white matrix, non-calcareous, trace carbonaceous specks, trace pyrite, very rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
22	3205.2	30	Eastern View Coal		SANDSTONE: white to light yellowish grey, firm to friable, 20% very fine, 50%

			Measures		fine, 30% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, common quartz overgrowths and white matrix, mildly calcareous, trace carbonaceous specks, trace pyrite, very rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
21	3212.9	25	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, firm to friable, 20% very fine, 50% fine, 30% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, very rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
19	3238.9	27	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, firm to friable, 20% very fine, 50% fine, 30% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, very rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
18	3258.0	15	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, hard, 20% very fine, 60% fine, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, common quartz overgrowths, trace carbonaceous specks, trace pyrite, very rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
16	3301.8	45	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, firm to hard, 20% very fine, 20% fine, 30% medium, 20% coarse, 10% very coarse-granular grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, common mica, crystals, fair inferred

					porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
15	3304.9	30	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, soft to friable, 10% very fine, 20% fine, 30% medium, 30% coarse, 10% very coarse-granular grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, rare mica crystals, fair inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
14	3309.4	35	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, firm to very firm, 30% very fine, 50% fine, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
13	3311.1	15	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey to dark grey in cemented patches, hard to very hard, 10% fine, 30% medium, 40% coarse, 20% very coarse-granular grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, trace brown non-calcareous argillaceous matrix, trace carbonaceous specks, trace pyrite, fair inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, common dull yellow mineral fluorescence.
12	3312.6	45	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, hard, 10% fine, 30% medium, 40% coarse, 20% very coarse-granular grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, trace brown non-calcareous argillaceous matrix, trace carbonaceous specks, trace pyrite, rare mica crystals, fair-good inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, common dull yellow mineral fluorescence.
10	3315.2	32	Eastern View Coal		SANDSTONE: white to light yellowish grey, firm, 20% very fine, 20% fine, 30%

			Measures		medium, 20% coarse, 10% very coarse-granular grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, rare mica crystals, fair-good inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
09	3316.4	10	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, firm, 20% very fine, 20% fine, 30% medium, 20% coarse, 10% very coarse-granular grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, rare mica crystals, fair-good inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
07	3328.2	10	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, firm, 30% very fine, 50% fine, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
06	3330.3	45	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, firm, 30% very fine, 50% fine, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.
05	3331.3	35	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, firm to very firm, 30% very fine, 50% fine, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull

					yellow mineral fluorescence.
04	3332.4	45	Eastern View Coal Measures		SANDSTONE: white to light yellowish grey, firm to very firm, 30%, very fine, 50% fine, 20% medium grains, poorly to moderately, sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, grains, common quartz overgrowths, mildly calcareous, trace carbonaceous specks, trace pyrite, rare mica crystals, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour, dull yellow mineral fluorescence.

APPENDIX 6: MSCT ROUTINE CORE ANALYSIS & PHOTOGRAPHS

Weatherford®
LABORATORIES

ROUTINE CORE ANALYSIS FINAL REPORT

of

ROCKHOPPER-1 ST-1 MSCT

for

ORIGIN ENERGY RESOURCES LIMITED

by

WEATHERFORD LABORATORIES (AUSTRALIA) PTY LTD

Weatherford
LABORATORIES

23rd April, 2010

Origin Energy Resources Limited
Ground Floor
John Oxley Centre, North Tower
339 Coronation Drive
MILTON QLD 4064

Attention: Deidre Brooks
Ted Surka

FINAL REPORT: 0475-02

CLIENT REFERENCE: Purchase Order # 16023586

MATERIAL: MSCT

LOCALITY: Rockhopper-1 ST-1

WORK REQUIRED: Routine Core Analysis

Please direct technical inquiries regarding this work to the signatory below under whose supervision the work was carried out.

KEVIN H FLYNN
General Manager
SCAL Technical Director

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II MSCT PHOTOGRAPHY

III PENTANE EXTRACTION

CHAPTER 1

INTRODUCTION

1. INTRODUCTION

The Rockhopper-1 ST1 MSCT core samples were received at Weatherford Laboratories' Brisbane facility on 18th February, 2010.

Following sample inspection a routine core analysis study, including sample preparation was undertaken as per instructions received from Origin Energy Resources Limited.

The study included the following analyses:

- MSCT core samples photography
- Sample preparation
- Dean-Stark fluid saturation analyses
- Ambient porosity, permeability & grain density
- Pentane Extraction

The following report details the methods and procedures utilised in these analyses. Results are presented in both tabular and graphical formats.

CHAPTER 2

CORE ANALYSIS

2.1 Test and Calculation Procedures

2. CORE ANALYSIS

2.1 Test and Calculation Procedures

2.1.1 Sample Preparation

Samples were initially inspected for analysis suitability and fluorescence. On completion all samples were photographed under white light with a Nikon D100 6.1 megapixel digital SLR camera. Only samples with visible fluorescence were photographed under ultra-violet light. All images are presented here in a standard format and are stored digitally.

Samples were trimmed to right cylinders of maximum length using a diamond impregnated cutting blade. All samples were stored in refrigerated conditions to avoid pore fluid loss.

2.1.2 Dean-Stark Residual Fluid Saturation

Selected samples underwent fluid saturation analysis. Each fresh state sample was placed in the Dean-Stark fluid extraction apparatus, where it is suspended above a reservoir of boiling toluene. The solvent vapours, together with the extracted pore fluids, are condensed at the top of the glassware and the water collected in a calibrated side arm. Oil and toluene are collected in the reservoir and continue boiling so that clean toluene vapour continues extracting pore fluids. The process is continued until the water production ceases.

From the collected water volume and the latter determined helium injection pore volume of the sample, water saturation is calculated as follows.

$$Sw = (\text{Pore Water Volume} / \text{Pore Volume}) \times 100\%$$

Oil saturations were calculated from the weight loss of sample during analysis and assumptions of 30,000 ppm brine composition and 0.8 g/cm^3 oil density.

2.1.3 Cleaning and Drying

Cleaning was performed in a modified soxhlet system (Appendix I) using a 3:1 chloroform:methanol azeotrope. Cleaning continued until tests for oil (fluorescence under UV lights) and salt (silver nitrate precipitation) showed negative. The clean samples were dried to constant weight in a humidity oven at 60°C and 40% relative humidity. Once dry, the samples were cooled to room temperature in an airtight chamber.

2.1.4 Porosity

The plugs were sealed in a matrix cup and a known volume of helium at 100 psi reference pressure was introduced to the cup. From the resultant pressure, the unknown volume, i.e. the grain volume, was calculated using Boyles Law.

The bulk volume of each plug was determined by mercury immersion. The porosity is calculated as the volume percentage of pore space with respect to the bulk volume.

$$P_1 V_1 = P_2 V_2$$

$$\Rightarrow \quad P_1 Vr = P_2 (Vr + Vc - Vg)$$

$$Vp = Vb - Vg$$

$$\text{Ambient Porosity \%} = \frac{Vp}{Vb} \times 100\%$$

where

P_1 = initial pressure (psig)
P_2 = final pressure (psig)
Vr = reference cell volume (cm^3)
Vc = matrix cup volume (cm^3)
Vg = grain volume (cm^3)
Vp = pore volume (cm^3)
Vb = bulk volume (cm^3)

2.1.5 Permeability to Air

The samples were placed into a hydrostatic cell (Appendix I) with an ambient confining pressure of 400 psi applied. The confining pressure was used to prevent bypassing of air around the sample when the measurement was made. In order to determine permeability, a known air pressure was applied to the upstream face of each sample, creating a flow of air through the core plug. Air permeability for each core sample was calculated using Darcy's Law through knowledge of the upstream pressure, flow rate, viscosity of air and sample dimensions.

$$Ka = \frac{2000.BP.\mu.q.L}{(P_1^2 - P_2^2).A}$$

where

Ka = air permeability (milliDarcy's)
BP = barometric pressure (atmospheres)
μ = gas viscosity (cP)
q = flow rate (cm^3/s) at barometric pressure
L = sample length (cm)
P_1 = upstream pressure (atmospheres)
P_2 = downstream pressure (atmospheres)
A = sample cross sectional area (cm^2)

2.1.6 Grain Density

The apparent grain density is calculated by dividing the weight of the plug by the grain volume, determined from the helium injection porosity measurement.

$$\rho = \frac{Wt}{Vg}$$

where ρ = *grain density (g/cm^3)*
Wt = *weight of sample (g)*
Vg = *grain volume (cm^3)*

2.1.7 Pentane Extraction

Sample off-cuts were initially crushed and immersed in a solution of n-pentane. The solution was agitated and after a minimum of 2 hours (for the residual crude oil to dissolve) the solution was filtered. The liquid was then evaporated to a residual sample before injection into a Gas Chromotograph. All concentrations were determined as mol %. Due to the very low concentration of oil in the samples (and minimal samples available for crushing) only sample 18 had sufficient peak definition to allow composition to be calculated.

CHAPTER 2

CORE ANALYSIS

2.2 Test Results

CORE ANALYSIS FINAL REPORT

Client : Origin Energy Resources Limited
Well : Rockhopper-1 ST-1 MSCT

Date : 29/03/2010
File : 0475-02

Sample Number	Depth (m)	Dir	Porosity Helium (percent)	Grain Density (g/cm^3)	Permeability to Air (mD)	Fluid Saturation So (percent)	Fluid Saturation Sw (percent)	Remarks
4	3332.40	MSCT	14.4	2.63	1.55	1.0	65.0	S.P.
5	3331.30	MSCT	20.8	2.64				Irr, S.P.
6	3330.30	MSCT	22.9	2.62				Irr, S.P.
7	3328.20	MSCT						N/A
9	3316.40	MSCT						N/A
10	3315.20	MSCT						N/A
12	3312.60	MSCT	7.9	2.63	0.48	2.5	68.2	
13	3311.10	MSCT	15.2	2.66				Irr, S.P.
14	3309.40	MSCT	16.8	2.64	1.36			
15	3304.90	MSCT						Failed
16	3301.80	MSCT	18.6	2.64	5.00			S.P.
18	3258.00	MSCT	14.5	2.64		1.1	72.0	S.P.
19	3238.90	MSCT	19.0	2.63		1.2	77.3	Irr, S.P.
21	3212.90	MSCT	18.7	2.63	1.78	1.2	81.5	Irr, S.P.
22	3205.20	MSCT	21.8	2.64	61.4	2.7	70.2	Irr, S.P.
23	3191.50	MSCT	18.0	2.65	2.40	1.4	88.2	H Fracs, S.P.
24	3184.70	MSCT	22.5	2.63		1.2	76.8	Irr, H Fracs, S.P.
25	3182.80	MSCT	18.1	2.67	16.0	2.4	61.0	Irr, S.P.
27	3137.00	MSCT	18.1	2.63		1.1	73.1	Irr, S.P.

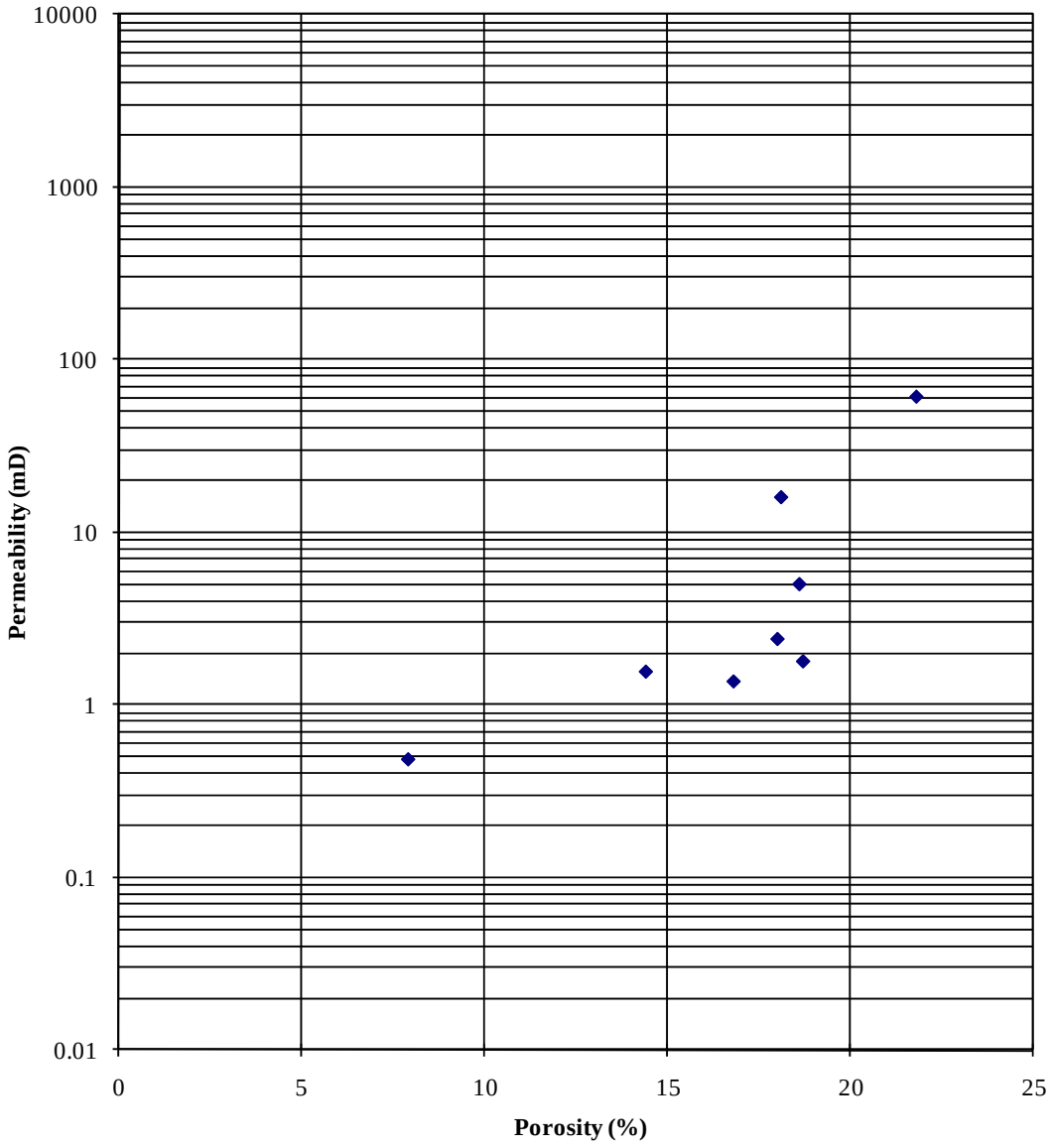
N/A	Not Analysed
Irr	Irregular Shape
S.P.	Short Plug
H Fracs	Horozontal Fractures

POROSITY vs PERMEABILITY
Ambient

Client: Origin Energy Resources Limited

Well: Rockhopper-1 ST-1 MSCT

Samples: MSCT

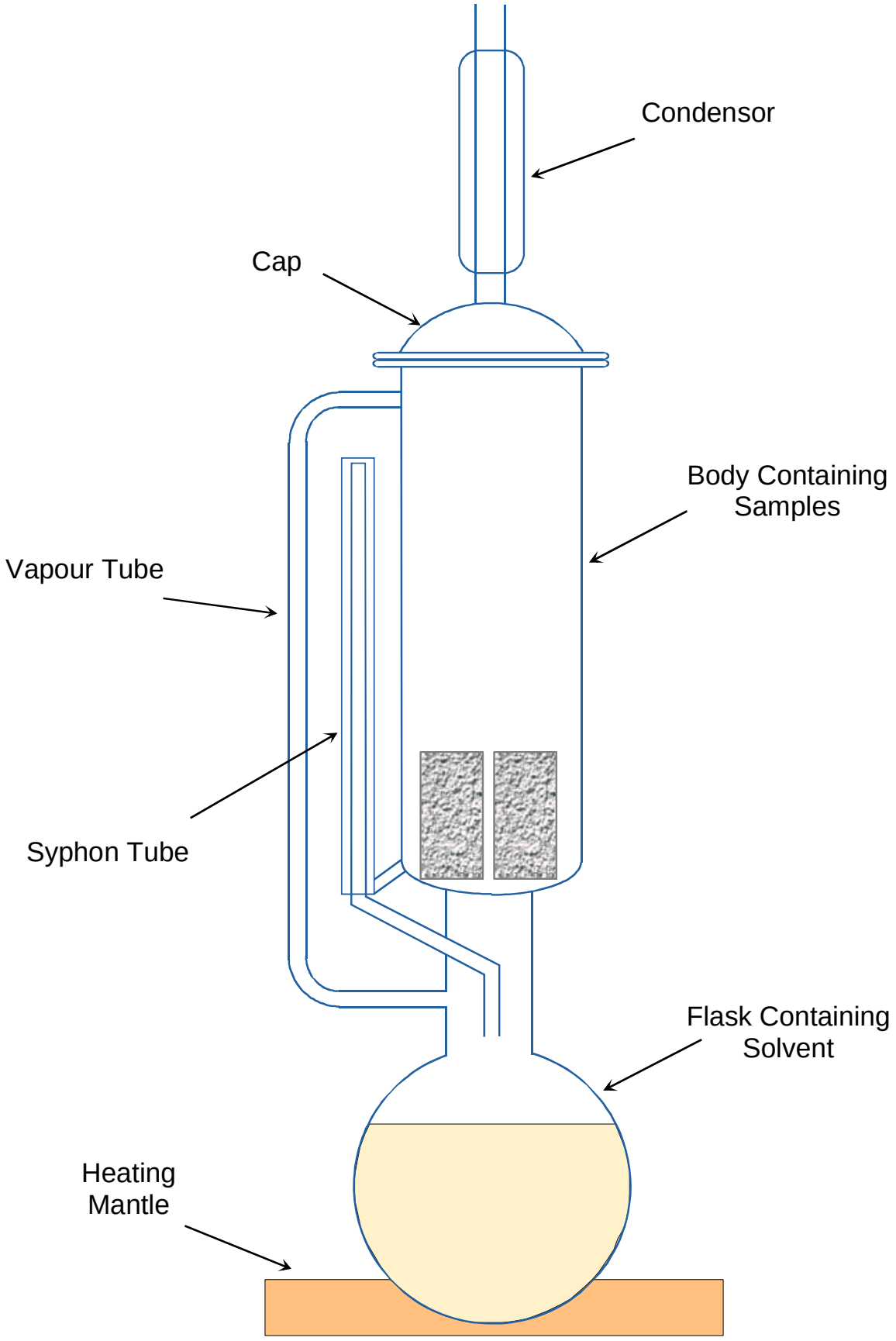


APPENDIX I

EQUIPMENT SCHEMATICS

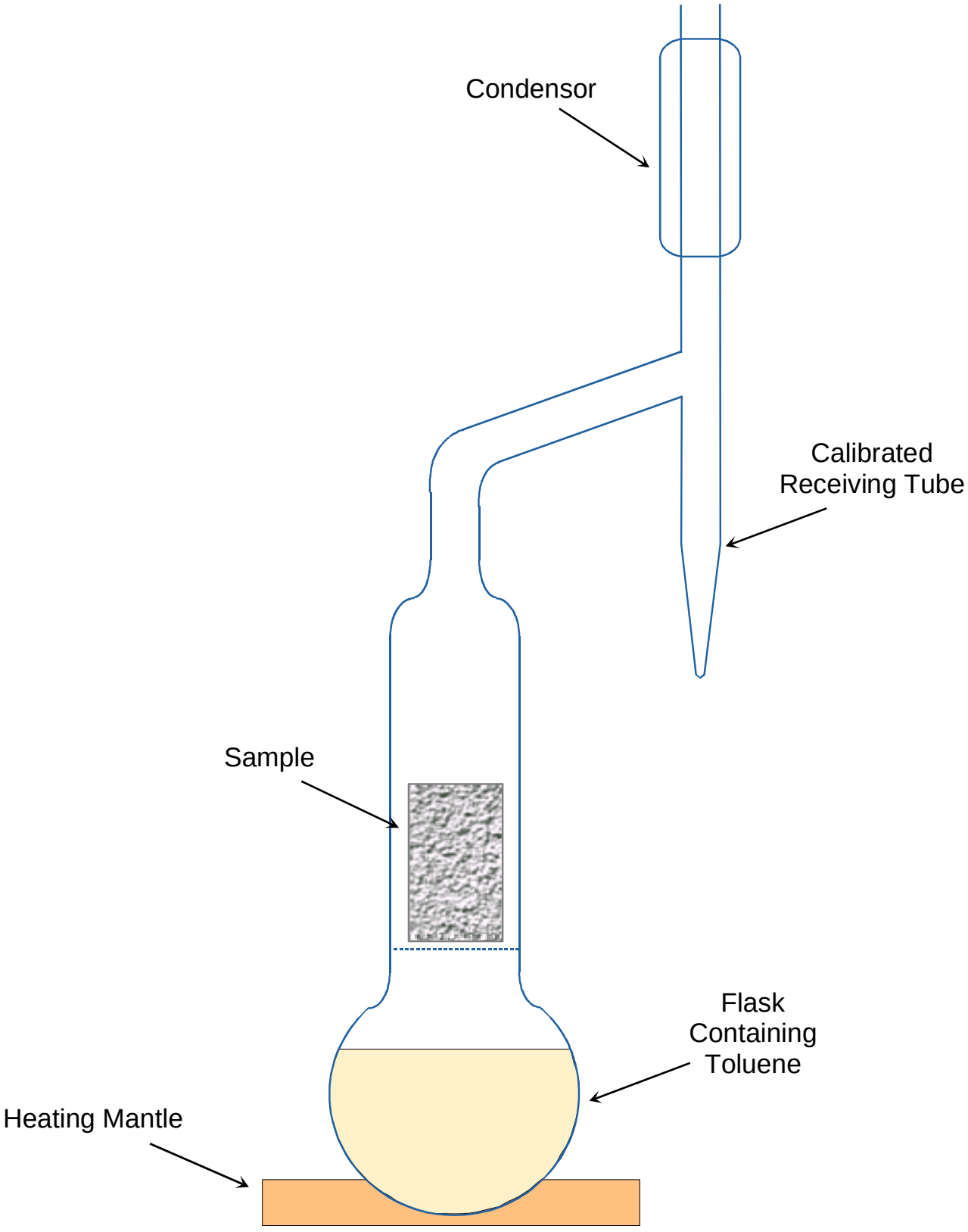
SOXHLET CLEANING APPARATUS

Weatherford LABORATORIES

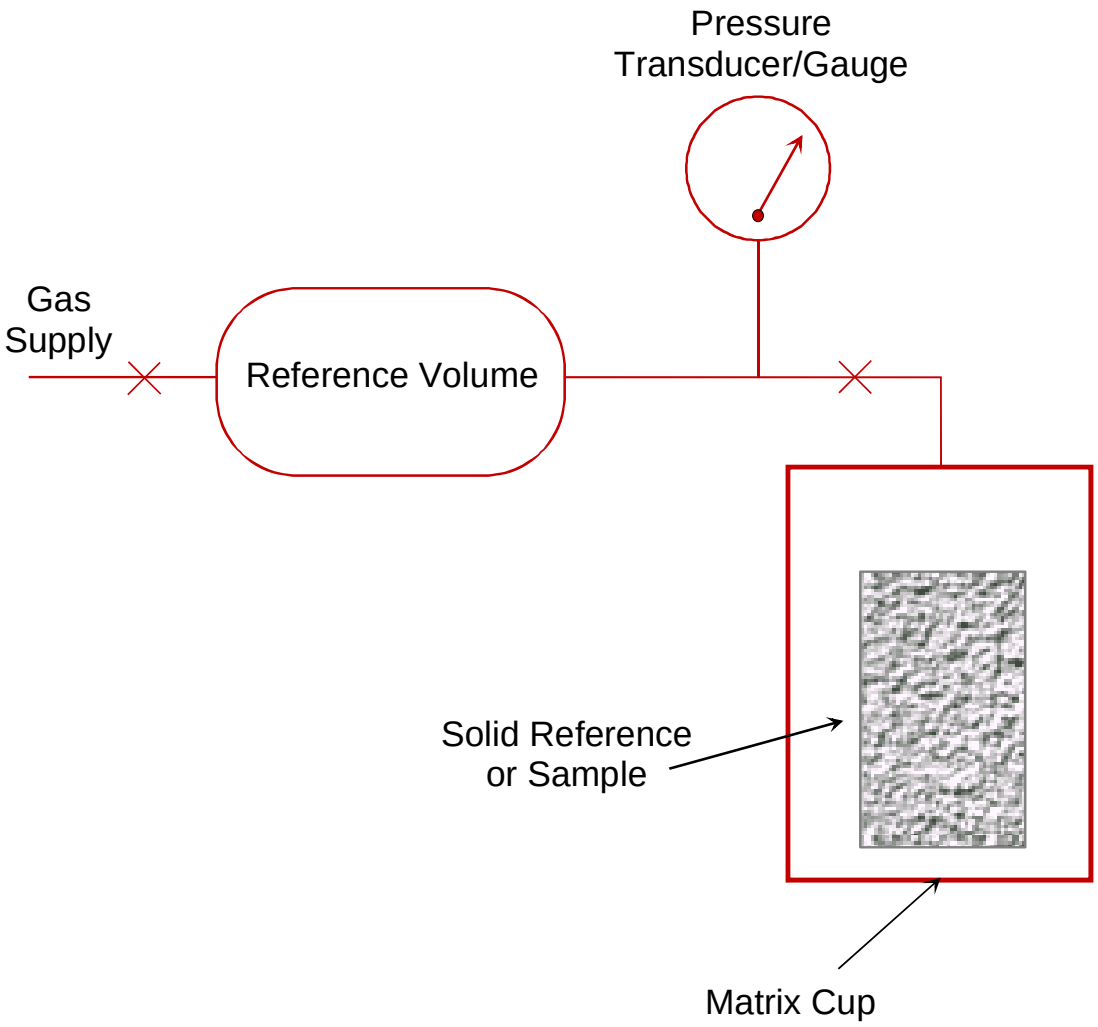


DEAN-STARK APPARATUS

Weatherford LABORATORIES



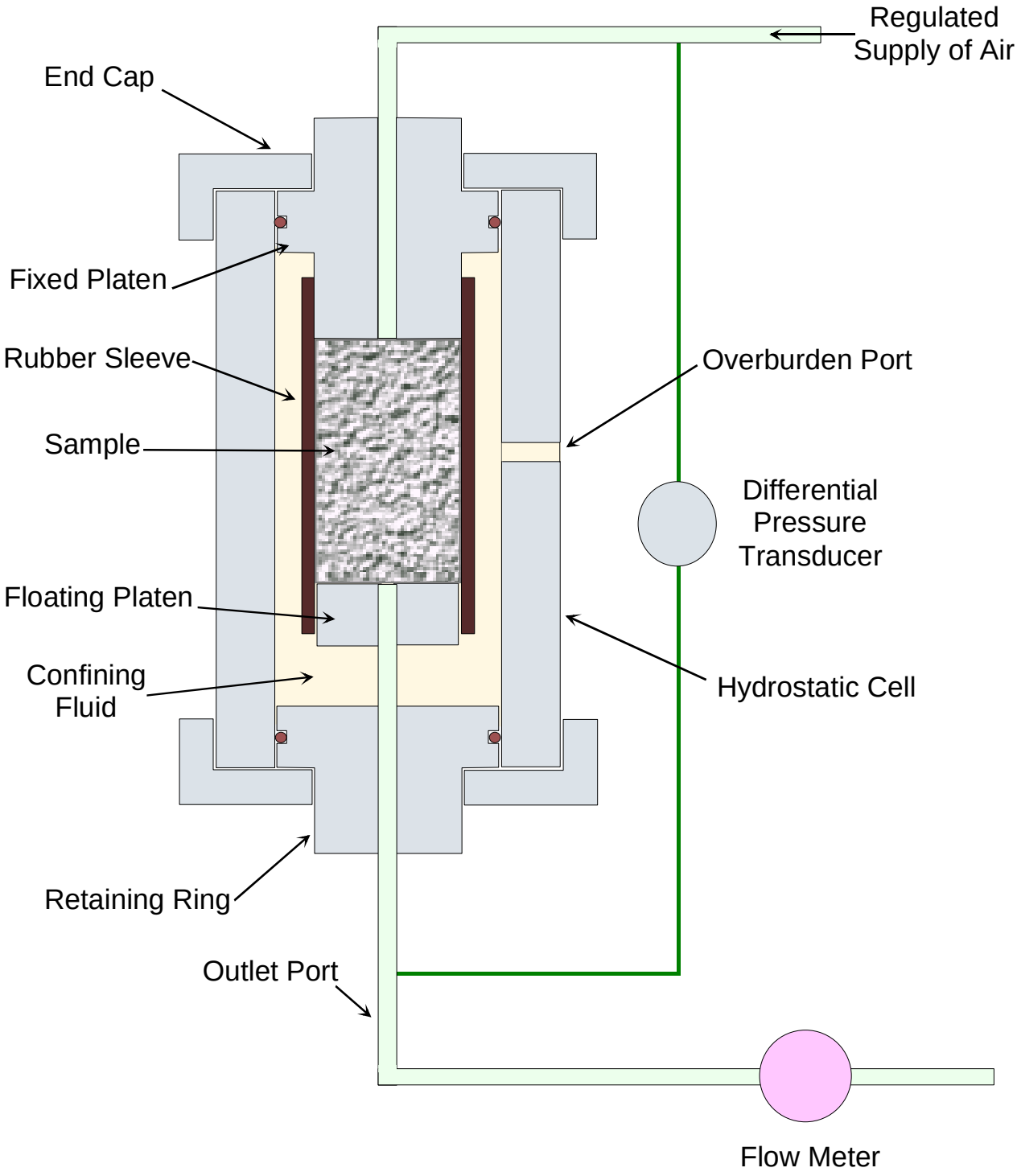
POROSIMETER SCHEMATIC



P1.V1 (reference) = P2.V2 (sample)

GAS PERMEAMETER SCHEMATIC (Hydrostatic)

Weatherford LABORATORIES

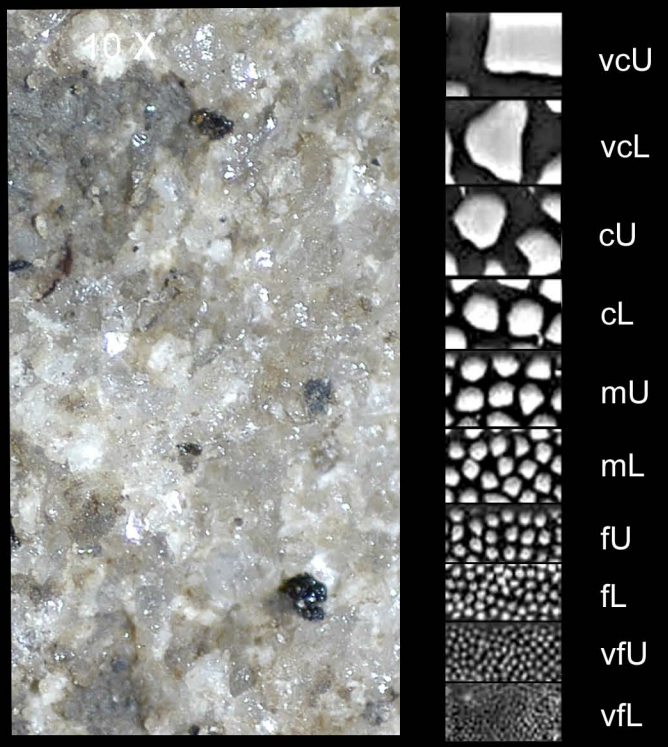


APPENDIX II

MSCT PHOTOGRAPHY

SWC Photography
ROCKHOPPER-1 ST1 MSCT

SWC 4 3332.40m



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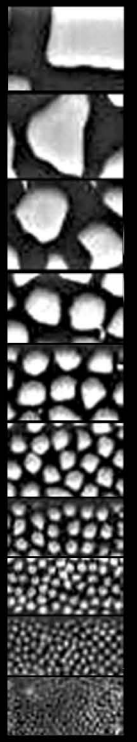

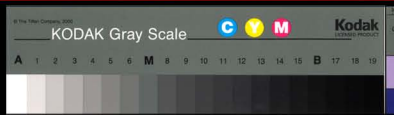

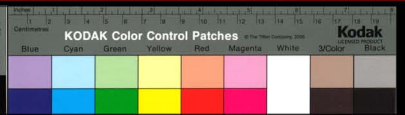

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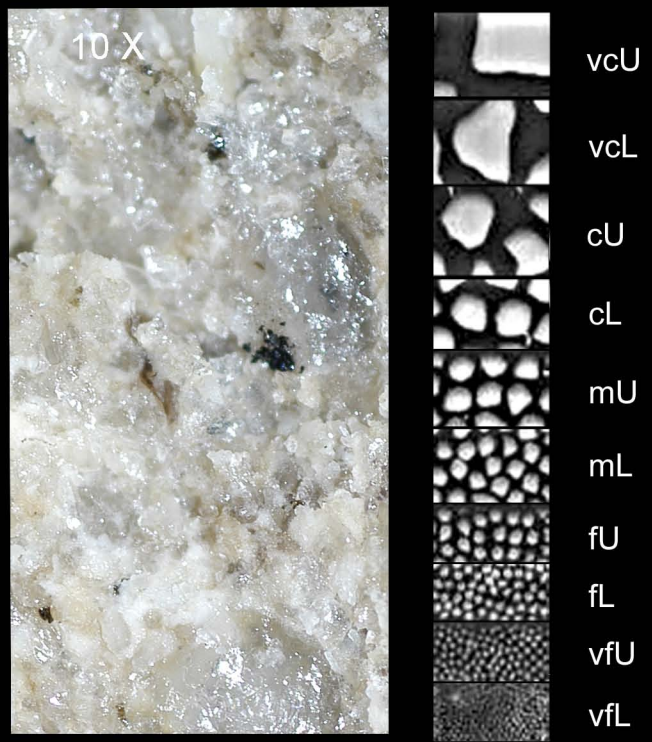

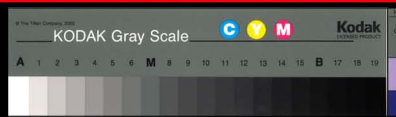

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ROCKHOPPER-1 ST1 MSCT

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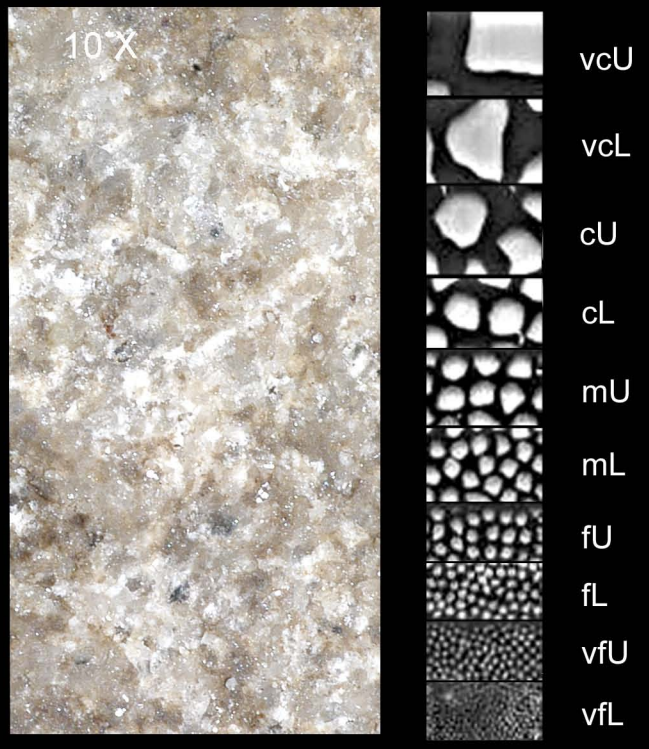

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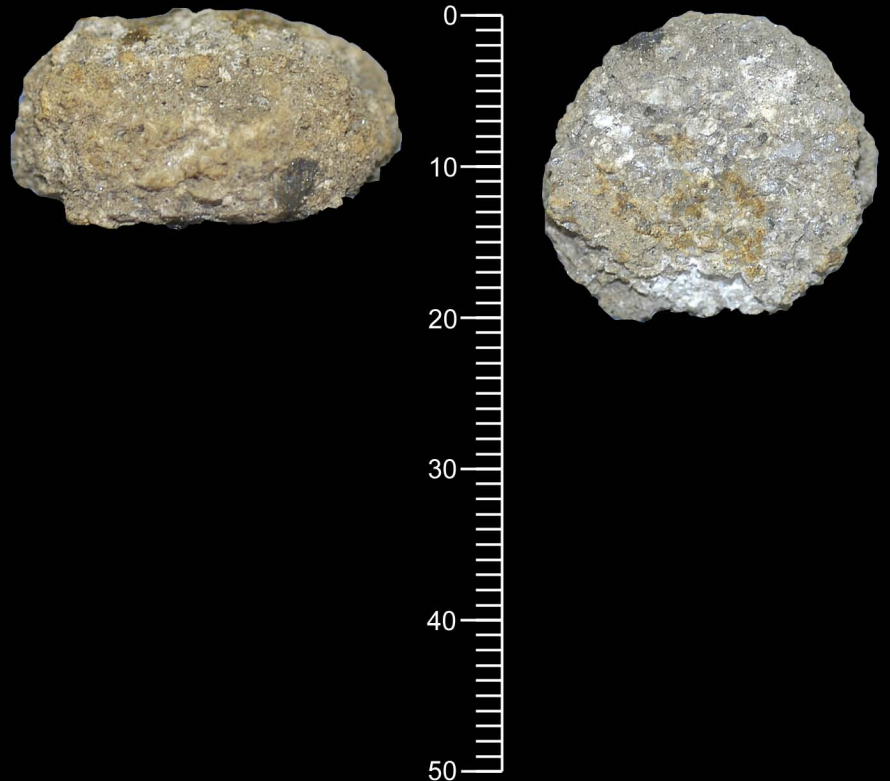
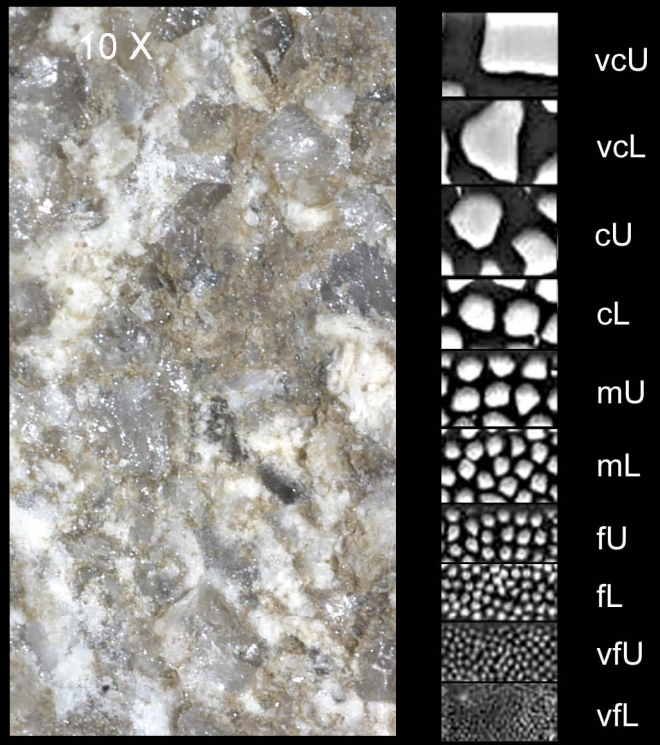
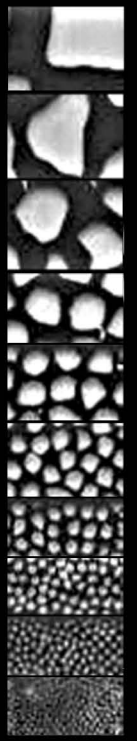
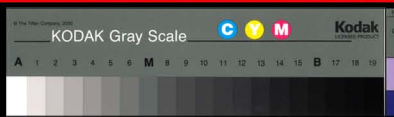




SWC Photography
ROCKHOPPER-1 ST1 MSCT

SWC 10 3315.20m





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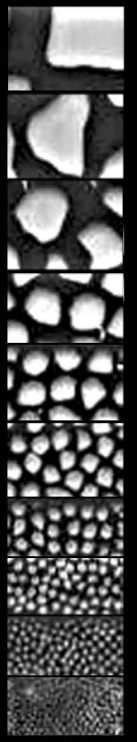

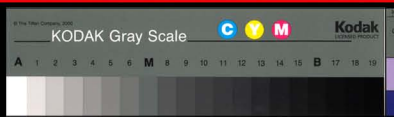

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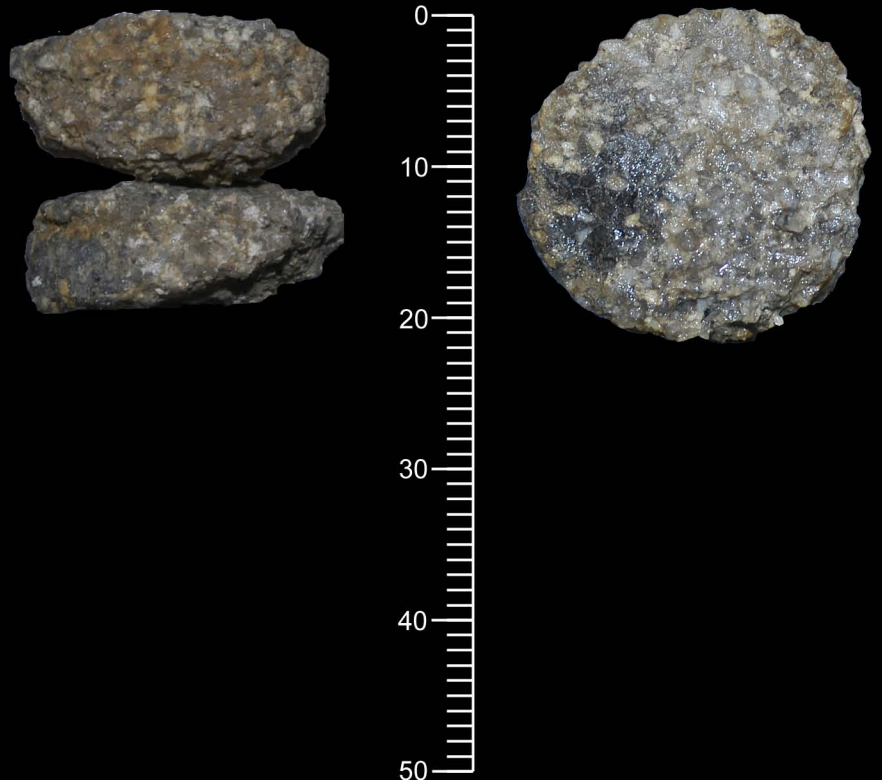

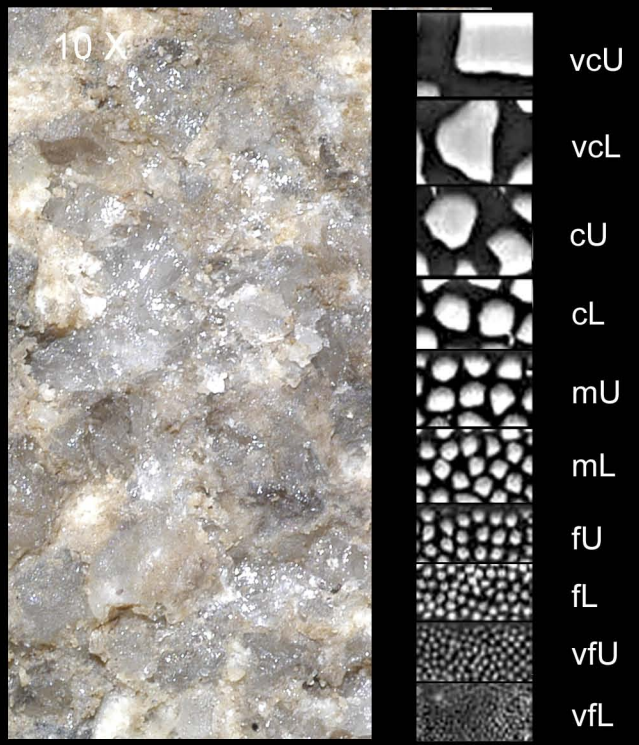

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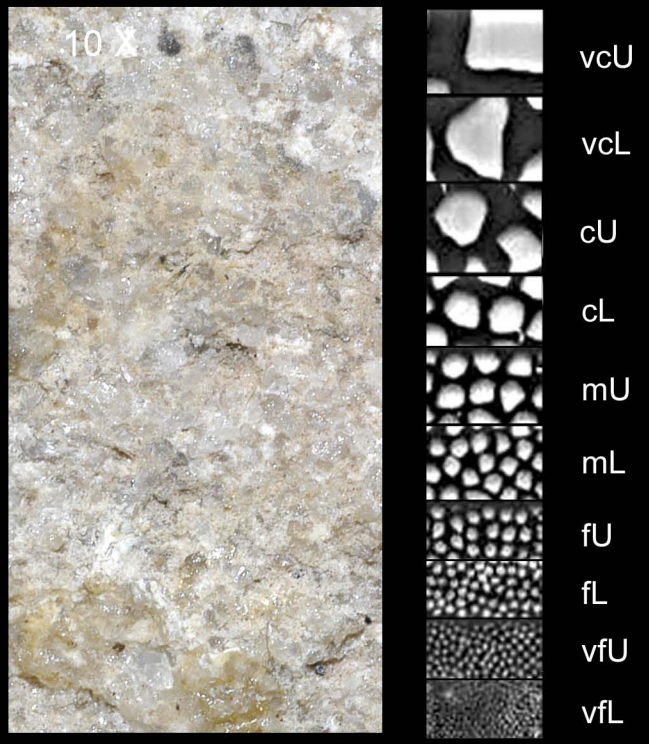

SWC Photography
ROCKHOPPER-1 ST1 MSCT
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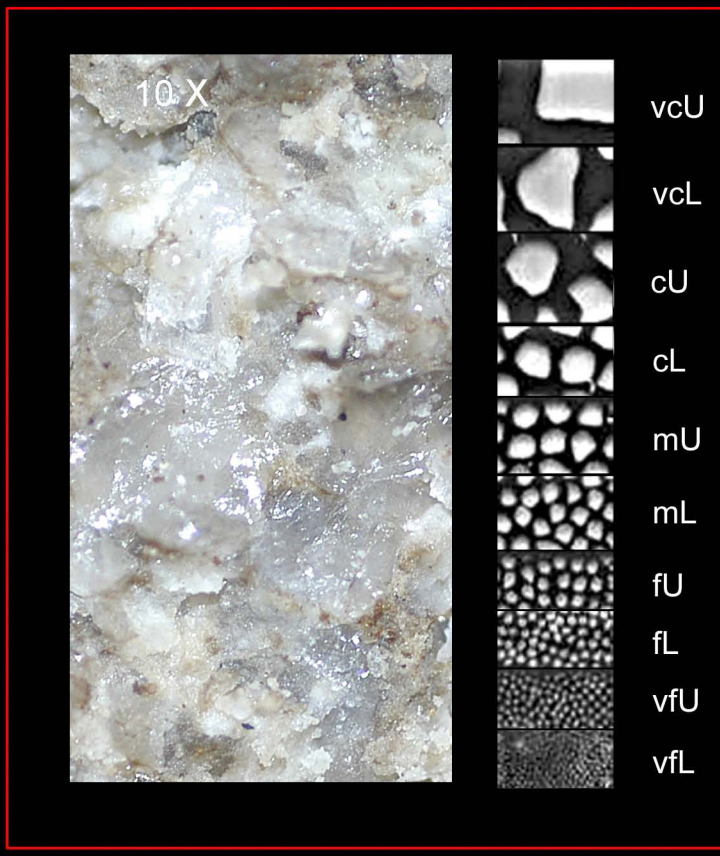

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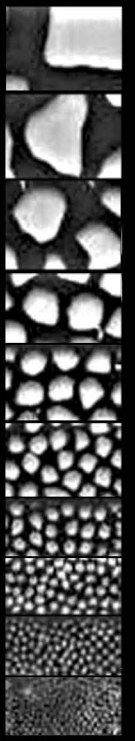

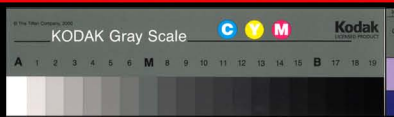

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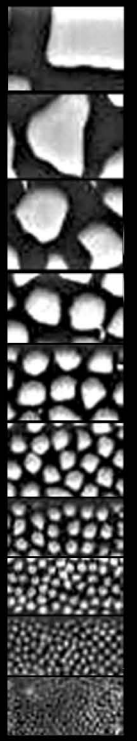

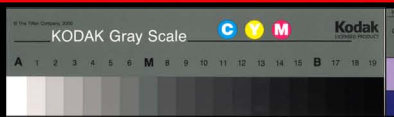

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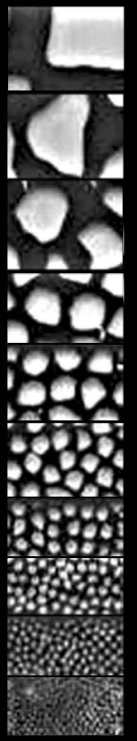

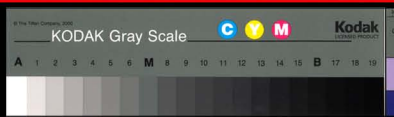

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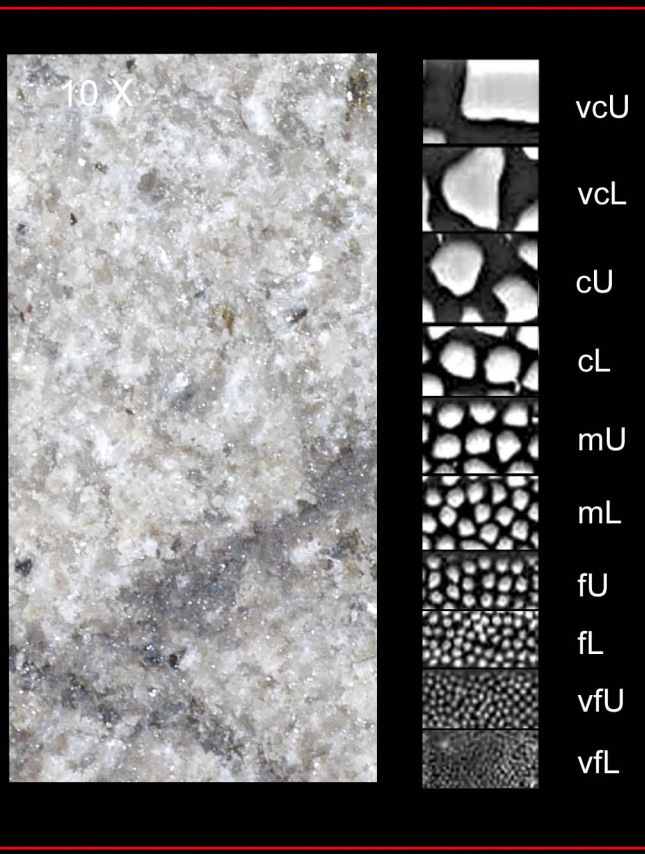

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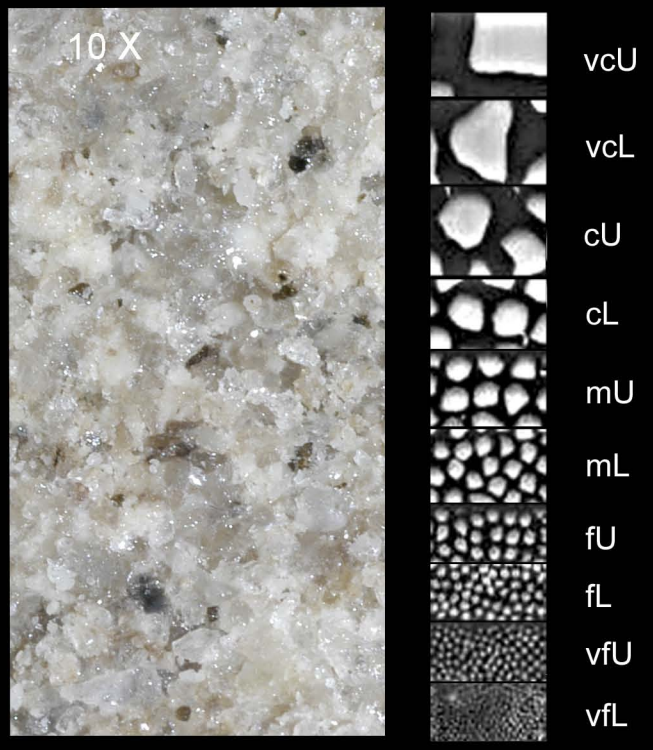

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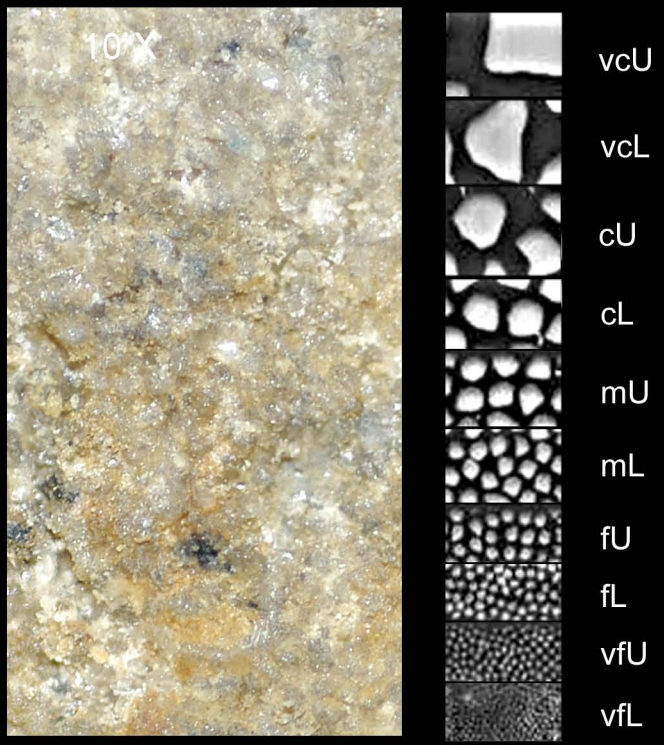

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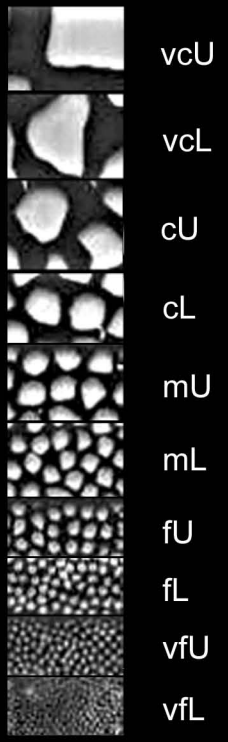

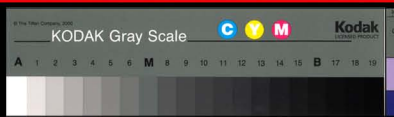

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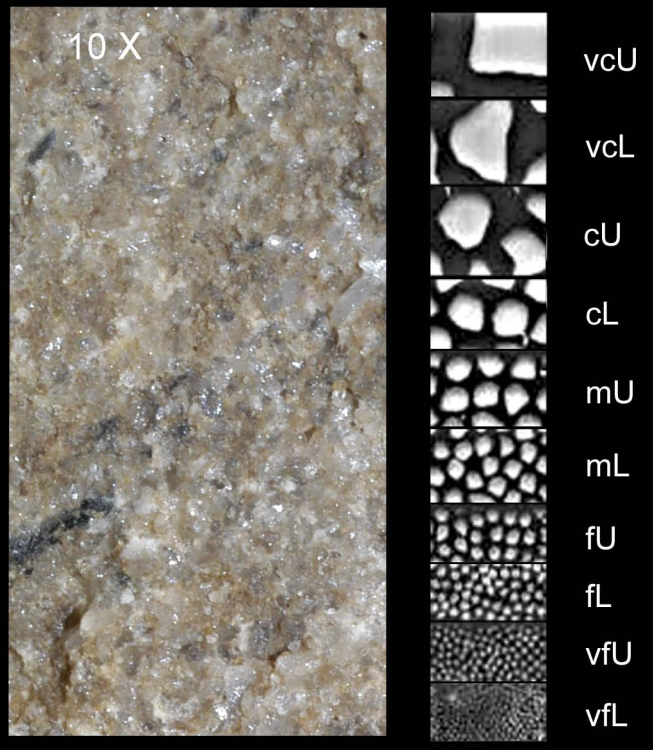

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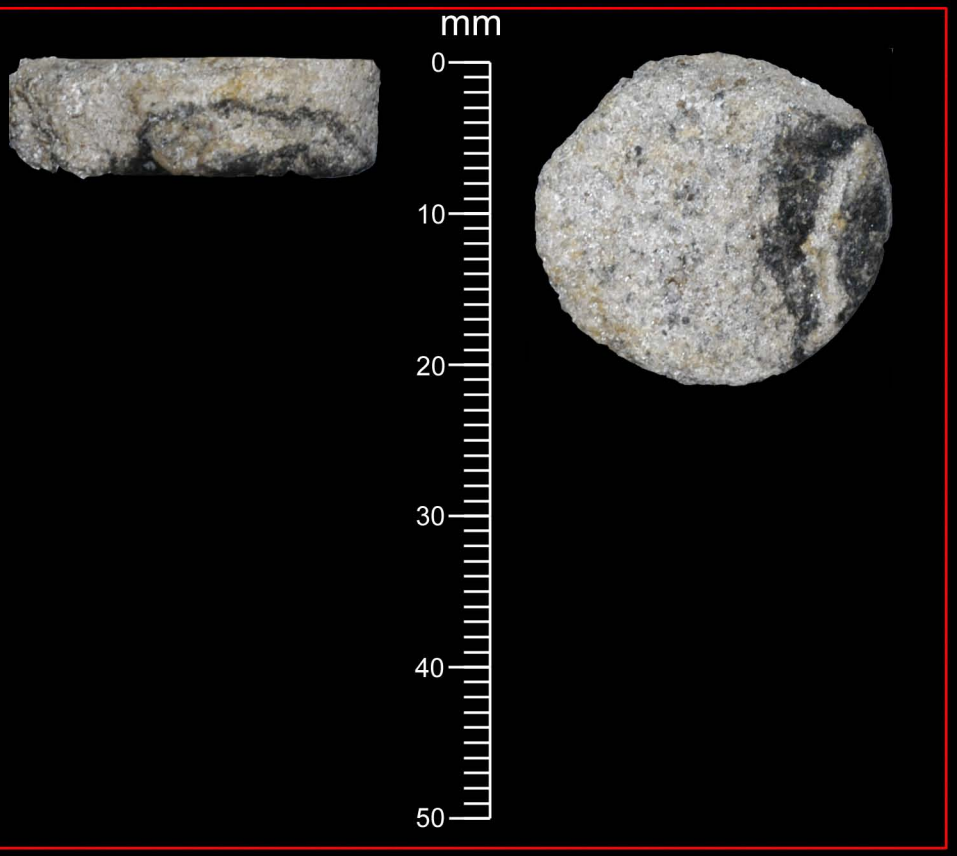
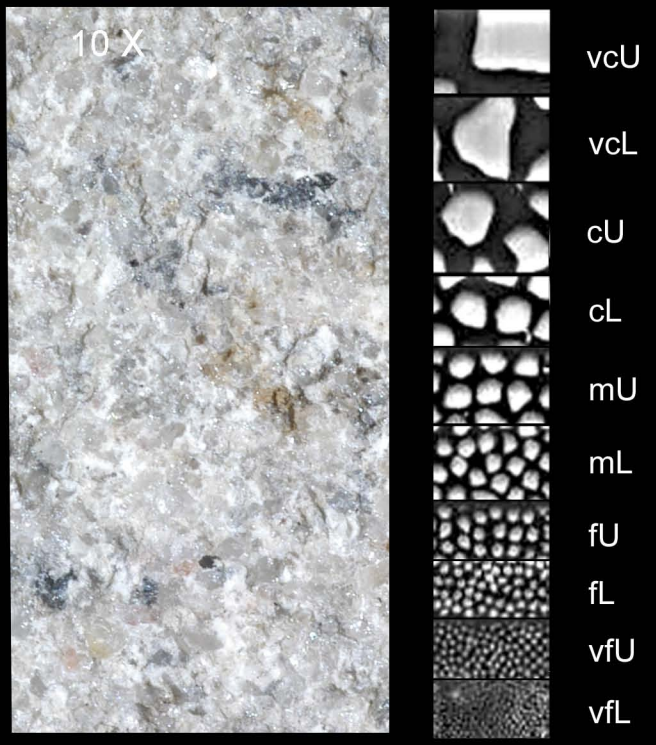




APPENDIX III

PENTANE EXTRACTION

VOLATILE AND SEMI-VOLATILE TPH RESULTS

Pentane Extraction

Client Origin Energy Resources Limited

Well Rockhopper-1 ST-1

	MSCT-04	MSCT-09	MSCT-12	MSCT-18	MSCT-19	MSCT-21
Depth (Metres)	3332.40	3316.40	3312.60	3258.00	3238.90	3212.90
Dean-Stark So (%)	1.0		2.5	1.1	1.2	1.2
Ethane	-	-	-	< 0.01	-	-
Propane	-	-	-	< 0.01	-	-
I-Butane	-	-	-	< 0.01	-	-
n-Butane	-	-	-	< 0.01	-	-
I-Pentane	-	-	-	< 0.01	-	-
n-Pentane	-	-	-	< 0.01	-	-
Hexane	-	-	-	< 0.01	-	-
Benzene	-	-	-	< 0.01	-	-
Cyclohexane	-	-	-	< 0.01	-	-
Heptane	-	-	-	< 0.01	-	-
MCH	-	-	-	< 0.01	-	-
Toluene	-	-	-	< 0.01	-	-
Octane	-	-	-	< 0.01	-	-
Ethylebenzene & Xylenes	-	-	-	< 0.01	-	-
C_9	-	-	-	< 0.01	-	-
C_{10}	-	-	-	< 0.01	-	-
C_{11}	-	-	-	< 0.01	-	-
C_{12}	-	-	-	< 0.01	-	-
C_{13}	-	-	-	2.63	-	-
C_{14}	-	-	-	0.33	-	-
C_{15}	-	-	-	0.46	-	-
C_{16}	-	-	-	0.71	-	-
C_{17}	-	-	-	0.67	-	-
C_{18}	-	-	-	1.27	-	-
C_{19}	-	-	-	1.81	-	-
C_{20}	-	-	-	2.29	-	-
C_{21}	-	-	-	3.81	-	-
C_{22}	-	-	-	6.76	-	-
C_{23}	-	-	-	9.96	-	-
C_{24}	-	-	-	10.02	-	-
C_{25}	-	-	-	11.92	-	-
C_{26}	-	-	-	10.14	-	-
C_{27}	-	-	-	10.61	-	-
C_{28}+	-	-	-	26.61	-	-

- Due to insufficient oil in the sample the Mol % could not be accurately determined

NB: All results are in Mol % unless otherwise specified.

VOLATILE AND SEMI-VOLATILE TPH RESULTS

Pentane Extraction

Client Origin Energy Resources Limited

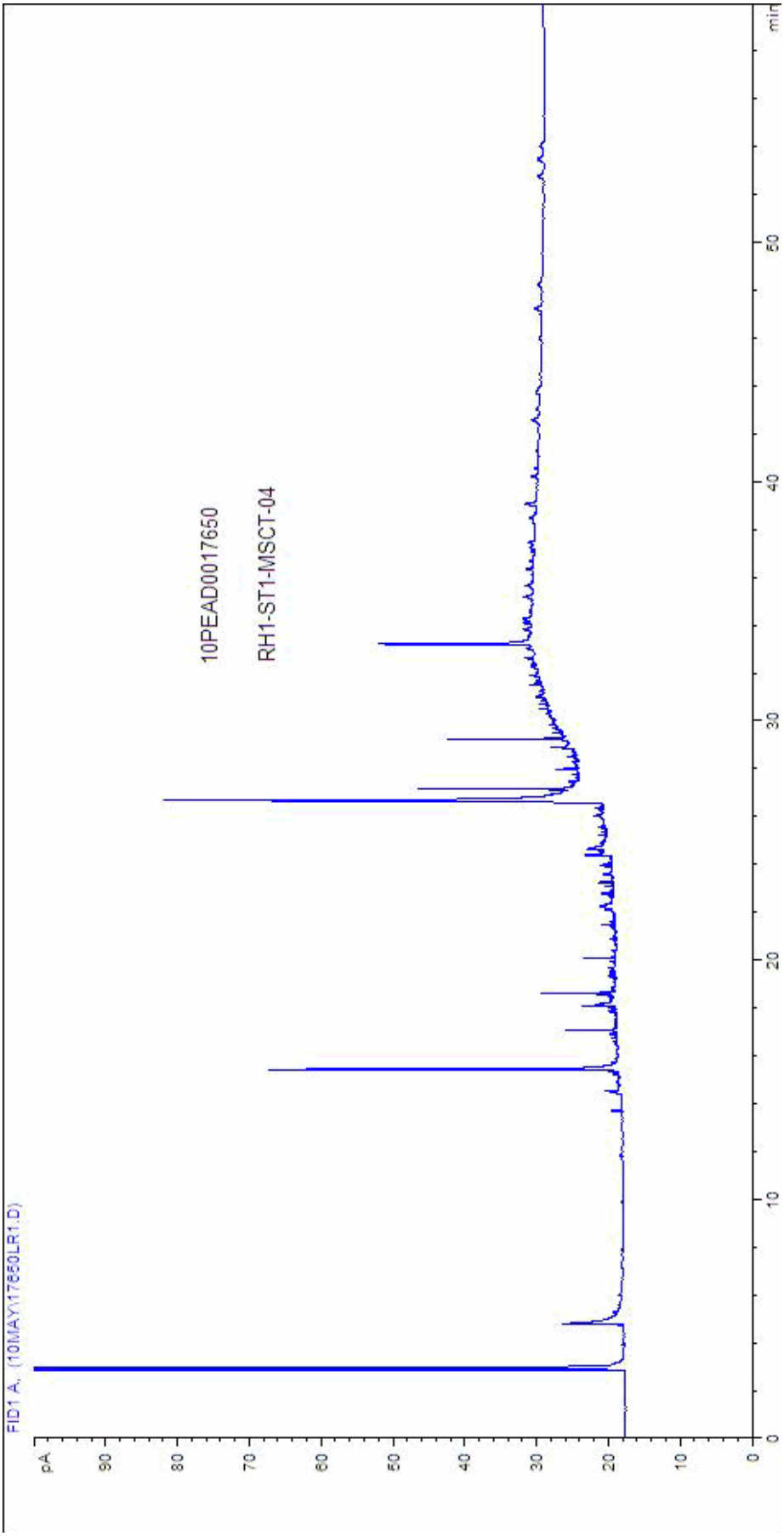
Well Rockhopper-1 ST-1

	MSCT-22	MSCT-23	MSCT-24	MSCT-25	MSCT-27
Depth (Metres)	3205.20	3191.50	3184.70	3182.80	3137.00
Dean-Stark So (%)	2.7	1.4	1.2	2.4	1.1

Ethane	-	-	-	-	-
Propane	-	-	-	-	-
I-Butane	-	-	-	-	-
n-Butane	-	-	-	-	-
I-Pentane	-	-	-	-	-
n-Pentane	-	-	-	-	-
Hexane	-	-	-	-	-
Benzene	-	-	-	-	-
Cyclohexane	-	-	-	-	-
Heptane	-	-	-	-	-
MCH	-	-	-	-	-
Toluene	-	-	-	-	-
Octane	-	-	-	-	-
Ethylebenzene & Xylenes	-	-	-	-	-
C_9	-	-	-	-	-
C_{10}	-	-	-	-	-
C_{11}	-	-	-	-	-
C_{12}	-	-	-	-	-
C_{13}	-	-	-	-	-
C_{14}	-	-	-	-	-
C_{15}	-	-	-	-	-
C_{16}	-	-	-	-	-
C_{17}	-	-	-	-	-
C_{18}	-	-	-	-	-
C_{19}	-	-	-	-	-
C_{20}	-	-	-	-	-
C_{21}	-	-	-	-	-
C_{22}	-	-	-	-	-
C_{23}	-	-	-	-	-
C_{24}	-	-	-	-	-
C_{25}	-	-	-	-	-
C_{26}	-	-	-	-	-
C_{27}	-	-	-	-	-
C_{28}+	-	-	-	-	-

- Due to insufficient oil in the sample the Mol % could not be accurately determined

NB: All results are in Mol % unless otherwise specified.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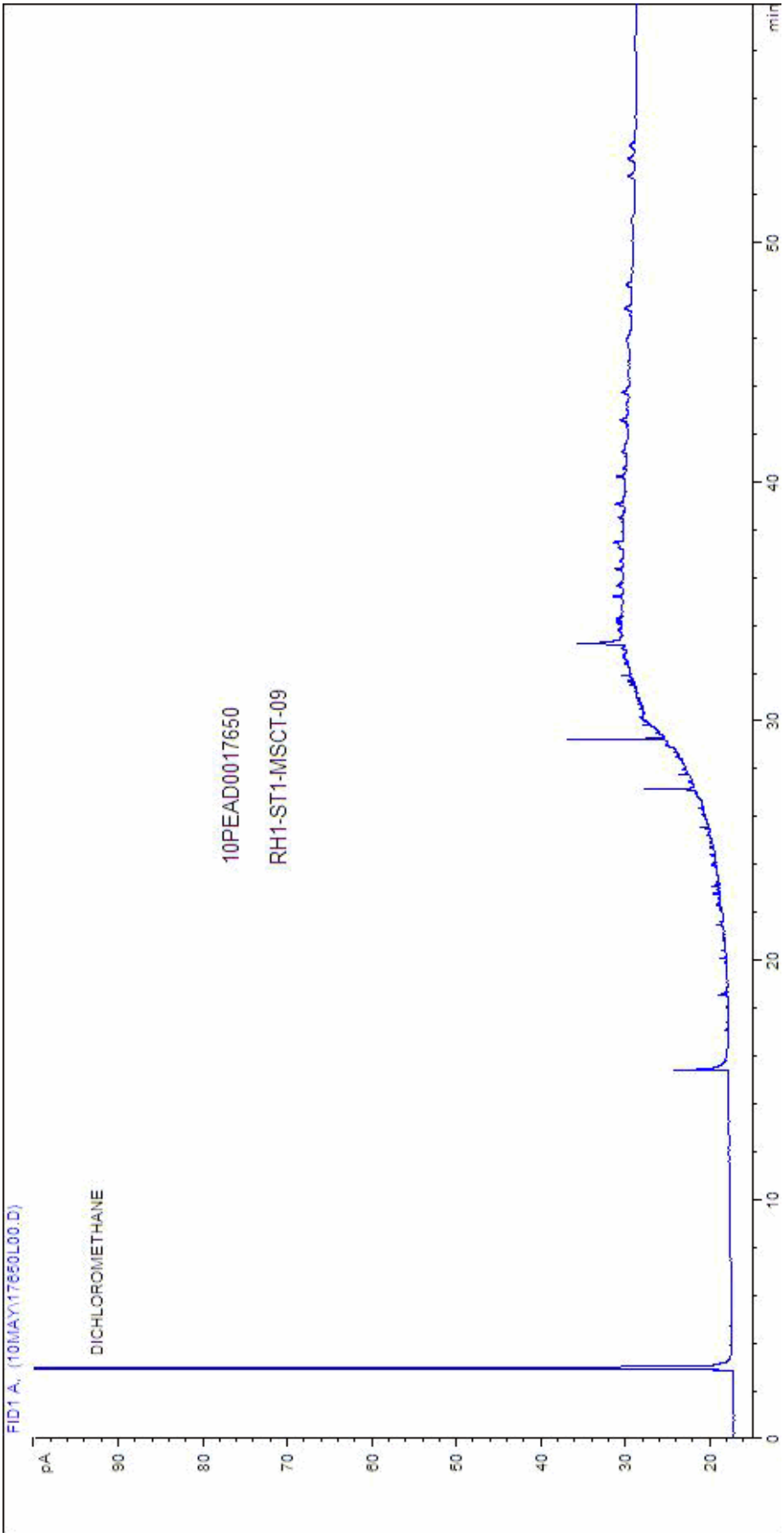
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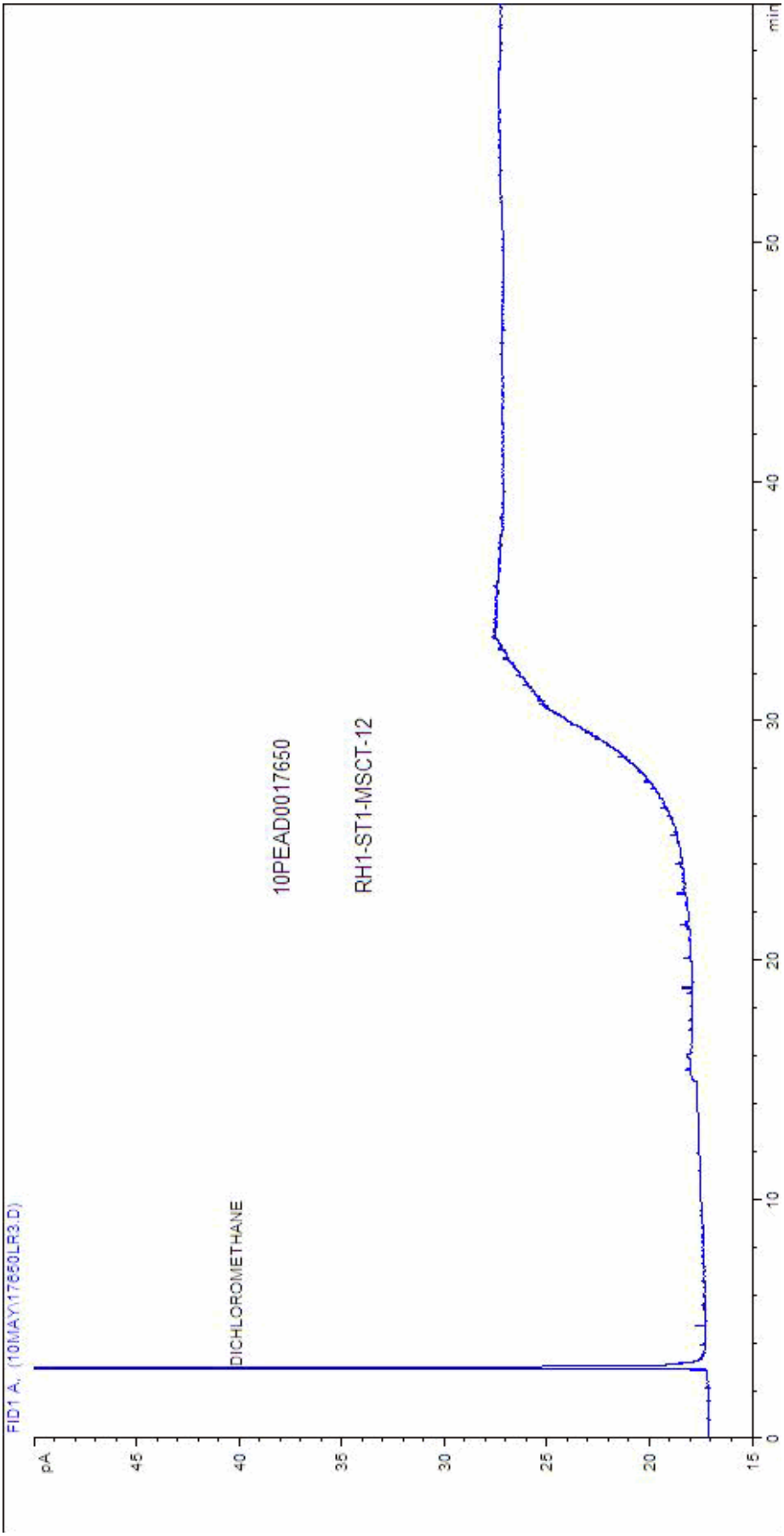
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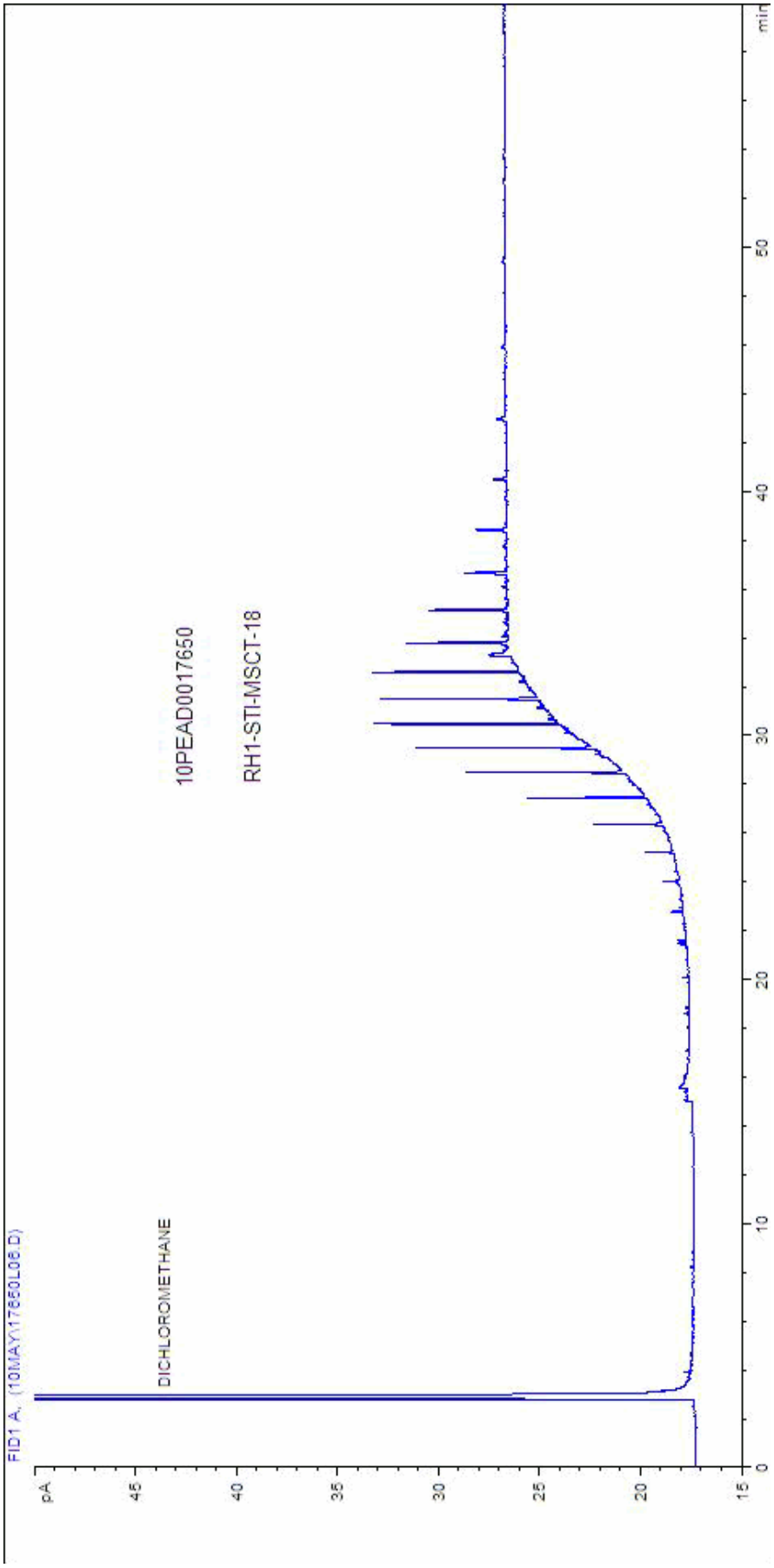
10
20
30
40
50
min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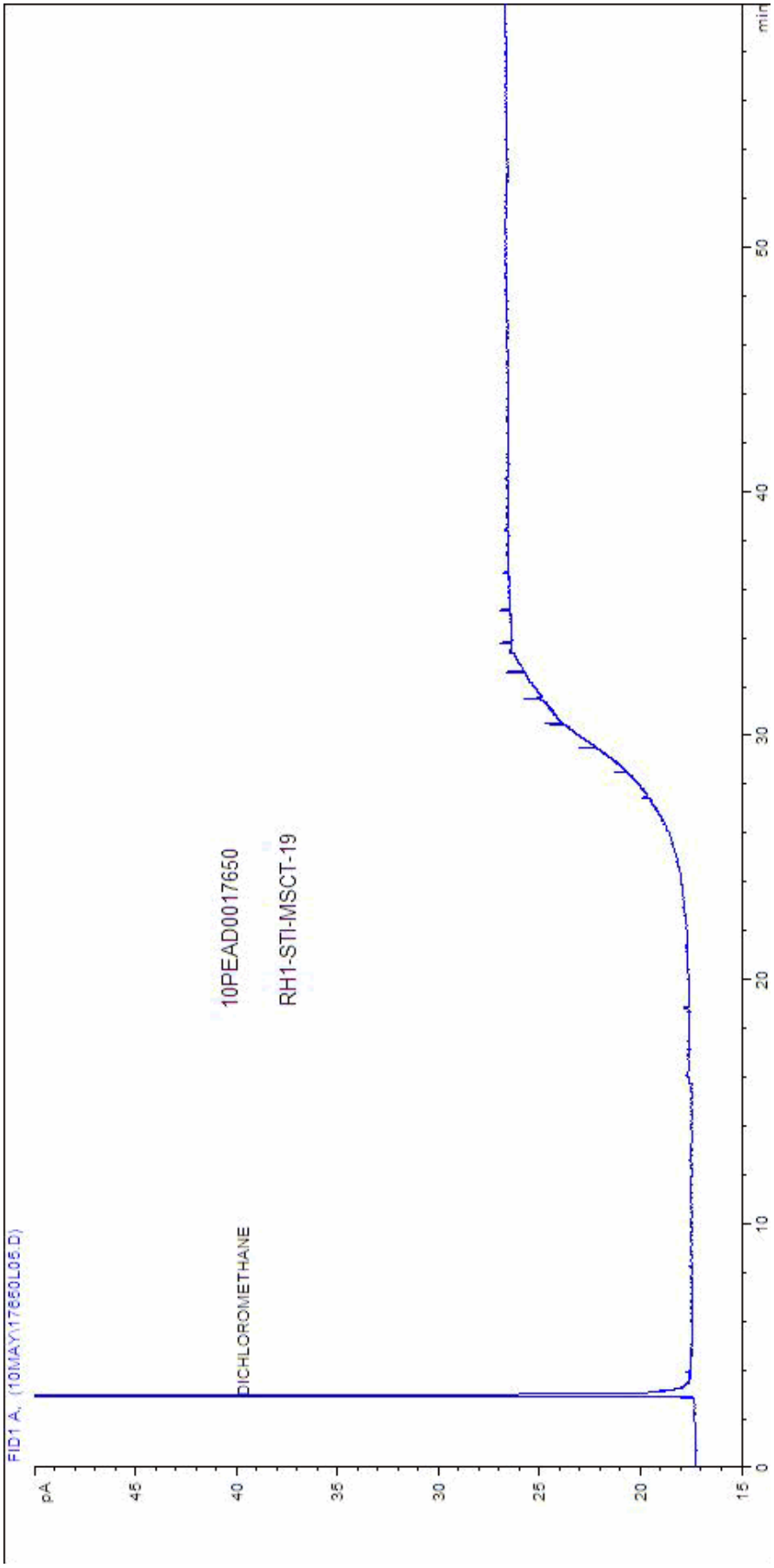
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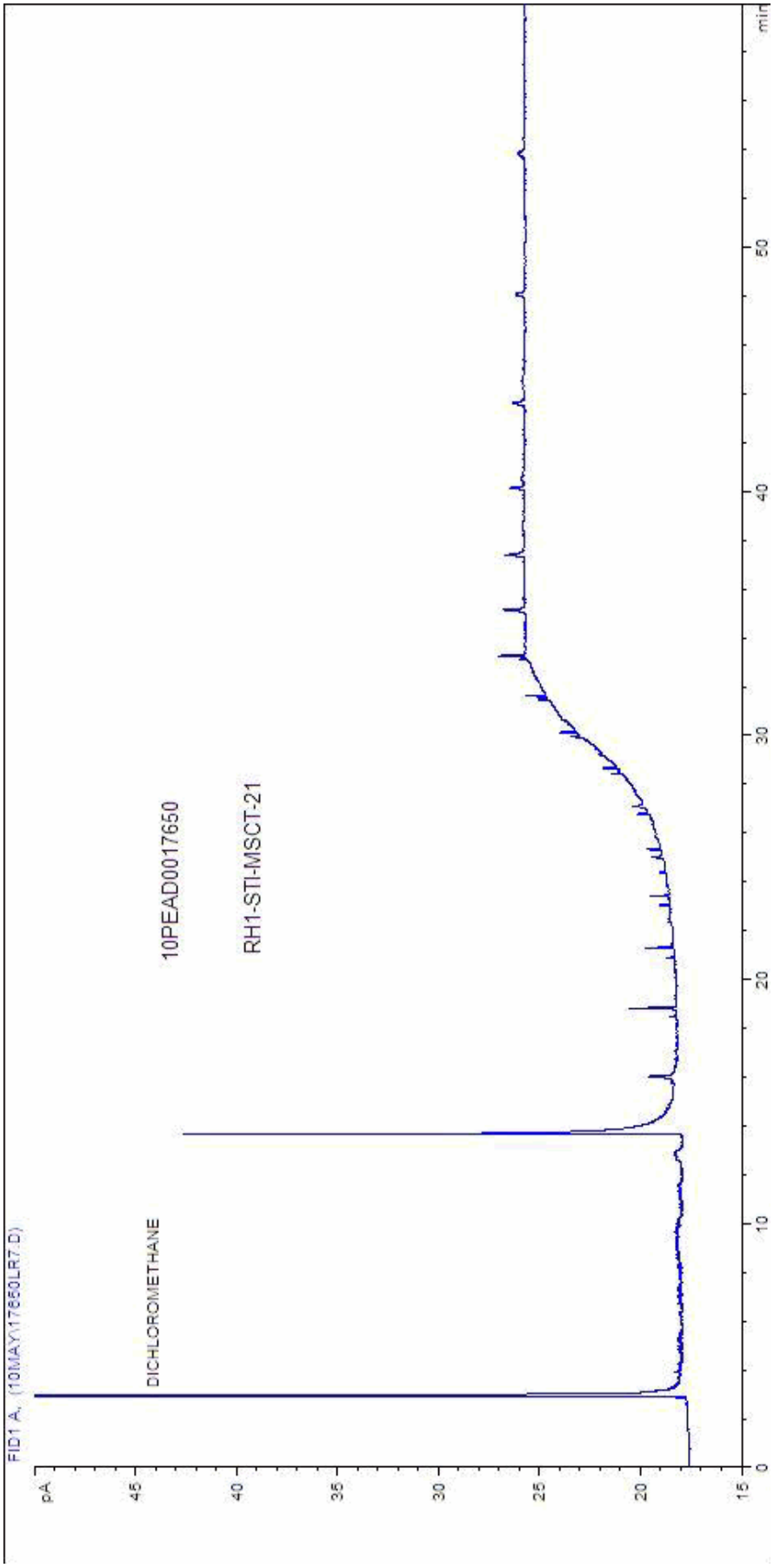
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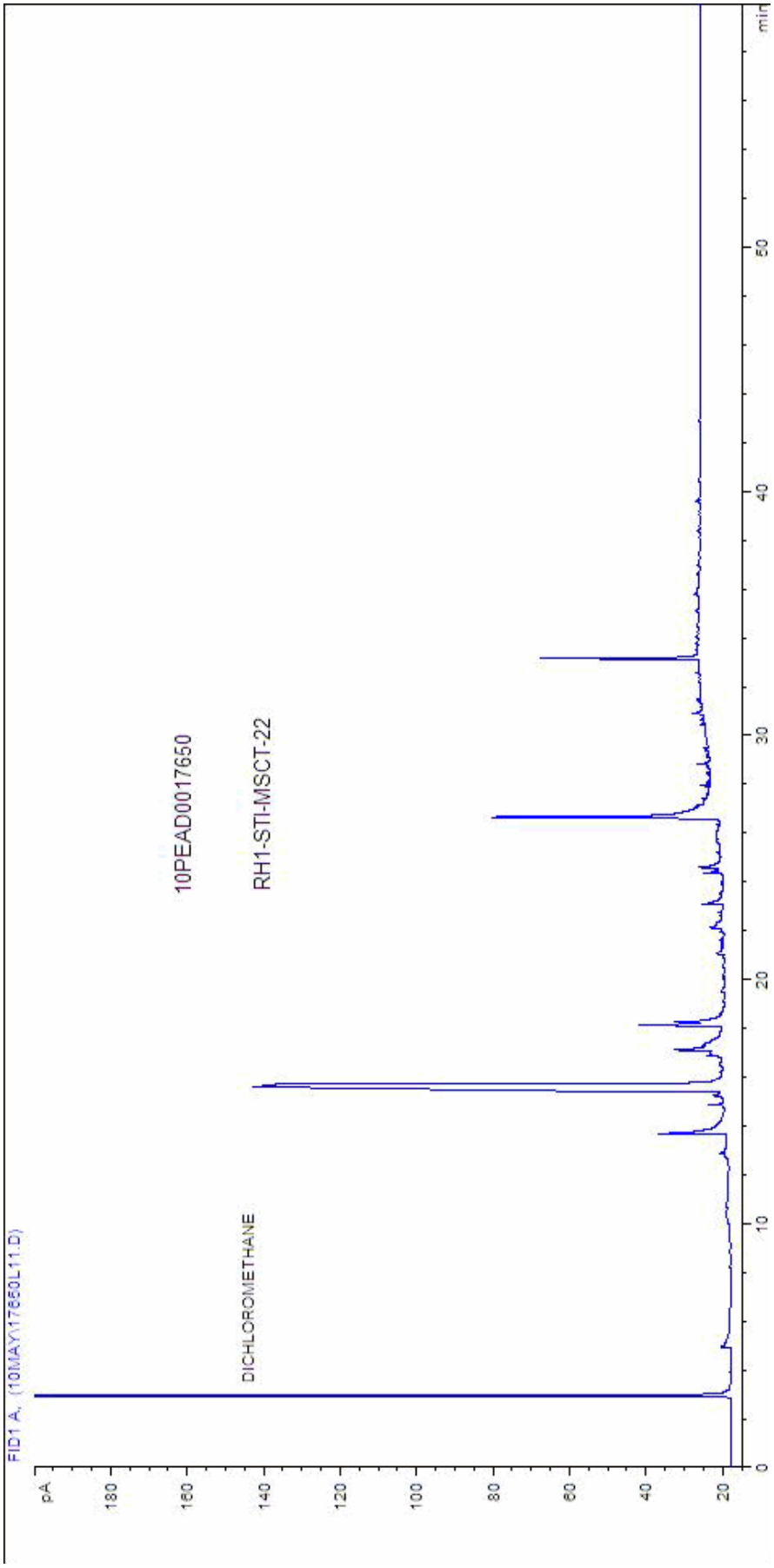
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100
80
60
40
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10
20
30
40
50
min
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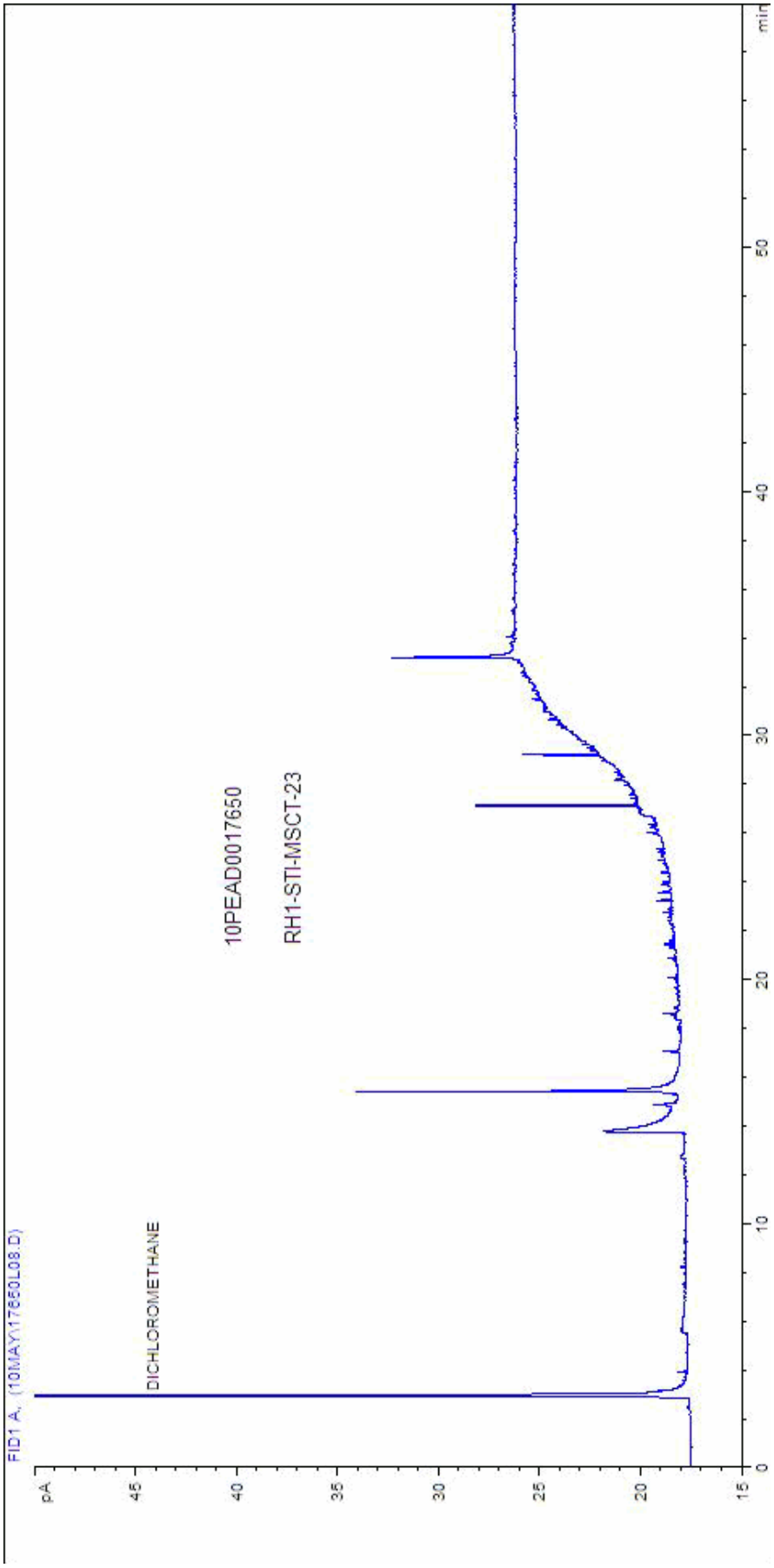
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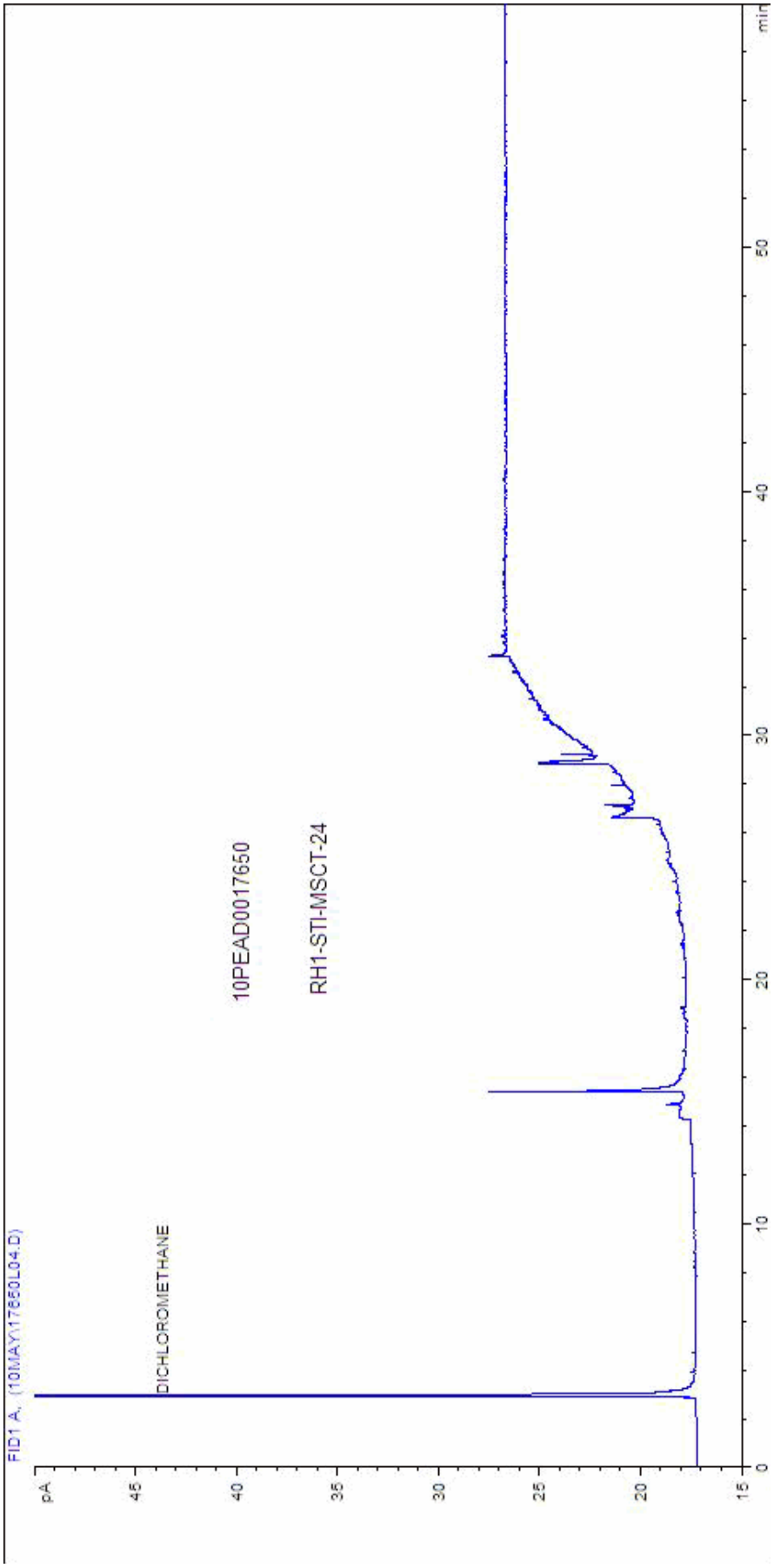
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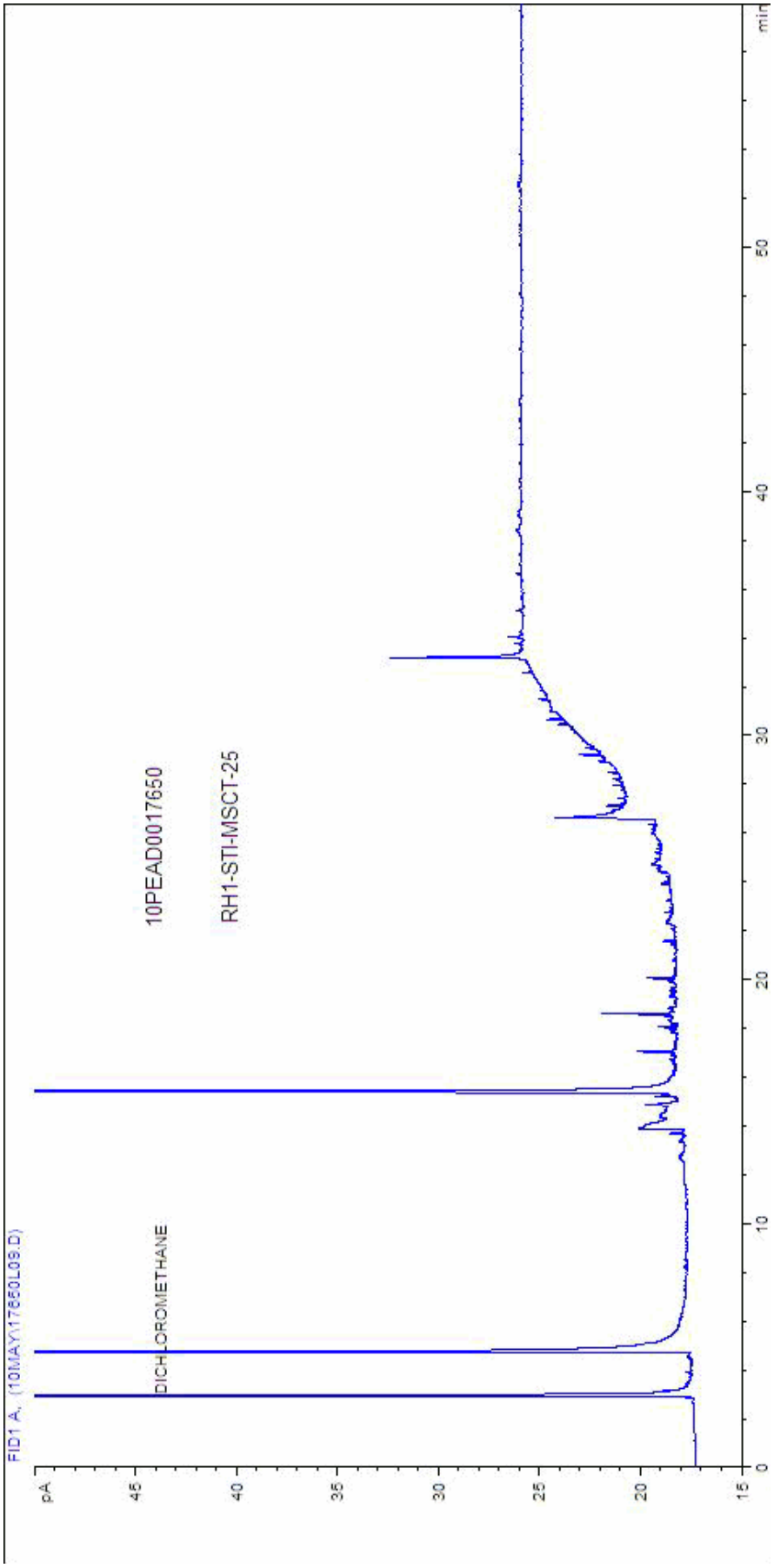
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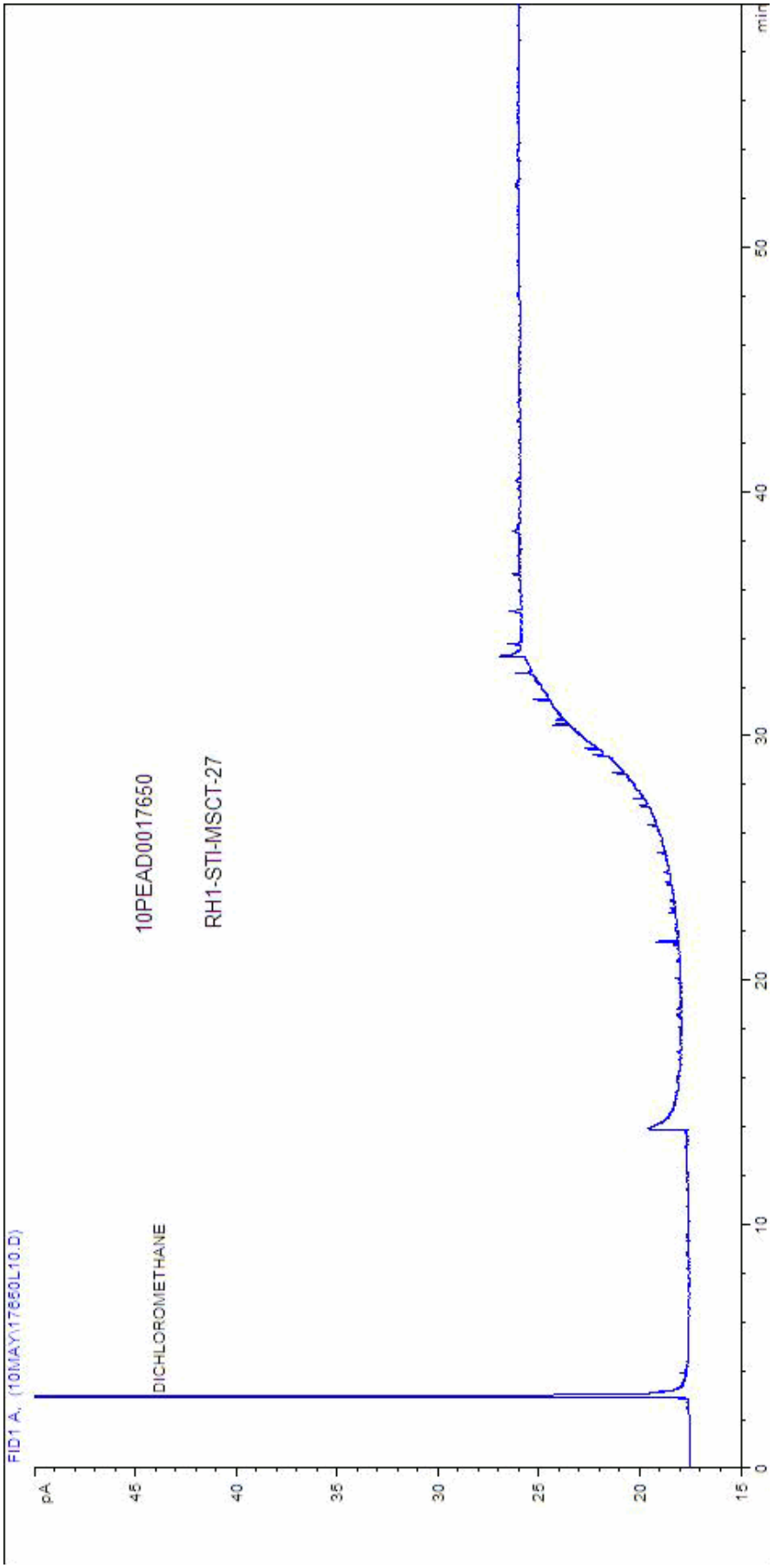
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min

APPENDIX 7: CUTTINGS GAS SUMMARY

Sourced from Daily Geological Reports

Depth (mMDRT)	Gas Type	Total Gas	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO_2 (%)
1990.0 - 1999.0	CEMENT								
1999.0 - 2065.0	Drilled	0.198	0.0852	0.0028	0.0025	0.0018	0.0009	0.0010	0.000
2065.0 - 2069.0	Drilled	0.183	0.0710	0.0024	0.0025	0.0024	0.0014	0.0019	0.000
2069.0 - 2112.0	Drilled	0.177	0.0717	0.0019	0.0019	0.0019	0.0011	0.0018	0.000
2070.5 -	Peak	0.254	0.1094	0.0033	0.0033	0.0028	0.0016	0.0021	0.000
2091.5 -	Peak	0.322	0.1637	0.0040	0.0035	0.0030	0.0017	0.0023	0.000
2112.0 - 2130.0	Drilled	0.131	0.0521	0.0016	0.0012	0.0010	0.0050	0.0013	0.000
2130.0 - 2150.0	Drilled	0.172	0.0692	0.0023	0.0018	0.0015	0.0008	0.0017	0.000
2150.0 - 2195.0	Drilled	0.202	0.0749	0.0031	0.0024	0.0019	0.0012	0.0023	0.000
2192.5 -	Peak	0.301	0.1096	0.0061	0.0043	0.0026	0.0017	0.0028	0.000
2195.0 - 2235.0	Drilled	0.178	0.0515	0.0035	0.0024	0.0018	0.0013	0.0024	0.000
2235.0 - 2300.0	Drilled	0.158	0.0432	0.0025	0.0020	0.0017	0.0010	0.0022	0.000
2300.0 - 2352.0	Drilled	0.198	0.0643	0.0033	0.0026	0.0020	0.0011	0.0022	0.000
2306.0 -	Peak	0.228	0.0815	0.0048	0.0032	0.0020	0.0012	0.0022	0.000
2336.0 -	Peak	0.750	0.1880	0.0085	0.0036	0.0025	0.0013	0.0025	0.000
2352.0 - 2368.0	Drilled	0.198	0.0638	0.0032	0.0026	0.0021	0.0011	0.0022	0.000
2368.0 - 2450.0	Drilled	0.320	0.1332	0.0071	0.0058	0.0033	0.0016	0.0028	0.000
2450.0 - 2520.0	Drilled	0.576	0.2725	0.0129	0.0095	0.0048	0.0020	0.0034	0.010
2467.0 -	Peak	1.020	0.5447	0.0210	0.0125	0.0051	0.0022	0.0026	0.000
2515.0 -	Peak	0.910	0.4821	0.0192	0.0115	0.0053	0.0022	0.0025	0.010

2520.0 - 2565.0	Drilled	0.409	0.1700	0.0089	0.0064	0.0040	0.0016	0.0034	0.015
2565.0 - 2706.0	Drilled	1.359	0.7393	0.0418	0.0238	0.0017	0.0038	0.0048	0.020
2581.0 -	Peak	2.525	1.6530	0.0575	0.0218	0.0074	0.0028	0.0037	0.020
2588.0 -	Peak	3.866	2.6680	0.0959	0.3290	0.0095	0.0037	0.0048	0.020
2635.0 -	Peak	2.846	1.7512	0.0856	0.0360	0.0099	0.0052	0.0059	0.010
2706.0 - 2772.0	Drilled	1.242	0.5675	0.0392	0.0347	0.0096	0.0073	0.0071	0.060
2772.0 - 2811.0	Drilled	0.749	0.2832	0.2400	0.2360	0.0070	0.0067	0.0066	0.010
2811.0 - 2877.0	Drilled	1.447	1.0647	0.0485	0.0320	0.0069	0.0071	0.0070	0.060
2812.7 -	Peak	2.493	1.0636	0.0448	0.0288	0.0091	0.0087	0.0088	0.020
2823.0 -	Peak	5.942	4.6653	0.1984	0.1140	0.0123	0.0126	0.0102	0.020
2877.0 - 2937.0	Drilled	0.737	0.5737	0.0377	0.0319	0.0059	0.0076	0.0062	0.140
2937.0 - 2973.0	Drilled	3.220	1.6549	0.1638	0.1830	0.0362	0.0579	0.0368	0.090
2938.5 -	Peak	13.912	6.2678	0.8296	0.9887	0.2031	0.3284	0.2027	0.160
2960.0 -	Peak	2.837	1.5535	0.1382	0.1438	0.0278	0.0447	0.0291	0.950
2973.0 - 3055.0	Drilled	1.162	0.7185	0.0525	0.0528	0.0122	0.0166	0.0134	0.250
3055.0 - 3158.0	Drilled	1.546	1.0546	0.0743	0.0621	0.0140	0.0171	0.0126	0.130
3081.0 -	Peak	2.162	1.3993	0.0977	0.0866	0.0242	0.0240	0.0191	0.200
3131.8 -	Peak	3.884	2.0638	0.1994	0.1850	0.0416	0.0516	0.0319	0.250
3148.0 -	Peak	3.021	1.8809	0.1601	0.1083	0.0191	0.0262	0.0154	0.250
3158.0 - 3196.0	Drilled	0.926	0.5712	0.0450	0.0280	0.0045	0.0061	0.0029	0.070
3166.0 -	Peak	2.109	1.7592	0.1355	0.0687	0.0086	0.0122	0.0068	0.320
3181.0 -	Peak	1.336	1.0459	0.0649	0.0421	0.0067	0.0093	0.0062	0.250

3196.0 - 3202.0	Drilled	0.432	0.2432	0.0213	0.0122	0.0022	0.0029	0.0026	0.340
3198.0 -	Peak	0.669	0.4021	0.0323	0.0176	0.0030	0.0042	0.0036	0.300
3202.0 - 3212.5	No returns due to core run 1								
3212.5 - 3234.0	Drilled	0.483	0.2290	0.0309	0.0197	0.0034	0.0049	0.0037	1.050
3220.0 -	Peak	0.608	0.3013	0.0416	0.0253	0.0040	0.0059	0.0043	1.150
3228.0 -	Peak	1.297	0.6612	0.0901	0.0591	0.0101	0.0142	0.0082	1.170
3234.0 - 3258.0	Drilled	0.709	0.3180	0.0488	0.0320	0.0058	0.0092	0.0064	1.100
3235.5 -	Peak	2.264	1.1079	0.1818	0.1190	0.0195	0.0304	0.0167	1.060
3253.0 -	Peak	0.724	0.3702	0.0422	0.0235	0.0045	0.0069	0.0054	1.250
3258.0 - 3283.0	Drilled	0.526	0.2162	0.0353	0.0229	0.0050	0.0069	0.0030	1.127
3283.0 - 3290.0	Drilled	0.399	0.1857	0.0255	0.0154	0.0033	0.0043	0.0020	0.738
3290.0 - 3298.5	No returns due to core run 2								
3298.5 - 3300.0	Drilled	0.611	0.3766	0.0299	0.0165	0.0039	0.0096	0.0023	1.430
3300.0 - 3309.0	No returns due to core run 3								
3309.0 -	Trip	0.926	0.5721	0.0428	0.0246	0.0051	0.0060	0.0025	5.830
3309.0 - 3357.0	Drilled	0.520	0.2550	0.0309	0.0133	0.0025	0.0033	0.0034	2.870
3341.0 -	Peak	0.837	0.4407	0.0604	0.0267	0.0045	0.0066	0.0051	2.810
3354.0 -	Peak	1.484	0.8336	0.1103	0.0505	0.0082	0.0121	0.0073	2.750
3357.0 - 3399.0	Drilled	0.830	0.4200	0.0547	0.0258	0.0049	0.0079	0.0032	2.210
3368.0 -	Peak	1.355	0.7327	0.0979	0.0481	0.0087	0.0136	0.0087	2.320
3399.0 - 3432.0	Drilled	0.646	0.2851	0.0372	0.0184	0.0039	0.0065	0.0029	1.640
3432.0 - 3482.0	Drilled	0.364	0.1273	0.0106	0.0062	0.0025	0.0038	0.0026	1.570

APPENDIX 8: MUDLOGGERS REPORT

Rockhopper-1ST1

FINAL WELL REPORT

Prepared by

Geoservices Australasia Pty Ltd

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1.0 WELL DATA SUMMARY

Operator	: Origin Energy Resources Ltd
Well name	: Rockhopper-1ST1
Basin	: Bass
Permit	: T / 18P
Operator	: Origin Energy Resources Ltd
Surface location	: Latitude: 39° 47' 34.1828" S
	: Longitude: 145° 26' 21.4660" E
Bottom Hole Location	: 732.5 m South of Surface Location
	: 17.9 m West of Surface Location
Total depth	: 3482.0 mMDRT
Rotary Table Elevation.	: 26 m above MSL
Sea-water depth	: 76 m
Rig Arrived	: 01:00 hr 29 November, 2009
Kick Off Date	: 03:00 hr 20 January, 2010
Bit Reached TD	: 03:00 hr 03 February, 2010
Well Status	: Plugged and Abandoned
Rig name	: Kan Tan IV (semi-sub)
Drilling Contractor	: Maersk

Drilling Phases

Diameter (inch)	From (m)	To (m)	Mud Type
216mm (8½")	1990.0	3482.0	KCl / Polymer

Cased Hole

Casing Diameter (inch)	Casing Type	Shoe Depth (m)
244(9⅝")*	Intermediate	1965.0MDRT

*Ran and set while drilling Rockhopper-1 well.

2.0 GENERAL INFORMATION

The proposed Rockhopper-1ST1 exploration well is located in T/18P in the Bass Basin. The location is approximately 0.8km NE from Aroo-1 and 9.5km north from Trefoil-1. The nearest population bases are Melbourne (223km NNW) and Port Latta (117km to the south). The Yolla A platform is 34km ESE from the proposed Rockhopper-1ST1 well location. Rockhopper-1ST1 will deviate from the original Rockhopper-1 prospect to explore and test the formation.

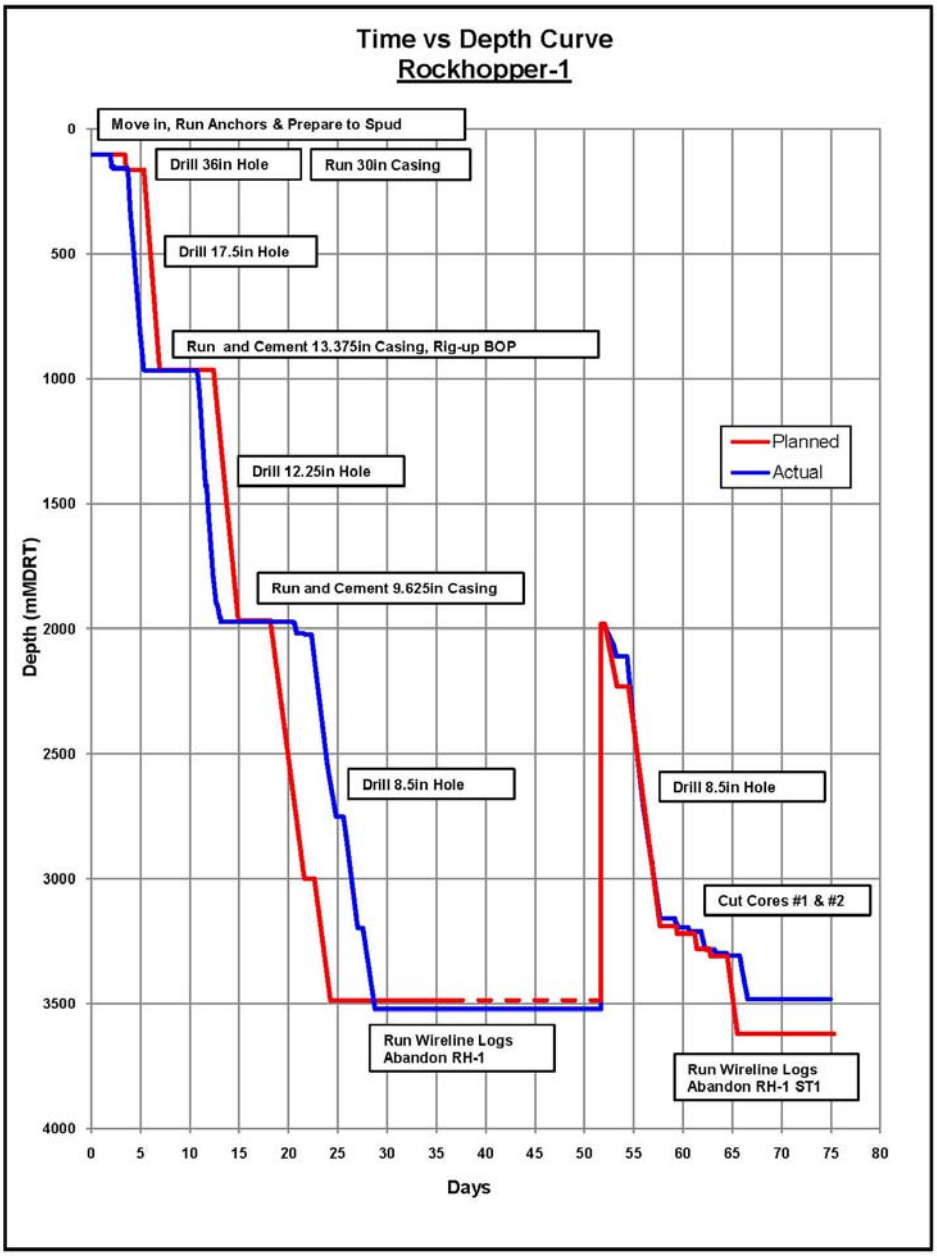
2.1 Geoservices Personnel

ALS Engineers	: Dmitriy Ilyin : Laurence Hannon : Cathryn Higgins
Mudloggers	: Gavin Fernandes : Kirupan Velauthapillai
Sample Catchers	: Trenton Frost : Yasir Jadoon

2.2 Contractor Information

Drilling	: Maersk Drilling Property
Rig name	: Kan Tan 4
Rig type	: Semi-submersible
Mud logging	: Geoservices Australasia
Mud engineering	: Halliburton -Baroid
MWD	: Halliburton- Sperry Sun
Wireline logging	: Schlumberger Wireline
Cementing	: Halliburton Cementing
Well head completion	: Dril-Quip
ROV	: Fugro
Casing	: Premium Casing Services
Helicopters	: Bristows

2.3 Days vs. Depth Progress Chart



Revision	Date	Issued by	Approved by	Remarks
1	February 2010	Geoservices Unit 174	Operations Assistant	

2.4 Sample Collection Summary

Sample Type	Number of sets	Quantity per set	Sampling interval	From (m)	To (m)
Unwashed	1	500 grams	5 meters 3 meters	1990-1995 2052-2055	2050-2052 3480-3482
Washed & Dried	3	100 grams	5 meters 3 meters	1990-1995 2052-2055	2050-2052 3480-3482
Samplex Trays	2	-	5 meters 3 meters	1990-1995 2052-2055	2050-2052 3480-3482

Cuttings Distribution

Company	Unwashed and Dried Samples
Origin Australia	1

Company	Washed and Dried Samples
Origin Australia	1
Mineral Resources Tasmania	1
Geoscience Australia	1

Company	Set of Samplex Trays
Origin Australia	2

3.0 GEOLOGICAL INFORMATION

3.1 Lithological Summary

Sidetrack well drilled 8½" hole from 1990.0 mMDRT with WBM.

INTERVAL: 1990.0 to 1999 mMDRT
ROP (Range): - m/h
Av. ROP: - m/h

CEMENT

INTERVAL: 1999.0 to 2065.0 mMDRT
ROP (Range): 2 to 72 m/h
Av. ROP: 6.6 m/h

ARGILLACEOUS SILTSTONE and inter-bedded CLAYSTONE

ARGILLACEOUS SILTSTONE (40-100%): olive black, grayish black, brownish black to dark grey, greenish black in part, very soft to firm, blocky to sub-blocky, 20-35% clay, 0-5% very fine quartz grains, trace carbonaceous specks, trace mica, trace lithic fragments.

CLAYSTONE (0-60%): brownish black grayish black, dark grey, very soft to soft, amorphous, occasional trace mica.

Show Details: No Hydrocarbon Shows

INTERVAL: 2069.0 to 2112.0 mMDRT
ROP (Range): 2 to 72 m/h
Av. ROP: 20 m/h

Inter-bedded ARGILLACEOUS SILTSTONE and SANDSTONE with small inter-beds of CLAYSTONE and SILTSTONE

ARGILLACEOUS SILTSTONE (0-95%): light olive grey to brownish black, very soft to soft, amorphous to sub-blocky, 20-35% clay, 0-2% very fine sand, trace carbonaceous specks, trace mica, trace lithic fragments.

SANDSTONE (0-95%): very light grey to light grey, light yellowish grey, light olive grey, olive grey, opaque, clear, friable to loose, blocky, 5-10% white clay matrix, 5-90% very fine sand, 5-15% fine sand, 0-50% medium sand, 0-40% course sand, friable to moderately hard, moderately to well sorted, sub angular to sub-rounded, spherical to sub spherical, 0-5% calcareous sand, trace-1% calcareous cement, poor to fair siliceous cement, trace mica, trace lithic fragments, trace carbonaceous specks, poor to good inferred visual porosity, no hydrocarbon fluorescence.

SILTSTONE (0-100%): olive grey to olive black, dark grey to grayish black in part, soft to firm, blocky to sub-blocky, 5-15% clay, 0-2% very fine sand, trace mica, trace lithic fragments.

CLAYSTONE (0-40%): olive black, brownish black and grayish black in part, very soft, amorphous, trace mica.

Show Details: No Hydrocarbon Shows

INTERVAL: 2112.0 to 2130.0 mMDRT
ROP (Range): 8 to 87 m/h
Av. ROP: 23 m/h

ARGILLACEOUS SILTSTONE inter-bedded with SANDSTONE and minor CLAYSTONE.

ARGILLACEOUS SILTSTONE (10-100%): grey, very light grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 5% very fine sand grains, trace lithic fragments, trace loose medium grained quartz sand, trace carbonaceous specks.

SANDSTONE (0-90%): very light grey to light grey, white to yellowish grey, 5% very fine, 10% fine,50% medium, 35% coarse grains, friable to moderately hard, moderately to well sorted, rounded to sub angular, sub spherical to spherical, 5% clay, 5% calcareous sand, 1% calcareous cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.

CLAYSTONE (0-10%): olive grey, white, very soft to soft, amorphous.

Show Details: No Hydrocarbon Shows

INTERVAL: 2130.0 to 2150.0 mMDRT
ROP (Range): 3 to 87 m/h
Av. ROP: 32 m/h

Inter bedded SANDSTONE, ARGILLACEOUS SILTSTONE with minor CLAYSTONE.

SANDSTONE (10-40%): loose grains, clear to opaque, rarely white and pale yellow, 10% very fine, 15% fine,70% medium, 5% coarse grains, very poorly sorted, sub-rounded to sub-angular, sub-elongated to sub-spherical, good inferred visual porosity, common fractured grains, trace inclusions, no hydrocarbon shows.

ARGILLACEOUS SILTSTONE (60-90%): grey, very light grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 5% very fine sand grains, trace lithic fragments, trace loose medium grained quartz sand, trace carbonaceous specks.

CLAYSTONE (0-10%): olive black to dark grey, soft to firm, sub-blocky to blocky, trace pyrite, trace carbonaceous specks.

Show Details: No Hydrocarbon Shows

INTERVAL: 2150.0 to 2195.0 mMDRT
ROP (Range): 10 to 99 m/h
Av. ROP: 29 m/h

Inter-bedded ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE

ARGILLACEOUS SILTSTONE (5-95%): brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 5% very fine to fine sand grains, trace lithic fragments, trace carbonaceous specks, trace fine grained pyrite, trace micro mica.

SILTY CLAYSTONE (5-95%): olive grey to brown, rarely white, very soft to firm, amorphous to sub-blocky, trace pyrite and carbonaceous specks, calcareous in part and firm to moderately hard.

Show Details: No Hydrocarbon Shows

INTERVAL: 2195.0 to 2235.0 mMDRT
ROP (Range): 11 to 138 m/h
Av. ROP: 48 m/h

Inter-bedded ARGILLACEOUS SILTSTONE, SILTY CLAYSTONE, and SANDSTONE with trace COAL.

ARGILLACEOUS SILTSTONE (0-40%): brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 5% very fine to fine sand grains, trace lithic fragments, trace carbonaceous specks, trace fine grained pyrite, trace micro mica.

SILTY CLAYSTONE (5-95%): olive grey to brown, rarely white, very soft to firm, amorphous to sub-blocky, trace pyrite and carbonaceous specks, calcareous in part and firm to moderately hard.

SANDSTONE (0-95%): white to yellowish grey, friable to firm, 80% very fine, 20% fine grained, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace micro mica, and trace pyrite, poor to fair visual porosity, no hydrocarbon shows.

COAL (Trace): black to dark greenish black, shiny, vitreous lustre, firm to hard, conchoidal fracture, commonly angular fragments.

Show Details: No Hydrocarbon Shows

INTERVAL: 2235.0 to 2300.0mMDRT
ROP (Range): 13 to 173 m/h
Av. ROP: 64 m/h

Massive SANDSTONE with trace COAL

SANDSTONE (99-100%): loose grains with trace aggregates as above, clear, translucent, white, pale yellow, 60% very fine, 10% fine, 10% medium, 5% coarse, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, common fractured grains, common inclusions, good inferred porosity, no hydrocarbon shows.

COAL (0-1%): black to olive black, angular to conchoidal fracture, firm to moderately hard, shiny to vitreous lustre.

Show Details: No Hydrocarbon Shows

INTERVAL: 2300.0 to 2352.0 mMDRT
ROP (Range): 3 to 76 m/h
Av. ROP: 21 m/h

Inter-bedded ARGILLACEOUS SILTSTONE, SANDSTONE, SILTY CLAYSTONE and minor COAL

ARGILLACEOUS SILTSTONE (0-80%): light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, trace micro mica, pyrite and carbonaceous specks.

SANDSTONE (0-95%): white, soft to firm in aggregates, 40% very fine, 40% fine, 10% medium, 5% coarse, 5% very coarse grains, very poorly sorted, angular to sub-rounded, sub-elongated to sub-spherical, trace pyrite, fair inferred porosity, no hydrocarbon shows.

SILTY CLAYSTONE (0-90%): light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, trace micro mica and pyrite.

COAL (0-90%): black to grayish black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, hackly appearance in part, trace calcite veinlets.

Show Details: No Hydrocarbon Shows

INTERVAL: 2352.0 to 2368.0 mMDRT
ROP (Range): 10 to 73 m/h
Av. ROP: 22 m/h

ARGILLACEOUS SILTSTONE inter-bedded with SILTSTONE, CLAYSTONE and minor COAL

ARGILLACEOUS SILTSTONE (0-100%): light brown, light brownish grey, brownish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% clay, 5% very fine sand, trace lithic fragments, trace coal.

SILTSTONE (0-100%): olive grey to dark greenish grey, brownish grey in part, very soft to soft, amorphous to sub-blocky, 5% clay, 5% very fine quartz sand, trace lithic fragments, trace coal.

CLAYSTONE (0-100%): light olive grey to olive grey, yellowish grey, brownish grey and white in part, very soft, amorphous, 0-15% silt, trace lithic fragments, trace coal.

COAL (0-10%): black, firm to hard, angular to conchoidal, shiny to vitreous lustre, occasionally hackly in appearance, trace calcite veins.

Show Details: No Hydrocarbon Shows

INTERVAL: 2368.0 to 2450.0 mMDRT
ROP (Range): 6 to 162 m/h
Av. ROP: 23 m/h

Inter-bedded ARGILLACEOUS SILTSTONE, SILTSTONE, SILTY CLAYSTONE and CLAYSTONE with minor inter-beds of SANDSTONE

ARGILLACEOUS SILTSTONE (0-100%): light brown, light brownish grey, brownish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% clay, 10% very fine sand, trace lithic fragments, trace coal.

CLAYSTONE (0-100%): olive grey to light olive grey, yellowish grey in part, very soft, amorphous, trace coal.

SANDSTONE (0-85%): colorless, opaque, white, pale yellow, loose to friable, 50% very fine, 40% fine, 10% medium grains, poorly to moderately sorted, angular to sub-rounded, sub-elongate to sub-spherical, trace white clay matrix, poor to fair inferred porosity, no hydrocarbon fluorescence.

SILTSTONE (0-90%): light brownish grey, brownish grey and olive grey in part, very soft to soft, amorphous to sub-blocky, 10% clay, 5% fine grained sand, trace lithic fragments, trace carbonaceous specks.

SILTY CLAYSTONE (0-100%): olive grey to light olive grey, yellowish grey and brownish grey in part, very soft, amorphous, 20% silt, 1% very fine sand, trace lithic fragments, trace mica, trace pyrite.

Show Details: No Hydrocarbon Shows

INTERVAL: 2450.0 to 2520.0 mMDRT
ROP (Range): 7 to 121 m/h
Av. ROP: 29 m/h

Interbedded SANDSTONE, ARGILLACEOUS SILTSTONE, CLAYSTONE, SILTY CLAYSTONE, and CALCAREOUS SANDSTONE with minor COAL

SANDSTONE (0-20%): colorless, opaque, white, pale yellow, loose to friable, 50% very fine, 40% fine, 10% medium grains, poorly to moderately sorted, angular to sub-rounded, sub-elongate to sub-spherical, trace white clay matrix, poor to fair inferred porosity, no hydrocarbon fluorescence.

ARGILLACEOUS SILTSTONE (10-95%): brownish grey to olive grey, soft to firm, sub-blocky to blocky, trace micro-mica, pyrite and black carbonaceous specks.

CLAYSTONE (0-10%): light brown to yellowish grey, very soft to soft, amorphous to dispersive.

SILTY CLAYSTONE (0-90%): light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, trace micro-mica, pyrite and carbonaceous specks.

CALCAREOUS SANDSTONE (0-30%): white to yellowish grey, firm to hard, 40% very fine, 40% fine, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace micro-mica, trace pyrite, calcareous cemented, thin hard stringers, poor visual porosity, no hydrocarbon shows.

ARGILLACEOUS SILTSTONE (10-95%): brownish grey to olive grey, soft to firm, sub-blocky to blocky, trace micro-mica, pyrite and black carbonaceous specks.

Show Details: No Hydrocarbon Shows

INTERVAL: 2520.0 to 2565.0 mMDRT
ROP (Range): 6 to 62 m/h
Av. ROP: 24 m/h

Massive SANDSTONE with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE inter-beds.

SANDSTONE (0-100%): loose grains, clear, white, opaque, 20% very fine, 60% fine, 10% medium, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, fair inferred porosity, no hydrocarbon fluorescence.

SILTY CLAYSTONE (0-65%): light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, trace micro mica, pyrite and carbonaceous specks.

ARGILLACEOUS SILTSTONE (0-80%): brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, trace micro mica, pyrite and black carbonaceous specks.

Show Details: No Hydrocarbon Shows

INTERVAL: 2565.0 to 2706.0 mMDRT
ROP (Range): 10 to 112 m/h
Av. ROP: 31 m/h

Inter-bedded ARGILLACEOUS SILTSTONE, SILTSTONE, SILTY CLAYSTONE, SANDSTONE and minor COAL

ARGILLACEOUS SILTSTONE (0-100%): brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20-30% clay, trace micro mica, pyrite and black carbonaceous specks.
SILTSTONE (0-100%): olive black to olive grey, light olive grey in part, soft to moderately hard, sub-blocky to angular, 10-15% clay, trace pyrite, trace mica, trace coal.
SILTY CLAYSTONE (0-90%): light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20-25% silt, trace micro mica, pyrite and carbonaceous specks.
SANDSTONE (0-70%): white, yellowish grey, loose to friable, 20-25% very fine, 60-70% fine, 5-10% medium, 0-10% coarse grains, sub-angular to sub-rounded, moderately to well sorted, sub-elongate to sub-spherical, poor to fair inferred porosity, no hydrocarbon fluorescence.

COAL (0-30%): black, firm to hard, angular to conchoidal, trace pyrite.

Show Details: No Hydrocarbon Shows

INTERVAL: 2706.0 to 2772.0 mMDRT
ROP (Range): 6 to 124 m/h
Av. ROP: 26 m/h

Inter-bedded SANDSTONE, SILTSTONE, ARGILLACEOUS SILTSTONE with minor SILTY CLAYSTONE and CLAYSTONE

SANDSTONE (0-85%): white to yellowish grey, colorless and opaque in part, loose to friable, 10-20% very fine, 20-50% fine, 30-40% medium, 0-20% coarse, 0-10% very coarse grains, sub-rounded to sub-angular, very poorly sorted, sub-spherical to spherical, good inferred porosity, no hydrocarbon fluorescence.

SILTSTONE (0-50%): olive grey to light brownish grey, light olive grey in part, soft to firm, blocky to sub-blocky,15% clay, trace coal, trace lithic fragments.

ARGILLACEOUS SILTSTONE (0-100%): olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20-30%clay, trace coal, trace lithic fragments, occasional very fine grained quartz aggregates.

SILTY CLAYSTONE (0-15%): olive grey to light olive grey, brownish grey to light brownish grey in part, very soft, amorphous to dispersive, 20% silt.

CLAYSTONE (0-100%): olive grey to light olive grey, brownish grey to light brownish grey, medium light grey in part, very soft, amorphous to dispersive, 10% silt, trace mica.

Show Details: No Hydrocarbon Shows

INTERVAL: 2772.0 to 2811.0 mMDRT
ROP (Range): 3 to 137 m/h
Av. ROP: 18 m/h

Interbedded SILTY CLAYSTONE, CLAYSTONE, SILTSTONE and ARGILLACEOUS SILTSTONE

SILTY CLAYSTONE (0-100%): olive grey to olive black, very soft to soft, sub-blocky, trace pyrite, trace carbonaceous specks.

ARGILLACEOUS SILTSTONE (0-100%): olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, trace micro-mica, carbonaceous specks and pyrite.

SILTSTONE (0-100%): olive black to olive grey, light olive grey in part, soft to firm, sub-blocky to blocky, 15% clay, trace coal, trace lithic fragments, trace very fine to fine grained quartz aggregates.

CLAYSTONE (0-100%): olive grey to light olive grey, light yellow grey in part, very soft, amorphous to dispersive, trace very fine and fine sand, trace lithic fragments, trace coal.

Show Details: No Hydrocarbon Shows

INTERVAL: 2811.0 to 2877.0 mMDRT
ROP (Range): 6 to 125 m/h
Av. ROP: 26 m/h

Inter-bedded SILTY CLAYSTONE, ARGILLACEOUS SILTSTONE, CLAYSTONE and SANDSTONE

SILTY CLAYSTONE (0-65%): light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, trace pyrite, micro-mica, carbonaceous specks.

ARGILLACEOUS SILTSTONE (0-95%): olive grey, brownish grey, soft to firm, sub-blocky to blocky, trace micro-mica, carbonaceous specks and pyrite.

SANDSTONE (0-60%): white to light brown, loose to friable, 30% very fine, 40% fine, 20% medium, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace micro-mica, trace pyrite, trace carbonaceous specks, fair visual porosity, no hydrocarbon fluorescence.

CLAYSTONE (0-70%): light olive grey, olive grey, soft to firm, angular to sub-blocky, trace pyrite, micro-mica.

Show Details: No Hydrocarbon Shows

INTERVAL: 2877.0 to 2940.0 mMDRT
ROP (Range): 2 to 72 m/h
Av. ROP: 19 m/h

Massive SILTY CLAYSTONE inter-bedded with minor ARGILLACEOUS SILTSTONE.

SILTY CLAYSTONE (0-100%): light olive grey, olive black, brownish grey, very soft to firm, angular to sub-blocky, very silty in part, occasional trace loose sand grains, trace pyrite, trace micro-mica, carbonaceous specks.

ARGILLACEOUS SILTSTONE (0-30%): olive grey, brownish grey, soft to firm, sub-blocky to blocky, trace micro-mica, carbonaceous specks and pyrite.

Show Details: No Hydrocarbon Shows

INTERVAL: 2940.0 to 2973.0 mMDRT
ROP (Range): 11 to 73 m/h
Av. ROP: 27 m/h

SANDSTONE with inter-bedded ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE

SANDSTONE (0-80%): white, light olive grey, yellowish grey, friable to firm, 5% white clay matrix, 25-40% very fine, 45-55% fine, 15-20% medium, 0-5% coarse grains, sub-angular to sub-rounded, poor to moderately sorted, sub-elongate to sub-spherical, trace silica cement, trace mica, poor to fair visual porosity, mostly nil hydrocarbon fluorescence except over interval from 2937.0 - 2949.0 mMDRT where poor to fair shows.

ARGILLACEOUS SILTSTONE (5-95%): light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 20-30% clay, trace mica, trace coal.

SILTY CLAYSTONE (0-95%): light olive grey, olive grey, brownish grey, very soft to firm, amorphous to sub-blocky, 20-24% silt, occasional trace very fine grained quartz sand, trace pyrite, trace mica, trace coal.

Show Details: (2937.0-2949.0mMDRT) 5-10% dull yellow, slow streaming bluish white crush cut, dull yellow green residue ring.

INTERVAL: 2973.0 to 3055.0 mMDRT
ROP (Range): 8 to 31 m/h
Av. ROP: 15 m/h

Massive SILTY CLAYSTONE inter-bedded with minor CLAYSTONE and ARGILLACEOUS SILTSTONE

SILTY CLAYSTONE (0-100%): light olive grey, olive grey, brownish grey, very soft to firm, amorphous to sub-blocky, 20-30% silt, occasional trace very fine grained quartz sand, trace pyrite, trace mica, trace coaly specks.

CLAYSTONE (0-100%): light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 15% silt, trace mica, trace coaly specks, trace pyrite.

ARGILLACEOUS SILTSTONE (0-20%): olive grey, brownish grey, olive black, firm, angular to sub-blocky, 30% clay, trace mica, trace coaly specks.

Show Details: No Hydrocarbon Shows

INTERVAL: 3055.0 to 3158.0 mMDRT
ROP (Range): 5 to 73 m/h
Av. ROP: 17 m/h

Inter-bedded ARGILLACEOUS SANDSTONE, SANDSTONE, ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE with minor COAL

ARGILLACEOUS SANDSTONE (0-80%): white to yellowish grey, 40% very fine, 40% fine, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous specks, trace micro-mica, aggregates cemented with quartz overgrowths and clay matrix, fair visual porosity, no hydrocarbon fluorescence.

SANDSTONE (0-98%): white to yellowish grey, 40% very fine, 40% fine, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous specks, trace micro-mica, fair visual porosity, weak hydrocarbon fluorescence from trace aggregates at 3078-3084 mMDRT, generally no hydrocarbon fluorescence.

ARGILLACEOUS SILTSTONE (0-80%): olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace micro-mica, trace carbonaceous specks.

SILTY CLAYSTONE (0-70%): olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz sand.

COAL (0-5%): black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, trace calcite micro-veinlets.

Show Details: (3078.0-3084.0mMDRT): Moderate bright white direct fluorescence, very slow bluish white streaming cut, thin dull bluish green residual ring.

INTERVAL: 3158.0 to 3196.0 mMDRT
ROP (Range): 1 to 42 m/h
Av. ROP: 13 m/h

Inter-bedded ARGILLACEOUS SILTSTONE, SILTY CLAYSTONE and ARGILLACEOUS SANDSTONE with minor COAL

ARGILLACEOUS SANDSTONE (0-100%): white to light yellowish grey and light grey, soft to firm aggregates, common loose grains, 40% very fine, 40% fine, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous specks, rare carbonaceous laminae, fair inferred porosity, no hydrocarbon fluorescence.

ARGILLACEOUS SILTSTONE (0-85%): olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace micro-mica, trace carbonaceous specks.

SILTY CLAYSTONE (0-40%): olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% silt, trace mica.

COAL (0-5%): black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, trace calcite micro-veinlets.

Show Details: No Hydrocarbon Shows

INTERVAL: 3196.0 to 3202.0 mMDRT
ROP (Range): 1 to 21 m/h
Av. ROP: 10 m/h

Inter-bedded SILTY CLAYSTONE, ARGILLACEOUS SANDSTONE and ARGILLACEOUS SILTSTONE

SILTY CLAYSTONE (30-45%): olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, commonly laminated, 25% silt, trace mica, trace pyrite.

ARGILLACEOUS SANDSTONE (10-30%): white to light yellowish grey and light grey, soft to firm aggregates, 40% very fine, 40% fine, 20% medium grained, poorly to moderately sorted, sub-angular to sub-rounded, sub-spherical to spherical grains, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous specks, rare carbonaceous laminae, poor inferred porosity, no hydrocarbon fluorescence.

ARGILLACEOUS SILTSTONE (25-80%): olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace micro-mica, trace carbonaceous specks.
Show Details: No Hydrocarbon Shows

INTERVAL: 3212.5 to 3234.0 mMDRT
ROP (Range): 6 to 57 m/h
Av. ROP: 15 m/h

ARGILLACEOUS SANDSTONE with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE inter-beds

ARGILLACEOUS SANDSTONE (5-90%): white, yellowish grey, soft to firm, 20-30% clay, 40-50% very fine, 30-40% fine, 15-20% medium, 0-5% coarse grains, angular to sub-rounded, very poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair visual porosity, no hydrocarbon fluorescence.

ARGILLACEOUS SILTSTONE (15-90%): olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% clay, trace mica, trace pyrite, trace coal.

SILTY CLAYSTONE (5-75%): olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% silt, trace coal, trace mica, trace pyrite.

Show Details: No Hydrocarbon Shows

INTERVAL: 3234.0 to 3258.0 mMDRT
ROP (Range): 1 to 39 m/h
Av. ROP: 14 m/h

ARGILLACEOUS SANDSTONE and SANDSTONE inter-bedded with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE

ARGILLACEOUS SANDSTONE (0-80%): white, yellowish grey, light olive grey, soft to firm, 25% clay, 50% very fine, 30% fine, 20% medium grains, sub-angular to sub-rounded, moderately to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair visual porosity, no hydrocarbon fluorescence.

SANDSTONE (0-65%): white, yellowish grey, light olive grey, firm, 10% clay, 20% very fine, 20% fine, 50% medium, 5% coarse, 5% very coarse grains, angular to sub-rounded, very poorly to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, fair visual porosity, no hydrocarbon fluorescence.

ARGILLACEOUS SILTSTONE (15-75%): olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% clay, trace mica, trace pyrite, trace coal.

SILTY CLAYSTONE (0-40%): olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% silt, trace coal, trace mica, trace pyrite.

Show Details: No Hydrocarbon Shows

INTERVAL: 3258.0 to 3283.0 mMDRT
ROP (Range): 5 to 54 m/h
Av. ROP: 14 m/h

SILTY CLAYSTONE and CLAYSTONE with inter-beds of ARGILLACEOUS SILTSTONE

ARGILLACEOUS SILTSTONE (20-35%): olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 20-30% clay, trace mica, trace pyrite, trace coal.

SILTY CLAYSTONE (0-80%): olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% silt, trace coal, trace mica, trace pyrite.

CLAYSTONE (0-100%): olive grey to olive black, brownish grey, soft to very soft, amorphous to sub-blocky, 15% silt, trace coal, trace mica, trace pyrite.

Show Details: No Hydrocarbon Shows

INTERVAL: 3283.0 to 3290.0 mMDRT
ROP (Range): 2 to 24 m/h
Av. ROP: 8 m/h

Inter-bedded ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE with minor SANDSTONE

ARGILLACEOUS SILTSTONE (30-70%): olive grey, brownish grey, soft to firm, amorphous to blocky, 20% clay, trace mica, trace pyrite, trace carbonaceous specks.

SILTY CLAYSTONE (30-69%): olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% silt, trace carbonaceous specks, trace micro-mica, trace pyrite.

SANDSTONE (0-5%): white, yellowish grey, light olive grey, firm to friable aggregates, 15% clay, 30% very fine, 50% fine, 20% medium grains, angular to sub-rounded, poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz overgrowths, poor visual porosity, no hydrocarbon fluorescence, weak mineral fluorescence only.

Show Details: No Hydrocarbon Shows

INTERVAL: 3298.5 to 3300.0 mMDRT
ROP (Range): 19 to 26 m/h
Av. ROP: 9 m/h

Inter-bedded ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE with minor SANDSTONE
ARGILLACEOUS SILTSTONE (30-70%): olive grey, brownish grey, soft to firm, amorphous to blocky, 20% clay, trace mica, trace pyrite, trace carbonaceous specks.

SILTY CLAYSTONE (30-69%): olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% silt, trace carbonaceous specks, trace micro-mica, trace pyrite.

SANDSTONE (0-1%): white, yellowish grey, light olive grey, firm to friable aggregates, 30% very fine, 50% fine, 19% medium, 1% coarse grains, angular to sub-rounded, sub-elongate to sub-spherical grains, very poorly sorted, 30% quartz overgrowths and white argillaceous non-calcareous matrix, poor visual porosity, no cut fluorescence, dull yellow mineral fluorescence.

Show Details: No Hydrocarbon Shows

INTERVAL: 3300.0 to 3357.0 mMDRT
ROP (Range): 4 to 189 m/h
Av. ROP: 14 m/h

SANDSTONE inter-bedded with SILTY CLAYSTONE and ARGILLACEOUS SILTSTONE

SANDSTONE (0-90%): white, yellowish grey, loose to friable, 5% white clay matrix, 0-35% very fine, 10-60% fine, 10-55% medium, 5-50% coarse, 0-20% very coarse grains, angular to rounded, very poorly to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace very fine quartz grains, poor to fair visual porosity, no hydrocarbon fluorescence.

SILTY CLAYSTONE (0-90%): olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% silt, trace mica, trace pyrite.

ARGILLACEOUS SILTSTONE (0-70%): olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% clay, trace mica, trace pyrite.

Show Details: No Hydrocarbon Shows

INTERVAL: 3357.0 to 3399.0 mMDRT
ROP (Range): 5 to 35 m/h
Av. ROP: 17 m/h

SANDSTONE inter-bedded with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE

SANDSTONE (5-80%): white, yellowish grey, loose to friable, 5% white clay matrix, 30-40% very fine, 50-60% fine, 0-20% medium grains, sub-angular to rounded, sub-spherical, poorly to moderately sorted, trace quartz cement, poor visual porosity, no cut fluorescence, bright pin-point white mineral fluorescence in parts.

ARGILLACEOUS SILTSTONE (15-90%): olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20-25% clay, trace mica, trace pyrite.

SILTY CLAYSTONE (0-25%): olive black to light olive grey, soft to firm, blocky to sub-blocky, 20% silt, non-calcareous, trace mica, trace pyrite.

Show Details: No Hydrocarbon Shows

INTERVAL: 3399.0 to 3432.0 mMDRT
ROP (Range): 3 to 42 m/h
Av. ROP: 15 m/h

SANDSTONE inter-bedded with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE

SANDSTONE (5-95%): white, yellowish grey, firm to friable, 5% calcareous clay, 20% very fine, 20% fine, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous specks, poor visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix.

ARGILLACEOUS SILTSTONE (5-15%): olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal.

SILTY CLAYSTONE (0-90%): olive black to light olive grey, very soft to firm, amorphous to blocky, non-calcareous, trace micro-mica and pyrite.

Show Details: No Hydrocarbon Shows

INTERVAL: 3432.0 to 3482.0 mMDRT
ROP (Range): 6 to 25 m/h
Av. ROP: 18 m/h

VARIABLY WEATHERED / DEGRADED VOLCANICS inter-bedded with minor SANDSTONE

VARIABLY WEATHERED / DEGRADED VOLCANICS (95-100%): white to light green, occasionally dark green to greenish black, firm to hard in parts, angular to blocky, occasional remnant basaltic texture visible (clay replacement), trace quartz fragments (infilling vesicles), common white calcareous matrix, common light brown kaolinitic clay, common chlorite, trace pyrite and red hematite, rare bright white mineral fluorescence, no cut fluorescence.

SANDSTONE (0-5%): light green, dark greenish grey, friable to firm, 40% very fine. 40% fine, 20% medium grains, poorly sorted, sub-angular to angular, sub-elongate to sub-spherical, common chlorite, mildly calcareous in part, trace pyrite, no hydrocarbon fluorescence.

Show Details: No Hydrocarbon Shows

3.2 Gas Ratio Interpretation – Introduction Lithological Summary

Gas composition and total gas in mud at the possum belly were measured using the Geoservices Reserval™ that utilises a GZG degasser to extract gas from mud. The Reserval™ also measures the Gas-In values from active pits utilising a GZG degasser installed in the active pit. The Gas-Out/Gas-In was monitored at an 80:20 ratio in the chromatograph cycle. The GFF (coupled with a GZ11degasser) was used as a backup gas detection system. Both use the FID technique of measuring ions released when hydrocarbons are burnt in a pure hydrogen flame.

Gas is extracted from the mud at the shale shakers by a degasser that is essentially an agitator inside a chamber through which the mud continually passes. The gas is then drawn back to the unit through tubing to the gas analysis equipment. Independent sensors in the unit also measure H_2S and CO_2.

The composition of the gas in mud from the formation is significant in determining the geochemical origin and value of a show. There are several methods that can be used to determine whether the hydrocarbon gas in mud comes from a potential gas or oil zone. Amongst these methods are the Triangle Diagram (also known as the gas composition diagram), Pixler Diagram (also known as the gas ratios method), and the gas Wetness/Balance/Character plots.

3.3 Explanation of Gas Composition Diagrams

The Triangle or Gas Composition Diagram is used to graphically represent the hydrocarbon distribution in the gas and to determine whether it corresponds to a gas or oil reservoir. The triangular diagram is obtained by tracing lines on three scales at 120° to each other, corresponding respectively to the ratios of ethane, propane and normal butane to the total gas. The scales are arranged in such a way that if the apex of the triangle is upward, the diagram represents the analysis of gas from a gas zone, while if the apex points downwards, the diagram represents the analysis of gas from an oil zone. A large triangle diagram represents dry gas or low GOR oil, while small triangles represent wet gases or high GOR oils. The centre of the triangle should fall inside the area delineated by the dotted line, which encircles compositions that are regarded as 'normal'. If the triangle area is outside this area the gas indicates that the reservoir is not exploitable and that the heavier hydrocarbon composition is 'abnormal' i.e. hydrocarbons that are chemically altered or gases with special compositions which are not associated with oil.

The Gas Ratio Analysis Diagram is a plot of the ratio of C1 to the other gas elements. The magnitude of the methane to ethane ratio determines if the reservoir contains gas or oil or if it is non-productive. The following conclusions are possible:

Ratio C1/C2:	< 2	non-productive zone
	2 – 15	oil present
	15 – 65	gas present
	> 65	non-productive zone

The slope of the line of the ratio plot of C1/C2, C1/C3, C1/C4 and C1/C5 indicates whether the reservoir will produce hydrocarbons or hydrocarbons and water. Positive line slopes indicate production; negative line slopes indicate water-bearing formations. When using the Gas Ratio Diagram, the following points should be borne in mind:

1. Productive dry gas zones may show only C1, but abnormally high shows of C1 are usually indicative of saltwater zones.
2. If the ratio C1/C2 is low in the oil section and the ratio C1/C4 is high in the gas section, the zone is probably non-productive.
3. If any ratio (C1/C5 except in an oil based mud) is lower than the preceding ratio then the zone is probably non-productive.
4. The ratios may not be definitive for zones of low permeability.
5. Steep gas ratio plots may be indicative of tight zones.

3.4 Explanation of Wetness/Balance/Character Curves

Another method for evaluating gas zones plots against depth three ratios: hydrocarbon Wetness (W_h), hydrocarbon Balance (B_h) and hydrocarbon Character (C_h), where:

$$W_h = \frac{(C2 + C3 + C4 + C5)}{(C1+C2+C3+C4+C5)} \times 100\ (\%)$$

$$B_h = \frac{(C1 + C2)}{(C3 + C4 + C5)}$$

$$C_h = \frac{(C4 + C5)}{C3}$$

Wetness (W_h) is the primary zone indicator and provides a measure of the relative proportion of heavier gases in the overall gas show as follows:

$W_h < 0.5$	Light non-associated gas with low productivity potential or only geo-pressured methane.
$0.5 < W_h < 17.5$	Potentially productive gas with gas density increasing with W_h.
$17.5 < W_h < 40.0$	Potentially productive oil with gravity decreasing as W_h increases.
$W_h > 40.0$	Heavy or residual oil with low productivity potential.

As reservoir hydrocarbons become denser in the transition from gas to oil, Balance (B_h) and Wetness (W_h) values move closer together and eventually intersect. The zone guidelines for B_h combine with those for W_h to improve reliability of show evaluation as follows:

$W_h < 0.5$ And $B_h > 100$	Very light, dry gas that is almost certainly non-productive.
$0.5 < W_h < 17.5$ and $W_h < B_h < 100$	Productive gas with gas increasing in wetness and density as the two curves converge.
$0.5 < W_h < 17.5$ And $B_h < W_h$	Productive gas condensate or a high gravity gas/oil ratio.
$17.5 < W_h < 40$ and $B_h < W_h$	Productive oil with oil gravity decreasing – density increasing as the curves diverge.
$17.5 < W_h < 40$ And $B_h > W_h$	Non-productive residual oil.

Character (C_h) values serve to resolve ambiguities between oil or gas indications by defining the following:

$0.5 < W_h < 17.5$ And $B_h < W_h$ and $C_h < 0.5$	Productive wet gas or condensate.
$0.5 < W_h < 17.5$ And $B_h < W_h$ and $C_h > 0.5$	Productive high gravity and/or high GOR oil.

It is important to note that in the conclusion to each of the interpretive tools, the terms 'productive' and 'non-productive' are used in a geochemical sense. Ultimate production of a zone is dependent upon reservoir thickness and extent as well as other physical and economic factors that are not taken into account when analysing gas compositions. The methods discussed here are intended to assist the interpretive skills of the geologist or log analyst.

3.5 Gas Composition Discussion

Gas monitoring while drilling Rockhopper-1ST1 commenced using the Geoservices Reserval™ and GFF gas systems from the kick off point at 1990.0 mMDRT. Background gas was first observed from a depth of 1996.0 mMDRT, where it was present in low concentrations of around 0.10 – 0.30 % solely as methane (C1), it remained at this low concentration until approximately 2440.0 mMDRT where the background gas concentrations began to increase. Background gas increased to around 0.3 – 0.5 % to TD of the well 3482.0 mMDRT with peaks reaching as high as 13.91%. A trip gas peak of 0.9% was observed at 3309.0m after a bit trip.

There was CO_2 gas recorded in the Rockhopper-1ST1 well but no H_2S gas was observed.
CO_2 gas was first observed from a depth of 2503.0 mMDRT, where it was present in very low concentrations of around 0.01-0.05% with a CO_2 peak of 0.25% seen at 2775.0 mMDRT.
Background levels of CO_2 gradually increased to 0.15% from 2775.0 mMDRT.
A CO_2 peak of 1.38% was observed at a depth of 2865.0 mMDRT with a background of 0.08%. The background CO_2 increased from 3010.0 mMDRT to TD of 3482.0 mMDRT with levels ranging from 0.15% to 2.35% and a peak of 5.28% seen at 3309.5 mMDRT.

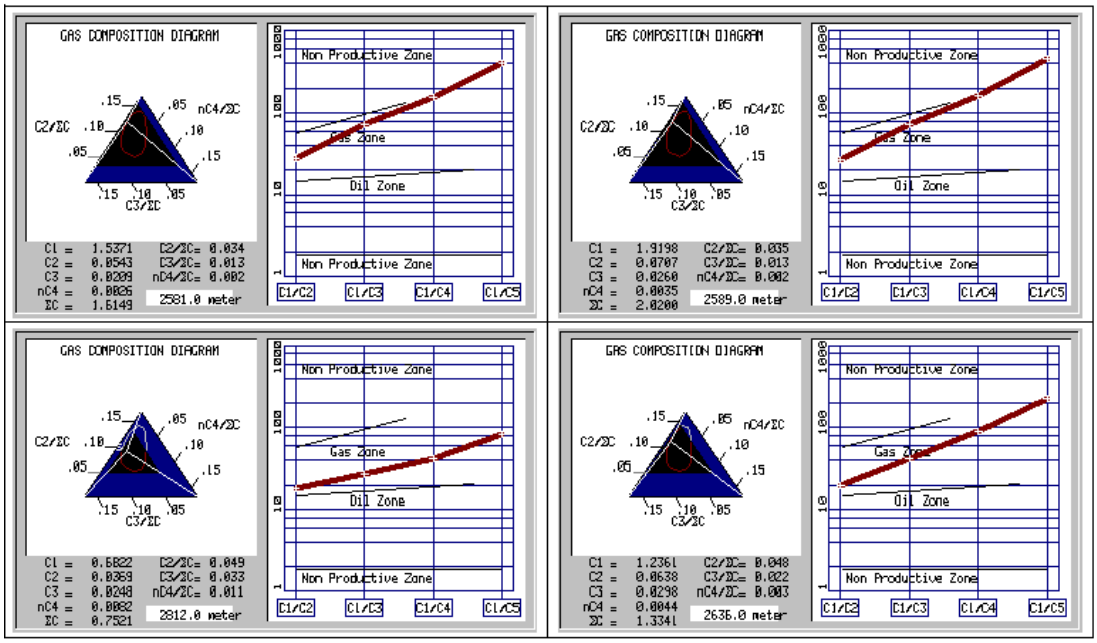
There was no H_2S gas recorded in 8 ½" hole .Gas Peaks listed below are from the Reserval gas equipment. A GFF backup gas system was run as well and plotted the same trends. The Reserval gas is more analytical of gas readings and picks up more background gases and has a constant mud flow. The Backup GZ11 degasser has a higher mud flow through it and liberates more gas from the mud to the chamber and during gas zones. The calibrations of both the gas detection equipment were checked during the well and were very accurate.

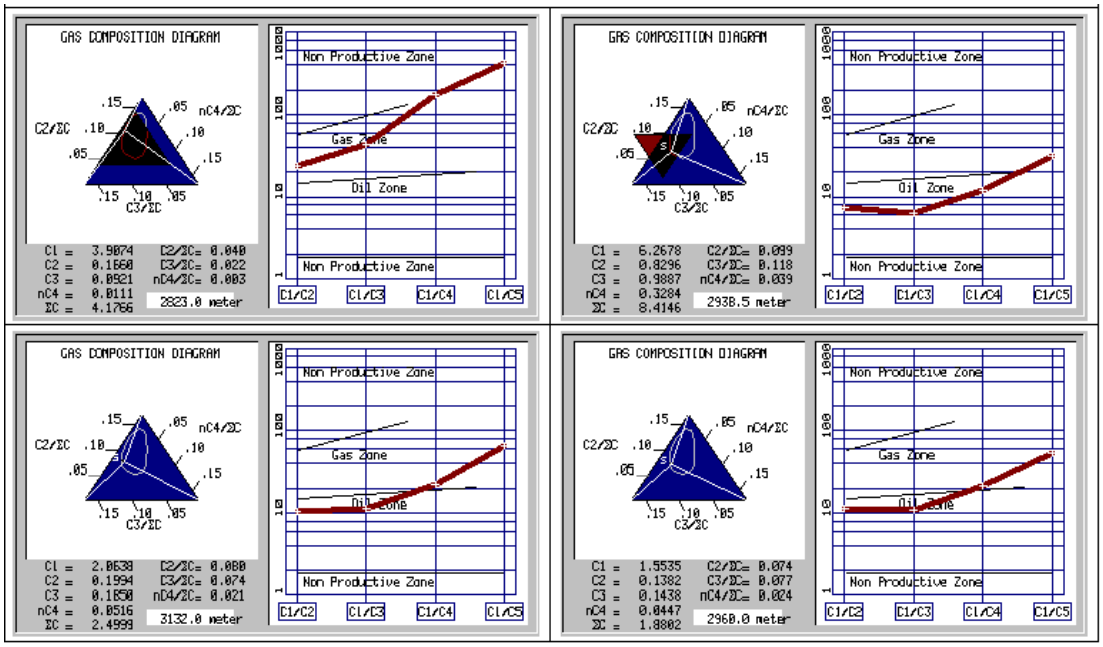
3.6 Gas Peaks (From Reserval™ Gas Detection System)

The following gas peaks were recorded while drilling Rockhopper-1ST1

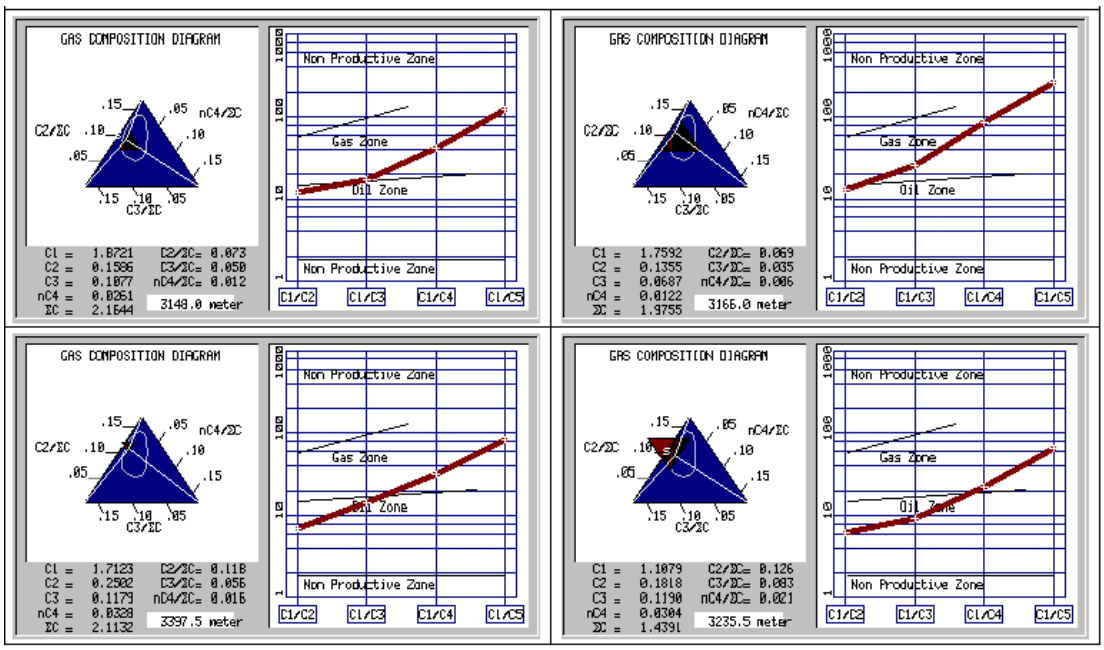
DEPTH METRES	TOTAL GAS PEAK / TRIP %	C1 %	C2 %	C3 %	IC4 %	NC4 %	C5 %
2070.5	0.2540	0.1094	0.0033	0.0033	0.0028	0.0016	0.0021
2091.5	0.3220	0.1637	0.0040	0.0035	0.0030	0.0017	0.0023
2192.50	0.3010	0.1096	0.0061	0.0043	0.0026	0.0017	0.0028
2306.00	0.2280	0.0815	0.0048	0.0032	0.0020	0.0012	0.0022
2336.00	0.7500	0.1880	0.0085	0.0036	0.0025	0.0013	0.0025
2467.00	1.0200	0.5447	0.0210	0.0125	0.0051	0.0022	0.0026
2515.00	0.9100	0.4821	0.0192	0.0115	0.0053	0.0022	0.0025
2581.00	2.5250	1.6530	0.0575	0.0218	0.0075	0.0028	0.0037
2588.00	3.8660	2.6680	0.0959	0.0329	0.0095	0.0037	0.0048
2635.00	2.8460	1.7512	0.0856	0.0360	0.0099	0.0052	0.0059
2812.50	2.4930	1.0636	0.0448	0.0288	0.0091	0.0087	0.0088
2823.00	5.9420	4.6653	0.1984	0.1140	0.0123	0.0126	0.0102
2938.50	13.912	6.2678	0.8296	0.9887	0.2031	0.3284	0.2027
2960.00	2.8370	1.5535	0.1382	0.1438	0.0278	0.0447	0.0291
3081.00	2.1620	1.3993	0.0977	0.0866	0.0242	0.0240	0.0191
3131.80	3.8840	2.0638	0.1994	0.1850	0.0416	0.0516	0.0319
3148.00	3.0210	1.8809	0.1601	0.1083	0.0191	0.0262	0.0154
3166.00	2.1090	1.7592	0.1355	0.0687	0.0086	0.0122	0.0068
3181.00	1.3360	1.0459	0.0649	0.0421	0.0067	0.0093	0.0062
3198.00	0.6690	0.4021	0.0323	0.0176	0.0030	0.0042	0.0036
3220.00	0.6080	0.3013	0.0416	0.0253	0.0040	0.0059	0.0043
3228.00	1.2970	0.6612	0.0901	0.0591	0.0101	0.0142	0.0082
3235.50	2.2640	1.1079	0.1818	0.1190	0.0195	0.0304	0.0167
3253.00	0.7240	0.3702	0.0422	0.0235	0.0045	0.0069	0.0054
3341.00	0.8365	0.4407	0.0604	0.0267	0.0045	0.0066	0.0051
3354.00	1.4835	0.8336	0.1103	0.0505	0.0082	0.0121	0.0073
3358.50	1.3053	0.7015	0.0924	0.0446	0.0077	0.0116	0.0074
3397.00	3.0941	1.7123	0.2503	0.1174	0.0214	0.0328	0.0219
3408.00	1.1632	0.6545	0.0722	0.0313	0.0057	0.0091	0.0066
3418.70	1.6327	0.8842	0.1218	0.0580	0.0110	0.0168	0.0112

3.7 Gas Ratio Diagram





Revision	Date	Issued by	Approved by	Remarks
1	February 2010	Geoservices Unit 174	Operations Assistant	



Revision	Date	Issued by	Approved by	Remarks
1	February 2010	Geoservices Unit 174	Operations Assistant	

4.0 PRESSURE ANALYSIS

4.1 Pressure Summary

Formation pressures were monitored throughout this well by recording a range of indicators. These indicators vary from direct observations of background gas and cuttings to drilling characteristics such as torque and tight hole, as well as quantitative methods like the D'exponent.

D'exponent: This is a normalized rate of penetration that takes into account mud weight, bit wear and hydraulics. It can be reliably used in shales and clean claystones; and as an indicator in siltstones, silty shales and calcareous claystones. A normal trend line is established through normally pressured shale points, representing a normal compaction trend, and any leftward deviation of subsequent shale points from this trend, representing relative under-compaction, indicates overpressure (plotted relative to depth) or increased porosity due to changes in the lithology.

The D'exponent calculation was not ideally suited for the detection of overpressure in this particular instance due to the fact that PDC bits were used. However Geoservices used both qualitative and quantitative techniques to monitor for abnormal pressure. The D-exponent plus close monitoring of gas levels, pit volumes, hole conditions and mud weights ensured that the well was drilled safely. Continuous consultation with well site Geologist and MWD/LWD operators ensured that Geoservices data was cross-referenced for accuracy and reliability.

Overpressure: The trend line was set for the Rockhopper-1ST1 well from the Rockhopper-1 well depths of 1130.0 mMDRT to 2060.0 mMDRT in the 311mm (12¼") hole section, which drilled through formation dominantly consisted of a suitable Siltstone, Claystone & Sandy Siltstone. The slope of the trend line is
a coeff = 0.001304
b coeff = -0.107314
The trend through this well follows a gradual increasing trend from 1990.0 mMDRT to TD of the well at 3482.0 mMDRT. The D'exponent trend seen was one of general compaction with occasional leftward shifts, due to formation changes. A slight leftward shift was noted in places with increasing amounts of Sand and Silt in the formations drilled. No overpressure was encountered in the Rockhopper-1ST1 well.

Formation pressure evaluation using D'exponent was done using the Eaton method. The Eaton method states the relationship between the formation pressure and the Dcs/Dcn ratio depending on changes in the overburden gradient.

$$P = S - (S-Pn) * (Dcs/Dcn)^{1.2}$$

Where: P : formation pressure gradient
S : overburden gradient
Pn: normal pressure gradient
Dcs: observed d'exponent
Dcn: normalised d'exponent

D'exponent:

Coefficients used for this well, results plotted in Geoservices Pressure Log.

Poisson : a = 0.26600 b = -2.66700
source : Santa Barbara (Soft)

Overburden : a = 0.01304 b = -0.17314 c = 1.43350
source : Santa Barbara (Soft)

The Rockhopper-1ST1 well was drilled with water based mud.

Gas: No abnormality in gas ratios or connection gas was observed.

Flow-line Temperature: There were no indications of abnormal pressures from temperature measurements of Rockhopper-1ST1

Cuttings: There were no cuttings observed at the shakers that may have indicated an abnormally pressured zone in this well.

5.0 DRILLING INFORMATION

5.1 Bit Records

BIT	Size (")	Type	Jets	In (m)	Out (m)	Hour	Condition
2	8½	Baker Christensen	-	1990.0	2112.0	14.7	2-3-WT-A-E-I-ER-BHA
3	8½	REED	6x18	2112.0	3158.0	56.12	2-2-CT-C-X-IN-NO-DFT
4	8½	Security DBS	3x15,3x12	3158.0	3196.0	3.91	0-0-NO-A-X-IN-NO-CP
5	8½	Core Bit	Core	3196.0	3212.5	3.58	0-0-NO-A-X-I-NO-BHA
4 RR	8½	Security DBS	3x12,3x15	3212.5	3283.0	5.93	0-0-ER-A-X-I-NO-CP
5 RR	8½	Core Bit	Core3283.0	3283.0	3298.5	2.13	0-0-NO-A-X-I-NO-PR
5 RR1	8½	Core Bit	Core	3298.5	3309.0	1.43	-
4 RR1	8½	Security DBS	3x12,3x15	3309.0	3482.0	15.6	0-0-RR-A-X-I-NO-TD

5.2 Mud Records

The 216mm (8½") hole section was drilled with KCL/Polymer mud from 1990.0 to TD of 3482.0 mMDRT with mud weight of 9.3 ppg to 9.4 ppg.

5.3 Drilling Phase Summary

5.3.1 *216* mm *(8½")* Hole Section

Dates	: 20th January to 3rd February 2010
Measured depth	: 2112.0 mMDRT to 3482.0 mMDRT
Vertical depth	: 2111.0 mMDRT to 3258.0 mMDRT
Number of bits used	: 4
Mud type	: KCL/Polymer

Bit #2, Baker Christensen 8 ½" bit and kick off assembly were made up and run in hole to sidetrack off Rockhopper-1 well. Drilled out cement plug from 1970.0 mMDRT to 1990.0 mMDRT. Commenced kick off at 1990.0 mMDRT. Slide orientate and rotate drilled the hole to 2112.0 mMDRT. The drill string was pulled out to surface. Bit #2 drilled 122.0 m in 14.7 hours and was graded: 2-3-WT-A-E-I-ER-BHA.

Bit #3, Reed Hycalog 8 ½" bit with Geopilot BHA was made up and RIH. Drilled 8 ½" hole to 3158.0 mMDRT with 120/140 RPM, 10/20klb WOB, 610gpm Flow, 2520 psi SPP. Sperry down hole tool failed. Sperry attempted to reset their tools. No success. Pulled out to surface from 3158.0 mMDRT. Bit #3 drilled 1046.0 m in 56.12 hours and was graded: 2-2CT-C-X-IN-NO-DFT

Bit #4, Security DBS 8 ½" BHA was made with replaced Sperry down hole tool and ran back in hole and drilled to 3196.0 mMDRT with 120/140 RPM, 10klb WOB, 600gpm Flow, 2500 psi SPP. The drill string was pulled out to surface. Bit #4 drilled 38m in 3.91 hours and was graded: 0-0-NO-A-X-IN-NO-CP.

Bit #5, Corepro 8 ½" bit was made up to a core barrel BHA and run in the hole. Cut Core #1 from 3196.0 mMDRT to 3212.5 mMDRT. Core head jammed at 3212.5 mMDRT (16.5m of core cut). Pulled out with Core Run#1 and laid out the inner barrels containing the core. 13.38m (81.0%) of core recovered. Bit #5 drilled 16.5m in 3.6 hours and was graded: 0-0-NO-A-X-I-NO-BHA

Bit #4 RR, Security DBS 8 ½" BHA was made and ran in hole. Drilled hole to 3283.0 mMDRT with 120/160 RPM, 5/20klb WOB, 580gpm Flow, 2340 psi SPP. Bit #4 RR drilled 5.3m in 70.5 hours and was graded: 00-ER-A-X-I-NO-CP

Bit #5 RR, Corepro 8 ½". Made up Core Barrel BHA and ran in hole. Cut Core #2 from 3283.0 mMDRT to 3298.5 mMDRT. Core head jammed at 3298.5 mMDRT (15.5m of core cut) Pulled out with Core Run #2. Laid out inner barrels with core. 14.08m (90.8%) of core recovered. Bit #5 RR drilled 15.5m in 2.13 hours and was graded: 0-0-NO-A-X-I-NO-PR

Bit #5 RR1, Corepro 8 ½". Made up Core Barrel BHA and ran in hole. Cut Core #3 from 3298.5 mMDRT to 3309.0 mMDRT. Core head jammed at 3309.0 mMDRT (10.5m of core cut) Pulled out with Core Run #3. Laid out inner barrels with core. 9.5m (90.0%) of core recovered. Bit #5 RR1 drilled 10.5m in 1.43 hours and was graded: NO

Bit #4 RR1 , Security DBS 8 ½" BHA was made and ran in hole. Reamed and logged well from 3260.0 mMDRT to 3309.0 mMDRT. Drilled hole to TD of the well 3482.0 mMDRT with 140/160 RPM, 5/15klb WOB, 600gpm Flow, 2450 psi SPP. Bit #4 RR1 drilled 173 m in 15.6 hours and was graded: 00-RR-A-X-I-NO-CP

Run 1: SP-HRLA-PEX-HNGS-CMR

Run 2: XPT-GR

Run 3: MDT-GR

Run 4: FMI-DSI-GR

Run 5: MSCT-GR

Run 6: VSI-GR

Wiper Trip

Run 7:MRPA (DUAL PACKER)-GR

Rockhopper-1ST1 was plugged and abandoned.

6.0 ENCLOSURES

A.	Formation Evaluation Log	1:500
B.	Drilling Data Log	1:500
C.	Pressure Evaluation Log	1:500
D.	Gas Evaluation Log	1:500

FORMATION EVALUATION LOG

WELL : ROCKHOPPER-1 ST 1

FROM (m): 1950 TO (m): 3510 SCALE: 1/ 500

Country :	: AUSTRALIA
Region	: TASMANIA
Field	: ROCKHOPPER
Permit	: T/18P
Well Type	: APPRAISAL
Rig Name	: KAN TAN 4

POSITION

Latitude	: 39 47' 34.1828" S
Longitude	: 145 26' 21.4660" E
X (m)	: 366376.031
Y (m)	: 5594075.423
RT-Sealevel (m MSL)	: 26
RT-Seabed (m)	: 100.3

CASING SHOE SIZE / DEPTH

762mm (30") at (m MDRT)	: 157.00
340mm (13 3/8") at (m MDRT)	: 961.00
245mm (9 5/8") at (m MDRT)	: 1965.00

Spud Date	: 20-01-2010
Total Depth Date	: 03-02-2010
Total Depth (m MDRT)	: 3482.0
Total Depth (m TVSS)	: 3158.0
Status	: P&A

ABBREVIATIONS

MW MUD WEIGHT
FV FUNNEL VISCOSITY
PV PLASTIC VISCOSITY
YP YIELD POINT
FC FILTER CAKE
SOL SOLIDS
CR CIRCULATE RETURNS
SD SAND - %
S SALINITY - PPM
RM MUD RESISTIVITY
RMF MUD FILTRATE
C CARBIDE TEST
LAT LOGGED AFTER TRIP
DS DEVIATION SURVEY
NB NEW BIT
RR RERUN BIT
CB CORE BIT
WOB WEIGHT ON BIT
RPM REVS PER MINUTE
FLC FLOW CHECK
WL FILTRATE
PR POOR RETURNS
NR NO RETURNS
BG BACKGROUND GAS
TG TRIP GAS
STG SHORT TRIP GAS
CG CONNECTION GAS
SG SWAB GAS
SVG SURVEY GAS

LITHOLOGY LEGEND

Dolomite
Calcirudite
Calcarenite
Calcisiltite
Calcilutite
Sandy Claystone
Silty Claystone
Calcareous Claystone
Argil Calcilutite
Claystone
Silstone
Sandstone
Coal
Intrusive Volcanics
Volcaniclastics
Tuff
Cement
Argil Siltstone
Sandy Siltstone
Calcareous Siltstone
Argil Sandstone
Calcareous Sandstone
Dolomitic Sandstone
Silty Sandstone
Calcareous
Dolomitic
Fossils
Foraminiferae
Carbonaceous
Chert
Pyrite
Glauconite
Mica

ENGINEERING

Test
FIT or LOT
Mud loss
Mud gain
Deviation survey
Core
Shoe
Calcimetry

MWD Gamma Ray (api) 0 100 200
WOB (Klbs) 0 50 100
ROP Backup (m/h) 400 300 200
ROP (m/h) 200 100 0
CORES
DEPTH mMDRT
CUTTINGS LITHOLOGY %
INTERPRETED LITHOLOGY
TOTAL GAS & RESISTIVITY
Resistivity (Deep) Ohm.m .2 2 20 200
Resistivity (Shallow) Ohm.m .2 2 20 200
Total Gas (%) .01 .1 1 10
CHROMATOGRAPH %
C1
C2
C3
iC4
nC4
iC5
nC5
.001 .01 .1 1 10
DIRECT FLUOR.
POOR FAIR GOOD
CALC (%) 0 100
DOLO (%) 100 0
LITHOLOGICAL DESCRIPTIONS AND REMARKS

1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060

BIT#2:216mm (8.5")
HCC MILL TOOTH
SN: 6062641
JETS:3x22
OUT:2112.5m
BIT RUN:122.5m
BIT HOURS:14.7
GRADE:2-3-WT-A-E-I-ER-BHA

WOB:7-14 klbs
RPM:0-80
GPM:509-547
SPP:1845-2103 psi

MW:9.3ppg,FV:58
PV/YP:28/36,
FC:1,SOL:3.3
SND:0.25%,CL:36000mg/l

MW:9.3ppg,FV:66
PV/YP:21/36,
FC:1,SOL:3.6
SND:0.25%,CL:36000mg/l

9-5/8" (244mm) Casing Shoe @ 1965.0mMDRT

Survey @ 1968.42 mMDRT INCL:0.69deg AZI:57.75deg TVD:1968.37m

DATA RECORDED FROM 1985.0 mMDRT

ROCKHOPPER-1ST1 KICK OFF from 1990.0 mMDRT @ 0300 hrs on 20th January 2010.

100% Formation from 1999.0 mMDRT.

Survey @ 1995.26 mMDRT INCL:1.12deg AZI:112.40deg TVD:1995.21m

ARGILLACEOUS SILTSTONE: brnsh blk,olv blk i/p,lt gry-med gry i/p,v sft-fri,amor-sbblky,25% cly,5% f snd gn agg, tr lith frag.

Survey @ 2020.27 mMDRT INCL:4.56deg AZI:164.56deg TVD:2020.19m

CLAYSTONE:brnsh blk-dk gry v sft-sft,stky,amor.

Radia-Green & Calcium Carbonate added to mud system.

20-01-2010

21-01-2010

MW:9.3ppg,FV:68
PV/YP:21/37,
FC:1,SOL:3.6
SND:0.25%,CL:36000mg/l

WOB:7-21 klbs
RPM:153-261
GPM:522-546
SPP:1845-2146 psi

21-01-2010

22-01-2010

BIT#3:216mm (8.5")
REED HYCALOG RSX616IM
SN: 220126
JETS:6x18
OUT:3158.0m
BIT RUN:1046.0m
BIT HOURS:56.1
GRADE:2-2-CT-C-X-IN-NO-DFT

MW:9.4ppg,FV:55
PV/YP:18/29,
FC:1,SOL:3.5
SND:0.2%,CL:36500mg/l

WOB:1-26.3 klbs
RPM:72-347
GPM:533-270
SPP:1615-2309 psi

2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270

Survey @ 2076.85 mMDRT
INCL:8.58deg AZI:180.86deg
TVD:2076.39m

ARGILLACEOUS SILTSTONE: brnsh blk,olv blk i/p,lt gry-med gry i/p,v sft-fri,amor-sbblky,25% cly,5% f snd gn agg,tr lith frag.

Survey @ 2101.74 mMDRT
INCL:10.33deg AZI:180.02deg
TVD:2100.90m

SANDSTONE:v lt gry-lt gry,wh-yelsh gry,5% v f,10% f,50% med, 35% crs snd,fri-mod hd,mod-wl srtd,rnd-sbang,sbsph-sph,5% cly,1% calc cmt,tr lith frag,gd inf por,no hydc fluor.

Survey @ 2133.86 mMDRT
INCL:11.00deg AZI:184.57deg
TVD:2132.5m

SANDSTONE:lse gns,clr-op,rr wh-pl yel,10% v f,15% f,70% med, 5% crs gns,v pr srtd,sbrnd-sbang,sbelong-sbsph,gd inf por, com frac gns,tr incl,no hydc fluor.

SILTY CLAYSTONE:olv gry-brn,rr wh,v sft-frm,amor-sbblky,tr pyr,tr carb spks, calc i/p.

Survey @ 2162.64 mMDRT
INCL:12.26deg AZI:191.23deg
TVD:2160.7m

ARGILLACEOUS SILTSTONE: brnsh gry,yelsh gry,lt brn i/p, v sft-frm,amor-sbblky,tr lith frag, tr carb spks,tr pyr,tr micromic.

SILTY CLAYSTONE:olv gry-brn,rr wh,v sft-frm,amor-sbblky, tr pyr,tr carb spks,calc i/p.

Survey @ 2191.04 mMDRT
INCL:14.11deg AZI:193.69deg
TVD:2188.3m

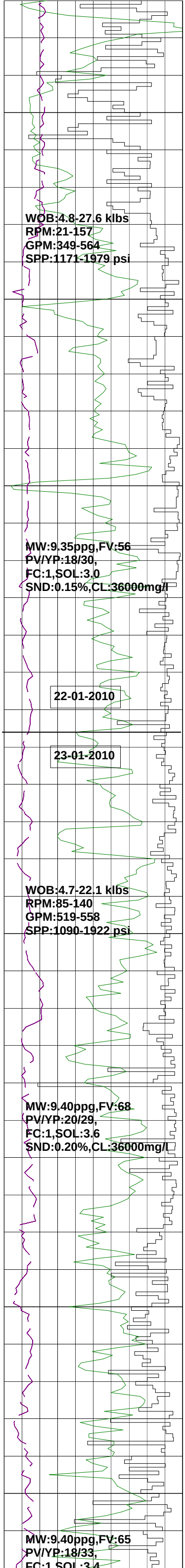
ARGILLACEOUS SANDSTONE: lt brn-yelsh brn,fri-frm, 80% v f,20% f,mod srtd,ang-sbrnd,sbsph-sbelong,tr micro mic,tr pyr,pr-fr vis por, no hydc fluor.

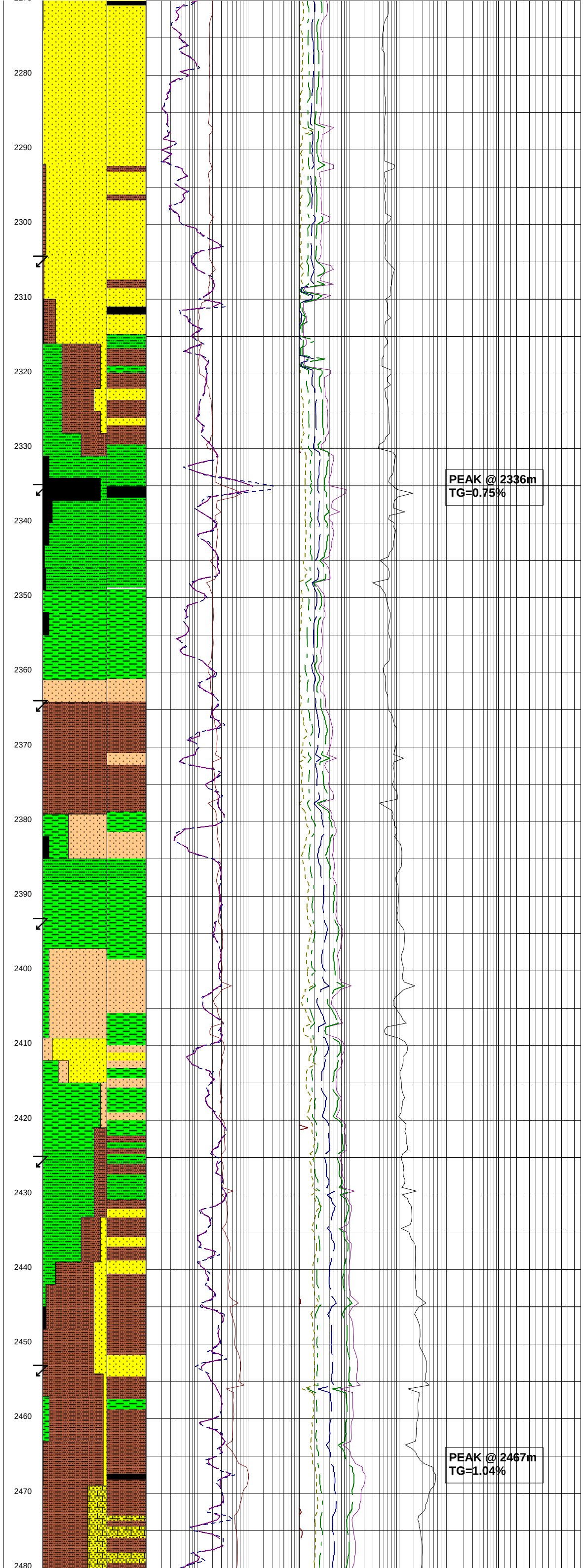
Survey @ 2221.57 mMDRT
INCL:17.25deg AZI:200.87deg
TVD:2217.7m

SANDSTONE:lse gns,clr,trnsl, wh,pl yel,60% v f,10% f,10% med, 5% crs,5% v crs gns,v pr srtd,ang-sbrnd,sbsph-elong,com frac gns, com incl,gd inf por,no fluor.

Survey @ 2250.0 mMDRT
INCL:21.13deg AZI:203.77deg
TVD:2244.5m

COAL:blk-dk gnsh blk,vit





lstr,frm-hd,conch frac,com ang frag.

SANDSTONE:lse gns,clr,trnsl, wh,pl yel,60% v f,10% f,10% med, 5% crs,5% v crs gns,v pr srtd, ang-sbrnd,sbsph-elong,com frac gns,com incl,gd inf por,no fluor.

Survey @ 2305.36 mMDRT
INCL:27.89deg AZI:201.28deg
TVD:2294.9m

ARGILLACEOUS SILTSTONE: lt brn-lt brnsh gry,v sft-sft,amor-sbblky,tr micromic, tr pyr,tr carb spks.
COAL:blk-grysh blk,frm-mod hd,ang-conch frac,vit lstr.

SANDSTONE:wh,sft-frm agg, 40% v f,10% med,5% crs,5% v crs,v pr srtd,ang-sbrnd, sbelong-sbsph,tr pyr,fr inf por,no fluor.

Survey @ 2335.32 mMDRT
INCL:29.38deg AZI:198.65deg
TVD:2321.20m

COAL:blk,frm-hd,ang-conch, vit lstr,occ hackly,tr calc veins.

SILTY CLAYSTONE:lt brnsh gry-lt olv gry,v sft-sft,amor-disp,tr micromic,tr pyr.

CLAYSTONE:yelsh gry-lt olv gry,lt brnsh gry i/p,amor-disp,tr mic,tr lith frag.

Survey @ 2364.03 mMDRT
INCL:31.55deg AZI:195.91deg
TVD:2345.9m

SILTSTONE:olv gry-dk grnsh gry,brnsh gry i/p,v sft-sft,amor-sbblky,5% cly,5% v f qtz snd,tr lith frag,tr coal.

ARGILLACEOUS SILTSTONE: lt brn,lt brnsh gry,brnsh gry,wh i/p, v sft-frm,amor-sbblky,20% cly, 5% v f snd,tr lith frag,tr coal.

CLAYSTONE:olv gry-lt olv gry, yelsh gry-lt brnsh gry i/p,v sft,20% slt,1% v f snd,tr lith frag,tr mic,tr pyr,tr carb spks.
SILTY CLAYSTONE:olv gry-lt gry,yelsh gry-brnsh gry i/p,v sft,amor,20% slt,1% v f snd,tr lith,tr pyr,tr mic,tr carb spks.

Survey @ 2393.22 mMDRT
INCL:33.06deg AZI:193.25deg
TVD:2370.6m

SILTSTONE:olv blk-olv gry, grnsh blk i/p,sft-frm,blky-sbblky, 10% cly,1% f snd,tr lith frag, tr coal.

SANDSTONE:wh-yelsh gry,opq, lse,20% v f,60% f,10% med,10% crs grn,mod srtd,ang-sbrnd,sb elong-sbsph,pr-fr inf por,no fluor.

SILTSTONE:olv blk-olv gry,lt brnsh gry i/p,sft-frm,sbbky-blky,occ inter lam.

Survey @ 2424.12 mMDRT
INCL:34.38deg AZI:191.99deg
TVD:2396.3m

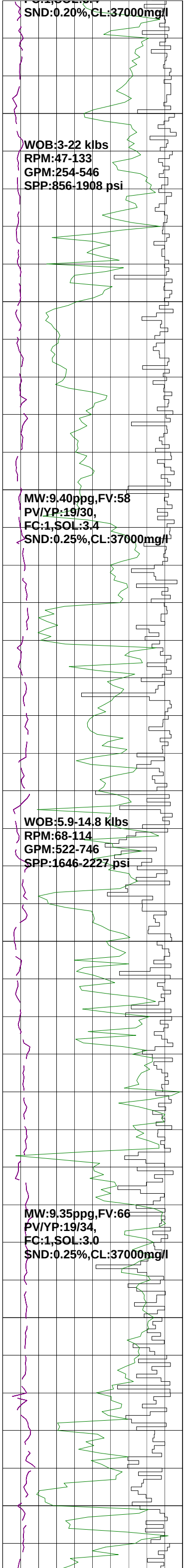
SANDSTONE:wh-yelsh gry,fri-lse,40% v f,40% f,20% med gns, pr-mod srtd,sbang-sbrnd,sbelong-sbsph,tr micromic,tr pyr,pr-fr vis por,no fluor.

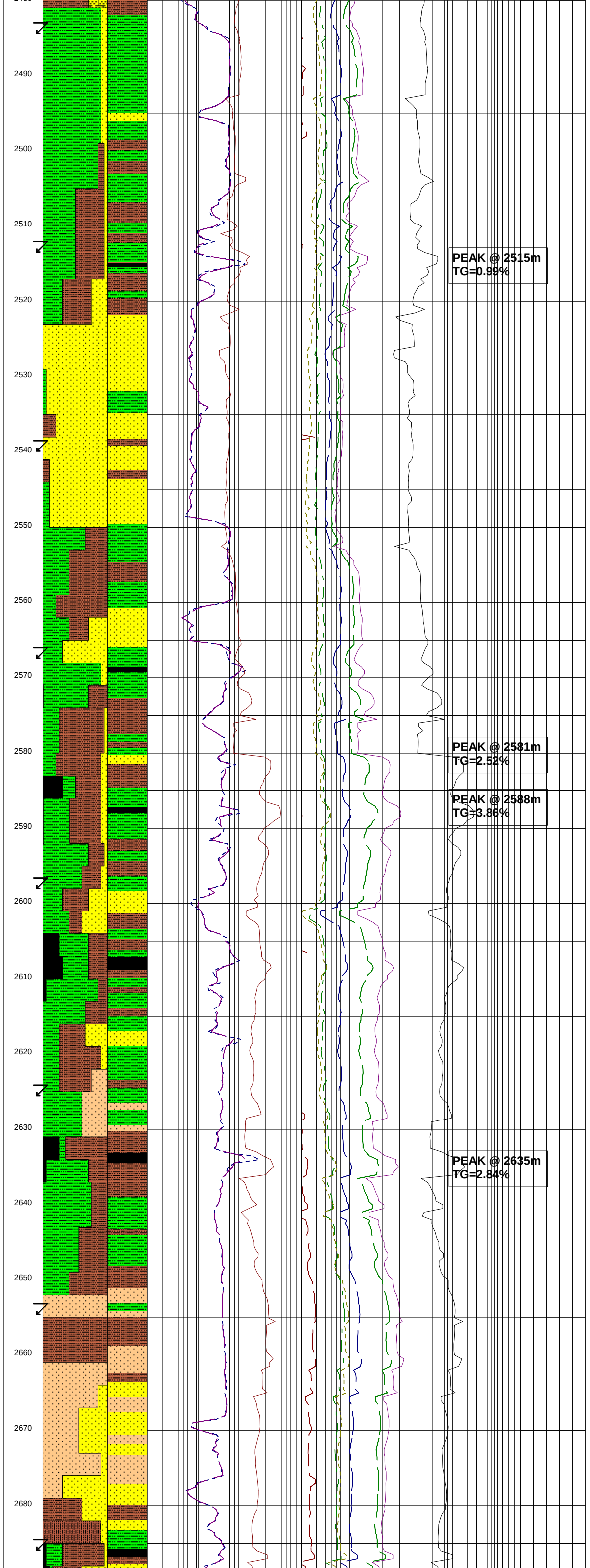
ARGILLACEOUS SILTSTONE: lt brn,lt brnsh gry,brnsh gry,wh i/p,v sft-frm,amor-sb blky,20% cly,5% v f snd,tr lith frag,tr coal.

Survey @ 2453.60 mMDRT
INCL:35.37deg AZI:186.44deg
TVD:2420.5m

COAL:blk,frm-mod hd,ang-conch frac,shiny-vit lstr.

CALCAREOUS SANDSTONE: wh-yelsh gry,frm-hd,40% v f, 40% f,20% med gns,pr-mod srtd, sbang-sbrnd,sbelong-sbsph,tr





micromica,tr pyr,calc cmt,thn hd stngr,pr vis por,no fluor.

Survey @ 2483.2 mMDRT
INCL:36.66deg AZI:186.44deg
TVD:2444.4m

SILTY CLAYSTONE:olv gry-lt gry,yelsh gry,brnsh gry i/p, v sft,amor,20% slt,1% f snd, tr mic,tr lith frag.

ARGILLACEOUS SILTSTONE: brnsh gry-olv gry,sft-frm,sbblky-blky,tr micromic,tr pyr,blk carb spks.

Survey @ 2512.34 mMDRT
INCL:35.35deg AZI:185.57deg
TVD:2468.0m

COAL:blk,frm-mod hd,ang-conch frac,shiny-vit lstr.

SANDSTONE:lse gns,clr,wh, lt yel,20% v f,60% f,10% med, 10% crs,pr srtd,sbang-sbrnd, sbsph-sbelong,tr pyr,tr frac gns,mod inf por,no fluor.

Survey @ 2539.22 mMDRT
INCL:36.13deg AZI:185.30deg
TVD:2489.8m

SANDSTONE:lse gns,clr,wh, opq,20% v f,60% f,10% med, 10% crs,pr srtd,sbang-sbrnd, sbsph-sbelong,tr pyr,tr frac gns,fr inf por,no fluor.

ARGILLACEOUS SILTSTONE: brnsh gry-lt brnsh gry,sft-frm, sbblky-blky,tr micromic,tr pyr, tr carb spks.

Survey @ 2567.35 mMDRT
INCL:35.96deg AZI:183.83deg
TVD:2512.6m

SANDSTONE:lse gns,clr,wh, lt yel,20% v f,60% f,10% med, 10% crs,pr srtd,sbang-sbrnd, sbsph-sbelong,tr pyr,tr frac gns,mod inf por,no fluor.
SILTY CLAYSTONE:lt brnsh gry-brnsh gry,v sft-sft,amor-sbblky,tr mic,tr pyr,tr carb spks.

COAL:blk,frm-mod hd,ang-conch frac,tr pyr.

Survey @ 2596.63 mMDRT
INCL:35.77deg AZI:183.27deg
TVD:2536.3m

SANDSTONE:lse gns w/rr wh & yelsh gry agg,clr,wh,opq,20% v f,60% f,10% med,10% crs,p srtd,sbang-sbrnd,sbsph-sb elong,tr pyr,fr inf por,no fluor.
COAL:blk,frm-hd,ang-conch, tr pyr.
SILTY CLAYSTONE:lt brnsh gry-brnsh gy,v lt gry i/p, v sft,amor-disp,20% slt,tr mic.
ARGILLACEOUS SILTSTONE: brnsh gry-lt brnsh gry,frm-fri, sbblky-bky,25% cly,tr pyr,tr mic,tr coal.

Survey @ 2623.25 mMDRT
INCL:35.68deg AZI:182.9deg
TVD:2557.9m

COAL:blk,frm-hd,ang-conch,sbvit-vit lstr,tr pyr.
SILTY CLAYSTONE:lt brnsh gry-v lt gry,v sft-sft,amor-disp,20% slt.

Survey @ 2653.75 mMDRT
INCL:34.85deg AZI:179.74deg
TVD:2582.8m

SILTSTONE:olv blk-lt olv gry,med lt gry-med gry i/p,frm-hd, sbblky-ang,5% cly,tr pyr,tr coal.

SANDSTONE:wh,yelsh gry,v lt gry,sbblky-ang,25% v f,70% f,5% med gn,sbrnd,sbsph,wl srtd,pr inf por,no fluor.

SILTSTONE:olv blk-lt olv gry,med lt gry-med gry i/p,frm-hd, sbblky-ang,15% cly,tr pyr,tr coal.

Survey @ 2684.95 mMDRT
INCL:35.97deg AZI:178.78deg
TVD:2608.2m

ARGILLACEOUS SILTSTONE: olv gry,brnsh gry,brnsh blk i/p, v sft-frm,amor-sbblky,25% cly,

RPM:94-150
GPM:577-626
SPP:1936-2430 psi

23-01-2010

24-01-2010

MW:9.35ppg,FV:66
PV/YP:20/36,
FC:1,SOL:3.0
SND:0.25%,CL:36000mg/l

WOB:3.6-19.4 klbs
RPM:12-162
GPM:216-636
SPP:625-2530 psi

MW:9.4ppg,FV:64
PV/YP:20/36,
FC:1,SOL:3.6
SND:0.25%,CL:37000mg/l

MW:9.40ppg,FV:59
PV/YP:21/37,
FC:1,SOL:3.6
SND:0.25%,CL:36500mg/l

WOB:1-23.8 klbs
RPM:31-173
GPM:526-625
SPP:1905-2532 psi

2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900

GAS LINE SWAPPED DUE TO BLOCKAGE

PEAK @ 2705m
TG=2.58%

PEAK @ 2812m
TG=2.48%

PEAK @ 2823m
TG=5.94%

tr lith frag.

SANDSTONE:wh,yelsh gry, lse,25% vf,65% f,10% med, sbrnd-sbang,mod-wl srtd, sbsph-sbelong,fr-gd inf por,no fluor.

ARGILLACEOUS SILTSTONE: olv gry,brnsh gry,brnsh blk i/p, v sft-frm,amor-sbblky,20% cly, tr coal,tr lith frag.

Survey @ 2711.61 mMDRT
INCL:35.67deg AZI:174.14deg
TVD:2629.9m

SANDSTONE:wh,yelsh gy,lse, opq,15% vf,30% f,40% med,10% crs,5% v crs,sbrnd-sbang,sbsph-sph,mod-wl srtd,gd inf por,no fluor.

Survey @ 2739.68 mMDRT
INCL:35.45deg AZI:177.12deg
TVD:2652.7m

ARGILLACEOUS SILTSTONE: olv gry,brnsh gry,brnsh blk i/p,v sft-frm,amor-sbblky, 25% cly,tr lith frag.

SANDSTONE:wh-yelsh gry,opq, lse-fri,20% v f,40% f,30% med, 10% crs,sbrnd-sbang,mod-wl srtd,sbsph-sph,pr-fr inf por, no fluor.

Survey @ 2771.60 mMDRT
INCL:35.52deg AZI:176.05deg
TVD:2678.7m

ARGILLACEOUS SILTSTONE: olv gry-olv blk,brnsh gry-lt brnsh gry,sft-frm,sbblky-blky, tr micromic,tr carb spks,tr pyr.

SILTY CLAYSTONE:olv gry-olv blk,v sft-sft,sbblky,tr pyr, carb spks.

Survey @ 2799.25 mMDRT
INCL:35.58deg AZI:174.76deg
TVD:2701.2m

SANDSTONE:wh-lt brn,lse-fri, 30% v f,40% f,20% med,10% crs gns,sbang-sbrnd,sbelong-sbsph, v pr srtd,abd wh amor rk flour, tr micromic,tr pyr,tr carb spks.

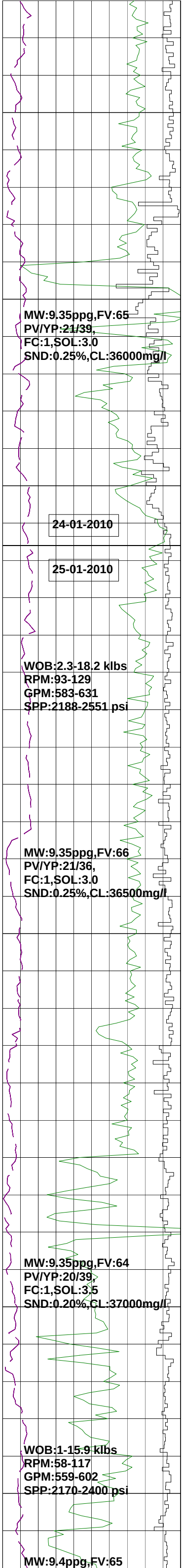
Survey @ 2830.33 mMDRT
INCL:35.66deg AZI:174.48deg
TVD:2726.2m

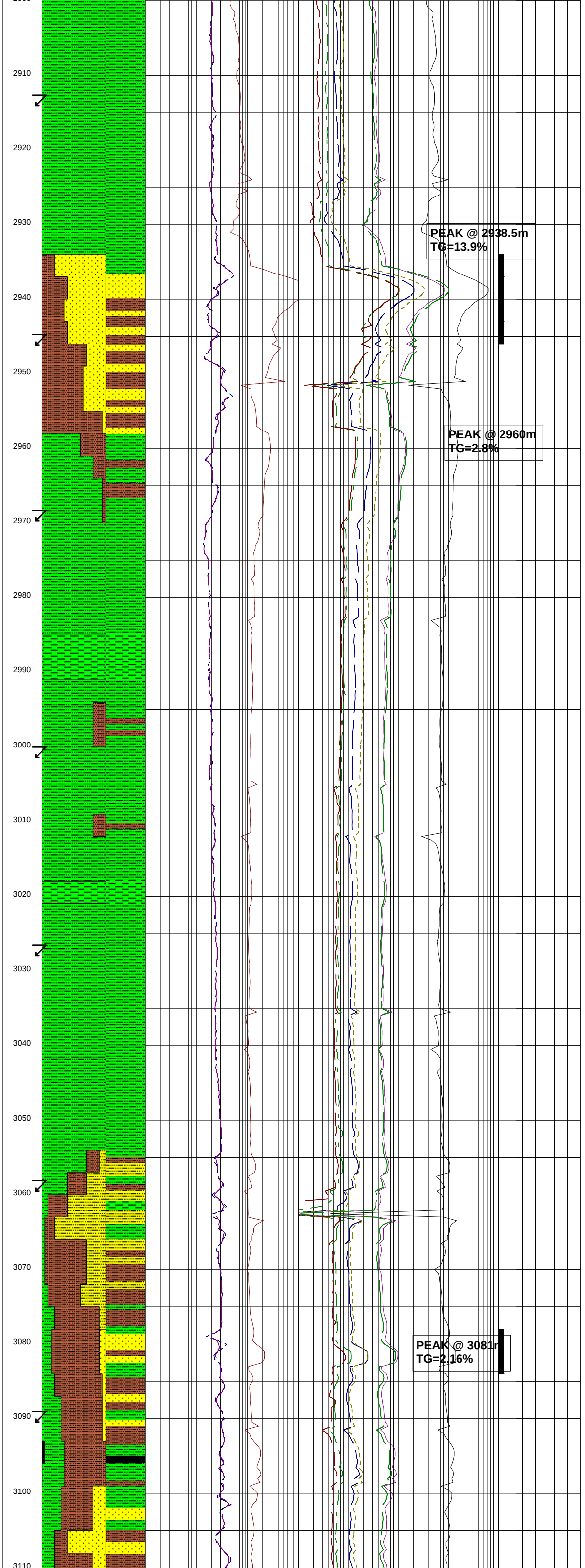
Survey @ 2858.86 mMDRT
INCL:35.40deg AZI:174.28deg
TVD:2749.7m

CLAYSTONE:lt olv gry,olv gry,sft-frm,ang-sbblky,tr pyr, micromic.

Survey @ 2886.55 mMDRT
INCL:35.44deg AZI:174.82deg
TVD:2772.2m

SILTY CLAYSTONE:olv gry-olv blk,v sft-sft,sbblky,tr pyr, carb spks.





Survey @ 2912.81 mMDRT
INCL:35.59deg AZI:174.71deg
TVD:2793.6m

SANDSTONE:wh,lt olv gry, yelsh gry,fri-frm,5% wh cly mtrx,30% v f,50% f,15% med, 5% crs gns,sbang-sbrnd,pr-mod srtd,sbelong-sbsph,tr sil cmt, tr mic,pr-fr vis por,pr hydc fluor.

FLUOR 2937-2949mMDRT: 5-20%,dll yel,slw strmg blush wh crsh ct,dll yel gn res rng.

Survey @ 2944.72 mMDRT
INCL:35.73deg AZI:174.86deg
TVD:2819.5m

ARGILLACEOUS SILTSTONE: lt olv gry-olv gry,brnsh gry,sft -frm,ang-sbblky,20% cly,tr mic, tr coal.

Survey @ 2970.13 mMDRT
INCL:33.6deg AZI:176.07deg
TVD:2840.4m

SILTY CLAYSTONE:olv gry-olv gry,brnsh gry,sft-frm,sbblky--blky,24% slt,tr f gn qtz snd, tr pyr,tr mic,tr coal.

CLAYSTONE:olv gry-gry,brnsh gry,sft-frm,sbblky-blky,15% slt, tr pyr,tr mic,tr coal.

Survey @ 3001.24 mMDRT
INCL:33.13deg AZI:177.20deg
TVD:2866.4m

SILTY CLAYSTONE:olv gry-olv gry,brnsh gry,sft-frm,sbblky--blky,15% slt,tr pyr,tr mic.

Survey @ 3026.7 mMDRT
INCL:33.59deg AZI:177.54deg
TVD:2887.7m

SILTY CLAYSTONE:lt olv gry, olv gry,brnsh gry,sft-frm,blky-sbblky,30% slt,tr mic,tr carb spks.

Survey @ 3059.36 mMDRT
INCL:34.65deg AZI:177.11deg
TVD:2914.7m

ARGILLACEOUS SANDSTONE: wh-yelsh gry,40% v f,40% f,20% med gns,sbang-sbrnd,sbsph-sph,pr srtd, tr pyr,tr carb spks,tr micromic,fr vis por,no hydc fluor.

ARGILLACEOUS SILTSTONE: olv gry,brnsh gry,lt olv gry, sft-frm,ang-sbblky,tr pyr,tr micromic,tr carb spks.

SANDSTONE:wh-yelsh gry,40% v f,40% f,20% med gns,sbang-sbrnd,sbsph-sph,pr srtd,tr pyr, tr carb spks,tr micromic,fr vis por,fr-wk hydc flour,frm tr agg.

FLUOR 3081-3084mMDRT: mod brt wh dir uv fluor,v slw blush wh stmg ct,thn dll blush grn res ring.

Survey @ 3089.54 mMDRT
INCL:35.50deg AZI:176.65deg
TVD:2939.4m

PV/YP:20/35,
FC:1,SOL:3.8
SND:0.20%,CL:37000mg/l

MW:9.35ppg,FV:56
PV/YP:19/40,
FC:1,SOL:3.0
SND:0.25%,CL:36500mg/l

25-01-2010

27-01-2010

BIT#4:216mm (8.5")
SECURITY DBS SMS365
SN:11374625
JETS:3x15,3x12
OUT:3196m
BIT RUN:38m
BIT HOURS:3.98
GRADE:0-0-NO-A-X-IN-NO-CP

MW:9.4ppg,FV:62
PV/YP:19/37,
FC:1,SOL:3.4
SND:0.20%,CL:37500mg/l
WOB:5.3-16.6 klbs
RPM:56-95
GPM:588-635
SPP:2249-2561 psi

27-01-2010

28-01-2010

BIT#5:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3212.5m
BIT RUN:16.5m
BIT HOURS:3.58

28-01-2010

29-01-2010

BIT#4RR:216mm (8.5")
SECURITY DBS FMF3653Z
SN: 11374625
JETS:3x12,3x15
OUT:3283.0m
BIT RUN:70.5m
BIT HOURS:5.93
GRADE:0-0-ER-A-X-I-NO-CP

29-01-2010

30-01-2010

MW:9.4ppg,FV:62
PV/YP:15/25,
FC:1,SOL:2.9
SND:0.15%,CL:38000mg/l

MW:9.35ppg,FV:66
PV/YP:20/34,
FC:1,SOL:2.9
SND:0.20%,CL:38000mg/l

WOB:2.6-17.7 klbs
RPM:117-194
GPM:564-606
SPP:2184-2460 psi

30-01-2010

31-01-2010

BIT#5RR:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3298.5m
BIT RUN:15.5m
BIT HOURS:2.13
BIT#5RR1:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3309.0m
BIT RUN:10.5m
BIT HOURS:1.43

02-02-2010

BIT#4RR1:216mm (8.5")
SECURITY DBS FMF3653Z
SN: 11374625

3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260
3270
3280
3290
3300
3310
3320

PEAK @ 3131.8m
TG=3.88%

PEAK @ 3148.5m
TG=3.02%

PEAK @ 3155.5m
TG=2.75%

PEAK @ 3166m
TG=2.1%

PEAK @ 3181m
TG=1.33%

PEAK @ 3198.5m
TG=0.66%

CUT CORE#1
3196.0-3212.5mMDRT
NO GAS DATA
BOTTOMS UP NOT CIRCULATED.

PEAK @ 3220.0m
TG=0.60%

PEAK @ 3228.0m
TG=1.29%

PEAK @ 3235.5m
TG=2.26%

PEAK @ 3253m
TG=0.72%

CUT CORE#2
3283.0-3298.5mMDRT
NO GAS DATA
BOTTOMS UP NOT CIRCULATED.

CUT CORE#3
3298.5-3309.0mMDRT
NO GAS DATA
BOTTOMS UP NOT CIRCULATED.

Survey @ 3118.07 mMDRT
INCL:35.57deg AZI:177.66deg
TVD:2962.6m

SANDSTONE:wh,clr,lt yel,lse-rr fri agg,30% v f,60% f,5% crs gns,sbang-sbrnd,sbelong-sbsph, v pr srtd,abd wh amor rk flour,tr incl,tr micromic,tr pyr,tr carb spks,gd inf por,no hydc fluor.

SILTY CLAYSTONE:olv gry-olv blk,lt olv gry,sft-frm, sbblky-blky,20% slt,tr carb spks,tr pyr,tr micromic.

COAL:blk,frm-hd,ang-conch, sbvit-vit lstr.

POOH from 3158mMDRT
LWD tools failed.
(Gamma/ABG/Dir)

Survey @ 3167.94 mMDRT
INCL:35.62deg AZI:178.03deg
TVD:3003.2m

ARGILLACEOUS SANDSTONE: wh-lt yelsh gry & lt gry,sft-frm agg,40% v f,40% f,20% med gns, pr srt,sbang-sbrnd,sbsph-sph,tr incl & frac,com arg mtx & carb spks,rr carb lam,fr inf por,no hydc fluor.

Survey @ 3185.30 mMDRT
INCL:35.62deg AZI:178.52deg
TVD:3017.3m

POOH for CORE#1
from 3196.0mMDRT

Survey @ 3203.43 mMDRT
INCL:35.49deg AZI:178.76deg
TVD:3032.0m

CORE RUN#1
3196.0-3212.5mMDRT
CUT 16.5m
RECOVERED 13.38m
RECOVERY 81%

ARGILLACEOUS SANDSTONE: wh,yelsh gry,sft-frm,30% cly, 40% v f,40% f,15% med,5% crs, ang-sbrnd,v pr-pr srtd,sbelong-sbsph,pr-fr vis por,tr qtz cmt, tr coal,tr mic,no hydc fluor.

Survey @ 3234.73 mMDRT
INCL:35.84deg AZI:179.25deg
TVD:3057.5m

ARGILLACEOUS SILTSTONE: olv gry,brnsh gry,lt olv gry, sft-frm,amor-blky,30% cly,tr coal,tr pyr,tr mic.

SANDSTONE:wh,yelsh gry, lt olv gry,frm,10% cly,20% vf 30% f,60% med,5% crs,5% v crs, ang-sbrnd,v pr-pr strd,sbelong -sbsph,fr vis por,tr qtz cmt, no hydc fluor.
CLAYSTONE:olv gry-olv blk, brnsh gry,sft-v sft,amor-sbblky, 15% slt,tr coal,tr mic,tr pyr.

Survey @ 3264.81 mMDRT
INCL:35.66deg AZI:178.72deg
TVD:3081.9m

SILTY CLAYSTONE:olv gry-olv blk,lt olv gry,sft-v sft,amor-sbblky, 20% slt,tr coal,tr mic,tr pyr.

POOH for CORE#2
from 3283.0mMDRT

CORE RUN#2
3283.0-3298.5mMDRT
CUT 15.5m
RECOVERED 14.08m
RECOVERY 91%

CORE RUN#3
3298.5-3309.0mMDRT
CUT 10.5m
RECOVERED 9.5m
RECOVERY 90%

Survey @ 3293.65 mMDRT
INCL:34.97deg AZI:178.07deg
TVD:3105.4m

SANDSTONE:wh,yelsh gry,lse-fri, 5% wh cly mtrx,10% f,55% med,25% crs,10% v crs,ang-sbrnd,v pr srtd,

JETS:3x12,3x15
OUT:3482.0m
BIT RUN:173.0m
BIT HOURS:15.6
GRADE:0-0-RR-A-X-I-NO-TD

MW:9.4ppg,FV:68
PV/YP:15/30,
FC:1,SOL:4.0
SND:0.20%,CL:37500mg/l

02-02-2010

03-02-2010

MW:9.4ppg,FV:67
PV/YP:15/29,
FC:1,SOL:4.0
SND:0.20%,CL:37500mg/l

WOB:4.1-19.8 klbs
RPM:47-245
GPM:233-609
SPP:776-2440psi

MW:9.4ppg,FV:57
PV/YP:19/36,
FC:1,SOL:3.7
SND:0.15%,CL:38500mg/l

MW:9.35ppg,FV:57
PV/YP:20/36,
FC:1,SOL:3.4
SND:0.20%,CL:37500mg/l

WOB:2.9-19.8 klbs
RPM:91-204
GPM:586-612
SPP:2354-2545psi

CIRCULATION TIME FROM TD PRIOR TO POOH=3.16HRS.

3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
3470
3480
3490
3500
3510

PEAK @ 3341.0m
TG=0.83%

PEAK @ 3354.0m
TG=1.48%

PEAK @ 3358.5m
TG=1.30%

PEAK @ 3368.0m
TG=1.35%

PEAK @ 3397.5m
TG=3.09%

PEAK @ 3407.0m
TG=1.19%

PEAK @ 3418.7m
TG=1.71%

CHANGE DELASCO RUBBER ON GZG DEGASSER.

ADJUST THE GZG PROBE IN FLOWLINE DUE TO LOW MUD LEVEL.

sbelong-sbsp,tr qtz cmt,tr v f qtz gn,pr-fr vis por,no hydc fluor.
ARGILLACEOUS SILTSTONE:olv blk-blk olv gry,brnsh gry i/p,sft-frm, blky-sbblky,20% cly,tr pyr,tr mic.

Survey @ 3323.61 mMDRT
INCL:35.99deg AZI:178.66deg
TVD:3129.8m

SILTY CLAYSTONE:olv blk-lt olv gry,sft-frm, amor-sbblky, 25% slt,tr mic,tr pyr.

Survey @ 3350.05 mMDRT
INCL:35.35deg AZI:178.82deg
TVD:3151.3m

SANDSTONE:wh,yelsh gry,lse-fri,5% wh cly mtrx,20% v f,35% f, 30% med,15% crs,sbang-sbrnd, pr srtd,sbelong-sbsph,pr-fr vis por,tr sil cmt,no hydc shows.

ARGILLACEOUS SILTSTONE: olv blk-lt olv gry,brnsh gry i/p, sft-frm,blky-sbblky,20% cly,tr v f-f grn qtz snd,tr mic,tr pyr,tr lith frag.

Survey @ 3379.25 mMDRT
INCL:35.64deg AZI:179.95deg
TVD:3175.1m

ARGILLAEOUS SANDSTONE: wh-yelsh gry,sft-frm,20% cly, 20% v f,60% f,20% med,sbrnd-rnd,mod srtd,sbsph-sph,tr qtz cmt,com blk carb lam i/p,pr-fr vis por,no cut fluor,com pnpt brit wh minrl fluor frm sd mtx.

Survey @ 3408.14 mMDRT
INCL:35.78deg AZI:180.50deg
TVD:3198.5m

SANDSTONE:wh,yelsh gry,frm-fri,5% calc cly,20% v f,20% f, 60% med gns,sbang-sbrnd,sbsph-sph,pr-mod srt,tr mic & carb spks,pr vis por,no cut fluor,com pnpt brit wh minrl fluor frm sd mtx.

SILTY CLAYSTONE:olv blk-lt olv gry,v sft-frm,amor-blky, non calc,tr micromic & pyr.

Survey @ 3439.04 mMDRT
INCL:36.10deg AZI:180.75deg
TVD:3222.8m

VARIABLY WEATHERED/ DEGRADED VOLCANICS: wh-lt grn & occ dk grn,sft-mod hd i/p,ang-blky,tr remnant basaltic txt,tr qtz gns,com wh calc mtrx,tr lt brn kaolinitic, occ frsh chlorite xln @ centre of the agg.

Survey @ 3467.05 mMDRT
INCL:35.47deg AZI:179.36deg
TVD:3245.6m

SANDSTONE:dk grn,dk grnsh gry,fri-frm,40% v f,60% f gns, sbang-ang,sbelng-sbsph,com grn chlorite,sli calc i/p,tr pyr,no hydc fluor.

ROCKHOPPER-1 ST1 reached TD of 3482.0mMDRT/3258.29mTVDRT on 03 Feb 2010 @ 14.30 hrs.

Completed Schlumberger wireline btwn 0830hrs 4th Feb-0430hrs 15th Feb,as follows:-
Run 1:SP-HRLA-PEX-HNGS-CMR
Run 2:XPT-GR
Run 3:MDT-GR
Run 4:FMI-DSI-GR
Run 5:VSI-GR
Run 6:MSCT-GR
Run 7:MRPA (DUAL PACKER)-GR

Wiper Trip Run was performed between Run 6 and Run 7

DRILLING DATA LOG

WELL : ROCKHOPPER-1 ST 1

FROM (m): 1950 TO (m): 3510 SCALE: 1/ 500

		POSITION		CASING SHOE SIZE / DEPTH			
Country	: AUSTRALIA	Latitude	: 39 47' 34.1828" S	762mm (30") at (m MDRT)	: 157.00	Spud Date	: 20-01-2010
Region	: TASMANIA	Longitude	: 145 26' 21.4660" E	340mm (13 3/8") at (m MDRT)	: 961.00	Total Depth Date	: 03-02-2010
Field	: ROCKHOPPER	X (m)	: 366376.031	245mm (9 5/8") at (m MDRT)	: 1965.00	Total Depth (m MDRT)	: 3482.0
Permit	: T/18P	Y (m)	: 5594075.423			Total Depth (m TVSS)	: 3158.0
Well Type	: APPRAISAL	RT-Sealevel (m MSL)	: 26			Status	: P&A
Rig Name	: KAN TAN 4	RT-Seabed (m)	: 100.3				

ABBREVIATIONS

MW MUD WEIGHT
FV FUNNEL VISCOSITY
PV PLASTIC VISCOSITY
YP YIELD POINT
FC FILTER CAKE
SOL SOLIDS
CR CIRCULATE RETURNS
SD SAND - %
S SALINITY - PPM
RM MUD RESISTIVITY
RMF MUD FILTRATE
C CARBIDE TEST
LAT LOGGED AFTER TRIP
DS DEVIATION SURVEY

NB NEW BIT
RR RERUN BIT
CB CORE BIT
WOB WEIGHT ON BIT
RPM REVS PER MINUTE
FLC FLOW CHECK
WL FILTRATE
PR POOR RETURNS
NR NO RETURNS
BG BACKGROUND GAS
TG TRIP GAS
STG SHORT TRIP GAS
CG CONNECTION GAS
SG SWAB GAS
SVG SURVEY GAS

LITHOLOGY LEGEND

Dolomite
Calcirudite
Calcarenite
Calcisiltite
Calcilutite
Sandy Claystone
Silty Claystone
Calcareous Claystone
Argil Calcilutite
Claystone
Silstone
Sandstone
Coal
Intrusive Volcanics
Volcaniclastics
Tuff
Cement
Argil Siltstone
Sandy Siltstone
Calcareous Siltstone
Argil Sandstone
Calcareous Sandstone
Dolomitic Sandstone
Silty Sandstone
Calcareous
Dolomitic
Fossils
Foraminiferae
Carbonaceous
Chert
Pyrite
Glauconite
Mica

ENGINEERING

Test
FIT or LOT
Mud loss
Mud gain
Deviation survey
Core
Shoe
Calcimetry

DEPTH mMDRT

INTERPRETED LITHOLOGY

Gamma Ray (api) 0 100 200
ROP (m/hr) 200 100 0
ROP Backup (m/hr) 400 300 200

FLOW IN (gpm) 0 300 600 900 1200 1500
RPM Avg 0 80 160 240 320 400
RPM Avg Backup 400 700 1K 1300 1600 1900
PUMP PRESSURE (psi) 0 1K 2K 3K 4K 5K
WOB Avg (klbs) 0 10 20 30 40 50

TORQUE (klb*ft) 0 10 20 30 40
DXC .03 .3 3

1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060

9-5/8" (244mm) Casing Shoe @ 1965.0mMDRT

BIT#2:216mm (8.5")
HCC MILL TOOTH
SN: 6062641
JETS:3x22
OUT:2112.5m
BIT RUN:122.5m
BIT HOURS:14.7
GRADE:2-3-WT-A-E-I-ER-BHA

WOB:7-14 klbs
RPM:0-80
GPM:509-547
SPP:1845-2103 psi

MW:9.3ppg,FV:58
PV/YP:28/36,
FC:1,SOL:3.3
SND:0.25%,CL:36000mg/l

DATA RECORDED FROM 1985.0 mMDRT

ROCKHOPPER-1ST1 KICK OFF from 1990.0 mMDRT @ 0300 hrs on 20th January 2010.

20-01-2010

21-01-2010

MW:9.3ppg,FV:68
PV/YP:21/37,
FC:1,SOL:3.6
SND:0.25%,CL:36000mg/l

21-01-2010

22-01-2010

BIT#3:216mm (8.5")
REED HYCALOG RSX6161M
SN: 220126
JETS:6x18
OUT:3158.0m
BIT RUN:1046.0m
BIT HOURS:56.1
GRADE:2-2-CT-X-IN-NO-DTF

MW:9.4ppg,FV:55
PV/YP:18/29,
FC:1,SOL:3.5
SND:0.2%,CL:36500mg/l

WOB:1-26.3 klbs
RPM:72-270
GPM:533-610
SPP:1615-2309 psi

2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270

WOB:4.8-27.6 klbs
RPM:21-157
GPM:349-564
SPP:1171-1979 psi

MW:9.35ppg,FV:56
PV/YP:18/30,
FC:1,SOL:3.0
SND:0.15%,CL:36000mg/l

22-01-2010

23-01-2010

WOB:4.7-22.1 klbs
RPM:85-140
GPM:519-558
SPP:1090-1922 psi

MW:9.40ppg,FV:68
PV/YP:20/29,
FC:1,SOL:3.6
SND:0.20%,CL:36000mg/l

2280
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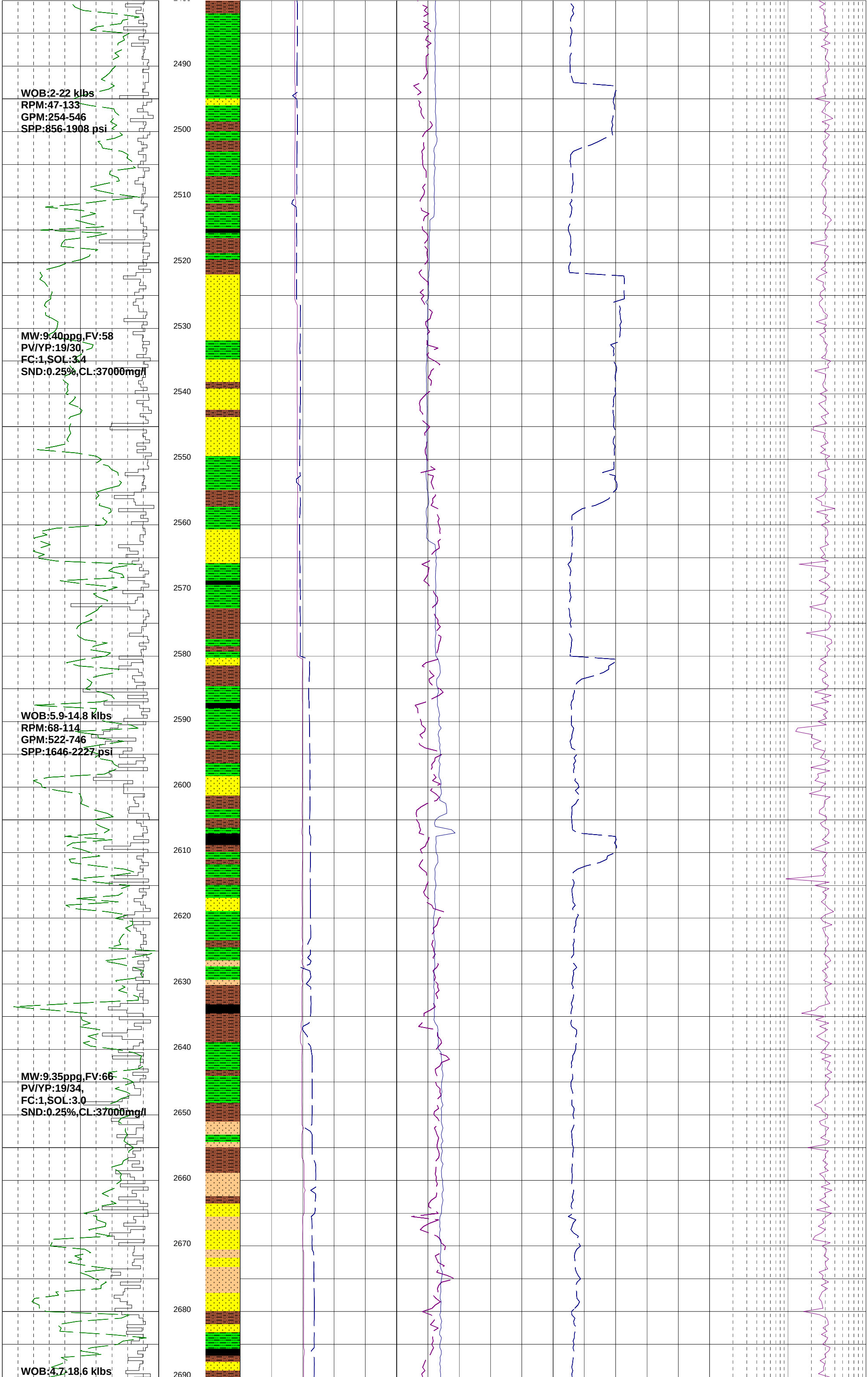
WOB:2-22 klbs
RPM:47-133
GPM:254-546
SPP:856-1908 psi
MW:9.40ppg,FV:58
PV/YP:19/30,
FC:1,SOL:3.4
SND:0.25%,CL:37000mg/l
WOB:5.9-14.8 klbs
RPM:68-114
GPM:522-746
SPP:1646-2227 psi
MW:9.35ppg,FV:66
PV/YP:19/34,
FC:1,SOL:3.0
SND:0.25%,CL:37000mg/l
WOB:4.7-18.6 klbs
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
2680
2690

RPM:94-150
GPM:577-626
SPP:1936-2430 psi

23-01-2010

24-01-2010

MW:9.35ppg,FV:66
PV/YP:20/36,
FC:1,SOL:3.0
SND:0.25%,CL:36000mg/l

WOB:3.6-19.4 klbs
RPM:12-162
GPM:216-636
SPP:625-2580 psi

MW:9.4ppg,FV:64
PV/YP:20/36,
FC:1,SOL:3.6
SND:0.25%,CL:37000mg/l

MW:9.40ppg,FV:59
PV/YP:21/37,
FC:1,SOL:3.6
SND:0.25%,CL:36500mg/l

WOB:1-23.8 klbs
RPM:31-173
GPM:526-625
SPP:1905-2532 psi

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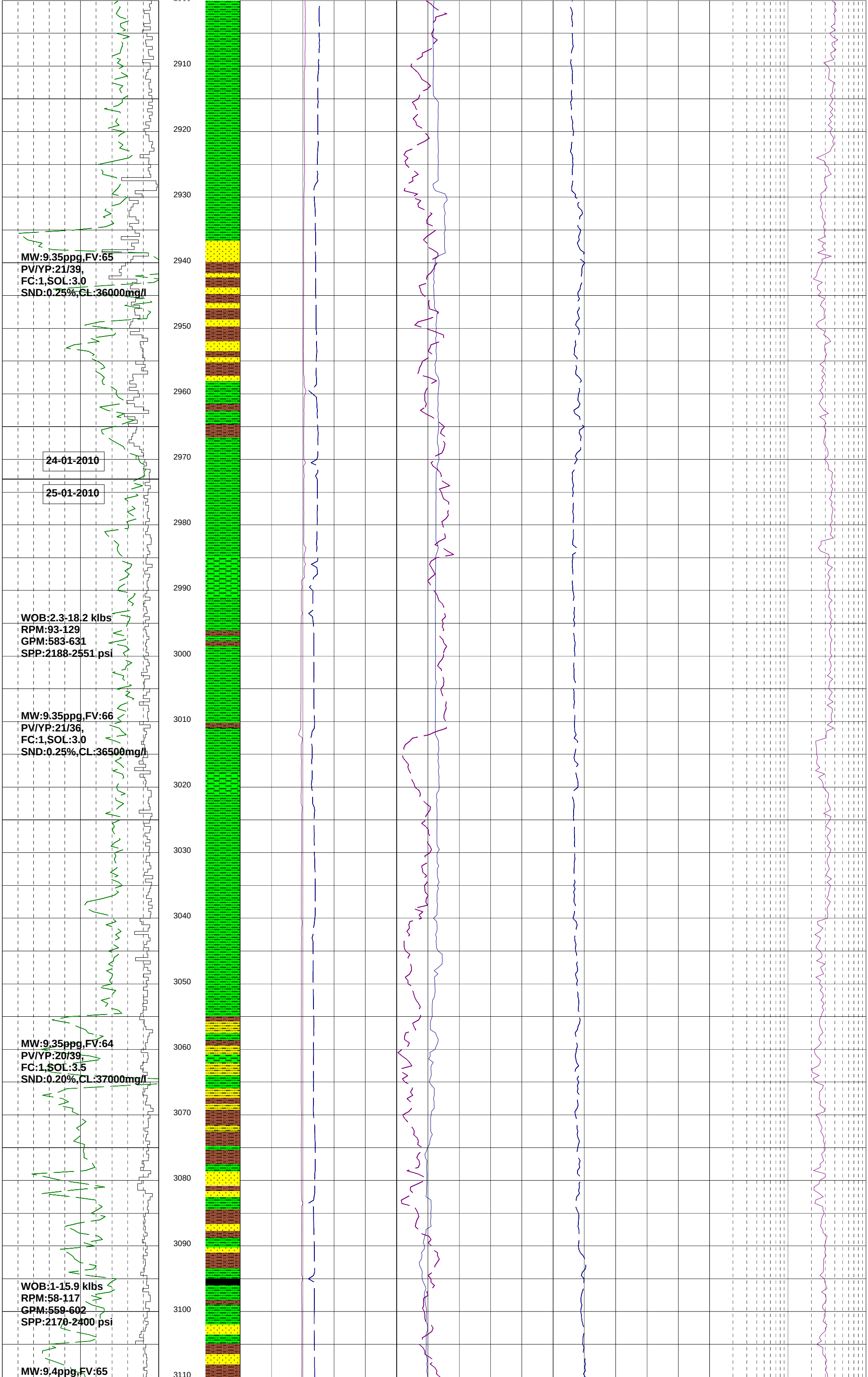
2890
2900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2980
2990
3000
3010
3020
3030
3040
3050
3060
3070
3080
3090
3100
3110
MW:9.35ppg,FV:65
PV/YP:21/39,
FC:1,SOL:3.0
SND:0.25%,CL:36000mg/l
24-01-2010
25-01-2010
WOB:2.3-18.2 klbs
RPM:93-129
GPM:583-631
SPP:2188-2551 psi
MW:9.35ppg,FV:66
PV/YP:21/36,
FC:1,SOL:3.0
SND:0.25%,CL:36500mg/l
MW:9.35ppg,FV:64
PV/YP:20/39,
FC:1,SOL:3.5
SND:0.20%,CL:37000mg/l
WOB:1-15.9 klbs
RPM:58-117
GPM:559-602
SPP:2170-2400 psi
MW:9.4ppg,FV:65

PV/YP:20/38,
FC:1,SOL:3.8
SND:0.20%,CL:37000mg/l

3120

3130

3140

MW:9.35ppg,FV:56
PV/YP:19/40,
FC:1,SOL:3.0
SND:0.25%,CL:36500mg/l

25-01-2010

3150

27-01-2010

3160

BIT#4:216mm (8.5")
SECURITY DBS SMS365
SN:11374625
JETS:3x15,3x12
OUT:3196m
BIT RUN:38m
BIT HOURS:3.91
GRADE:0-0-NO-A-X-IN-NO-CP

3170

MW:9.4ppg,FV:62
PV/YP:19/37,
FC:1,SOL:3.4
SND:0.20%,CL:37500mg/l
WOB:5.3-16.6 klbs
RPM:56-95
GPM:588-635
SPP:2249-2561 psi

3180

3190

27-01-2010

28-01-2010

3200

BIT#5:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3212.5m
BIT RUN:16.5m
BIT HOURS:3.58

3210

28-01-2010

29-01-2010

BIT#4RR:216mm (8.5")
SECURITY DBS FMF3653Z
SN: 11374625
JETS:3x12,3x15
OUT:3283.0m
BIT RUN:70.5m
BIT HOURS:5.93
GRADE:0-0-ER-A-X-I-NO-CP

3220

3230

29-01-2010

30-01-2010

MW:9.4ppg,FV:62
PV/YP:15/25,
FC:1,SOL:2.9
SND:0.15%,CL:38000mg/l

3240

3250

MW:9.35ppg,FV:66
PV/YP:20/34,
FC:1,SOL:2.9
SND:0.20%,CL:38000mg/l

WOB:2.6-17.7 klbs
RPM:117-194
GPM:564-606
SPP:2184-2460 psi

3260

3270

3280

30-01-2010

31-01-2010

BIT#5RR:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3298.5m
BIT RUN:15.5m
BIT HOURS:2.13

3290

3300

BIT#5RR1:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3309.0m
BIT RUN:10.5m
BIT HOURS:1.43

3310

02-02-2010

BIT#4RR1:216mm (8.5")
SECURITY DBS FMF3653Z
SN: 11374625

3320

JETS:3x12,3x15
OUT:3482.0m
BIT RUN:173.0m
BIT HOURS:15.6
GRADE:0-0-RR-A-X-I-NO-TD

MW:9.4ppg,FV:68
PV/YP:15/30,
FC:1,SOL:4.0
SND:0.20%,CL:37500mg/l

3330

3340

3350

02-02-2010

03-02-2010

3360

3370

MW:9.4ppg,FV:67
PV/YP:15/29,
FC:1,SOL:4.0
SND:0.20%,CL:37500mg/l

3380

WOB:4.1-19.8 klbs
RPM:47-245
GPM:233-609
SPP:776-2440psi

3390

3400

MW:9.4ppg,FV:57
PV/YP:19/36,
FC:1,SOL:3.7
SND:0.15%,CL:38500mg/l

3410

3420

3430

3440

MW:9.35ppg,FV:57
PV/YP:20/36,
FC:1,SOL:3.4
SND:0.20%,CL:37500mg/l

3450

3460

3470

WOB:2.9-19.8 klbs
RPM:91-204
GPM:586-612
SPP:2354-2545psi

3480

CIRCULATION TIME FROM TD PRIOR TO POOH=3.16HRS.

ROCKHOPPER-1 ST1 reached TD of 3482.0mMDRT/3258.29mTVDRT on 3rd Feb 2010 @ 14.30 hrs.

3490

3500

3510

PRESSURE EVALUATION LOG

WELL : ROCKHOPPER-1 ST 1

FROM (m): 1950 TO (m): 3510 SCALE: 1/ 500

		POSITION		CASING SHOE SIZE / DEPTH			
Country	: AUSTRALIA	Latitude	: 39 47' 34.1828" S	762mm (30") at (m MDRT)	: 157.00	Spud Date	: 20-01-2010
Region	: TASMANIA	Longitude	: 145 26' 21.4660" E	340mm (13 3/8") at (m MDRT)	: 961.00	Total Depth Date	: 03-02-2010
Field	: ROCKHOPPER	X (m)	: 366376.031	245mm (9 5/8") at (m MDRT)	: 1965.00	Total Depth (m MDRT)	: 3482.0
Permit	: T/18P	Y (m)	: 5594075.423			Total Depth (m TVSS)	: 3158.0
Well Type	: APPRAISAL	RT-Sealevel (m MSL)	: 26			Status	: P&A
Rig Name	: KAN TAN 4	RT-Seabed (m)	: 100.3				

ABBREVIATIONS

MW MUD WEIGHT
FV FUNNEL VISCOSITY
PV PLASTIC VISCOSITY
YP YIELD POINT
FC FILTER CAKE
SOL SOLIDS
CR CIRCULATE RETURNS
SD SAND - %
S SALINITY - PPM
RM MUD RESISTIVITY
RMF MUD FILTRATE
C CARBIDE TEST
LAT LOGGED AFTER TRIP
DS DEVIATION SURVEY
NB NEW BIT
RR RERUN BIT
CB CORE BIT
WOB WEIGHT ON BIT
RPM REVS PER MINUTE
FLC FLOW CHECK
WL FILTRATE
PR POOR RETURNS
NR NO RETURNS
BG BACKGROUND GAS
TG TRIP GAS
STG SHORT TRIP GAS
CG CONNECTION GAS
SG SWAB GAS
SVG SURVEY GAS

LITHOLOGY LEGEND

Dolomite
Calcirudite
Calcarenite
Calcisiltite
Calcilutite
Sandy Claystone
Silty Claystone
Calcareous Claystone
Argil Calcilutite
Claystone
Silstone
Sandstone
Coal
Intrusive Volcanics
Volcaniclastics
Tuff
Cement
Argil Siltstone
Sandy Siltstone
Calcareous Siltstone
Argil Sandstone
Calcareous Sandstone
Dolomitic Sandstone
Silty Sandstone
Calcareous
Dolomitic
Fossils
Foraminiferae
Carbonaceous
Chert
Pyrite
Glauconite
Mica

ENGINEERING

Test
FIT or LOT
Mud loss
Mud gain
Deviation survey
Core
Shoe
Calcimetry

Gamma Ray (api) 0 100 200
ROP (m/hr) 200 100 0
DEPTH mMDRT
CORES
INTERPRETED LITHOLOGY
Resistivity (Deep) .2 2 20 200
Resistivity (Shallow) .2 2 20 200
DXC .01 .1 1 10
Temperature In (deg C) 0 20 40 60 80 100
Temperature Out (deg C) 0 20 40 60 80 100
Connection Gas (%) X
Trip Gas (%) *
Total Gas % .01 .1 1 10 100
MW In (spc_grv) 1 2 3
ECD (spc_grv) 1 2 3
EST PP (SG) 1 2 3
FRAC PRESS (SG) 1 2 3
LOT, FIT *

1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060

9-5/8" (244mm) Casing Shoe @ 1965.0mMDRT

DATA RECORDED FROM 1985.0 mMDRT

ROCKHOPPER-1ST1 KICK OFF from 1990.0 mMDRT @ 0300 hrs on 20th January 2010.

BIT#2:216mm (8.5")
HCC MILL TOOTH
SN: 6062641
JETS:3x22
OUT:2112.5m
BIT RUN:122.5m
BIT HOURS:18.27
GRADE:2-3-WT-A-E-I-ER-BHA

MW:9.3ppg,FV:58
PV/YP:28/36,
FC:1,SOL:3.3
SND:0.25%,CL:36000mg/l

MW:9.3ppg,FV:66
PV/YP:21/36,
FC:1,SOL:3.6
SND:0.25%,CL:36000mg/l

20-01-2010

21-01-2010

MW:9.3ppg,FV:68
PV/YP:21/37,
FC:1,SOL:3.6
SND:0.25%,CL:36000mg/l

21-01-2010

22-01-2010

BIT#3:216mm (8.5")
REED HYCALOG RSX6161M
SN: 220126
JETS:6x18
OUT:3158.0m
BIT RUN:1046.0m
BIT HOURS:56.1
GRADE:2-2-CT-C-X-IN-NO-DTF

MW:9.4ppg,FV:55
PV/YP:18/29,
FC:1,SOL:3.5
SND:0.2%,CL:36500mg/l

2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270

WOB:4.8-27.6 klbs
RPM:21-157
GPM:349-564
SPP:1171-1979 psi

MW:9.35ppg,FV:56
PV/YP:18/30,
FC:1,SOL:3.0
SND:0.15%,CL:36000mg/l

22-01-2010

23-01-2010

WOB:4.7-22.1 klbs
RPM:85-140
GPM:519-558
SPP:1090-1922 psi

MW:9.40ppg,FV:68
PV/YP:20/29,
FC:1,SOL:3.6
SND:0.20%,CL:36000mg/l

MW:9.40ppg,FV:65
PV/YP:18/33,
FC:1,SOL:3.4
SND:0.20%,CL:37000mg/l

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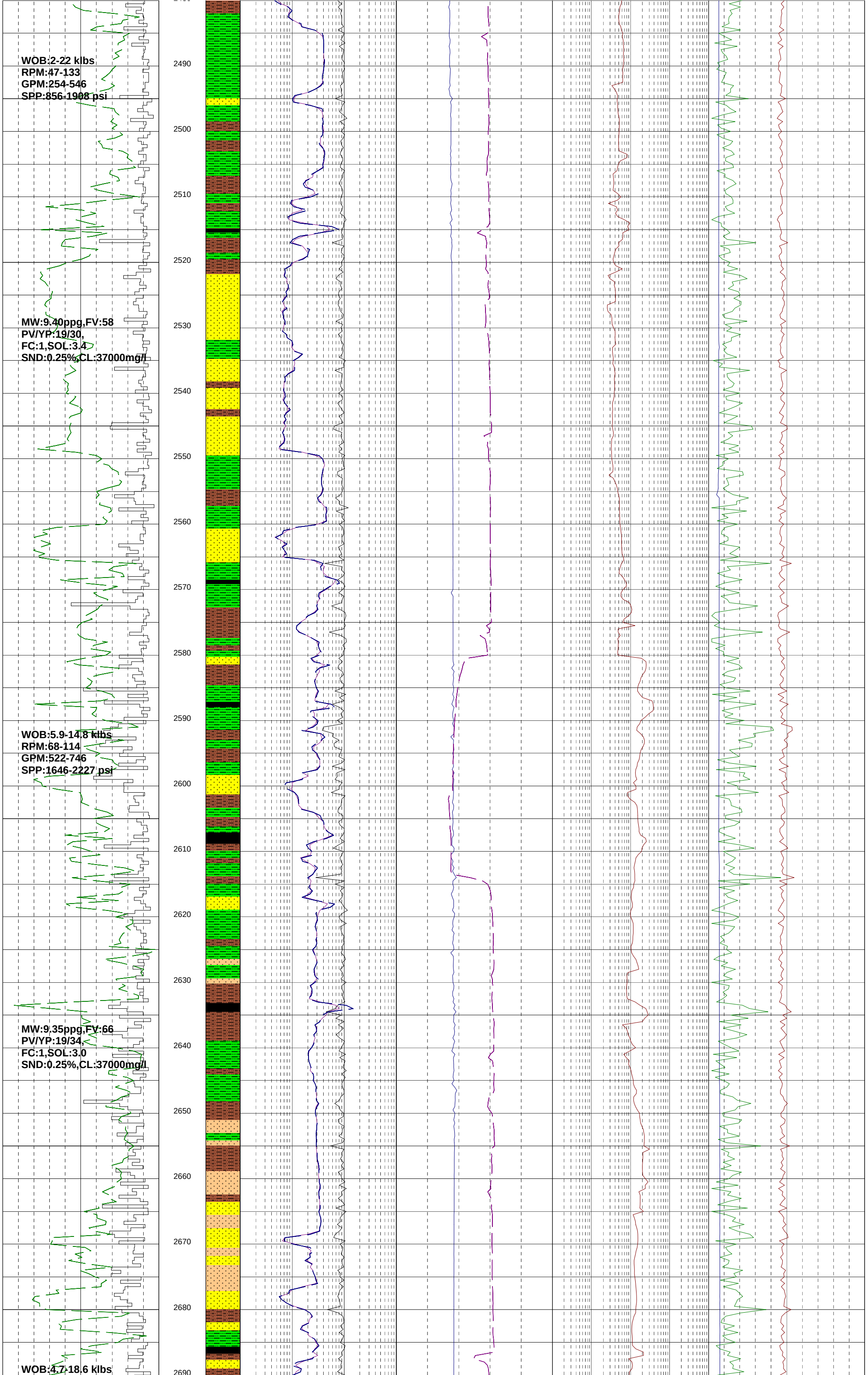
WOB:2-22 klbs
RPM:47-133
GPM:254-546
SPP:856-1908 psi
MW:9.40ppg,FV:58
PV/YP:19/30,
FC:1,SOL:3.4
SND:0.25%,CL:37000mg/l
WOB:5.9-14.8 klbs
RPM:68-114
GPM:522-746
SPP:1646-2227 psi
MW:9.35ppg,FV:66
PV/YP:19/34,
FC:1,SOL:3.0
SND:0.25%,CL:37000mg/l
WOB:4.7-18.6 klbs
2490
2500
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2620
2630
2640
2650
2660
2670
2680
2690

RPM:94-150
GPM:577-626
SPP:1936-2430 psi

23-01-2010

24-01-2010

MW:9.35ppg,FV:66
PV/YP:20/36,
FC:1,SOL:3.0
SND:0.25%,CL:36000mg/l

WOB:3.6-19.4 klbs
RPM:12-162
GPM:216-636
SPP:625-2580 psi

MW:9.4ppg,FV:64
PV/YP:20/36,
FC:1,SOL:3.6
SND:0.25%,CL:37000mg/l

MW:9.40ppg,FV:59
PV/YP:21/37,
FC:1,SOL:3.6
SND:0.25%,CL:36500mg/l

WOB:1-23.8 klbs
RPM:31-173
GPM:526-625
SPP:1905-2532 psi

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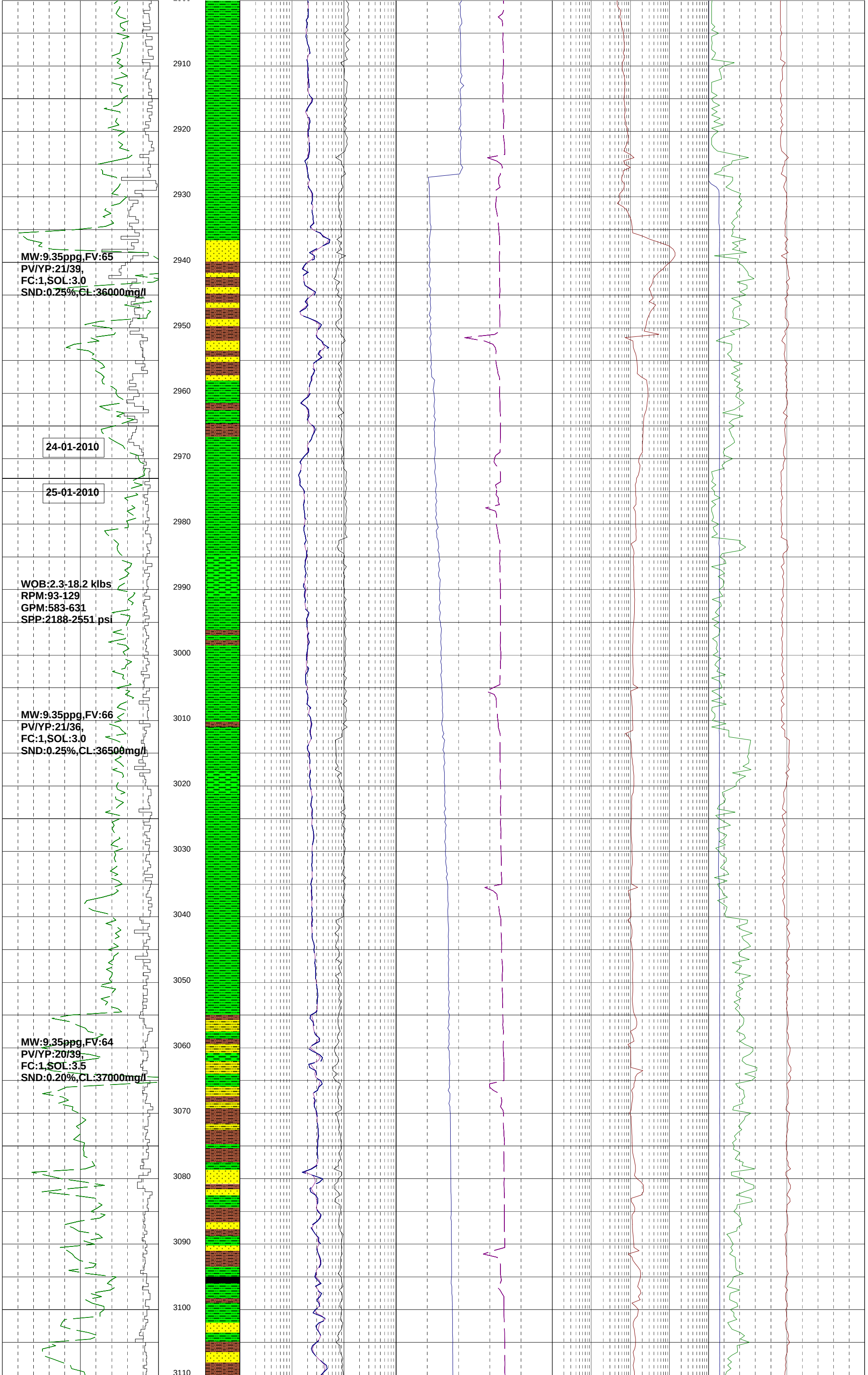
2910
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2980
2990
3000
3010
3020
3030
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3070
3080
3090
3100
3110
MW:9.35ppg,FV:65
PV/YP:21/39,
FC:1,SOL:3.0
SND:0.25%,CL:36000mg/l
24-01-2010
25-01-2010
WOB:2.3-18.2 klbs
RPM:93-129
GPM:583-631
SPP:2188-2551 psi
MW:9.35ppg,FV:66
PV/YP:21/36,
FC:1,SOL:3.0
SND:0.25%,CL:36500mg/l
MW:9.35ppg,FV:64
PV/YP:20/39,
FC:1,SOL:3.5
SND:0.20%,CL:37000mg/l

MW:9.4ppg,FV:65
PV/YP:20/38,
FC:1,SOL:3.8
SND:0.20%,CL:37000mg/l

3120

3130

3140

MW:9.35ppg,FV:56
PV/YP:19/40,
FC:1,SOL:3.0
SND:0.25%,CL:36500mg/l

25-01-2010

3150

27-01-2010

BIT#4:216mm (8.5")
SECURITY DBS SMS365
SN:11374625
JETS:3x12,3x15
OUT:3196m
BIT RUN:38m
BIT HOURS:3.91
GRADE:0-0-NO-A-X-IN-NO-CP

3160

MW:9.4ppg,FV:62
PV/YP:19/37,
FC:1,SOL:3.4
SND:0.20%,CL:37500mg/l

WOB:5.3-16.6 klbs
RPM:56-95
GPM:588-635
SPP:2249-2561 psi

3170

27-01-2010

28-01-2010

BIT#5:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3212.5m
BIT RUN:16.5m
BIT HOURS:3.58

3180

28-01-2010

29-01-2010

BIT#4RR:216mm (8.5")
SECURITY DBS FMF3653Z
SN: 11374625
JETS:3x12,3x15
OUT:3283.0m
BIT RUN:70.5m
BIT HOURS:5.93
GRADE:0-0-ER-A-X-I-NO-CP

3190

29-01-2010

30-01-2010

MW:9.4ppg,FV:62
PV/YP:15/25,
FC:1,SOL:2.9
SND:0.15%,CL:38000mg/l

3200

MW:9.35ppg,FV:66
PV/YP:20/34,
FC:1,SOL:2.9
SND:0.20%,CL:38000mg/l

WOB:2.6-17.7 klbs
RPM:117-194
GPM:564-606
SPP:2184-2460 psi

3210

30-01-2010

31-01-2010

BIT#5RR:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3298.5m
BIT RUN:15.5m
BIT HOURS:2.13
BIT#5RR1:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3309.0m
BIT RUN:10.5m
BIT HOURS:1.43

3220

02-02-2010

BIT#4RR1:216mm (8.5")
SECURITY DBS FMF3653Z
SN: 11374625

3230

JETS:3x12,3x15
OUT:3482.0m
BIT RUN:173.0m
BIT HOURS:15.6
GRADE:0-0-RR-A-X-I-NO-TD

MW:9.4ppg,FV:68
PV/YP:15/30,
FC:1,SOL:4.0
SND:0.20%,CL:37500mg/l

3330

3340

3350

02-02-2010

03-02-2010

3360

3370

MW:9.4ppg,FV:67
PV/YP:15/29,
FC:1,SOL:4.0
SND:0.20%,CL:37500mg/l

3380

WOB:4.1-19.8 klbs
RPM:47-245
GPM:233-609
SPP:776-2440psi

3390

3400

MW:9.4ppg,FV:57
PV/YP:19/36,
FC:1,SOL:3.7
SND:0.15%,CL:38500mg/l

3410

3420

3430

3440

MW:9.35ppg,FV:57
PV/YP:20/36,
FC:1,SOL:3.4
SND:0.20%,CL:37500mg/l

3450

3460

3470

WOB:2.9-19.8 klbs
RPM:91-204
GPM:586-612
SPP:2354-2545psi

3480

CIRCULATION TIME FROM TD PRIOR TO POOH=3.16HRS.

ROCKHOPPER-1 ST1 reached TD of 3482.0mMDRT/3258.29mTVDRT on 3rd Feb 2010 @ 14.30 hrs.

3490

3500

3510

RESERVAL GAS RATIO LOG

WELL : ROCKHOPPER-1 ST 1

FROM (m): 1950 TO (m): 3510 SCALE: 1/ 500

		POSITION		CASING SHOE SIZE / DEPTH			
Country	: AUSTRALIA	Latitude	: 39 47' 34.1828" S	762mm (30") at (m MDRT)	: 157.00	Spud Date	: 20-01-2010
Region	: TASMANIA	Longitude	: 145 26' 21.4660" E	340mm (13 3/8") at (m MDRT)	: 961.00	Total Depth Date	: 03-02-2010
Field	: ROCKHOPPER	X (m)	: 366376.031	245mm (9 5/8") at (m MDRT)	: 1965.00	Total Depth (m MDRT)	: 3482.0
Permit	: T/18P	Y (m)	: 5594075.423			Total Depth (m TVSS)	: 3158.0
Well Type	: APPRAISAL	RT-Sealevel (m MSL)	: 26			Status	: P&A
Rig Name	: KAN TAN 4	RT-Seabed (m)	: 100.3				

GAS RATIOS FORMULAE

GAS WETNESS RATIO (Wh)

GWR = (C2 + C3 + C4 + C5)/ (C1 + C2 + C3 + C4 + C5)*100

LIGHT TO HEAVY RATIO (Bh)

LHR = (C1 + C2)/(C3 + C4 + C5)

OIL CHARACTER QUALIFIER (Ch)

OCQ = (C4 + C5)/(C3)

Dolomite, Calcirudite, Calcarenite, Calcisiltite, Calcilutite, Sandy Claystone, Silty Claystone, Calcareous Claystone, Argil Calcilutite

Claystone, Silstone, Sandstone, Coal, Intrusive Volcanics, Volcaniclastics, Tuff, Cement

Argil Siltstone, Sandy Siltstone, Calcareous Siltstone, Argil Sandstone, Calcareous Sandstone, Dolomitic Sandstone, Silty Sandstone

Calcareous, Dolomitic, Fossils, Foraminiferae, Carbonaceous, Chert, Pyrite, Glauconite, Mica

GEOSERVICES CREW

ALS ENGINEERS

C.Higgins

L.Hannon

MUDLOGGERS

G.Fernandes

k.Vellauthapalli

DEPTH mMDRT

ROP (m/hr) 200 20 2 .2

(TVD) 1950

CUTTINGS (%)

CHROMATOLOG (%)

C1 C2 C3 iC4 nC4 iC5 nC5

TOTAL GAS (%) .001 .01 .1 1 10 100

OIL CHARACTER QUALIFIER .1 1 10

GAS WETNESS RATIO

LIGHT TO HEAVY RATIO .1 1 10 100

9-5/8" (244mm) Casing Shoe @ 1965.0mMDRT

BIT#2:216mm (8.5")
HCC MILL TOOTH
SN: 6062641
JETS:3x22
OUT:2112.5m
BIT RUN:122.5m
BIT HOURS:18.27
GRADE:2-3-WT-A-E-I-ER-BHA

ROCKHOPPER-1ST1 KICK OFF from 1990.0 mMDRT on 20th Jan 2010.

1960 1970 1980 1985.51 1990 2000 2004.4 2010 2020 2024.35 2030 2040 2044.22 2050 2060

20-01-2010

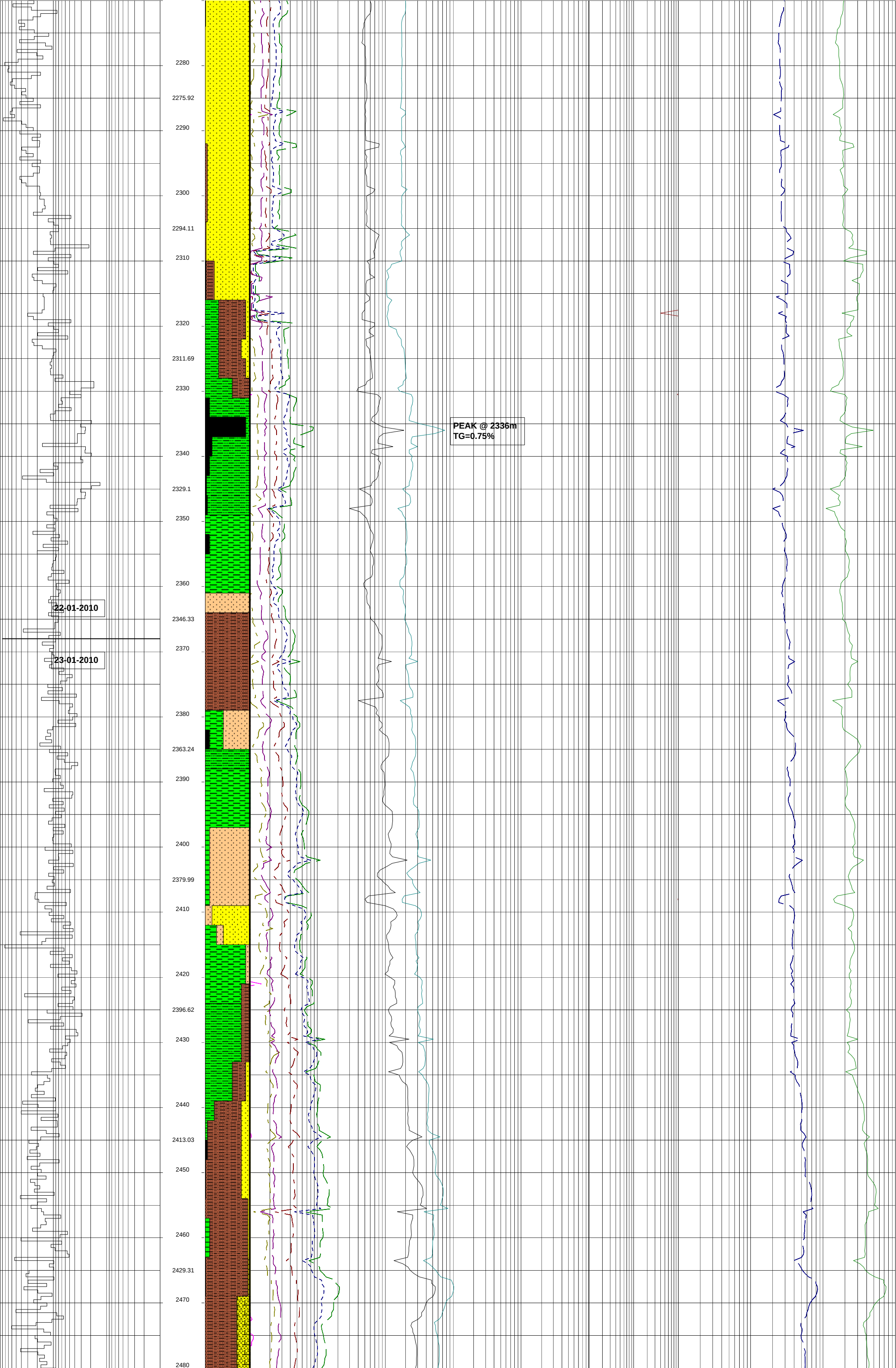
21-01-2010

21-01-2010

22-01-2010

BIT#3:216mm (8.5")
REED HYCALOG RSX6161M
SN: 220126
JETS:6x18
OUT:3158.0m
BIT RUN:1046.0m
BIT HOURS:56.1
GRADE:2-2-CT-C-X-IN-NO-DTF

2064.08
2070
2080
2083.9
2090
2100
2103.62
2110
2120
2123.28
2130
2140
2142.9
2150
2160
2162.47
2170
2180
2181.95
2190
2200
2201.27
2210
2220
2220.47
2230
2240
2239.36
2250
2260
2257.74
2270


2280
2275.92
2290
2300
2294.11
2310
2320
2311.69
2330
2340
2329.1
2350
2360
2346.33
2370
2380
2363.24
2390
2400
2379.99
2410
2420
2396.62
2430
2440
2413.03
2450
2460
2429.31
2470
2480
22-01-2010
23-01-2010
PEAK @ 2336m
TG=0.75%

2445.49
2490
2500
2461.67
2510
2520
2477.88
2530
2540
2494.1
2550
2560
2510.27
2570
2580
2526.47
2590
2600
2542.69
2610
2620
2558.94
2630
2640
2575.27
2650
2660
2591.58
2670
2680
2607.88
2690

PEAK @ 2581m
TG=2.52%

PEAK @ 2588m
TG=3.86%

PEAK @ 2635m
TG=2.84%

23-01-2010

24-01-2010

2700

2624.1

2710

2720

2640.35

2730

2740

2656.63

2750

2760

2672.91

2770

2780

2689.19

2790

2800

2705.46

2810

2820

2721.71

2830

2840

2737.99

2850

2860

2754.27

2870

2880

2770.57

2890

2900

GAS LINE SWAPPED DUE TO BLOCKAGE

PEAK @ 2812m
TG=2.48%

PEAK @ 2823m
TG=5.94%

2786.85
2910
2920
2803.11
2930
2940
2819.36
2950
2960
2835.81
24-01-2010
2970
25-01-2010
2980
2852.44
2990
3000
2869.14
3010
3020
2885.85
3030
3040
2902.42
3050
3060
2918.93
3070
3080
2935.3
3090
3100
2951.6
3110

PEAK @ 2938.5m
TG=13.9%

PEAK @ 2960m
TG=2.8%

PEAK @ 3081m
TG=2.16%

3120
2967.87
3130
3140
2984.13
3150
25-01-2010
3160
27-01-2010
BIT#4:216mm (8.5")
SECURITY DBS SMS365
SN:11374625
JETS:3x15.3x12
OUT:3196m
BIT RUN:38m
BIT HOURS:3.91
GRADE:0-0-NO-A-X-IN-NO-CP
3000.39
3170
3180
3016.24
3190
27-01-2010
28-01-2010
BIT#5:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3212.5m
BIT RUN:16.5m
BIT HOURS:3.58
3033.04
3200
3210
28-01-2010
29-01-2010
BIT#4RR:216mm (8.5")
SECURITY DBS FMF3653Z
SN: 11374625
JETS:3x12.3x15
OUT:3283.0m
BIT RUN:70.5m
BIT HOURS:5.93
GRADE:0-0-ER-A-X-I-NO-CP
3049.2
3220
3230
29-01-2010
30-01-2010
3065.51
3240
3250
3260
3081.66
3270
3280
30-01-2010
3097.95
31-01-2010
BIT#5RR:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3298.5m
BIT RUN:15.5m
BIT HOURS:2.13
3290
3300
BIT#5RR1:216mm (8.5")
CORE BIT MCP572
SN:83691
OUT:3309.0m
BIT RUN:10.5m
BIT HOURS:1.43
3114.17
3310
02-02-2010
BIT#4RR1:216mm (8.5")
SECURITY DBS FMF3653Z
SN: 11374625
3320

PEAK @ 3131.80m
TG=3.88%

PEAK @ 3148.5m
TG=3.02%

PEAK @ 3155.5m
TG=2.75%

PEAK @ 3166m
TG=2.10%

PEAK @ 3181m
TG=1.33%

PEAK @ 3198.5m
TG=0.66%

CUT CORE#1
3196.0-3212.5mMDRT
NO GAS DATA
BOTTOMS UP NOT CIRCULATED.

PEAK @ 3220.0m
TG=0.60%

PEAK @ 3228.0m
TG=1.29%

PEAK @ 3235.5m
TG=2.26%

PEAK @ 3253m
TG=0.72%

CUT CORE#2
3283.0-3298.5mMDRT
NO GAS DATA
BOTTOMS UP NOT CIRCULATED.

CUT CORE#3
3298.5-3309.0mMDRT
NO GAS DATA
BOTTOMS UP NOT CIRCULATED.

JETS:3X12,3X13
OUT:3482.0m
BIT RUN:173.0m
BIT HOURS:15.6
GRADE:0-0-RR-A-X-I-NO-TD

3130.82
3330
3340
3146.78
3350
02-02-2010
03-02-2010
3360
3162.45
3370
3380
3179.66
3390
3400
3195.63
3410
3420
3211.79
3430
3440
3228.16
3450
3460
3244.16
3470
3480
3490
3500
3510

PEAK @ 3341.0m
TG=0.83%

PEAK @ 3354.0m
TG=1.48%

PEAK @ 3358.5m
TG=1.30%

PEAK @ 3368.0m
TG=1.35%

PEAK @ 3397.5m
TG=3.09%

PEAK @ 3407m
TG=1.19%

PEAK @ 3418.7m
TG=1.71%

CHANGE DELASCO RUBBER
ON GZG DEGASSER.

ADJUST THE GZG PROBE IN
FLOWLINE DUE TO LOW MUD LEVEL

CIRCULATION TIME
FROM TD PRIOR TO
POOH=3.16HRS.

ROCKHOPPER-1 ST1 reached TD
of 3482.0mMDRT/3258.29mTVDRT
on 3rd Feb 2010 @ 14.30 hrs.

APPENDIX 9: LWD & DIRECTIONAL DRILLING REPORT

HALLIBURTON

Sperry Drilling Services

LWD End of Well Report

For

Origin Energy Resources Ltd

Rockhopper-1 ST1

Rig:	**Kan Tan IV**
Field:	**Rockhopper-1 ST1**
Country:	**Australia**
Job No:	**AU-FE-0006791008**
Date:	**20 JAN 2010**

HALLIBURTON

Table of Contents

1. General Information
2. Operational Overview
3. Summary of MWD Runs
4. Bitrun Summary
5. Directional Survey Data
6. Service Interrupt Report

General Information

Company:	Origin Energy Resources Ltd
Rig:	Kan Tan IV
Well:	Rockhopper-1 ST1
Field:	Rockhopper
Lease Name:	
State:	Tasmania
County:	
Country:	Australia
API Number:	
Sperry Job Number:	AU-FE-0006791008
Job start date:	20-Jan-10
Job end date:	03-Feb-10
North reference:	Grid
Declination:	12.495 deg
Dip angle:	-70.395 deg
Total magnetic field:	60970 nT
Date of magnetic data:	01 December, 2009
Wellhead coordinates N:	39 deg. 47 min 34.18 sec South
Wellhead coordinates E:	145 deg. 26 min 21.47 sec East
Vertical section direction:	179.28 deg
Unit Number:	SSH-40
MWD Engineers:	J. Lau, T. Oborne, M. George
Company Representatives:	B. Houston
Company Geologist:	D. Archer, C. Matthews

Operational Overview

Sperry Drilling was contracted by Origin Energy Resources Ltd to provide Logging While Drilling (LWD) services for the drilling of Rockhopper-1 ST1. The well was drilled in permit T/18P by the Maersk MODU Kan Tan IV.

8 1/2" (216mm) Hole Section:

This section was drilled in seven bit runs using a Geopilot rotary steerable system (RSS) BHA together with a motor BHA.

LWD tools used in the RSS BHA comprised of the following :
Drillstring Dynamics (DDSr-DGR) for drilling optimisation, Dual Gamma Ray (DGR), Electromagnetic wave resistivity (EWR-P4), Compensated Thermal Neutron (CTN), Azimuthal Litho-Density (ALD) and Bi-Modal Acoustic (BAT) for formation evaluation. Acoustic Caliper (ACAL) was run in recorded mode to determine hole size. Additionally a Pressure Case Directional (PCDC) was run for wellbore surveying.

MWD in the Motor BHA was directional only and consisted of PCDC for directional control.

In the first run, the motor BHA was picked and RIH but failed to find the cement plug. BHA was pulled to set another kick-off plug.
In the second run the motor BHA was picked up and drilled from 1990.0 to 2112.0 mMDRT. BHA was pulled to pickup the RSS BHA.
In the third run, while the RSS BHA was tested at the shallow depth, the PCDC inclination locked up and the BHA was tripped to change out PCDC.
The fourth run was RSS BHA with backup PCDC tool. The kick-off section was wiped from 1970.0m to 2112.0 mMDRT for logging data.. It was then drilled from 2112 mMDRT to 3158.0 mMDRT. POOH to due to RSS BHA LWD failure.
The fifth assembly was drilled from 3158.0m to 3196.0m MDRT. POOH for first coring run.
The sixth RSS assembly was wiped from 3169.0m to 3212.5 mMDRT to log the first core section. It was then drilled from 3212.5m to 3284.0m MDRTand POOH for second and third coring runs.
The seventh RSS assembly was wiped from 3212.5m to 3309.0m to log second and third core section. It was then drilled to TD at 3482.0m MDRT and pull out of hole for wireline logging.

Summary of MWD runs

Run No.	Bit No.	Hole Size (mm)	MWD Service	Start Depth (m)	End Depth (m)	Drill/Wipe Distance (m)	Run Start Date Time	Run End Date Time	BRT Hrs.	Oper. Hrs.	Circ. Hrs.	Max Temp. (degC)	Serv. Int.	Trip for MWD	Failure Type
100	1	216.00	DWD	0.000	0.000	0.000	07-Jan-10 22:30	08-Jan-10 12:30	14.00	14.000	2.330	0.00	No	No	
200	2	216.00	DWD	1990.000	2112.000	122.000	19-Jan-10 18:40	21-Jan-10 15:15	44.58	44.580	24.800	56.30	No	No	
300	3	216.00	Quad GP	2112.000	2112.000	0.000	21-Jan-10 18:02	21-Jan-10 22:00	3.97	3.970	0.830	0.00	Yes	Yes	PCD-C
400	4	216.00	Quad GP	2112.000	3158.000	1046.000	21-Jan-10 23:29	26-Jan-10 10:15	106.76	106.760	82.130	76.00	Yes	Yes	RLL
500	5	216.00	Quad GP	3158.000	3196.000	38.000	26-Jan-10 15:52	27-Jan-10 23:11	31.31	31.340	12.450	109.30	No	No	
600	6	216.00	Quad GP	3212.500	3283.000	70.500	29-Jan-10 11:36	30-Jan-10 18:16	30.66	30.660	12.260	86.00	No	No	
700	7	216.00	Quad GP	3309.000	3482.000	173.000	02-Feb-10 06:38	04-Feb-10 06:19	47.68	47.680	21.350	127.00	No	No	

HALLIBURTON | Sperry Drilling

Bitrun Summary

RUN TIME DATA

MWD Run	: 100	**Run Start**	: 07-Jan-10 22:30	**BRT Hrs**	: 14.00 hr	**Circ. Hrs**	: 2.33 hr
Rig Bit No	: 1	**Run End**	: 08-Jan-10 12:30	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 14.00 hr

DRILLING DATA

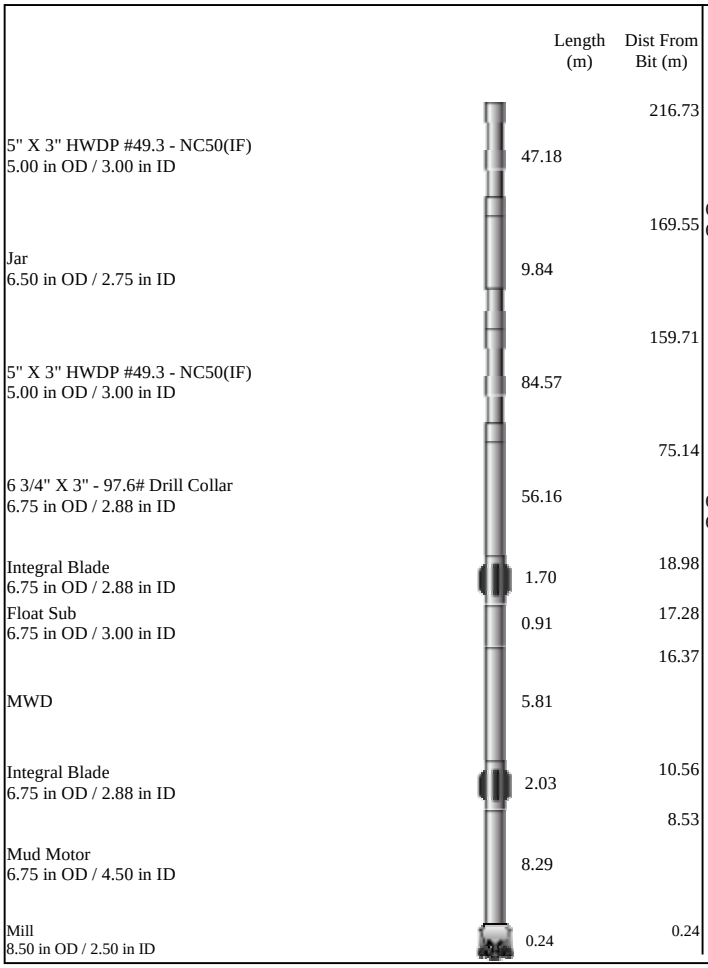
Start Depth	: 0.00 m	**Footage**	: 0.00 m	**Avg RPM**	: 0 rpm	**Avg ROP**	: 0.00 m/hr
End Depth	: 0.00 m	**Avg Flow Rate**	: 0.00 gpm	**Avg WOB**	: 0.0 klb	**Avg SPP**	: 0 psig
Drilling Hours	: 0.000 hr						

MUD DATA

Mud Type	:						
Weight	: 0.00 ppg	**Viscosity**	: 0.00 spqt	**PV**	: 0 cP	**YP**	: 0.00 lhf2
Chlorides	: 0.00 ppm	**Max Temp.**	: 0.00 degC	**% Solids**	: 0.00 %	**% Sand**	: 0.00 %
pH	: 0.00 pH	**Fluid Loss**	: 0 mptm	**% Oil**	: 0.00 %	**O:W**	:

MWD PERFORMANCE

Tool OD	: 8.00 in	**Type**	: DWD	**Min. Inc.**	: 0.00 deg	**Min. Inc. Depth**	: 0.000 m
Final Az.	: 0.00 deg	**Max Op. Press.**	: 0 psig	**Max Inc.**	: 0.00 deg	**Max Inc. Depth**	: 0.000 m
	MWD Real-time %	: 0 %		**MWD Recorded %**	: 0 %		



COMMENTS

Attempt to side track well, no cement plug found. POOH to set another kick-off plug.

HALLIBURTON | Sperry Drilling

Bitrun Summary

RUN TIME DATA

MWD Run	: 200	**Run Start**	: 19-Jan-10 18:40	**BRT Hrs**	: 44.58 hr	**Circ. Hrs**	: 24.80 hr
Rig Bit No	: 2	**Run End**	: 21-Jan-10 15:15	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 44.58 hr

DRILLING DATA

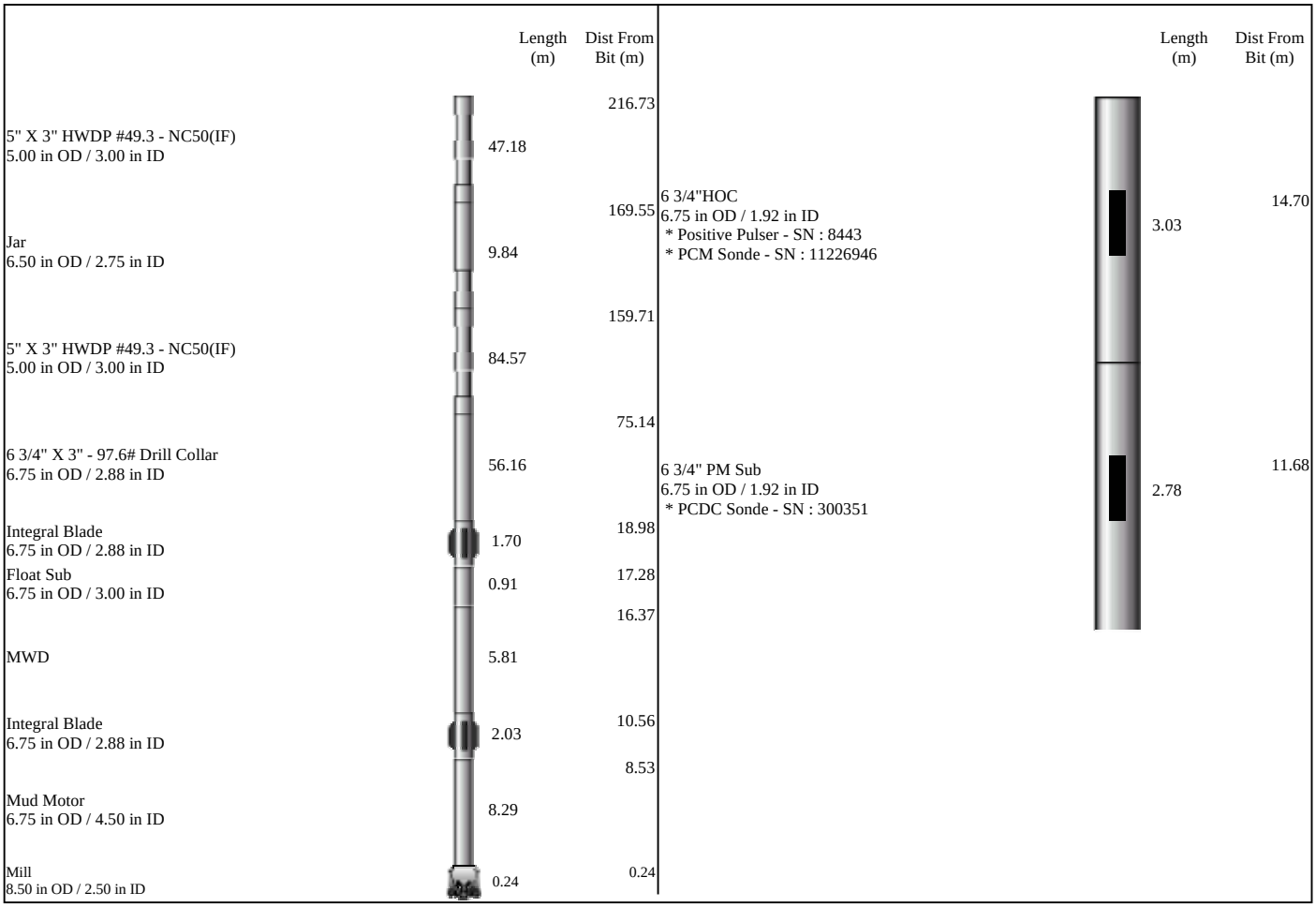
Start Depth	: 1990.00 m	**Footage**	: 122.00 m	**Avg RPM**	: 223 rpm	**Avg ROP**	: 6.70 m/hr
End Depth	: 2112.00 m	**Avg Flow Rate**	: 544.00 gpm	**Avg WOB**	: 13.3 klb	**Avg SPP**	: 1971 psig
Drilling Hours	: 18.200 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.30 ppg	**Viscosity**	: 68.00 spqt	**PV**	: 21 cP	**YP**	: 33.00 lhf2
Chlorides	: 36000.00 ppm	**Max Temp.**	: 56.30 degC	**% Solids**	: 3.30 %	**% Sand**	: 0.25 %
pH	: 10.50 pH	**Fluid Loss**	: 4 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:93.8

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: DWD	**Min. Inc.**	: 1.12 deg	**Min. Inc. Depth**	: 1995.260 m
Final Az.	: 180.78 deg	**Max Op. Press.**	: 3351 psig	**Max Inc.**	: 9.89 deg	**Max Inc. Depth**	: 2097.430 m
	MWD Real-time %	: 100 %		**MWD Recorded %**	: 0 %		



COMMENTS

RIH and initiate kick off of Rockhopper-1ST1 from the well bore of Rockhopper-1 at 1990.0m MDRT and drill ahead steering as required.

HALLIBURTON | Sperry Drilling

Bitrun Summary

RUN TIME DATA

MWD Run	: 300	**Run Start**	: 21-Jan-10 18:02	**BRT Hrs**	: 3.97 hr	**Circ. Hrs**	: 0.83 hr
Rig Bit No	: 3	**Run End**	: 21-Jan-10 22:00	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 3.97 hr

DRILLING DATA

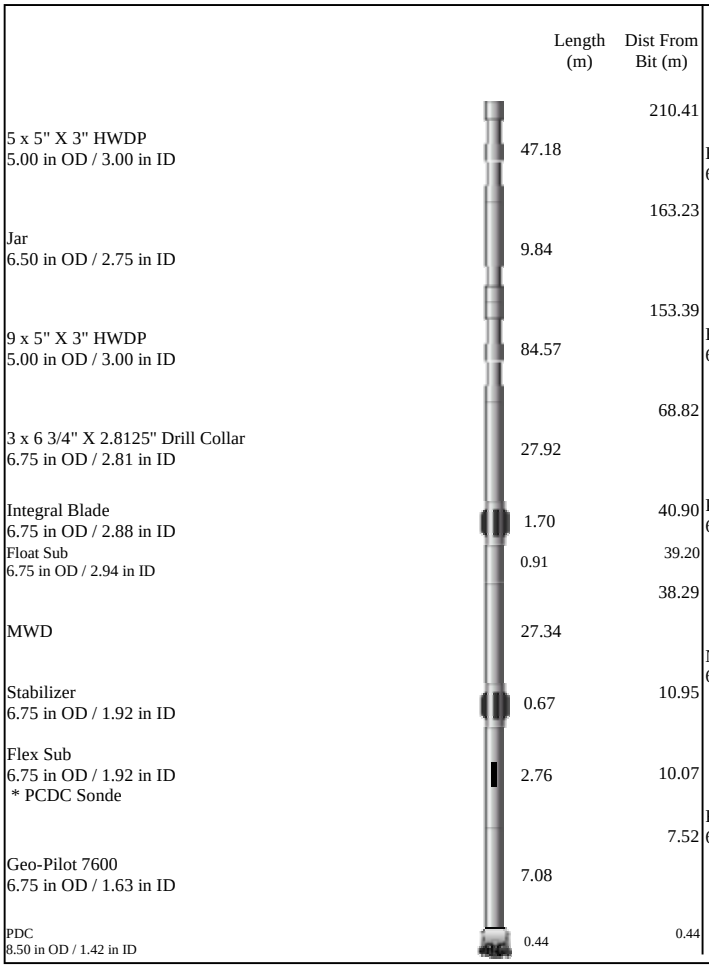
Start Depth	: 2112.00 m	**Footage**	: 0.00 m	**Avg RPM**	: 0 rpm	**Avg ROP**	: 0.00 m/hr
End Depth	: 2112.00 m	**Avg Flow Rate**	: 0.00 gpm	**Avg WOB**	: 0.0 klb	**Avg SPP**	: 0 psig
Drilling Hours	: 0.000 hr						

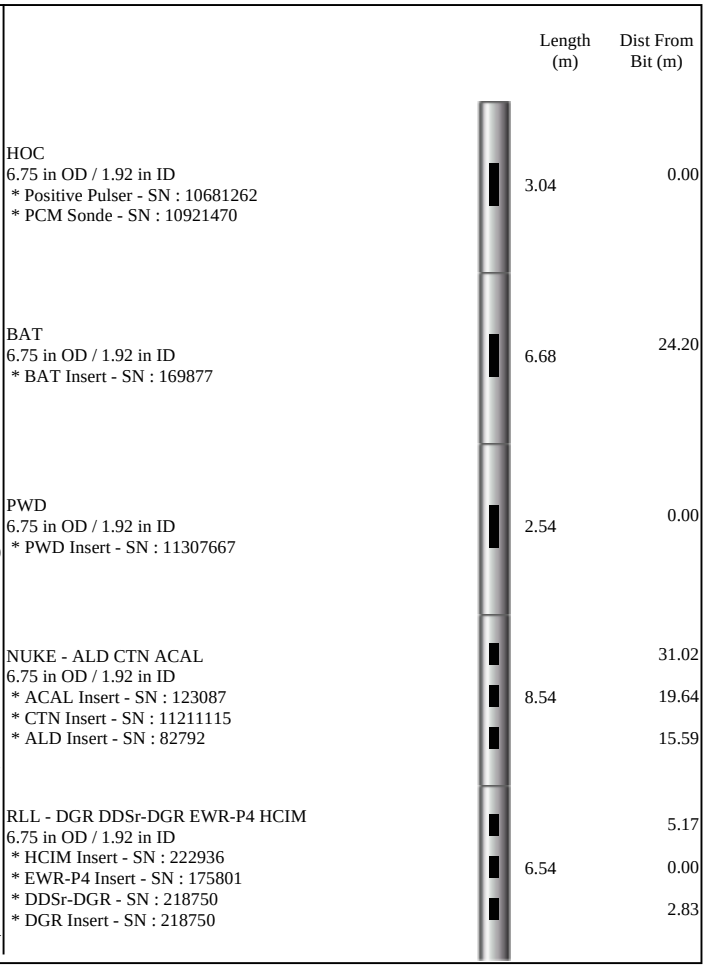
MUD DATA

Mud Type	: Polymer						
Weight	: 0.00 ppg	**Viscosity**	: 0.00 spqt	**PV**	: 0 cP	**YP**	: 0.00 lhf2
Chlorides	: 0.00 ppm	**Max Temp.**	: 0.00 degC	**% Solids**	: 0.00 %	**% Sand**	: 0.00 %
pH	: 0.00 pH	**Fluid Loss**	: 0 mptm	**% Oil**	: 0.00 %	**O:W**	:

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: Quad GP	**Min. Inc.**	: 0.00 deg	**Min. Inc. Depth**	: 0.000 m
Final Az.	: 0.00 deg	**Max Op. Press.**	: 0 psig	**Max Inc.**	: 0.00 deg	**Max Inc. Depth**	: 0.000 m
	MWD Real-time % : 0 %			**MWD Recorded %** : 0 %			





COMMENTS

RIH to drill 8 1/2" section, during SPT, PCDC locked up giving error readings for Gy and Gtotal. POOH to pick up backup tools.

Bitrun Summary

RUN TIME DATA

MWD Run	: 400	**Run Start**	: 21-Jan-10 23:29	**BRT Hrs**	: 106.76 hr	**Circ. Hrs**	: 82.13 hr
Rig Bit No	: 4	**Run End**	: 26-Jan-10 10:15	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 106.76 hr

DRILLING DATA

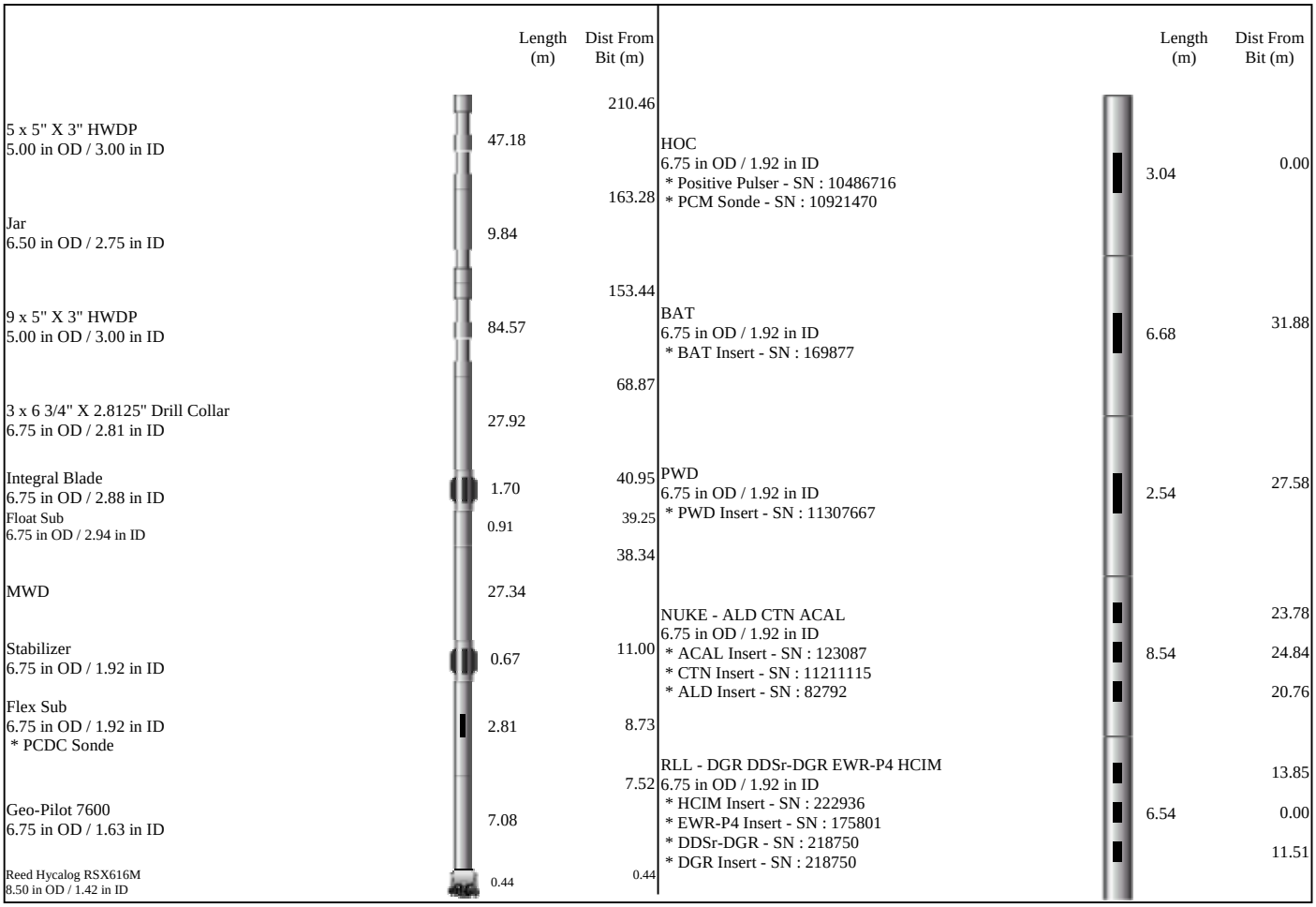
Start Depth	: 2112.00 m	**Footage**	: 1046.00 m	**Avg RPM**	: 108 rpm	**Avg ROP**	: 18.62 m/hr
End Depth	: 3158.00 m	**Avg Flow Rate**	: 574.00 gpm	**Avg WOB**	: 13.2 klb	**Avg SPP**	: 2141 psig
Drilling Hours	: 56.180 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.40 ppg	**Viscosity**	: 65.00 spqt	**PV**	: 19 cP	**YP**	: 30.00 lhf2
Chlorides	: 37000.00 ppm	**Max Temp.**	: 76.00 degC	**% Solids**	: 3.40 %	**% Sand**	: 0.20 %
pH	: 9.50 pH	**Fluid Loss**	: 4 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:94

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: Quad GP	**Min. Inc.**	: 10.33 deg	**Min. Inc. Depth**	: 2101.740 m
Final Az.	: 177.66 deg	**Max Op. Press.**	: 4795 psig	**Max Inc.**	: 36.74 deg	**Max Inc. Depth**	: 2483.190 m
	MWD Real-time % : 100 %			**MWD Recorded %**	: 98 %		



COMMENTS

RIH with Quad Combo and GP assembly. Wipe previously drilled directional only section from 2001m to 2112m MDRT.
Drill new formation to 3158.0mMDRT. POOH for LWD failure.

Bitrun Summary

RUN TIME DATA

MWD Run	: 500	**Run Start**	: 26-Jan-10 15:52	**BRT Hrs**	: 31.31 hr	**Circ. Hrs**	: 12.45 hr
Rig Bit No	: 5	**Run End**	: 27-Jan-10 23:11	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 31.34 hr

DRILLING DATA

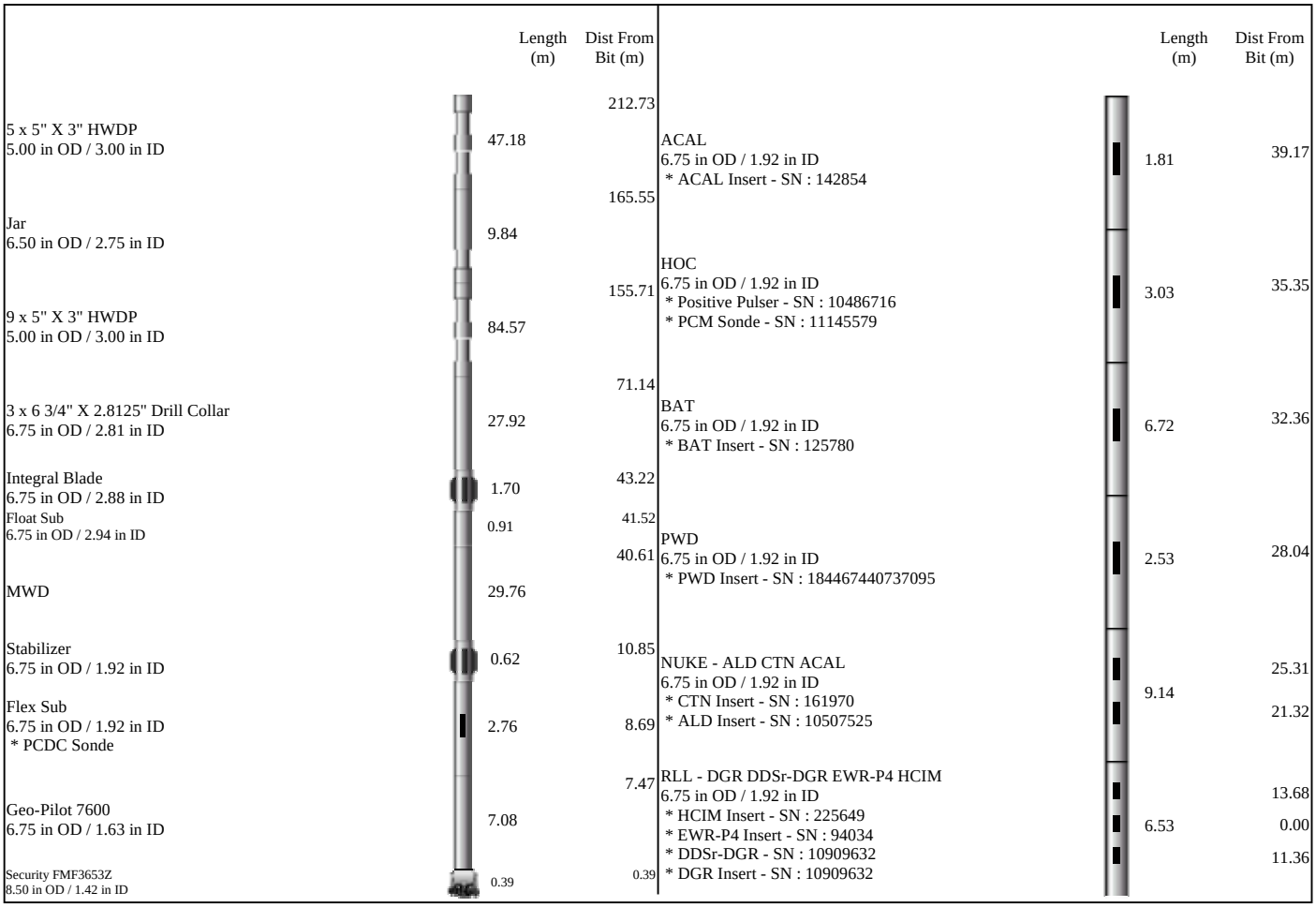
Start Depth	: 3158.00 m	**Footage**	: 38.00 m	**Avg RPM**	: 77 rpm	**Avg ROP**	: 9.74 m/hr
End Depth	: 3196.00 m	**Avg Flow Rate**	: 604.00 gpm	**Avg WOB**	: 9.9 klb	**Avg SPP**	: 2468 psig
Drilling Hours	: 3.900 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.40 ppg	**Viscosity**	: 63.00 spqt	**PV**	: 20 cP	**YP**	: 37.00 lhf2
Chlorides	: 37500.00 ppm	**Max Temp.**	: 109.30 degC	**% Solids**	: 3.40 %	**% Sand**	: 0.20 %
pH	: 9.00 pH	**Fluid Loss**	: 4 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:94.0

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: Quad GP	**Min. Inc.**	: 35.32 deg	**Min. Inc. Depth**	: 3145.400 m
Final Az.	: 178.52 deg	**Max Op. Press.**	: 4859 psig	**Max Inc.**	: 35.70 deg	**Max Inc. Depth**	: 3185.270 m
	MWD Real-time % : 100 %			**MWD Recorded %**	: 100 %		



COMMENTS

Drill 8 1/2" Section from 3158.0 mMDRT to first core point at 3196.0 mMDRT. POOH to run core barrels.

Bitrun Summary

RUN TIME DATA

MWD Run	: 600	**Run Start**	: 29-Jan-10 11:36	**BRT Hrs**	: 30.66 hr	**Circ. Hrs**	: 12.26 hr
Rig Bit No	: 6	**Run End**	: 30-Jan-10 18:16	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 30.66 hr

DRILLING DATA

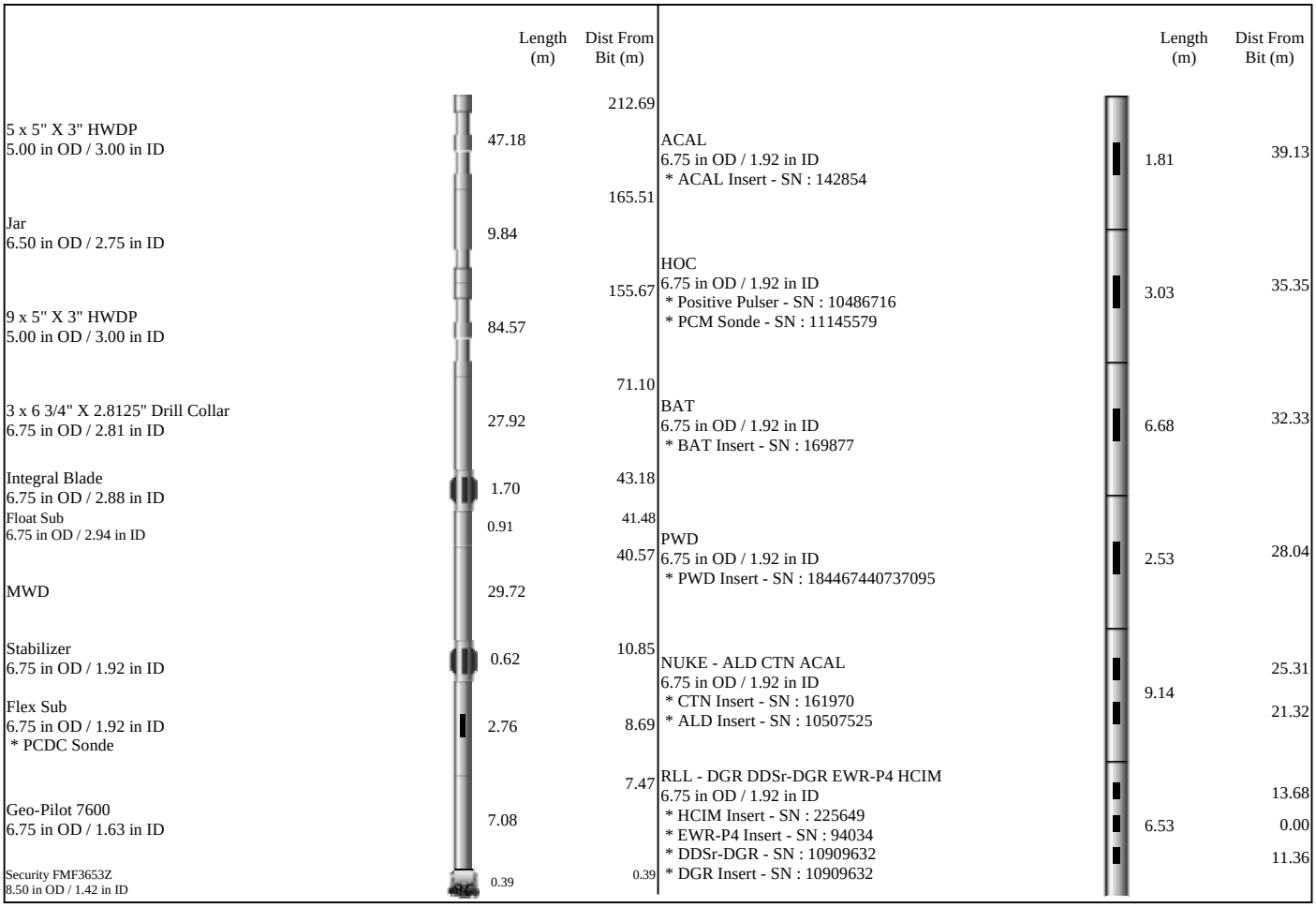
Start Depth	: 3212.50 m	**Footage**	: 70.50 m	**Avg RPM**	: 172 rpm	**Avg ROP**	: 11.79 m/hr
End Depth	: 3283.00 m	**Avg Flow Rate**	: 580.00 gpm	**Avg WOB**	: 12.1 klb	**Avg SPP**	: 2000 psig
Drilling Hours	: 5.980 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.35 ppg	**Viscosity**	: 62.00 spqt	**PV**	: 15 cP	**YP**	: 25.00 lhf2
Chlorides	: 38000.00 ppm	**Max Temp.**	: 86.00 degC	**% Solids**	: 2.90 %	**% Sand**	: 0.15 %
pH	: 9.00 pH	**Fluid Loss**	: 4 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:94

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: Quad GP	**Min. Inc.**	: 35.56 deg	**Min. Inc. Depth**	: 3203.430 m
Final Az.	: 178.72 deg	**Max Op. Press.**	: 4940 psig	**Max Inc.**	: 35.91 deg	**Max Inc. Depth**	: 3234.730 m
	MWD Real-time % : 100 %			**MWD Recorded %**	: 100 %		



COMMENTS

Change out BAT sonic tool and RIH with the previous assembly to wipe core section and drill ahead to second core point. POOH to core.

Bitrun Summary

RUN TIME DATA

MWD Run	: 700	**Run Start**	: 02-Feb-10 06:38	**BRT Hrs**	: 47.68 hr	**Circ. Hrs**	: 21.35 hr
Rig Bit No	: 7	**Run End**	: 04-Feb-10 06:19	**Hole Size**	: 216.00 mm	**Oper. Hrs**	: 47.68 hr

DRILLING DATA

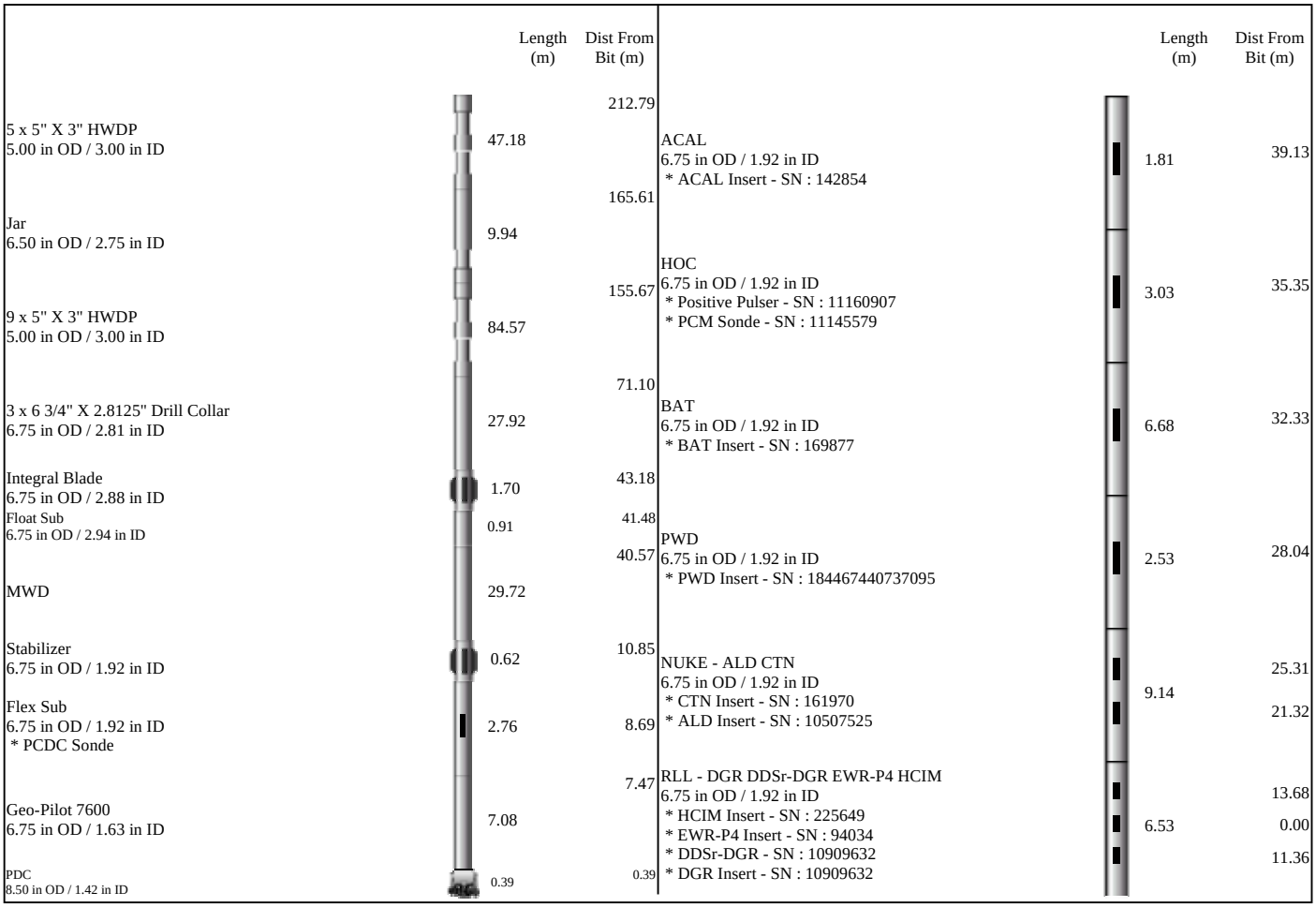
Start Depth	: 3309.00 m	**Footage**	: 173.00 m	**Avg RPM**	: 160 rpm	**Avg ROP**	: 11.09 m/hr
End Depth	: 3482.00 m	**Avg Flow Rate**	: 594.00 gpm	**Avg WOB**	: 12.7 klb	**Avg SPP**	: 2230 psig
Drilling Hours	: 15.600 hr						

MUD DATA

Mud Type	: Polymer						
Weight	: 9.40 ppg	**Viscosity**	: 73.00 spqt	**PV**	: 18 cP	**YP**	: 28.00 lhf2
Chlorides	: 38000.00 ppm	**Max Temp.**	: 127.00 degC	**% Solids**	: 3.50 %	**% Sand**	: 0.20 %
pH	: 9.00 pH	**Fluid Loss**	: 4 mptm	**% Oil**	: 0.00 %	**O:W**	: 0:100

MWD PERFORMANCE

Tool OD	: 6.75 in	**Type**	: Quad GP	**Min. Inc.**	: 35.03 deg	**Min. Inc. Depth**	: 3293.650 m
Final Az.	: 179.36 deg	**Max Op. Press.**	: 5225 psig	**Max Inc.**	: 36.10 deg	**Max Inc. Depth**	: 3439.040 m
	MWD Real-time % : 100 %			**MWD Recorded %**	: 100 %		



COMMENTS

RIH with the previous rotary and LWD assembly to wipe core section and drill ahead to TD. POOH to run wireline logs.

Directional Survey Data

RT- LAT=26.0m
Final survey projected to TD
All surveys are SAG corrected.

Tie-in

0.000	0.00	0.00	0.000	0.000 N	0.000 E		***

Measured Depth (m)	Inclination (deg)	Direction (deg)	Vertical Depth (m)	Latitude (m)	Departure (m)	Vertical Section (m)	Dogleg (°/30m)
100.300	0.00	0.00	100.300	0.000 N	0.000 E	0.000	0.00
242.360	0.22	278.10	242.360	0.040 N	0.270 W	-0.040	0.05
327.420	0.34	318.42	327.420	0.250 N	0.600 W	-0.260	0.08
356.380	0.16	310.14	356.380	0.340 N	0.690 W	-0.350	0.19
414.830	0.43	334.58	414.830	0.590 N	0.840 W	-0.600	0.15
502.130	0.25	356.62	502.130	1.080 N	1.000 W	-1.090	0.08
559.330	0.33	356.35	559.330	1.370 N	1.010 W	-1.380	0.04
645.930	0.22	77.08	645.920	1.650 N	0.870 W	-1.660	0.13
733.400	0.10	264.51	733.390	1.680 N	0.780 W	-1.690	0.11
819.330	0.13	204.11	819.320	1.590 N	0.890 W	-1.600	0.04
907.200	0.22	337.40	907.190	1.650 N	1.000 W	-1.660	0.11
956.770	0.15	112.45	956.760	1.710 N	0.980 W	-1.730	0.21
980.350	0.00	258.48	980.340	1.700 N	0.950 W	-1.710	0.19
1009.960	0.20	60.48	1009.950	1.730 N	0.900 W	-1.740	0.20
1039.180	0.22	57.43	1039.170	1.780 N	0.810 W	-1.790	0.02
1068.020	0.25	56.38	1068.010	1.850 N	0.710 W	-1.860	0.03
1096.690	0.09	334.71	1096.680	1.900 N	0.670 W	-1.910	0.26
1125.200	0.25	23.41	1125.190	1.980 N	0.650 W	-1.990	0.21
1153.520	0.31	18.55	1153.510	2.110 N	0.610 W	-2.120	0.07
1182.120	0.26	64.52	1182.110	2.210 N	0.520 W	-2.220	0.24
1210.690	0.31	28.33	1210.680	2.310 N	0.430 W	-2.310	0.19
1239.340	0.36	49.88	1239.330	2.430 N	0.320 W	-2.440	0.14
1298.150	0.40	29.51	1298.140	2.730 N	0.080 W	-2.730	0.07
1327.530	0.39	32.18	1327.520	2.900 N	0.020 E	-2.900	0.02
1356.770	0.31	47.29	1356.760	3.040 N	0.140 E	-3.040	0.12
1385.600	0.44	56.10	1385.590	3.160 N	0.290 E	-3.150	0.15
1412.810	0.48	46.30	1412.800	3.290 N	0.450 E	-3.290	0.10
1441.660	0.57	57.51	1441.650	3.450 N	0.660 E	-3.450	0.14
1470.690	0.57	43.73	1470.680	3.640 N	0.880 E	-3.630	0.14
1499.950	0.59	47.75	1499.930	3.840 N	1.100 E	-3.830	0.05
1529.470	0.61	56.99	1529.450	4.030 N	1.340 E	-4.010	0.10
1558.730	0.62	46.69	1558.710	4.220 N	1.590 E	-4.200	0.11
1587.900	0.64	49.02	1587.880	4.440 N	1.820 E	-4.420	0.03
1616.890	0.68	52.55	1616.870	4.650 N	2.080 E	-4.620	0.06
1645.390	0.64	67.47	1645.360	4.810 N	2.360 E	-4.780	0.19
1673.840	0.66	56.91	1673.810	4.960 N	2.650 E	-4.930	0.13
1702.240	0.67	57.55	1702.210	5.140 N	2.930 E	-5.110	0.01
1759.920	0.72	70.24	1759.890	5.450 N	3.550 E	-5.400	0.08
1789.630	0.84	75.16	1789.590	5.570 N	3.940 E	-5.520	0.14
1848.620	0.80	79.00	1848.580	5.750 N	4.760 E	-5.690	0.03
1876.780	0.90	76.63	1876.730	5.840 N	5.170 E	-5.780	0.11
1905.300	0.76	78.61	1905.250	5.930 N	5.570 E	-5.860	0.15

Directional Survey Data

Measured Depth (m)	Inclination (deg)	Direction (deg)	Vertical Depth (m)	Latitude (m)	Departure (m)	Vertical Section (m)	Dogleg (°/30m)
1934.760	0.91	50.85	1934.710	6.120 N	5.940 E	-6.040	0.43
1951.760	0.68	51.65	1951.710	6.270 N	6.130 E	-6.190	0.41
1968.420	0.69	57.75	1968.370	6.380 N	6.290 E	-6.300	0.13
1995.260	1.12	112.40	1995.200	6.370 N	6.670 E	-6.280	1.02
2020.270	4.56	164.56	2020.180	5.320 N	7.160 E	-5.230	4.77
2076.850	8.58	180.86	2076.380	1.080 S	7.700 E	1.170	2.33
2097.430	9.89	180.78	2096.700	4.380 S	7.650 E	4.470	1.91
2101.740	10.33	180.02	2100.940	5.130 S	7.640 E	5.230	3.20
2133.860	11.00	184.57	2132.500	11.070 S	7.400 E	11.160	1.00
2162.640	12.26	191.23	2160.690	16.800 S	6.580 E	16.890	1.92
2191.040	14.09	193.69	2188.350	23.120 S	5.180 E	23.180	2.02
2221.570	17.24	200.87	2217.740	30.960 S	2.690 E	30.990	3.63
2249.960	21.12	203.77	2244.550	39.580 S	0.870 W	39.560	4.22
2279.090	25.17	203.19	2271.330	50.080 S	5.430 W	50.010	4.18
2305.360	27.89	201.28	2294.830	60.940 S	9.860 W	60.810	3.26
2335.320	29.38	198.65	2321.130	74.430 S	14.760 W	74.240	1.95
2364.040	31.58	195.91	2345.880	88.340 S	19.070 W	88.100	2.72
2393.220	33.12	193.25	2370.530	103.450 S	22.990 W	103.160	2.16
2424.120	34.46	191.99	2396.210	120.220 S	26.740 W	119.880	1.47
2453.550	35.45	189.16	2420.330	136.790 S	29.830 W	136.410	1.94
2483.190	36.74	186.44	2444.280	154.090 S	32.200 W	153.680	2.08
2512.340	35.42	185.57	2467.840	171.160 S	33.990 W	170.720	1.46
2539.220	36.20	185.30	2489.640	186.820 S	35.480 W	186.360	0.89
2567.350	35.96	183.83	2512.380	203.330 S	36.800 W	202.850	0.96
2596.630	35.85	183.27	2536.090	220.470 S	37.870 W	219.980	0.35
2623.250	35.76	182.90	2557.680	236.020 S	38.700 W	235.520	0.26
2653.750	34.92	179.74	2582.560	253.650 S	39.110 W	253.140	1.98
2684.950	36.05	178.78	2607.970	271.760 S	38.880 W	271.250	1.21
2711.610	35.74	177.14	2629.570	287.380 S	38.320 W	286.880	1.14
2739.680	35.53	177.12	2652.380	303.720 S	37.500 W	303.220	0.22
2771.600	35.60	176.05	2678.350	322.250 S	36.400 W	321.760	0.59
2799.250	35.65	174.76	2700.820	338.300 S	35.110 W	337.830	0.82
2830.330	35.66	174.48	2726.070	356.340 S	33.410 W	355.890	0.16
2858.860	35.48	174.28	2749.280	372.850 S	31.780 W	372.420	0.23
2886.550	35.51	174.82	2771.830	388.860 S	30.260 W	388.450	0.34
2912.810	35.67	174.71	2793.180	404.080 S	28.860 W	403.680	0.20
2944.720	35.81	174.86	2819.080	422.640 S	27.170 W	422.260	0.16
2970.130	33.67	176.07	2839.960	437.070 S	26.020 W	436.710	2.65
3001.240	33.20	177.20	2865.920	454.180 S	25.010 W	453.830	0.75
3026.700	33.66	177.54	2887.170	468.190 S	24.370 W	467.850	0.59
3059.360	34.73	177.11	2914.180	486.530 S	23.510 W	486.200	1.01
3089.540	35.58	176.65	2938.860	503.880 S	22.570 W	503.560	0.88
3118.070	35.65	177.66	2962.050	520.470 S	21.740 W	520.160	0.62
3145.400	35.32	177.16	2984.310	536.320 S	21.020 W	536.020	0.48
3167.940	35.69	178.03	3002.660	549.400 S	20.480 W	549.100	0.83
3185.270	35.70	178.52	3016.730	559.510 S	20.170 W	559.210	0.50
3203.430	35.56	178.76	3031.490	570.080 S	19.920 W	569.790	0.33
3234.730	35.91	179.25	3056.900	588.360 S	19.600 W	588.070	0.43

Directional Survey Data

Measured Depth (m)	Inclination (deg)	Direction (deg)	Vertical Depth (m)	Latitude (m)	Departure (m)	Vertical Section (m)	Dogleg (°/30m)
3264.810	35.73	178.72	3081.290	605.960 S	19.290 W	605.670	0.36
3293.650	35.03	178.07	3104.800	622.650 S	18.820 W	622.370	0.83
3324.890	36.06	178.66	3130.220	640.810 S	18.310 W	640.530	1.04
3350.050	35.41	178.82	3150.640	655.500 S	17.980 W	655.220	0.78
3379.250	35.71	179.95	3174.400	672.480 S	17.800 W	672.200	0.74
3408.140	35.85	180.50	3197.840	689.370 S	17.870 W	689.090	0.36
3439.040	36.10	180.75	3222.840	707.520 S	18.070 W	707.240	0.28
3467.050	35.47	179.36	3245.560	723.900 S	18.080 W	723.610	1.10
3482.000	35.47	179.36	3257.740	732.570 S	17.990 W	732.290	0.00

CALCULATION BASED ON MINIMUM CURVATURE METHOD

SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT

VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 179.28 DEGREES(GRID)
A TOTAL CORRECTION OF 11.50 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD
HORIZONTAL DISPLACEMENT(CLOSURE) AT 3482.00 METRES
IS 732.79 METRES ALONG 181.41 DEGREES (GRID)

Service Interrupt Report

MWD Run Number	: 400	**Time/Date of Failure**	: 21-Jan-10 19:45
Rig Bit Number	: 3	**Depth at time of Failure**	: 360.000 m
MWD Run start time/date	: 21-Jan-10 23:29	**Lost Rig Hours**	: hr
MWD Run end time/date	: 26-Jan-10 10:15		

RIG ACTIVITY

Shallow Pulse Test

DESCRIPTION OF FAILURE

PCDC inclination locked and giving invalid Gy and Gtotal readings.

ACTION TAKEN

Cycle pumps, mode switch and send downlinks to reset sensor. PCDC failed to respond. POOH to pick up backup PCD-C

OPERATION IMPACT

POOH to pick up backup PCD-C.

REASON FOR FAILURE

To be investigated

Service Interrupt Report

MWD Run Number	: 400	**Time/Date of Failure**	: 25-Feb-10 16:24
Rig Bit Number	: 4	**Depth at time of Failure**	: 3156.000 m
MWD Run start time/date	: 21-Jan-10 23:29	**Lost Rig Hours**	: hr
MWD Run end time/date	: 26-Jan-10 10:15		

RIG ACTIVITY

Drilling ahead to core point.

DESCRIPTION OF FAILURE

Tool lost all sensors below EWR, No PCDC, ABG, DGR and Geo-pilot.

ACTION TAKEN

Try to revive tool by pump cycles, send downlink commands in an attempt to take surveys, mode switch and reset sensors. All attempts failed to revive tool.

OPERATION IMPACT

POOH to change tools.

REASON FOR FAILURE

Intermittent communication bus failure.

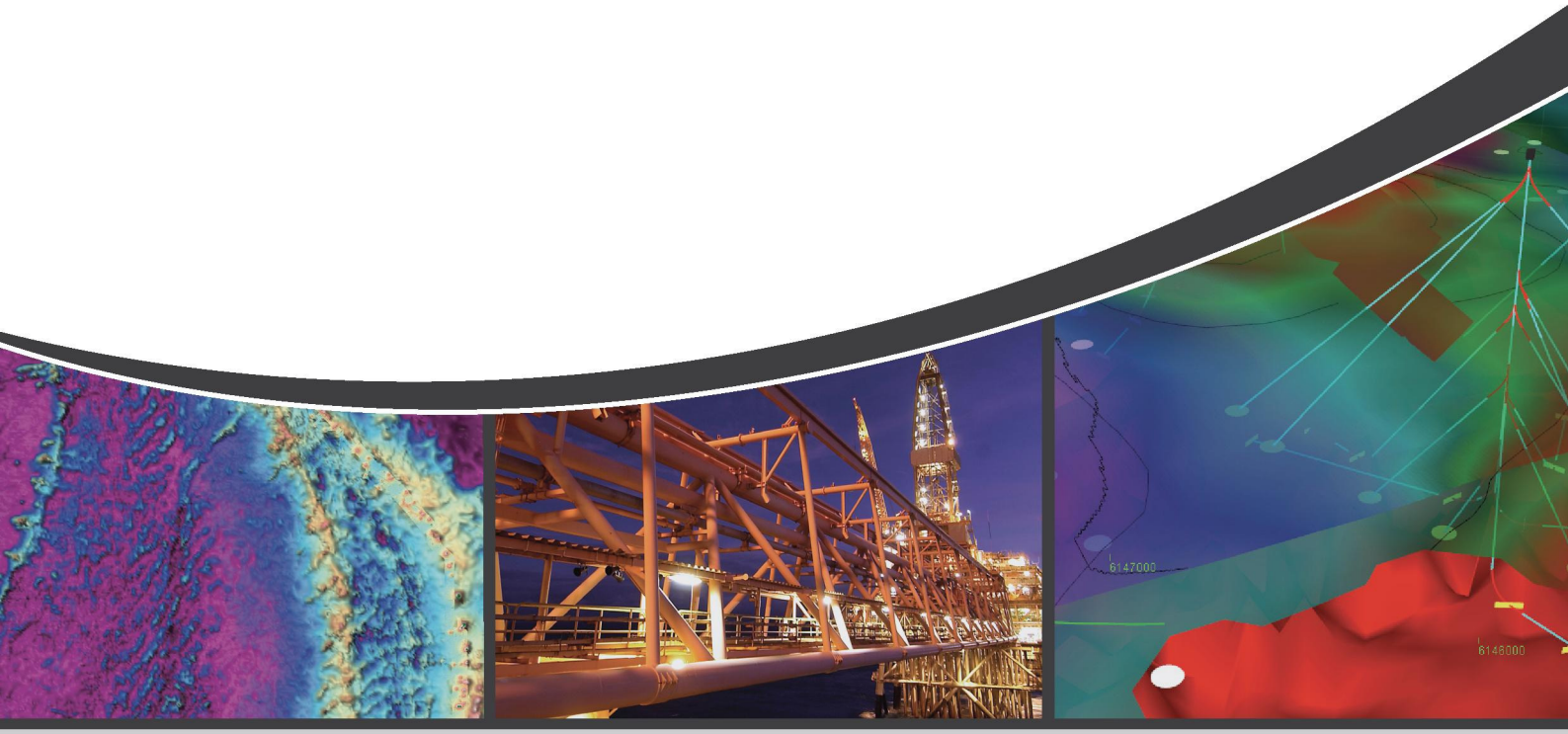
Sperry Drilling - HALLIBURTON

Directional Drilling
End of Well Report

Origin energy

Australian Drilling Associates Pty Ltd ADA

Well: Rockhopper-1 ST1
Rig: Kan Tan IV
Location: Bass Basin, Australia



Contents

Section 1:	Well Data
Section 2:	Drilling Parameters
Section 3:	Definitive Survey Data
Section 4:	Actual Vs Proposed A4 Plot
Section 5:	Drilling Survey
Section 6:	BHA Data

SECTION 1

Well Report

Operator : Origin Energy Resources Ltd

Well : Rockhopper-1 ST1

Job Objectives:

Rockhopper-1 ST1 is designed to intersect gas bearing sandstone units identified in Rockhopper-1 at a structurally down-dip location. The sidetrack will allow fluid pressure data and core to be obtained at a down-dip location over any significant gas-bearing reservoir intervals identified in Rockhopper-1. This information will enable gas-water contacts to be interpreted and when integrated with the core data, will be crucial to understanding the size and deliverability of the discovered resource

Summary of Results:

8 1/2" Hole Section BHA # 1 From 1998m to 2112m.
This Motor assembly was run to drill out the cement and build up to 10 degrees before the upcoming Geo-Pilot run The Cement was drilled in good time with no problems .The Kick -off was initiated in the required direction and was control drilled for the first stand to ensure good kick-off .The next few stands suffered from hanging up problems but was mitigated by back-reaming. Toolface control was reasonable and although ROP was slow the objective of a good kick off was met and drilling ceased at 2112m with 9.89 degrees in the hole at 180 Degrees azimuth. At surface the bit was found to be more worn than expected but could be re-run .

8 1/2" Hole Section BHA # 2 From 2112m to 3158 m.
This was a Geo-Pilot BHA and it was run to complete the build section at 33 .34 Degrees inclination with
Azimuth of 178 degrees .The build rate for this run was not as good as expected requiring 3 .5 degree doglegs and working to get 3,s Almost the whole run was plagued by stick-slip and vibration and no parameters were found to mitigate this for any length of time .Some spurious down-links were found during vibration and extra vigilance had to be made to counteract the same .ROP was quite good considering the amount of time spent off bottom re-starting drilling in poor periods of stick-slip .This BHA held out despite all of this to 3158m some 30m short of core point and was pulled for no response to the tools .The bit was found to be in reasonable shape but about 1/16 under-gauge .

8 1/2" Hole Section BHA # 3 From 3158m to 3196m.
This BHA was run to find core point then be re-run to next core point and in turn to TD .This BHA also suffered from stick-slip and vibration .Again all parameters were adopted but it was such a short run with long intervals off bottom that it was impossible to report actual BHA tendencies .This BHA held inclination to core point at 3196m and was pulled for the coring run .

8 1/2" Hole Section BHA # 4 From 3196m to 3213mMD
This was the first core BHA and was deemed to be a success in that some 13.5m of core of interest was cut .

8 1/2" Hole Section BHA # 5 From 3213m to 3284mMD
This BHA only drilled 71 m MD and was very difficult to gauge its performance due to this however the general consensus was that it was marginally better at coping with stick-slip than BHA# 3.This BHA was different by way of having a new FMF3653Z PDC bit which may have helped stick-slip mitigation .

8 1/2" Hole Section BHA # 6 From 3283m to 3298.5mMD This BHA was run to retrieve the second core for Geological evaluation .This BHA recovered 14.08m of core, this was deemed to be insufficient and it was decided to run back in with another coring assembly to attempt to cut another 20m of core.

8 1/2" Hole Section BHA # 7 From 3298.5m to 3309mMD This BHA was run to retrieve the second core for Geological evaluation .This BHA recovered 9.50m of core, this was deemed to be sufficient for evaluation.

8 1/2" Hole Section BHA # 8 From 3309m to 3482m MD This BHA was a Geo-Pilot BHA and was used to drill the section after the core point to TD. Again massive stick-slip was recorded and when the volcanics formations came in this was to be further compounded by vibration also .All attempts were made to mitigate this but was unsuccessful .Despite this the tools made it to TD at 3482m MD The subsequent trip out was good with little drag

Discussion:

BHA #	Bit #	Motor Run #	Hole Size (in)	MD In (m)	MD Out (m)	TVD In (m)	TVD Out (m)	Inc In (deg)	Inc Out (deg)	Azi In (deg)	Azi Out (deg)	Drlg hrs	Circ hrs
1	1	1	8.500	1998	2112	1998	2111	1.4	10.5	129	182	22	11
2	2	2	8.500	2112	3158	2111	2995	10.5	35.5	182	178	80	16
3	3	3	8.500	3158	3196	2995	3025	35.5	35.6	178	179	5	9
4	4		8.500	3196	3213	3025	3039	35.6	35.7	179	179	5	2
5	3rr1	4	8.500	3213	3283	3039	3096	35.7	35.3	179	178	10	4
6	4rr1		8.500	3283	3298	3096	3108	35.3	35.1	178	178	3	2
7	4rr2		8.500	3298	3309	3108	3117	35.1	35.5	178	178	2	2
8	3rr2	5	8.500	3309	3482	3117	3258	35.5	35.5	178	179	20	8

Table 1 - BHA Summary

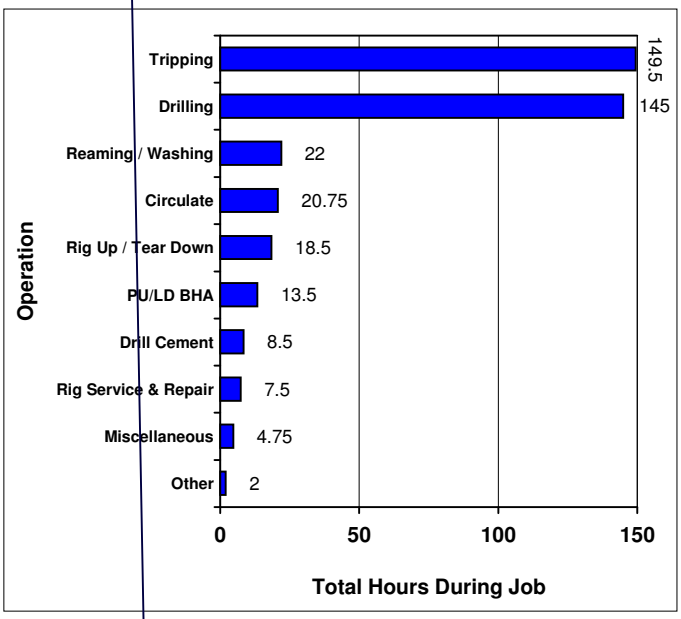
Motor Run #	Manufacturer	Type	Lobe	OD (in)	Gauge (in)	Bend (deg)	Adj	DLS (Ori) (°/30m)	ROP (Ori) (m/hr)	ROP (Rot) (m/hr)
1	SSDS	SperryDrill	7/8	6.750		1.15	Y	3.00	4	6
2	SSDS	Geopilot	/	6.750	8.375	0.00	N	0.30	0	13
3	SSDS	Geopilot	/	6.750	8.375	0.00	N		0	8
4	SSDS	Geopilot	/	6.750	8.375	0.00	N		0	7
5	SSDS	Geopilot	/	6.750	8.375	0.00	N	0.40	0	9

Table 2 - Motor Run Summary

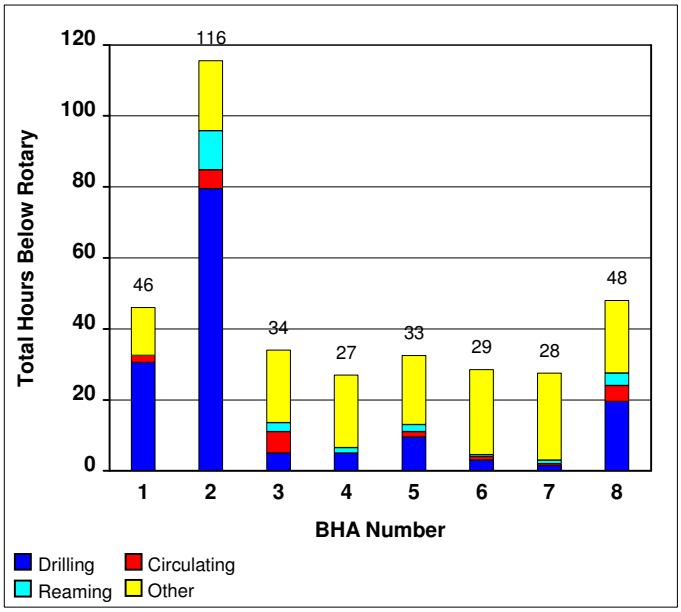
Bit #	Manufacturer	Style	OD (in)	Gge Len (in)	Nozzles (/32's)	TFA (in²)	Dull Grades I O D L B G O R	Ftge (m)	Drlg hrs	ROP (m/hr)
1	Hughes Christensen	MXL-1x	8.500			1.114	2-3-WT-A -2-I-ER-BHA	114	22.00	5
2	Reed Hycalog	RSX616M	8.500		6x18	1.491	2-1-CT-C--X-I-NO-DTF	1046	79.50	13
3	Security DBS	FMF3653Z	8.500	1.500	3x15, 3x12	0.849	0-0-NO-A -X-I-NO-CP	38	5.00	8
4	Corepro		8.500			0.000	0-0-NO-A -X-I-NO-PR	17	5.00	3
3rr1	Security DBS	FMF3653Z	8.500	1.500	3x15, 3x12	0.849	0-0-ER-A -X-I-NO-CP	70	9.50	7
4rr1	Corepro		8.500			0.000	0-0-NO-A -X-I-NO-PR	15	3.00	5
4rr2	Corepro		8.500			0.000	0-0-NO-A -X-I-NO-CP	11	1.50	7
3rr2	Security DBS	FMF3653Z	8.500	1.500	3x15, 3x12	0.849	0-0-RR-A -X-I-NO-TD	173	19.50	9

Table 3 - Bit Run Summary

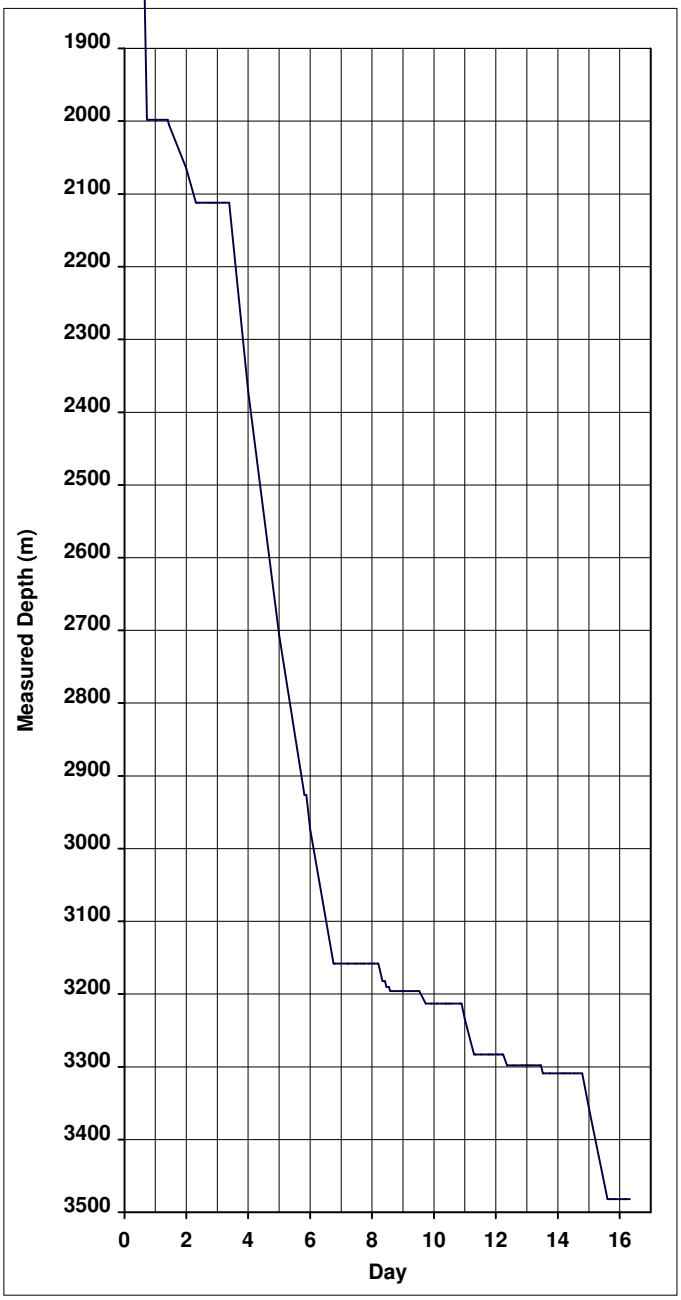
Hours by Operation Summary



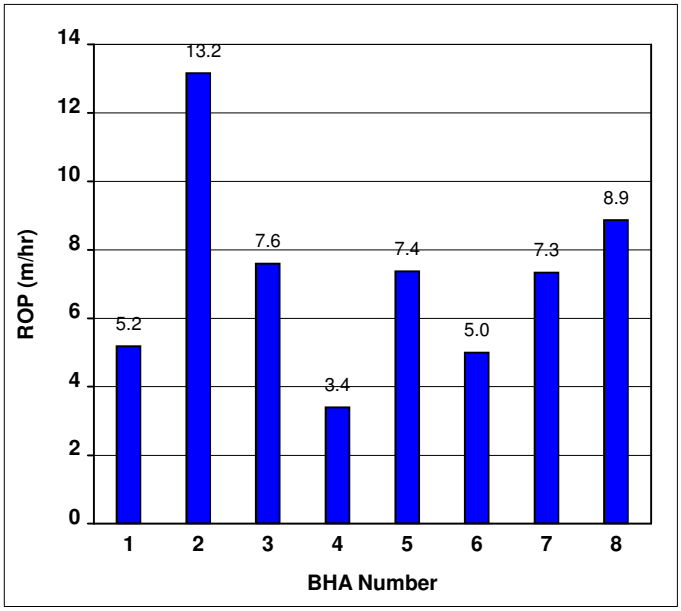
Hours per BHA Breakdown



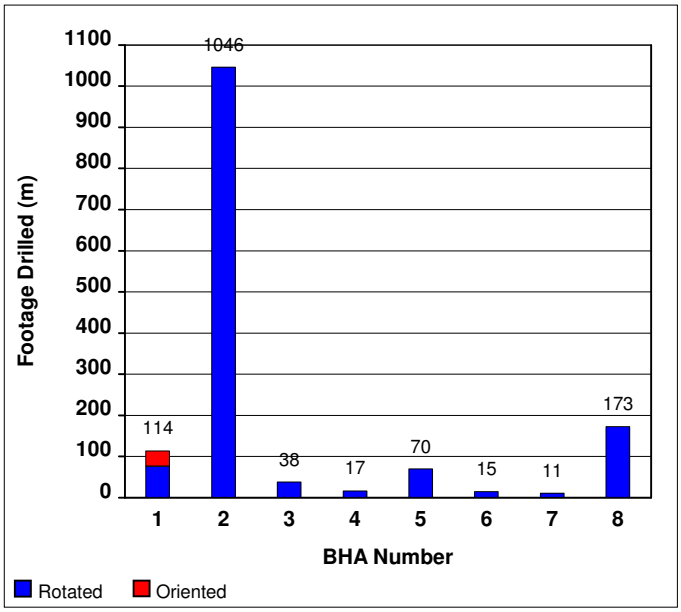
Days vs. Depth



Average Rate of Penetration per BHA



Footage per BHA



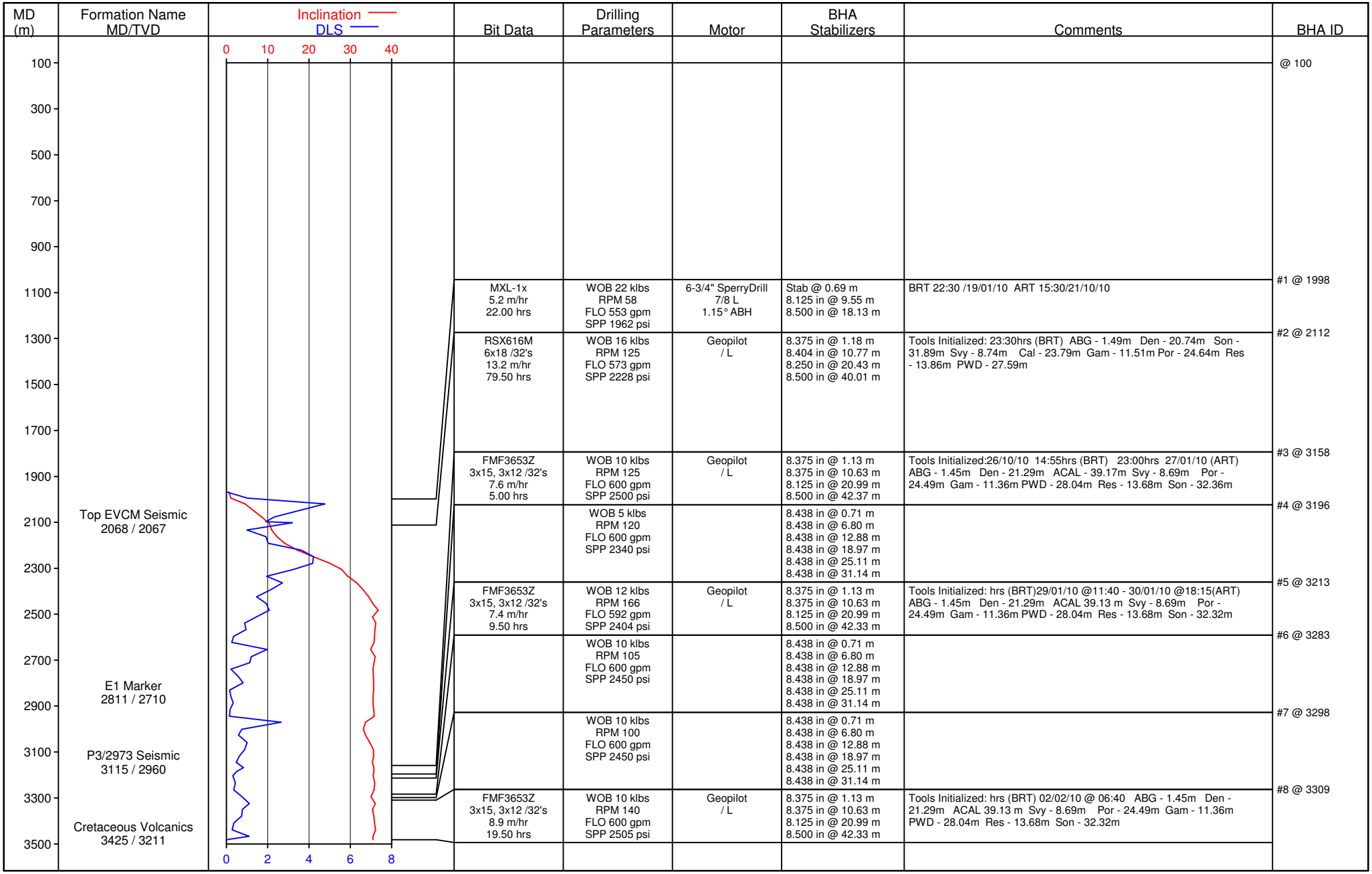
SECTION 2

Drilling Parameters

Sperry-Sun Drilling Services

Origin Energy Resources Ltd
Rockhopper-1 ST1
Kan Tan IV

Australia
Bass Basin
AU-DD-0006791008



SECTION 3

Definitive Survey Report

Sperry Drilling

Origin Energy Resources LTD

Rockhopper-1
Rockhopper-1
Rockhopper-1

Rockhopper-1 ST

Design: Rockhopper-1 ST1 Definitive Survey

Standard Survey Report

02 March, 2010

Origin energy

Company:	Origin Energy Resources LTD	**Local Co-ordinate Reference:**	Well Rockhopper-1
Project:	Rockhopper-1	**TVD Reference:**	Rotary Table @ 26.00m (Above MSL)
Site:	Rockhopper-1	**MD Reference:**	Rotary Table @ 26.00m (Above MSL)
Well:	Rockhopper-1	**North Reference:**	Grid
Wellbore:	Rockhopper-1 ST	**Survey Calculation Method:**	Minimum Curvature
Design:	Rockhopper-1 ST1 Definitive Survey	**Database:**	EDM 2003.21 Sperry NZ DB21

Project Rockhopper-1

Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	GDA94		
Map Zone:	Zone 55S (144 E to 150 E)		

Site Rockhopper-1

Site Position:		**Northing:**	5,594,071.42 m	**Latitude:**	39° 47' 34.1828 S
From:	Map	**Easting:**	366,374.03 m	**Longitude:**	145° 26' 21.4660 E
Position Uncertainty:	0.00 m	**Slot Radius:**	in	**Grid Convergence:**	1.00 °

Well Rockhopper-1

Well Position	**+N/-S**	0.00 m	**Northing:**	5,594,071.42 m	**Latitude:**	39° 47' 34.1828 S
	+E/-W	0.00 m	**Easting:**	366,374.03 m	**Longitude:**	145° 26' 21.4660 E
Position Uncertainty		0.00 m	**Wellhead Elevation:**	26.00 m	**Water Depth:**	74.30 m

Wellbore Rockhopper-1 ST

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2009	4/12/2009	12.49	-70.39	60,969

Design Rockhopper-1 ST1 Definitive Survey

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	1,968.42

Vertical Section:	Depth From (TVD) (m)	+N/-S (m)	+E/-W (m)	Direction (°)
	0.00	0.00	0.00	179.28

Survey Program **Date** 2/03/2010

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
100.30	100.30	Rockhopper-1 - 36" MWD Survey (Rockho	MWD+SAG+SC	MWD + Sag + SC corrections (no bias)
242.36	956.77	Rockhopper-1 - 17 1/2" MWD Survey (Roc	MWD+SAG+SC	MWD + Sag + SC corrections (no bias)
980.35	1,951.76	Rockhopper-1 - 12 1/4" MWD Survey (Roc	MWD+SAG+SC	MWD + Sag + SC corrections (no bias)
1,968.42	1,968.42	Rockhopper-1 - 8 1/2" MWD Survey (Rock	MWD+SAG+SC	MWD + Sag + SC corrections (no bias)
1,995.26	3,482.00	Rockhopper-1 ST - 8 1/2" MWD Survey (R	MWD+SAG+SC	MWD + Sag + SC corrections (no bias)

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00
100.30	0.00	0.00	100.30	0.00	0.00	0.00	0.000	0.00	0.00
242.36	0.22	278.10	242.36	0.04	-0.27	-0.04	0.046	0.05	0.00
327.42	0.34	318.42	327.42	0.25	-0.60	-0.26	0.079	0.04	14.22
356.38	0.16	310.14	356.38	0.34	-0.69	-0.35	0.190	-0.19	-8.58
414.83	0.43	334.58	414.83	0.59	-0.84	-0.60	0.150	0.14	12.54
502.13	0.25	356.62	502.13	1.08	-1.00	-1.09	0.075	-0.06	7.57
559.33	0.33	356.35	559.33	1.37	-1.01	-1.38	0.042	0.04	-0.14
645.93	0.22	77.08	645.92	1.65	-0.87	-1.66	0.127	-0.04	27.97

Company:	Origin Energy Resources LTD	**Local Co-ordinate Reference:**	Well Rockhopper-1
Project:	Rockhopper-1	**TVD Reference:**	Rotary Table @ 26.00m (Above MSL)
Site:	Rockhopper-1	**MD Reference:**	Rotary Table @ 26.00m (Above MSL)
Well:	Rockhopper-1	**North Reference:**	Grid
Wellbore:	Rockhopper-1 ST	**Survey Calculation Method:**	Minimum Curvature
Design:	Rockhopper-1 ST1 Definitive Survey	**Database:**	EDM 2003.21 Sperry NZ DB21

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
733.40	0.10	264.51	733.39	1.68	-0.78	-1.69	0.110	-0.04	-59.19
819.33	0.13	204.11	819.32	1.59	-0.89	-1.60	0.041	0.01	-21.09
907.20	0.22	337.40	907.19	1.65	-1.00	-1.66	0.110	0.03	45.51
956.77	0.15	112.45	956.76	1.71	-0.98	-1.73	0.208	-0.04	81.73
961.00	0.12	112.45	960.99	1.71	-0.97	-1.72	0.191	-0.19	0.00
13 3/8" Casing									
980.35	0.00	258.48	980.34	1.70	-0.95	-1.71	0.191	-0.19	0.00
1,009.96	0.20	60.48	1,009.95	1.73	-0.90	-1.74	0.203	0.20	0.00
1,039.18	0.22	57.43	1,039.17	1.78	-0.81	-1.79	0.024	0.02	-3.13
1,068.02	0.25	56.38	1,068.01	1.85	-0.71	-1.86	0.032	0.03	-1.09
1,096.69	0.09	334.71	1,096.68	1.90	-0.67	-1.91	0.265	-0.17	-85.46
1,125.20	0.25	23.41	1,125.19	1.98	-0.65	-1.99	0.213	0.17	51.25
1,153.52	0.31	18.55	1,153.51	2.11	-0.61	-2.12	0.068	0.06	-5.15
1,182.12	0.26	64.52	1,182.11	2.21	-0.52	-2.22	0.238	-0.05	48.22
1,210.69	0.31	28.33	1,210.68	2.31	-0.43	-2.31	0.192	0.05	-38.00
1,239.34	0.36	49.88	1,239.33	2.43	-0.32	-2.44	0.141	0.05	22.57
1,298.15	0.40	29.51	1,298.14	2.73	-0.08	-2.73	0.071	0.02	-10.39
1,327.53	0.39	32.18	1,327.52	2.90	0.02	-2.90	0.021	-0.01	2.73
1,356.77	0.31	47.29	1,356.76	3.04	0.14	-3.04	0.125	-0.08	15.50
1,385.60	0.44	56.10	1,385.59	3.16	0.29	-3.15	0.148	0.14	9.17
1,412.81	0.48	46.30	1,412.80	3.29	0.45	-3.29	0.097	0.04	-10.80
1,441.66	0.57	57.51	1,441.65	3.45	0.66	-3.45	0.142	0.09	11.66
1,470.69	0.57	43.73	1,470.68	3.64	0.88	-3.63	0.141	0.00	-14.24
1,499.95	0.59	47.75	1,499.93	3.84	1.10	-3.83	0.046	0.02	4.12
1,529.47	0.61	56.99	1,529.45	4.03	1.34	-4.01	0.100	0.02	9.39
1,558.73	0.62	46.69	1,558.71	4.22	1.59	-4.20	0.114	0.01	-10.56
1,587.90	0.64	49.02	1,587.88	4.44	1.82	-4.42	0.033	0.02	2.40
1,616.89	0.68	52.55	1,616.87	4.65	2.08	-4.62	0.059	0.04	3.65
1,645.39	0.64	67.47	1,645.36	4.81	2.36	-4.78	0.185	-0.04	15.71
1,673.84	0.66	56.91	1,673.81	4.96	2.65	-4.93	0.128	0.02	-11.14
1,702.24	0.67	57.55	1,702.21	5.14	2.93	-5.11	0.013	0.01	0.68
1,759.92	0.72	70.24	1,759.89	5.45	3.55	-5.40	0.084	0.03	6.60
1,789.63	0.84	75.16	1,789.59	5.57	3.94	-5.52	0.139	0.12	4.97
1,848.62	0.80	79.00	1,848.58	5.75	4.76	-5.69	0.035	-0.02	1.95
1,876.78	0.90	76.63	1,876.73	5.84	5.17	-5.78	0.113	0.11	-2.52
1,905.30	0.76	78.61	1,905.25	5.93	5.57	-5.86	0.150	-0.15	2.08
1,934.76	0.91	50.85	1,934.71	6.12	5.94	-6.04	0.434	0.15	-28.27
1,951.76	0.68	51.65	1,951.71	6.27	6.13	-6.19	0.406	-0.41	1.41
1,964.00	0.69	56.15	1,963.95	6.35	6.25	-6.27	0.132	0.02	11.03
9 5/8" Casing									
1,968.42	0.69	57.75	1,968.37	6.38	6.29	-6.30	0.132	0.02	10.86
1,995.26	1.12	112.40	1,995.20	6.37	6.67	-6.28	1.022	0.48	61.09
2,020.27	4.56	164.56	2,020.18	5.32	7.16	-5.23	4.765	4.13	62.57
2,076.85	8.58	180.86	2,076.38	-1.08	7.70	1.17	2.329	2.13	8.64
2,097.43	9.89	180.78	2,096.70	-4.38	7.65	4.47	1.910	1.91	-0.12
2,101.74	10.33	180.02	2,100.94	-5.13	7.64	5.23	3.200	3.06	-5.29
2,133.86	11.00	184.57	2,132.50	-11.07	7.40	11.16	1.005	0.63	4.25
2,162.64	12.26	191.23	2,160.69	-16.80	6.58	16.89	1.917	1.31	6.94
2,191.04	14.09	193.69	2,188.35	-23.12	5.18	23.18	2.021	1.93	2.60
2,221.57	17.24	200.87	2,217.74	-30.96	2.69	30.99	3.629	3.10	7.06
2,249.96	21.12	203.77	2,244.55	-39.58	-0.87	39.56	4.221	4.10	3.06
2,279.09	25.17	203.19	2,271.33	-50.08	-5.43	50.01	4.178	4.17	-0.60
2,305.36	27.89	201.28	2,294.83	-60.94	-9.86	60.81	3.255	3.11	-2.18
2,335.32	29.38	198.65	2,321.13	-74.43	-14.76	74.24	1.954	1.49	-2.63

Company:	Origin Energy Resources LTD	**Local Co-ordinate Reference:**	Well Rockhopper-1
Project:	Rockhopper-1	**TVD Reference:**	Rotary Table @ 26.00m (Above MSL)
Site:	Rockhopper-1	**MD Reference:**	Rotary Table @ 26.00m (Above MSL)
Well:	Rockhopper-1	**North Reference:**	Grid
Wellbore:	Rockhopper-1 ST	**Survey Calculation Method:**	Minimum Curvature
Design:	Rockhopper-1 ST1 Definitive Survey	**Database:**	EDM 2003.21 Sperry NZ DB21

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
2,364.04	31.58	195.91	2,345.88	-88.34	-19.07	88.10	2.718	2.30	-2.86
2,393.22	33.12	193.25	2,370.53	-103.45	-22.99	103.16	2.156	1.58	-2.73
2,424.12	34.46	191.99	2,396.21	-120.22	-26.74	119.88	1.468	1.30	-1.22
2,453.55	35.45	189.16	2,420.33	-136.79	-29.83	136.41	1.936	1.01	-2.88
2,483.19	36.74	186.44	2,444.28	-154.09	-32.20	153.68	2.082	1.31	-2.75
2,512.34	35.42	185.57	2,467.84	-171.16	-33.99	170.72	1.457	-1.36	-0.90
2,539.22	36.20	185.30	2,489.64	-186.82	-35.48	186.36	0.888	0.87	-0.30
2,567.35	35.96	183.83	2,512.38	-203.33	-36.80	202.85	0.958	-0.26	-1.57
2,596.63	35.85	183.27	2,536.09	-220.47	-37.87	219.98	0.355	-0.11	-0.57
2,623.25	35.76	182.90	2,557.68	-236.02	-38.70	235.52	0.264	-0.10	-0.42
2,653.75	34.92	179.74	2,582.56	-253.65	-39.11	253.14	1.978	-0.83	-3.11
2,684.95	36.05	178.78	2,607.97	-271.76	-38.88	271.25	1.211	1.09	-0.92
2,711.61	35.74	177.14	2,629.57	-287.38	-38.32	286.88	1.137	-0.35	-1.85
2,739.68	35.53	177.12	2,652.38	-303.72	-37.50	303.22	0.225	-0.22	-0.02
2,771.60	35.60	176.05	2,678.35	-322.25	-36.40	321.76	0.589	0.07	-1.01
2,799.25	35.65	174.76	2,700.82	-338.30	-35.11	337.83	0.817	0.05	-1.40
2,830.33	35.66	174.48	2,726.07	-356.34	-33.41	355.89	0.158	0.01	-0.27
2,858.86	35.48	174.28	2,749.28	-372.85	-31.78	372.42	0.225	-0.19	-0.21
2,886.55	35.51	174.82	2,771.83	-388.86	-30.26	388.45	0.341	0.03	0.59
2,912.81	35.67	174.71	2,793.18	-404.08	-28.86	403.68	0.197	0.18	-0.13
2,944.72	35.81	174.86	2,819.08	-422.64	-27.17	422.26	0.155	0.13	0.14
2,970.13	33.67	176.07	2,839.96	-437.07	-26.02	436.71	2.654	-2.53	1.43
3,001.24	33.20	177.20	2,865.92	-454.18	-25.01	453.83	0.752	-0.45	1.09
3,026.70	33.66	177.54	2,887.17	-468.19	-24.37	467.85	0.585	0.54	0.40
3,059.36	34.73	177.11	2,914.18	-486.53	-23.51	486.20	1.008	0.98	-0.39
3,089.54	35.58	176.65	2,938.86	-503.88	-22.57	503.56	0.885	0.84	-0.46
3,118.07	35.65	177.66	2,962.05	-520.47	-21.74	520.16	0.623	0.07	1.06
3,145.40	35.32	177.16	2,984.31	-536.32	-21.02	536.02	0.482	-0.36	-0.55
3,167.94	35.69	178.03	3,002.66	-549.40	-20.48	549.10	0.834	0.49	1.16
3,185.27	35.70	178.52	3,016.73	-559.51	-20.17	559.21	0.495	0.02	0.85
3,203.43	35.56	178.76	3,031.49	-570.08	-19.92	569.79	0.327	-0.23	0.40
3,234.73	35.91	179.25	3,056.90	-588.36	-19.60	588.07	0.433	0.34	0.47
3,264.81	35.73	178.72	3,081.29	-605.96	-19.29	605.67	0.358	-0.18	-0.53
3,293.65	35.03	178.07	3,104.80	-622.65	-18.82	622.37	0.827	-0.73	-0.68
3,324.89	36.06	178.66	3,130.22	-640.81	-18.31	640.53	1.043	0.99	0.57
3,350.05	35.41	178.82	3,150.64	-655.50	-17.98	655.22	0.783	-0.78	0.19
3,379.25	35.71	179.95	3,174.40	-672.48	-17.80	672.20	0.742	0.31	1.16
3,408.14	35.85	180.50	3,197.84	-689.37	-17.87	689.09	0.364	0.15	0.57
3,439.04	36.10	180.75	3,222.84	-707.52	-18.07	707.24	0.281	0.24	0.24
3,467.05	35.47	179.36	3,245.56	-723.90	-18.08	723.61	1.101	-0.67	-1.49
3,482.00	35.47	179.36	3,257.74	-732.57	-17.99	732.29	0.000	0.00	0.00
Projected to TD									

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
1,964.00	1,963.95	9 5/8" Casing	9.625	12.250
961.00	960.99	13 3/8" Casing	13.375	17.500

Company:	Origin Energy Resources LTD	**Local Co-ordinate Reference:**	Well Rockhopper-1
Project:	Rockhopper-1	**TVD Reference:**	Rotary Table @ 26.00m (Above MSL)
Site:	Rockhopper-1	**MD Reference:**	Rotary Table @ 26.00m (Above MSL)
Well:	Rockhopper-1	**North Reference:**	Grid
Wellbore:	Rockhopper-1 ST	**Survey Calculation Method:**	Minimum Curvature
Design:	Rockhopper-1 ST1 Definitive Survey	**Database:**	EDM 2003.21 Sperry NZ DB21

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3,482.00	3,257.74	-732.57	-17.99	Projected to TD

Checked By: _____ Approved By: _____ Date: _____

SECTION 4

A4 Plot

Sperry Drilling

Project: Rockhopper-1
Site: Rockhopper-1
Well: Rockhopper-1
Wellbore: Rockhopper-1 ST
Design: Rockhopper-1 ST1 Definitive Survey

Origin energy

WELL DETAILS: Rockhopper-1 ST1

Water Depth: 74.30

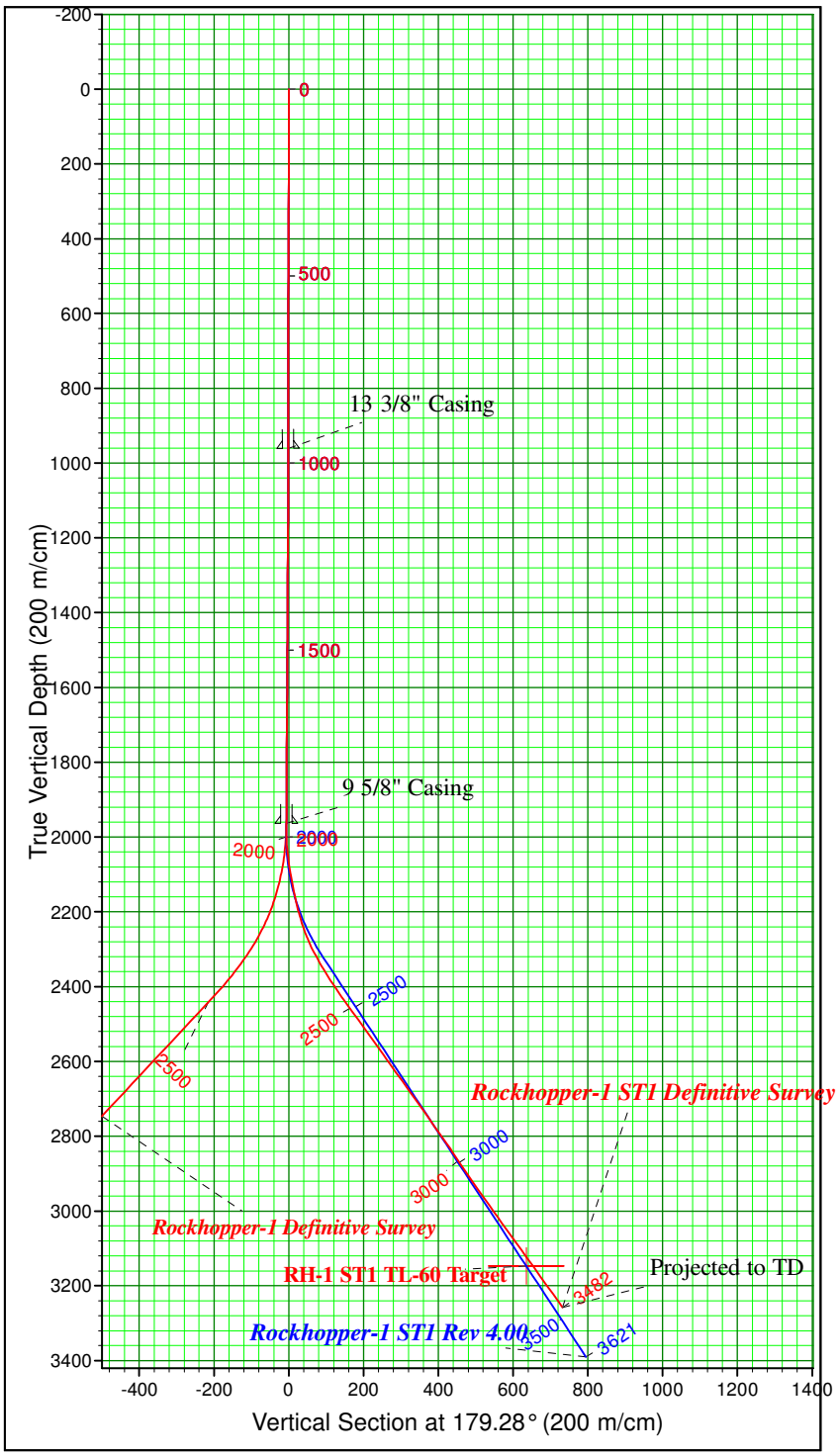
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	5594071.42	366374.03	39° 47' 34.1828 S	145° 26' 21.4660 E

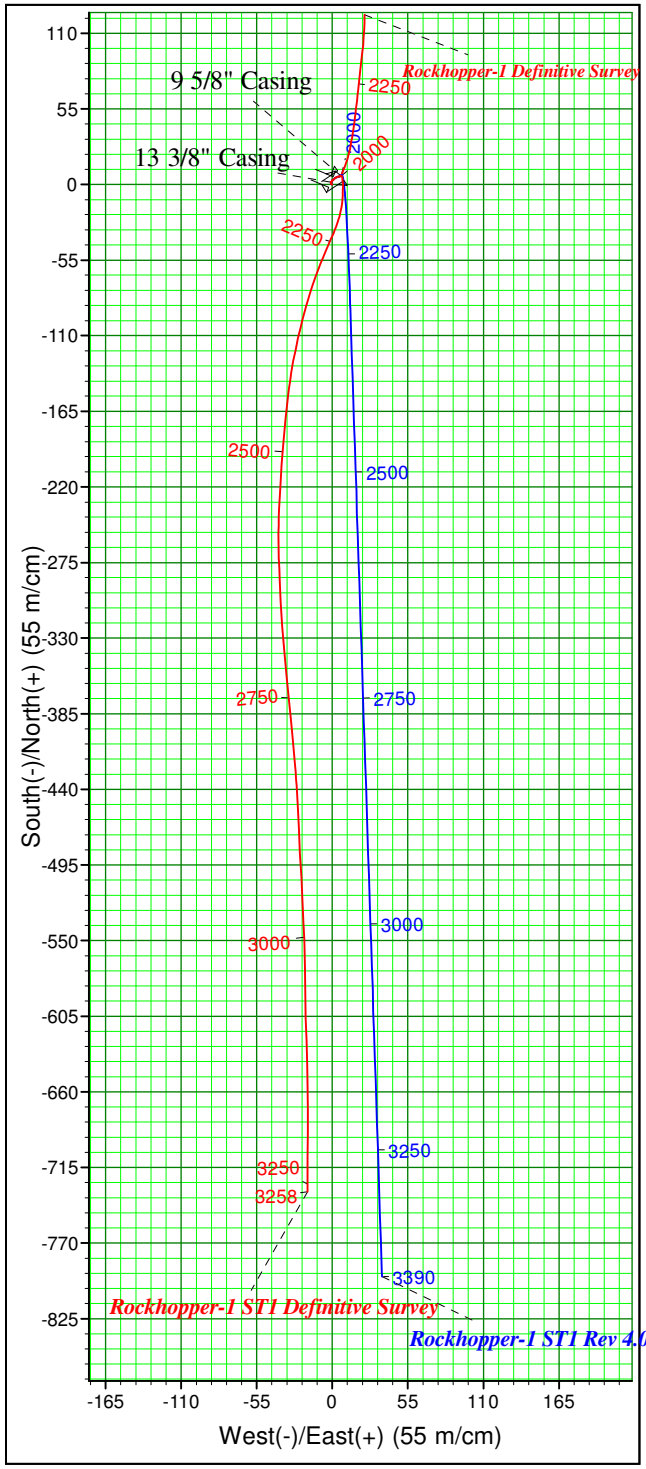
REFERENCE INFORMATION

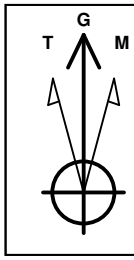
Co-ordinate (N/E) Reference: Well Rockhopper-1, Grid North
Vertical (TVD) Reference: Rotary Table @ 26.00m (Above MSL)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: Rotary Table @ 26.00m (Above MSL)
Calculation Method: Minimum Curvature

CASING DETAILS

TVD	MD	Name	Size
960.99	961.00	13 3/8" Casing	13.375
1963.95	1964.00	9 5/8" Casing	9.625







Azimuths to Grid North
True North: -1.00°
Magnetic North: 11.50°

Magnetic Field
Strength: 60968.9snT
Dip Angle: -70.39°
Date: 4/12/2009
Model: BGGM2009

PROJECT DETAILS: Rockhopper-1

Geodetic System: Universal Transverse Mercator
Datum: GDA94
Ellipsoid: GRS 1980
Zone: Zone 55S (144 E to 150 E)

System Datum: Mean Sea Level

SECTION 5

Drilling Surveys

sperry-sun DRILLING SERVICES

Survey and Drilling Parameters

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Rig : Kan Tan IV

Country : Australia
Location : Bass Basin
Job # : AU-DD-0006791008

North Ref : Mag **Declination :** ° **VS Dir :** 179.28° (from Wellhead)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S (m)	Coordinates E/W (m)	DLS (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	WOB (klbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m)	Orientation To (m)	Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00										Tieon
1968.42	0.69	57.75	1968.4	-6.3	6.4	6.3	0.00	0.00	0.00										Tieon
1995.26	1.12	112.40	1995.2	-6.3	6.4	6.7	1.02	0.48	0.00	4		550	2100	1990	1995	LS			
2020.27	4.56	164.56	2020.2	-5.2	5.3	7.2	4.77	4.13	62.57	30		550	1960	1995	1996	LS		1	
														1996	2005	LS		1	
														2020	2020	LS		1	
2076.85	8.58	180.86	2076.4	1.2	-1.1	7.7	2.33	2.13	8.64	22		550	1920	2020	2033	LS		1	
														2070	2077	HS		1	
2097.43	9.89	180.78	2096.7	4.5	-4.4	7.6	1.91	1.91	-0.12	20	60	550	1900	2077	2080	HS	10	1	
2101.74	10.33	180.02	2100.9	5.2	-5.1	7.6	3.20	3.06	-5.29	20	60	550	1900	2098	2100	HS	10	1	
2133.86	11.00	184.57	2132.5	11.2	-11.1	7.4	1.00	0.63	4.25	20	120	550	1950	2102	2104	HS	22	2	TF 10L Def 75%
														2106	2108	HS		2	
														2110	2112	HS		2	
2162.64	12.26	191.23	2160.7	16.9	-16.8	6.6	1.92	1.31	6.94	20	120	550	1950				22	2	TF 20L Def 90%
2191.04	14.09	193.69	2188.4	23.2	-23.1	5.2	2.02	1.93	2.60	20	120	550	1950				22	2	TF 20L Def 100%
2221.57	17.24	200.87	2217.7	31.0	-31.0	2.7	3.63	3.10	7.06	25	140	550	1950				10	2	TF 20L Def 100%
2249.96	21.12	203.77	2244.6	39.6	-39.6	-0.9	4.22	4.10	3.06	25	150	550	1950				36	2	TF 30L Def 100%
2279.09	25.17	203.19	2271.3	50.0	-50.1	-5.4	4.18	4.17	-0.60	20	120	550	1950				55	2	TF 45L Def 90%
2305.36	27.89	201.28	2294.8	60.8	-60.9	-9.9	3.26	3.11	-2.18	20	130	550	1950				40	2	TF 45L Def 90%
2335.32	29.38	198.65	2321.1	74.2	-74.4	-14.8	1.95	1.49	-2.63	16	130	525	1850				14	2	TF 45L Def 95%
2364.04	31.58	195.91	2345.9	88.1	-88.3	-19.1	2.72	2.30	-2.86	16	130	525	1850				14	2	TF 45L Def 90%
2393.22	33.12	193.25	2370.5	103.2	-103.5	-23.0	2.16	1.58	-2.73	16	130	525	1850				14	2	TF 35L Def 100%
2424.12	34.46	191.99	2396.2	119.9	-120.2	-26.7	1.47	1.30	-1.22	21	130	525	1900				10	2	TF 45L Def 100%
2453.55	35.45	189.16	2420.3	136.4	-136.8	-29.8	1.94	1.01	-2.88	21	120	530	1940				16	2	TF 45L Def 100%
2483.19	36.74	186.44	2444.3	153.7	-154.1	-32.2	2.08	1.31	-2.75	21	120	530	1940				16	2	TF 45L Def 100%
2512.34	35.42	185.57	2467.8	170.7	-171.2	-34.0	1.46	-1.36	-0.90	15	120	550	2250				11	2	CR 70% Def -30 Bias
2539.22	36.20	185.30	2489.6	186.4	-186.8	-35.5	0.89	0.87	-0.30	15	120	550	2250				11	2	CR 90% Def -30 Bias
2567.35	35.96	183.83	2512.4	202.9	-203.3	-36.8	0.96	-0.26	-1.57	15	120	550	2250				11	2	CR 90% Def -30 Bias
2596.63	35.85	183.27	2536.1	220.0	-220.5	-37.9	0.35	-0.11	-0.57	15	120	550	2250				11	2	CR 90% Def -30 Bias
2623.25	35.76	182.90	2557.7	235.5	-236.0	-38.7	0.26	-0.10	-0.42	15	115	600	2280				21	2	CR 90% Def -30 Bias

sperry-sun
DRILLING SERVICES

Survey and Drilling Parameters

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Rig : Kan Tan IV

Country : Australia
Location : Bass Basin
Job # : AU-DD-0006791008

North Ref : Mag **Declination :** ° **VS Dir :** 179.28° (from Wellhead)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S (m)	Coordinates E/W (m)	DLS (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)	WOB (klbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m)	Orientation To (m)	Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
2653.75	34.92	179.74	2582.6	253.1	-253.7	-39.1	1.98	-0.83	-3.11	15	130	600	2300				30	2	TF 40L Def 100%
2684.95	36.05	178.78	2608.0	271.3	-271.8	-38.9	1.21	1.09	-0.92	13	135	610	2420				24	2	TF 20L Def 100%
2711.61	35.74	177.14	2629.6	286.9	-287.4	-38.3	1.14	-0.35	-1.85	10	140	610	2450				48	2	CR 90% Def -40 Bias
2739.68	35.53	177.12	2652.4	303.2	-303.7	-37.5	0.22	-0.22	-0.02	20	120	610	2450				18	2	CR 90% Def -40 Bias
2771.60	35.60	176.05	2678.4	321.8	-322.2	-36.4	0.59	0.07	-1.01	13	135	610	2470				20	2	CR 90% Def -40 Bias
2799.25	35.65	174.76	2700.8	337.8	-338.3	-35.1	0.82	0.05	-1.40	20	135	610	2520				14	2	CR 90% Def -40 Bias
2830.33	35.66	174.48	2726.1	355.9	-356.3	-33.4	0.16	0.01	-0.27	20	135	610	2520				14	2	CR 90% Def -30 Bias
2858.86	35.48	174.28	2749.3	372.4	-372.9	-31.8	0.23	-0.19	-0.21	15	140	600	2450				10	2	CR 90% Def -30 Bias
2886.55	35.51	174.82	2771.8	388.4	-388.9	-30.3	0.34	0.03	0.59	12	140	600	2450				11	2	CR 90% Def -30 Bias
2912.81	35.67	174.71	2793.2	403.7	-404.1	-28.9	0.20	0.18	-0.13	15	110	610	2450				11	2	CR 90% Def -30 Bias
2944.72	35.81	174.86	2819.1	422.3	-422.6	-27.2	0.16	0.13	0.14	15	125	590	2430				12	2	CR 90% Def -30 Bias
2970.10	33.67	176.07	2839.9	436.7	-437.1	-26.0	2.66	-2.53	1.43	15	130	590	2450				12	2	TF 30L Def 100%
3001.24	33.20	177.20	2865.9	453.8	-454.2	-25.0	0.75	-0.45	1.09	15	130	590	2450				12	2	TF 20L Def 100%
3026.70	33.66	177.54	2887.2	467.9	-468.2	-24.4	0.59	0.54	0.40	15	120	590	2450				11	2	TF 20L Def 100%
3059.36	34.73	177.11	2914.2	486.2	-486.5	-23.5	1.01	0.98	-0.39	12	120	590	2450				10	2	TF 20L Def 100%
3089.54	35.58	176.65	2938.9	503.6	-503.9	-22.6	0.88	0.84	-0.46	12	100	590	2430				10	2	CR 100% Bias -30
3118.07	35.65	177.66	2962.1	520.2	-520.5	-21.7	0.62	0.07	1.06	12	100	590	2430				10	2	CR 100% Bias -30
3145.40	35.32	177.16	2984.3	536.0	-536.3	-21.0	0.48	-0.36	-0.55	10	100	590	2430				11	2	CR @100% Bias -30
3167.94	35.69	178.03	3002.7	549.1	-549.4	-20.5	0.83	0.49	1.16	10	125	600	2500				10	3	CR @100% Bias -30
3185.27	35.70	178.52	3016.7	559.2	-559.5	-20.2	0.50	0.02	0.85	10	125	600	2500				25	3	CR @100% Bias -20
3203.43	35.56	178.75	3031.5	569.8	-570.1	-19.9	0.32	-0.23	0.38	5	120	600	2340				4	4	CR @100% Bias -30
3234.73	35.91	179.25	3056.9	588.1	-588.4	-19.6	0.44	0.34	0.48	10	165	580	2350				5	5	CR @100% Bias -30
3264.81	35.73	178.72	3081.3	605.7	-606.0	-19.3	0.36	-0.18	-0.53	15	170	600	2450				13	5	CR @100% Bias -30
3295.65	35.03	178.07	3106.4	623.5	-623.8	-18.8	0.77	-0.68	-0.63	10	100	600	2450				12	6	Home
3324.89	36.06	178.66	3130.2	640.5	-640.8	-18.3	1.11	1.06	0.61	10	150	600	2360				12	8	CR @100% Bias -30
3350.05	35.41	178.82	3150.7	655.2	-655.5	-18.0	0.78	-0.78	0.19	5	170	600	2360				8	8	CR @100% Bias -30
3379.25	35.71	179.95	3174.4	672.2	-672.5	-17.8	0.74	0.31	1.16	10	160	600	2460				7	8	CR @100% Bias -30
3408.14	35.85	180.50	3197.8	689.1	-689.4	-17.9	0.36	0.15	0.57	15	140	600	2490				15	8	CR @100% Bias -30
3439.04	36.10	180.75	3222.9	707.2	-707.5	-18.1	0.28	0.24	0.24	10	120	600	2490				15	8	CR @100% Bias -30
3467.05	35.47	179.36	3245.6	723.6	-723.9	-18.1	1.10	-0.67	-1.49	10	120	600	2490				15	8	HOME
3482.00	35.47	179.36	3257.7	732.3	-732.6	-18.0	0.00	0.00	0.00	10	120	600	2490				10	8	Projected to TD

SECTION 6

BHA Data

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006791008 **BHA# 1**

BHA# 1 : **Date In** 19/01/201 **MD In (m) :** 1998 **TVD In (m) :** 1998 **Date Out** 21/01/201(**MD Out (m):** 2112 **TVD Out (m):** 2111

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
1	8.500	Hughes Christensen	MXL-1x	6062641		1.114	2-3-WT-A -2-I-ER-BHA

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
1	6.750	SSDS	SperryDrill	675400	1.15°		63	32.50

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	8 1/2" Hughes Mill Tooth Bit	6062641	8.500	3.000	8.500	169.30	P 4-1/2" Reg	0.24	
2	6-3/4" SperryDrill Lobe 6/7 - 5.0 stg	675400	6.750	4.498		67.81	B 4-1/2" IF	8.29	0.69
3	8-1/8" Integral Blade Stabilizer	10988869	6.750	2.813	8.125	100.77	B 4-1/2" IF	2.03	9.55
4	6-3/4"PM Sub	194443	6.750	1.920		112.09	B 4-1/2" IF	2.78	
5	6-3/4" HOC	203842	6.750	1.920		112.09	B 4-1/2" IF	3.03	
6	Float Sub w/- Ported Float	11029122	6.750	3.000		97.86	B 4-1/2" IF	0.91	
7	8-1/2" Integral Blade Stabilizer	700802	6.500	2.813	8.500	91.91	B 4-1/2" IF	1.70	18.13
8	6x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	56.16	
9	9x HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
10	6-1/2" Drilling Jars	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
11	5x HWDP		5.000	3.000		49.30	B 4-1/2" IF	47.18	
								216.73	

Parameter	Min	Max	Ave
WOB (klbs) :	20	35	22
RPM (rpm) :	50	65	58
Flow (gpm) :	550	600	553
SPP (psi) :	1890	2200	1962

Activity	Hrs
Drilling :	22.00
Reaming :	0.00
Circ-Other :	10.50
Total :	32.50

BHA Weight	(lb)
in Air (Total) :	48291
in Mud (Total) :	41372
in Air (Bel Jars) :	37663
in Mud (Bel Jars) :	32267

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	1.36	10.54
Azimuth (deg)	129.23	181.54

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	38.00	4			3.00
Rotated :	76.00	6			
Total :	114.00	5	2.41	13.76	2.57

COMMENTS

BRT 22:30 /19/01/10
ART 15:30/21/10/10

OBJECTIVES:

To drill the Cement down to the kick -off point and then orientate the well to 180 degrees south and build some angle of up to 10 degrees before the upcoming Geo-Pilot BHA run.

RESULTS:

The BHA was run in to the top of the Cement at 1970m MD and was drilled with no problems in good time to 1990m MD where the motor was orientated to 180 Degrees and the well was control drilled for the kick -off. The ROP was controlled until 1998m MD where it was confirmed that samples showed 98% formation and kick-off was initiated

The next stand was also control drilled to gain some angle in the hole F 1998-2033m .Sliding mode gave slow ROP and only realised just over 1 degree from a 13m slide .Again a 10m slide was put in and this time realised a 4 degree dog-leg and so with this the slide ratio was reduced .In Slide mode hanging up became a regular occurrence requiring the well to be back-reamed which had a negative effect on ROP and actual on bottom drilling time however tool-face control was reasonable. The well was successfully kicked -off in the required direction .Once the well was drilled to approximately (Projected) 10 Degrees and after discussion with the company Rep it was decided that this was enough angle in the hole to be confident that the BHA could be pulled and the subsequent Geo-Pilot could commence for the remainder of the well to core point .The actual depth and inclination at this point was 2112m and 8.58 degrees .

The subsequent trip out of the hole was good and there was no back-reaming required and there were no tight spots or other such hole problems .The bit for this run was surprisingly more worn than expected and the motor was in good shape with only 1mm of bearing wear .

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006791008 **BHA# 2**

BHA# 2 : **Date In** 21/01/201 **MD In (m) :** 2112 **TVD In (m) :** 2111 **Date Out** 26/01/201(**MD Out (m):** 3158 **TVD Out (m):** 2995

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
2	8.500	Reed Hycalog	RSX616M	220126	6x18	1.491	2-1-CT-C--X-I-NO-DTF

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
2	6.750	SSDS	Geopilot	GP850TL103	0.00°		0	95.75

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Reed Hycalog RSX616M PDC	220126	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.44	
2	7600 Geo-Pilot w/- LSH	GP850TL103	6.750	1.920	8.375	112.09	B 4-1/2" IF	7.08	1.18
3	6-3/4" NM Flex with PCDC	CP1005711	6.750	1.920		112.09	B 4-1/2" IF	2.81	
4	6 3/4 RLL Stab	1016171	6.750	1.920	8.404	112.09	B 4-1/2" IF	0.67	10.77
5	6-3/4" RLL w/DGR + EWR	90232556	6.750	1.920		106.76	B 4-1/2" IF	6.54	
6	6 3/4 ALD C/W Stab	902300556	6.750	1.920	8.250	112.09	B 4-1/2" IF	4.32	20.43
7	6-3/4" CTN + ACAL	902300556	6.750	1.920		112.09	B 4-1/2" IF	4.22	
8	6-3/4" PWD	90222556	6.750	1.920		112.09	B 4-1/2" IF	2.54	
9	6- BAT- Sonic	90230519	6.750	1.920		112.09	B 4-1/2" IF	6.68	
10	6-3/4" HOC	203846	6.750	1.920		112.09	B 4-1/2" IF	3.04	
11	6-3/4" Float Sub w/- Ported Float	11029122	6.750	3.000		97.86	B 4-1/2" IF	0.91	
12	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	40.01
13	3x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	27.92	
14	9x HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
15	6-1/2" Drilling Jar	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
16	5x HWDP		5.000	3.000		49.30	B 4-1/2" IF	47.18	
								210.46	

Parameter	Min	Max	Ave
WOB (klbs) :	10	25	16
RPM (rpm) :	80	150	125
Flow (gpm) :	525	610	573
SPP (psi) :	1850	2520	2228

Activity	Hrs
Drilling :	79.50
Reaming :	11.00
Circ-Other :	5.25
Total :	95.75

BHA Weight	(lb)
in Air (Total) :	48329
in Mud (Total) :	41405
in Air (Bel Jars) :	37701
in Mud (Bel Jars) :	32299

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	10.54	35.53
Azimuth (deg)	181.54	177.65

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			0.30
Rotated :	1046.00	13	0.20	0.20	
Total :	1046.00	13	0.72	-0.11	0.72

COMMENTS

Tools Initialized: 23:30hrs (BRT)
ABG - 1.49m Den - 20.74m Son - 31.89m
Svy - 8.74m Cal - 23.79m
Gam - 11.51m Por - 24.64m
Res - 13.86m PWD - 27.59m

OBJECTIVES:

To continue directionally drilling 8 ½" hole section to TD building inclination and turning azimuth with an average dogleg of 3 degree/30m.This BHA will be run to drill to the first core point then on to the second core point and then to TD as picked by Geology

RESULTS:

The BHA was run to bottom with no hole problems. Response was reasonable throughout the run but was hampered by vibration and stick-slip resulting in pulling off bottom to send down -links at times .. Steering mode was used for the build up section, from 2112m to 2500m, then switched to cruise mode for the remainder of the well other than a two or three occasions when it was put back in to steering mode to combat right hand bit walk . Effective dog leg produced was only 3+ degrees per 30m requiring 100% deflection and lower flow-rate to maintain same .

During the run high stick slip and torsional vibration exposed all tools to extremely high levels of shock. Every possible effort was endeavoured to mitigate stick slip and torsional vibration with limited success. Appeared the bit was generating the down hole torque .The formation was very inter-bedded and despite constant variation of parameters and best drilling practices being used it was almost impossible to stop, resulting in periods off bottom to allow energy out of the string before re-attempting to drill ahead

Frequent false downlinks were received by Geo-Pilot believed to be initiated by the perceived stick-slip down hole. Some down-links could not be sent due to stick-slip and so some were sent while off bottom and stationary before drilling ahead .In the later section of the well downlinks were sent after the survey to ensure the tool was set before drilling ahead .This BHA was pulled when communication was lost at he RLL tools was lost due to the massive stick-slip shocks sustained during this section .The subsequent trip out of the hole was without problems and the bit was worn more than expected from this run.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006791008 **BHA# 3**

BHA# 3 : **Date In** 26/01/201 **MD In (m) :** 3158 **TVD In (m) :** 2995 **Date Out** 28/01/201(**MD Out (m):** 3196 **TVD Out (m):** 3025

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
3	8.500	Security DBS	FMF3653Z	11374625	3x15, 3x12	0.849	0-0-NO-A -X-I-NO-CP

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
3	6.750	SSDS	Geopilot	GP850TL134	0.00°		0	13.50

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	SDBS FMF3653Z PDC	11374625	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.39	
2	7600 Geo-Pilot w/- LSH	GP850TL134	6.750	1.920	8.375	112.09	B 4-1/2" IF	7.08	1.13
3	6-3/4" NM Flex with PCDC	CP919968	6.750	1.920		112.09	B 4-1/2" IF	2.76	
4	6-3/4" RLL w/- Stab	90224657	6.750	1.920	8.375	112.09	B 4-1/2" IF	0.62	10.63
5	6-3/4" RLL w/DGR + EWR	90224657	6.750	1.920		106.76	B 4-1/2" IF	6.53	
6	6-3/4" ALD w/- Stab	902300556	6.750	1.920	8.125	112.09	B 4-1/2" IF	4.99	20.99
7	6-3/4" CTN	902322813	6.750	1.920		112.09	B 4-1/2" IF	4.15	
8	6-3/4" PWD	90215164	6.750	1.920		112.09	B 4-1/2" IF	2.53	
9	6- BAT- Sonic	90235228	6.750	1.920		112.09	B 4-1/2" IF	6.72	
10	6-3/4" HOC	302842	6.750	1.920		112.09	B 4-1/2" IF	3.03	
11	6-3/4" ACAL	90235611	6.750	1.920		112.09	B 4-1/2" IF	1.81	
12	6-3/4" Float Sub w/- Ported Float	11029122	6.750	3.000		97.86	B 4-1/2" IF	0.91	
13	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	42.37
14	3x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	27.92	
15	9x HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
16	6-1/2" Drilling Jar	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
17	5x HWDP		5.000	3.000		49.30	B 4-1/2" IF	47.18	
								212.73	

Parameter	Min	Max	Ave
WOB (klbs) :	10	10	10
RPM (rpm) :	125	125	125
Flow (gpm) :	600	600	600
SPP (psi) :	2500	2500	2500

Activity	Hrs
Drilling :	5.00
Reaming :	2.50
Circ-Other :	6.00
Total :	13.50

BHA Weight	(lb)
in Air (Total) :	49154
in Mud (Total) :	42186
in Air (Bel Jars) :	38525
in Mud (Bel Jars) :	33064

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	35.53	35.62
Azimuth (deg)	177.65	178.66

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			
Rotated :	38.00	8			
Total :	38.00	8	0.07	0.80	0.47

COMMENTS

Tools Initialized:26/10/10 14:55hrs (BRT) 23:00hrs 27/01/10 (ART)
ABG - 1.45m Den - 21.29m ACAL - 39.17m
Svy - 8.69m Por - 24.49m
Gam - 11.36m PWD - 28.04m
Res - 13.68m Son - 32.36m

OBJECTIVES:

To drill 30m to the first core point 100m to the second core point and then to TD at 3630m +/_ holding tangent angle and landing to the south of the target TL 60

RESULTS:

This BHA was run to bottom and the hole was re-logged on the way down at the same time .The hole packed off at a few points on the way down which were specifically 3150md and 3152md .Once on bottom drilling began in inclination cruise with a 30 L bias to negate the right hand turn expected from the bit .This section was to be drilled to core point as picked by Geologist .The first drilled depth was F 3158m 3180m MD where the pipe was reciprocated until logs were sent and samples obtained for Geology .This section also suffered from stick-slip and lateral vibration and all attempts were made to mitigate same but the parameters found to minimise this also slowed ROP to an unacceptable 1-1.5m/hr and so again parameters were modified to regain an acceptable ROP while minimising stick-slip .Again this was not successful

The second drilled depth was F3180m-3190m MD as directed by Geology for the core point and once again the pipe was reciprocated while logs were sent and samples got for Geology .This section was the same as before with lateral vibration and stick-slip always present .The parameters were constantly modified to try and prevent this but once again was unsuccessful .This was considered to be core point and the BHA was tripped out of hole .There were no problems on the trip out .The Geo-Pilot performed as expected.

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DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006791008 **BHA# 4**

BHA# 4 : **Date In** 28/01/201 **MD In (m) :** 3196 **TVD In (m) :** 3025 **Date Out** 29/01/201(**MD Out (m):** 3213 **TVD Out (m):** 3039

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
4	8.500	Corepro		83691		0.000	0-0-NO-A -X-I-NO-PR

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Core Head	83691	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.37	
2	Stabilizer	WO137258	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	0.71
3	Outer Core Barrel	WO135-256	7.125	5.625		51.19	B 4-1/2" IF	5.33	
4	Stabilizer	WO137-237	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	6.80
5	Outer Core Barrel	WO135264	7.125	5.625		51.19	B 4-1/2" IF	5.33	
6	Stabilizer	WO137-015	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	12.88
7	Outer Core Barrel	WO135-1974	7.125	5.625		51.19	B 4-1/2" IF	5.33	
8	Stabilizer	WO137-219	6.500	5.625	8.438	28.40	B 4-1/2" IF	0.76	18.97
9	Outer Core Barrel	WO135-098	7.125	5.625		51.19	B 4-1/2" IF	5.33	
10	Stabilizer	WO137-219	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	25.11
11	Outer Core Barrel	W0135-098	7.063	1.938		123.47	B 4-1/2" IF	5.33	
12	Stabilizer	WO1476014	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	31.14
13	Top Head	wo1856027	7.063	2.875		111.40	B 4-1/2" IF	0.60	
14	6x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	56.16	
15	6-1/2" Drilling Jar	17602019	6.500	2.750		92.85	B 4-1/2" IF	9.94	
16	2 x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	18.78	
17	15 x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	141.19	
								258.25	

Parameter	Min	Max	Ave
WOB (klbs) :	5	5	5
RPM (rpm) :	120	120	120
Flow (gpm) :	600	600	600
SPP (psi) :	2340	2340	2340

Activity	Hrs
Drilling :	5.00
Reaming :	1.50
Circ-Other :	0.00
Total :	6.50

BHA Weight (lb)	
in Air (Total) :	57119
in Mud (Total) :	49022
in Air (Bel Jars) :	25103
in Mud (Bel Jars) :	21545

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	35.62	35.67
Azimuth (deg)	178.66	178.90

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			0.00
Rotated :	17.00	3	0.00	0.00	
Total :	17.00	3	0.09	0.44	0.27

COMMENTS

OBJECTIVES:

To retreive 30m of core F 3196m-3226m MD

RESULTS:

This was core BHA and was a success in that the13.4m of core recovered was deemed to be good enough to drill ahead to second core point for evaluation .

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DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006791008 **BHA# 5**

BHA# 5 : **Date In** 29/01/201 **MD In (m) :** 3213 **TVD In (m) :** 3039 **Date Out** 30/01/201(**MD Out (m):** 3283 **TVD Out (m):** 3096

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
3rr1	8.500	Security DBS	FMF3653Z	11374625	3x15, 3x12	0.849	0-0-ER-A -X-I-NO-CP

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
4	6.750	SSDS	Geopilot	GP850TL134	0.00°		0	26.50

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	SDBS FMF3653Z PDC	11374625	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.39	
2	7600 Geo-Pilot w/- LSH	GP850TL134	6.750	1.920	8.375	112.09	B 4-1/2" IF	7.08	1.13
3	6-3/4" NM Flex with PCDC	CP919968	6.750	1.920		112.09	B 4-1/2" IF	2.76	
4	6-3/4" RLL w/- Stab	90224657	6.750	1.920	8.375	112.09	B 4-1/2" IF	0.62	10.63
5	6-3/4" RLL w/DGR + EWR	90224657	6.750	1.920		106.76	B 4-1/2" IF	6.53	
6	6-3/4" ALD w/- Stab	902300556	6.750	1.920	8.125	112.09	B 4-1/2" IF	4.99	20.99
7	6-3/4" CTN	902322813	6.750	1.920		112.09	B 4-1/2" IF	4.15	
8	6-3/4" PWD	90215164	6.750	1.920		112.09	B 4-1/2" IF	2.53	
9	6- BAT- Sonic	90230519	6.750	1.920		112.09	B 4-1/2" IF	6.68	
10	6-3/4" HOC	302842	6.750	1.920		112.09	B 4-1/2" IF	3.03	
11	6-3/4" ACAL	90235611	6.750	1.920		112.09	B 4-1/2" IF	1.81	
12	6-3/4" Float Sub w/- Ported Float	11029122	6.750	3.000		97.86	B 4-1/2" IF	0.91	
13	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	42.33
14	3x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	27.92	
15	9x HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
16	6-1/2" Drilling Jar	17602177	6.500	2.750		92.85	B 4-1/2" IF	9.84	
17	5x HWDP		5.000	3.000		49.30	B 4-1/2" IF	47.18	
								212.69	

Parameter	Min	Max	Ave
WOB (klbs) :	5	15	12
RPM (rpm) :	120	170	166
Flow (gpm) :	580	600	592
SPP (psi) :	2330	2450	2404

Activity	Hrs
Drilling :	9.50
Reaming :	2.00
Circ-Other :	1.50
Total :	13.00

BHA Weight	(lb)
in Air (Total) :	49139
in Mud (Total) :	42099
in Air (Bel Jars) :	38511
in Mud (Bel Jars) :	32993

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	35.67	35.32
Azimuth (deg)	178.90	178.34

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			
Rotated :	70.00	7			
Total :	70.00	7	-0.15	-0.24	0.21

COMMENTS

Tools Initialized: hrs (BRT)29/01/10 @11:40 - 30/01/10 @18:15(ART)
ABG - 1.45m Den - 21.29m ACAL 39.13 m
Svy - 8.69m Por - 24.49m
Gam - 11.36m PWD - 28.04m
Res - 13.68m Son - 32.32m

OBJECTIVES:

This BHA will be run to continue tangent section to prognosed core point number 2 then continue to hold tangent angle and inclination to through target TL60 and to TD at 3630m+/_md

RESULTS:

This BHA was the same as BHA#3 other than the Bat-sonic was run .The bit was the same as the previous run which was such a short run that it was difficult to get a feel for the characteristics of it .This BHA was tripped to bottom with no problems and the hole was clean on the trip in .The bit was broken in on bottom to try and establish a new pattern on bottom where the core BHA had left off .Once broken in the RPM was brought up to 155RPM in order to try and minimise stick-slip ,and then on to 170 RPM seen at surface which was deemed to be as fast as the rotary could be turned .Stick-slip was still an issue but marginally less than before .Again varying parameters were attempted and it appeared that 140RPM with 20K WOB seemed to settle the stick-slip, however this was short lived .

Many combinations of WOB and RPM were adopted but as stated earlier only slightly better than before .Again this was only a short run F 3213m -3284m(71m) and again it was very difficult gauge BHA characteristics but overall on this run it would seem to have been an improvement on the previous BHA.

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DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006791008 **BHA# 6**

BHA# 6 : **Date In** 30/01/201 **MD In (m) :** 3283 **TVD In (m) :** 3096 **Date Out** 1/02/2010 **MD Out (m):** 3298 **TVD Out (m):** 3108

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
4rr1	8.500	Corepro		83691		0.000	0-0-NO-A -X-I-NO-PR

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Core Head	83691	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.37	
2	Stabilizer	WO137258	6.750	5.625	8.438	37.26	B 4-1/2" Reg	0.76	0.71
3	Outer Core Barrel	WO135-256	7.125	5.625		51.19	B 4-1/2" IF	5.33	
4	Stabilizer	WO137-237	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	6.80
5	Outer Core Barrel	WO135264	7.125	5.625		51.19	B 4-1/2" IF	5.33	
6	Stabilizer	WO137-015	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	12.88
7	Outer Core Barrel	WO135-1974	7.125	5.625		51.19	B 4-1/2" IF	5.33	
8	Stabilizer	WO137-219	6.500	5.625	8.438	28.40	B 4-1/2" IF	0.76	18.97
9	Outer Core Barrel	WO135-098	7.125	5.625		51.19	B 4-1/2" IF	5.33	
10	Stabilizer	WO137-219	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	25.11
11	Outer Core Barrel	W0135-098	7.063	1.938		123.47	B 4-1/2" IF	5.33	
12	Stabilizer	WO1476014	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	31.14
13	Top Head	wo1856027	7.063	2.875		111.40	B 4-1/2" IF	0.60	
14	6x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	56.16	
15	6-1/2" Drilling Jar	17602019	6.500	2.750		92.85	B 4-1/2" IF	9.94	
16	2 x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	18.78	
17	15 x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	141.19	
								258.25	

Parameter	Min	Max	Ave
WOB (klbs) :	10	13	10
RPM (rpm) :	100	170	105
Flow (gpm) :	600	600	600
SPP (psi) :	2450	2450	2450

Activity	Hrs
Drilling :	3.00
Reaming :	0.50
Circ-Other :	1.00
Total :	4.50

BHA Weight (lb)	
in Air (Total) :	57119
in Mud (Total) :	48935
in Air (Bel Jars) :	25103
in Mud (Bel Jars) :	21506

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	35.32	35.11
Azimuth (deg)	178.34	178.12

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			
Rotated :	15.00	5			
Total :	15.00	5	-0.41	-0.44	0.48

COMMENTS

OBJECTIVES:

THis BHA will be run to recover 50-70m of core as picked by Geology.

RESULTS:

This BHA cut core from 3283m to 3298.5m before it became jammed. Assembly was then pulled out of hole and 14.08m of core was recovered and was considered not to be enough for evaluation and so a third run would be done..

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DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006791008 **BHA# 7**

BHA# 7 : **Date In** 1/02/2010 **MD In (m) :** 3298 **TVD In (m) :** 3108 **Date Out** 2/02/2010 **MD Out (m):** 3309 **TVD Out (m):** 3117

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
4rr2	8.500	Corepro		83691		0.000	0-0-NO-A -X-I-NO-CP

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Core Head	83691	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.37	
2	Stabilizer	WO137258	6.750	5.625	8.438	37.26	B 4-1/2" Reg	0.76	0.71
3	Outer Core Barrel	WO135-256	7.125	5.625		51.19	B 4-1/2" IF	5.33	
4	Stabilizer	WO137-237	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	6.80
5	Outer Core Barrel	WO135264	7.125	5.625		51.19	B 4-1/2" IF	5.33	
6	Stabilizer	WO137-015	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	12.88
7	Outer Core Barrel	WO135-1974	7.125	5.625		51.19	B 4-1/2" IF	5.33	
8	Stabilizer	WO137-219	6.500	5.625	8.438	28.40	B 4-1/2" IF	0.76	18.97
9	Outer Core Barrel	WO135-098	7.125	5.625		51.19	B 4-1/2" IF	5.33	
10	Stabilizer	WO137-219	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	25.11
11	Outer Core Barrel	W0135-098	7.063	1.938		123.47	B 4-1/2" IF	5.33	
12	Stabilizer	WO1476014	6.750	5.625	8.438	37.26	B 4-1/2" IF	0.76	31.14
13	Top Head	wo1856027	7.063	2.875		111.40	B 4-1/2" IF	0.60	
14	6x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	56.16	
15	6-1/2" Drilling Jar	17602019	6.500	2.750		92.85	B 4-1/2" IF	9.94	
16	2 x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	18.78	
17	15 x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	141.19	
								258.25	

Parameter	Min	Max	Ave
WOB (klbs) :	10	10	10
RPM (rpm) :	100	100	100
Flow (gpm) :	600	600	600
SPP (psi) :	2450	2450	2450

Activity	Hrs
Drilling :	1.50
Reaming :	1.00
Circ-Other :	0.50
Total :	3.00

BHA Weight (lb)	
in Air (Total) :	57119
in Mud (Total) :	48935
in Air (Bel Jars) :	25103
in Mud (Bel Jars) :	21506

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	35.11	35.50
Azimuth (deg)	178.12	178.34

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			
Rotated :	11.00	7			
Total :	11.00	7	1.06	0.61	1.11

COMMENTS

OBJECTIVES:

This BHA will be run to retrieve another 20 m of core if possible due to the previous core sample being shorter than expected

RESULTS:

This BHA cut core from 3298.5m to 3309m before it became jammed. Assembly was then pulled out of hole and 9.50m of core was recovered.

sperry-sun
DRILLING SERVICES

BHA Report

Operator : Origin Energy Resources Ltd
Well : Rockhopper-1 ST1
Country : Australia
Location : Bass Basin
Rig : Kan Tan IV
Job # : AU-DD-0006791008 **BHA# 8**

BHA# 8 : **Date In** 2/02/2010 **MD In (m) :** 3309 **TVD In (m) :** 3117 **Date Cur** 4/02/2010 **MD Cur (m):** 3482 **TVD Cur (m):** 3258

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in²)	Dull Condition
3rr2	8.500	Security DBS	FMF3653Z	11374625	3x15, 3x12	0.849	0-0-RR-A -X-I-NO-TD

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
5	6.750	SSDS	Geopilot	GP850TL134	0.00°		68	54.00

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	SDBS FMF3653Z PDC	11374625	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.39	
2	7600 Geo-Pilot w/- LSH	GP850TL134	6.750	1.920	8.375	112.09	B 4-1/2" IF	7.08	1.13
3	6-3/4" NM Flex with PCDC	CP919968	6.750	1.920		112.09	B 4-1/2" IF	2.76	
4	6-3/4" RLL w/- Stab	90224657	6.750	1.920	8.375	112.09	B 4-1/2" IF	0.62	10.63
5	6-3/4" RLL w/DGR + EWR	90224657	6.750	1.920		106.76	B 4-1/2" IF	6.53	
6	6-3/4" ALD w/- Stab	902300556	6.750	1.920	8.125	112.09	B 4-1/2" IF	4.99	20.99
7	6-3/4" CTN	902322813	6.750	1.920		112.09	B 4-1/2" IF	4.15	
8	6-3/4" PWD	90215164	6.750	1.920		112.09	B 4-1/2" IF	2.53	
9	6- BAT- Sonic	90230519	6.750	1.920		112.09	B 4-1/2" IF	6.68	
10	6-3/4" HOC	302842	6.750	1.920		112.09	B 4-1/2" IF	3.03	
11	6-3/4" ACAL	90235611	6.750	1.920		112.09	B 4-1/2" IF	1.81	
12	6-3/4" Float Sub w/- Ported Float	11029122	6.750	3.000		97.86	B 4-1/2" IF	0.91	
13	8-1/2" Integral Blade Stabilizer	700802	6.500	2.875	8.500	90.96	B 4-1/2" IF	1.70	42.33
14	3x Drill collar		6.750	2.875		99.83	B 4-1/2" IF	27.92	
15	9x HWDP		5.000	3.000		49.30	B 4-1/2" IF	84.57	
16	6-1/2" Drilling Jar	17602019	6.500	2.750		92.85	B 4-1/2" IF	9.94	
17	5x HWDP		5.000	3.000		49.30	B 4-1/2" IF	47.18	
								212.79	

Parameter	Min	Max	Ave
WOB (klbs) :	5	15	10
RPM (rpm) :	80	170	140
Flow (gpm) :	600	600	600
SPP (psi) :	2360	3260	2505

Activity	Hrs
Drilling :	19.50
Reaming :	3.50
Circ-Other :	4.50
Total :	27.50

BHA Weight	(lb)
in Air (Total) :	49170
in Mud (Total) :	42125
in Air (Bel Jars) :	38511
in Mud (Bel Jars) :	32993

Drill String	OD(in)	Len (m)

PERFORMANCE

	In	Out
Inclination (deg)	35.50	35.47
Azimuth (deg)	178.34	179.36

	Distance (m)	ROP (m/hr)	Build (°/30m)	Turn (°/30m)	DLS (°/30m)
Oriented :	0.00	0			0.40
Rotated :	173.00	9	0.30	0.30	
Total :	173.00	9	-0.01	0.18	0.10

COMMENTS

Tools Initialized: hrs (BRT) 02/02/10 @ 06:40
ABG - 1.45m Den - 21.29m ACAL 39.13 m
Svy - 8.69m Por - 24.49m
Gam - 11.36m PWD - 28.04m
Res - 13.68m Son - 32.32m

OBJECTIVES:

This BHA will be run to drill from the core point at 3309m to Prognosed TD at 3620m intersecting the Target TL -60 holding inclination and direction as required for the target.

RESULTS:

This BHA has been run before and after the core point .Again from the outset this BHA suffered from stick -slip as it had done on the previous runs .The stick-slip seen was severe and varying parameters were adopted to try and mitigate it .From the core point at 3309m MD the parameters were 5-15K WOB with 120-170 RPM being the range with periods off bottom to allow the inertia out of the string before re-starting drilling .These parameters were modified almost continuously and at times 120-130 RPM and 10-15K WOB seemed to be the best for a while but was short lived and again severe stick -slip was seen .The rig heave during this was almost as much as the rig was designed for and the compensator seemed to struggle to keep up with the heave and only compounded the stick-slip as keeping a constant weight on bit was extremely difficult if not impossible.

At around 3430m MD the formation changed and the volcanic formations were coming in which not only gave the same stick-slip issues but was now coupled with vibration also .Once again parameters were changed and modified as necessary but it was only minimised as far as possible and not mitigated .ROP during this section was average 10m/hr and although the Geo-Pilot was run out of specification it made the run to TD at 3482m MD as advised by Geologist .The Subsequent trip out of the hole was good with just about 15k drag at some points but easily worked through.

APPENDIX 10: WIRELINE LOGGING REPORT

Rockhopper-1ST1
END OF WELL REPORT

Client: **Origin Energy Resources Ltd.**

Rig: **Kan Tan IV**

Engineers: **P. Jara Guzman, T. Ngartamta**

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HIGHLIGHTS

- Zero HSE incidents during the entire logging operation.
- Good communication between rig and Schlumberger crew leading to a safe and efficient rig up/rig down; JSA and Risk assessments were performed prior to rig up and rig down. All safety hazards (radiation, pressure, and manual handling) were discussed with the rig crews and Origin representatives. Tool b ox technique was used during all pre-job meetings.
- Successfully obtained good quality real time data.
- Total of 10 samples were recovered over reservoir and desired stations during Quicksilver and Dual Packer runs.
- Formation pressure.
- ECRD (fusible weakpoint) used for runs 2, 3 and 7 to allow increased pulling capacity.
- Real Time Support in data monitoring during all logging runs.
- Successful fishing operation was completed to recovered MSCT toolstring. Total of 19 cores were recovered once tool reached the surface.

LOWLIGHTS

- WMC system presented occasional pressure drops affecting depth accuracy.
- Sticking issues were encountered during the logging operation, particularly during the MDT and Dual Packer runs.

LOGGING SUMMARY

Open Hole Operations (8.5")	Operating Time (hrs)	Down Time (hrs)
Suite 1		
Run 1: SP-HRLA-PEX-HNGS-CMR+-GR	19.67	0
Run 2: XPT-GR-ECRD	6.75	0
Run 3: MDT(Quicksilver)-GR-ECRD	55.08	3.21
Run 4: DSI-FMI-GR	11.67	0.75
Run 5: ZVSI-GR	12.25	0.25
Run 6: MSCT-GR	13.75	0
Run 7: Dual Packer-GR-ECRD	66.57	0
TOTAL	185.74	4.21

CREW DETAILS

POSITION	FIRST CREW	SECOND CREW
Engineer	Patricia Guzman	Togto Ngartamta
Crew Chief	Gerald Brady	Nathan Franklin
Operator	Robin Oliver	Mark Armstrong
Specialists	Bruce Forrest	Jaime Palmera
Field Quality Coach	Wichien Nimmolrat	

SUITE 1: OPEN HOLE OPERATIONS

RUN 1: SP-HRLA-PEX-HNGS-CMR+-GR (ECRD)

Objectives:

- **Acquire good quality basic log data for petrophysical evaluation (GR, SP, density, neutron, and resistivity) to aid tops picking and correlation, estimate lithology, N/G, porosity and fluid type.**
- **To obtain a Spectral GR log for the mineral composition of formation and determination of shale content.**
- **Acquire CMR to evaluate fixed and moveable fluid volumes in the reservoir.**

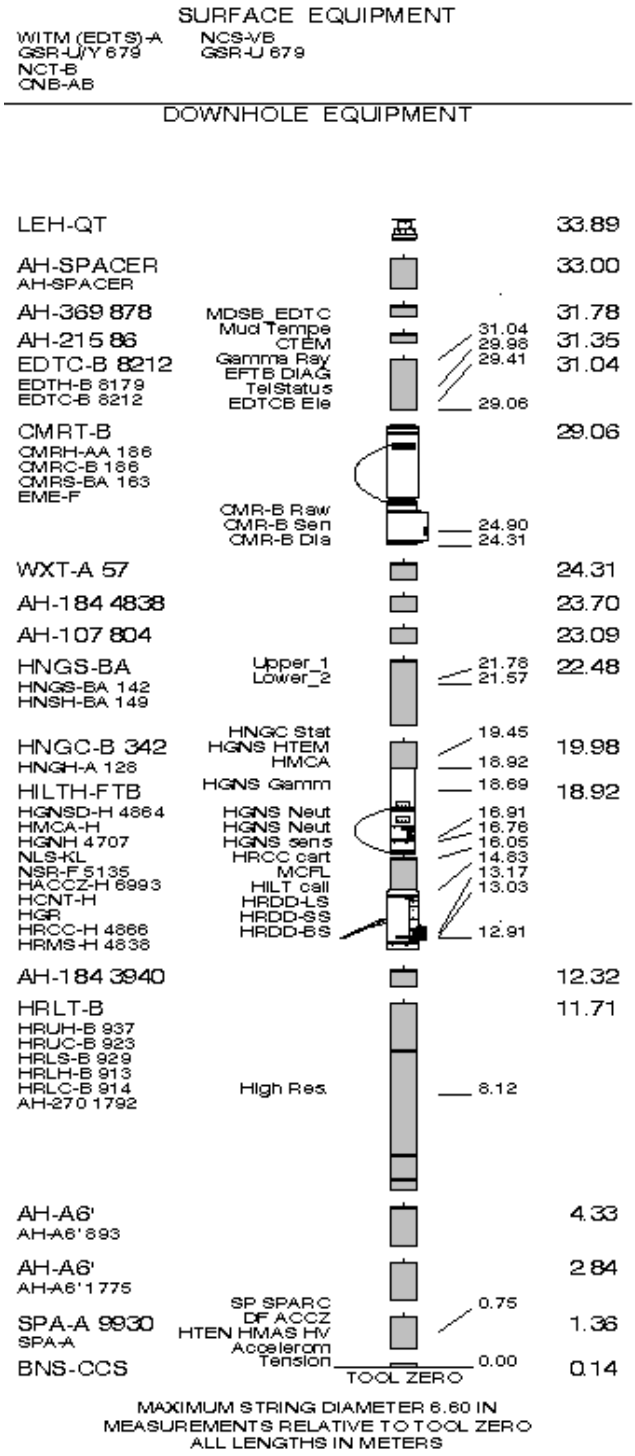
Summary of operation:

Rigged up @	**08:00 (4-Feb-2010)**
Rigged down @	**02:30 (5-Feb-2010)**
Total time:	**19.67 hours**
Down time:	**0.0 hours**

Remarks:

- Rockhopper- 1 ST1 is a deviated well located in T/18P in the Bass Basin.
- CMR, HNGS and PEX eccentered by bowsprings. HRLA run with 4 X 1.5" standoffs.
- Toolstring run as per toolsketch.
- CMR+AT run in a separate pass with a switch.
- CMR main pass logged from 3457 m to 2800 m and repeat pass logged from 3330 m to 3285 m, as per client request.
- CMR data recorded at 500 fph, T2 cut off = 33 msec and sampling rate of 7.5 in.
- HNGS corrected for potassium and barite.
- Neutron corrected for borehole salinity, hole size, mud weight, pressure/temperature, standoff.
- Density corrected for hole size and mud weight.
- Main pass logged from TD to 9.625" casing shoe, as per client request.
- Repeat pass logged from 3330 m to 3285 m, as per client request.
- Log correlated to driller's casing shoe as per client request.
- Maximum recorded temperature from logging head thermometers was 131 degC.

Tool String


SURFACE EQUIPMENT
WITM (EDTS)-A
GSR-U/Y 679
NCT-B
CNB-AB
NCS-VB
GSR-U 679
DOWNHOLE EQUIPMENT
LEH-QT
33.89
AH-SPACER
AH-SPACER
33.00
AH-369 878
31.78
AH-215 86
31.35
EDTC-B 8212
EDTH-B 8179
EDTC-B 8212
31.04
MDSB_EDTC
Mud Tempe
CTEM
Gamma Ray
EFTB DIAG
TelStatus
EDTCB Ele
31.04
29.98
29.41
29.06
CMRT-B
CMRH-AA 186
CMRC-B 186
CMRS-BA 163
EME-F
29.06
CMR-B Raw
CMR-B Sen
CMR-B Dia
24.90
24.31
WXT-A 57
24.31
AH-184 4838
23.70
AH-107 804
23.09
HNGS-BA
HNGS-BA 142
HNSH-BA 149
22.48
Upper_1
Lower_2
21.78
21.57
HNGC-B 342
HNGH-A 128
19.98
HNGC Stat
HGNS HTEM
HMCA
19.45
18.92
HILTH-FTB
HGNSD-H 4864
HMCA-H
HGNH 4707
NLS-KL
NSR-F 5135
HACCZ-H 6993
HCNT-H
HGR
HRCC-H 4866
HRMS-H 4838
18.92
HGNS Gamm
HGNS Neut
HGNS Neut
HGNS sens
HRCC cart
MCFL
HILT call
HRDD-LS
HRDD-SS
HRDD-BS
18.69
16.91
16.76
16.05
14.63
13.17
13.03
12.91
AH-184 3940
12.32
HRLT-B
HRUH-B 937
HRUC-B 923
HRLS-B 929
HRLH-B 913
HRLC-B 914
AH-270 1792
11.71
High Res
8.12
AH-A6'
AH-A6' 893
4.33
AH-A6'
AH-A6' 1775
2.84
SPA-A 9930
SPA-A
1.36
SP SPARC
DF ACCZ
HTEN HMAS HV
Accelerom
Tension
0.75
BNS-CCS
0.14
0.00
TOOL ZERO
MAXIMUM STRING DIAMETER 6.60 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

RUN 2: XPT-GR (ECRD)

Objectives:

- **Acquire high quality pressure data to quantify reservoir pressures and fluid gradients.**

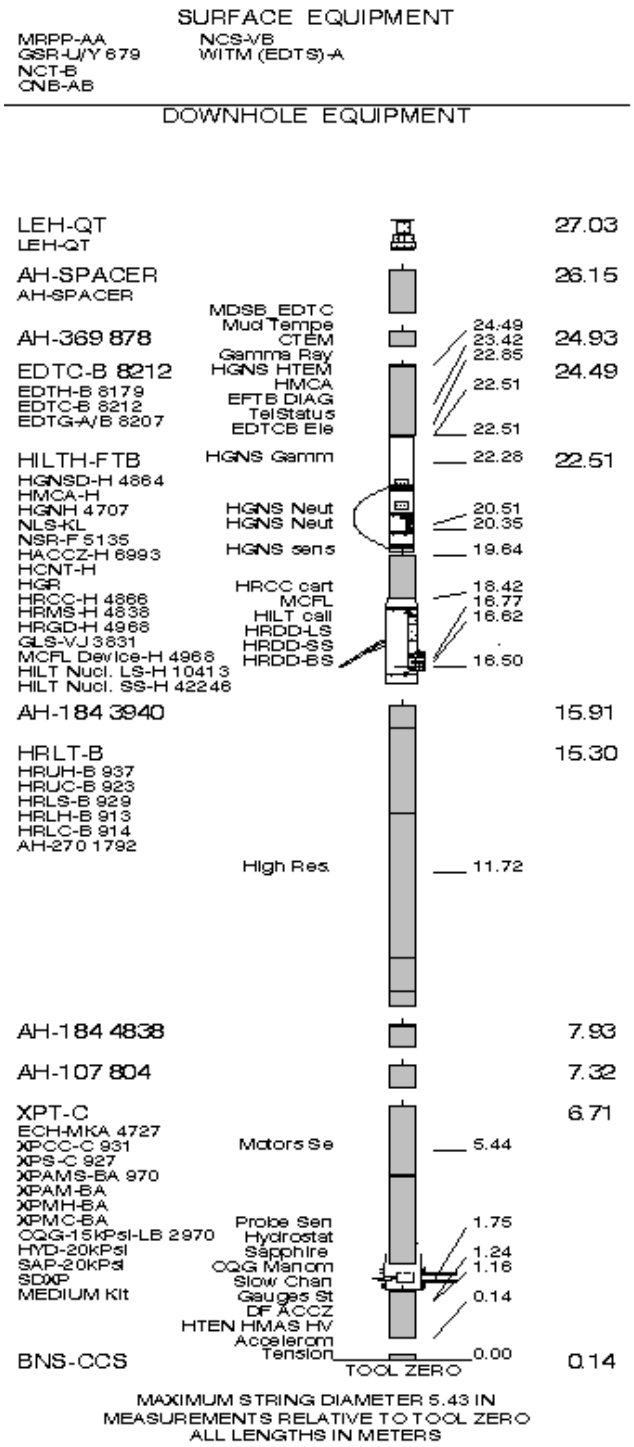
Summary of operation:

Rigged up @	**03:30 (5-Feb-2010)**
Rigged down @	**05:15 (6-Feb-2010)**
Total time:	**06.75 hours**
Down time:	**0.0 hours**

Remarks:

-Rockhopper- 1 ST1 is a deviated well located in T/18P in the Bass Basin.
- Electrical Control Release Device run as per client request.
- Subsequent run in hole. Log correlated to Schlumberger SP-HRLA-PEX-HNGS-CMR+-GR dated 4-Feb-2010.
- There was 66 pretests in all, among which 29 were good, 25 tights; 10 supercharged and 2 dry.

Tool String


SURFACE EQUIPMENT
MRPP-AA
GSR-U/Y 679
NCT-B
CNB-AB
NCS-VB
WITM (EDTS)-A
DOWNHOLE EQUIPMENT
LEH-QT
LEH-QT
27.03
AH-SPACER
AH-SPACER
26.15
MDSB_EDTC
Mud Tempe
CTEM
Gamma Ray
24.49
23.42
22.85
AH-369 878
24.93
EDTC-B 8212
EDTH-B 8179
EDTC-B 8212
EDTG-A/B 8207
HGNS HTEM
HMCA
EFTB DIAG
TelStatus
EDTCB Ele
22.51
22.51
24.49
HILTH-FTB
HGNSD-H 4864
HMCA-H
HGNH 4707
NLS-KL
NSR-F 5135
HACCZ-H 6993
HCNT-H
HGNS Gamm
22.28
22.51
HGR
HRCC-H 4866
HRMS-H 4838
HRGD-H 4968
GLS-VJ 3831
MCFL Device-H 4968
HILT Nucl. LS-H 10413
HILT Nucl. SS-H 42246
HGNS Neut
HGNS Neut
HGNS sens
20.51
20.35
19.64
HRCC cart
MCFL
HILT call
HRDD-LS
HRDD-SS
HRDD-BS
18.42
16.77
16.62
16.50
AH-184 3940
15.91
HRLT-B
HRUH-B 937
HRUC-B 923
HRLS-B 929
HRLH-B 913
HRLC-B 914
AH-270 1792
15.30
High Res.
11.72
AH-184 4838
7.93
AH-107 804
7.32
XPT-C
ECH-MKA 4727
XPCC-C 931
XPS-C 927
XPAMS-BA 970
XPAM-BA
XPMH-BA
XPMC-BA
CQG-15kPsi-LB 2970
HYD-20kPsi
SAP-20kPsi
SDXP
MEDIUM Kit
Motors Se
5.44
6.71
Probe Sen
Hydrostat
Sapphire
CQG Manom
Slow Chan
Gauges St
DF ACCZ
HTEN HMAS HV
Accelerom
Tension
1.75
1.24
1.16
0.14
BNS-CCS
0.00
0.14
TOOL ZERO
MAXIMUM STRING DIAMETER 5.43 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

RUN 3: MDT (Quicksilver)-GR

Objectives:

- **Acquire high quality pressure data to quantify reservoir pressures and fluid gradients.**
- **Recover samples at different stations to determine fluid composition.**

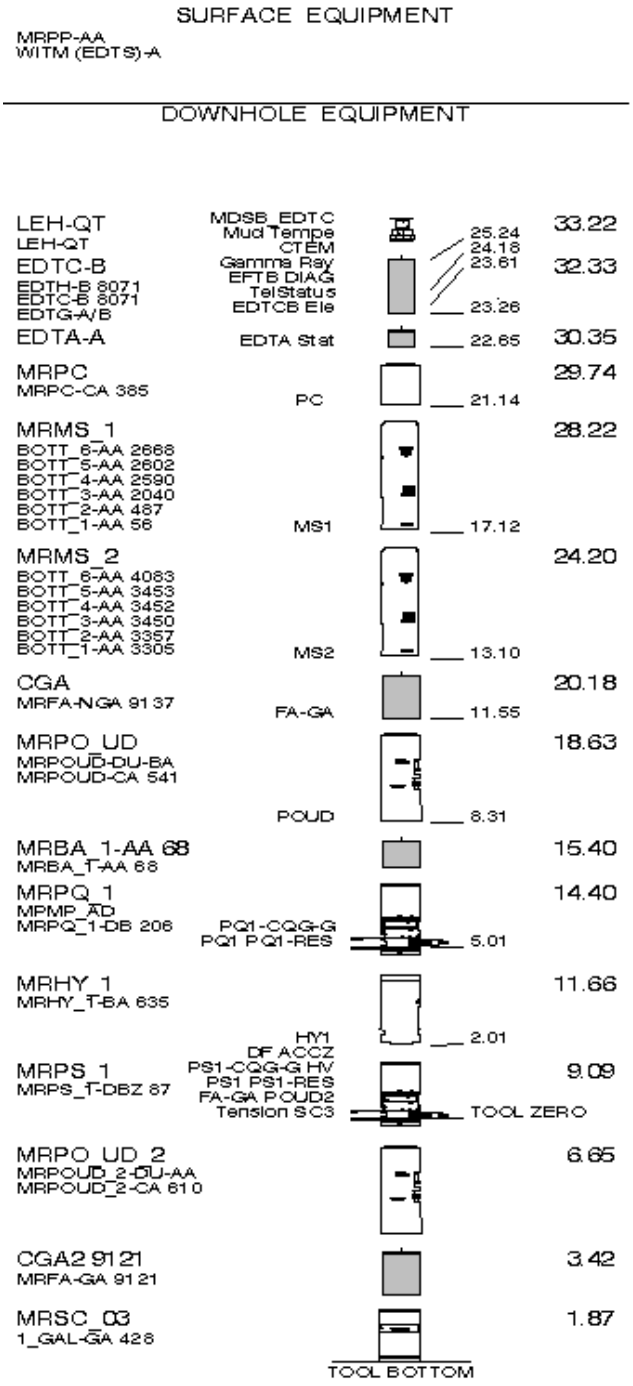
Summary of operation:

Rigged up @	**06:15 (6-Feb-2010)**
Rigged down @	**11:20 (8-Feb-2010)**
Total time:	**55.08 hours**
Down time:	**3.21 hours**

Remarks:

- Rockhopper- 1 ST1 is a deviated well located in T/18P in the Bass Basin.
- Electrical Control Release Device run as per client request.
- Subsequent trip in hole; log correlated to Schlumberger SP-HRLA-PEX-HNGS-CMR+-GR dated on 4-Feb-2010.
- Toolstring run as per toolsketch. Quicksilver probe and large diameter probe in the toolstring.
- The quicksilver was used to acquire formation sample whenever mobility permitted it.
- 3 sampling stations were done with the Quicksilver probe, 5 bottles (450 cc each) were filled.
- 2 pumping stations carried out with the PQ, not sample was taken at those depths.
- 23 pretests were done with the Quicksilver, mostly tights not allowing any pumping to be carried out.
- The quicksilver probe rubbers worn out and it was losing seal, the large diameter was used to continue the program.
- The Large diameter probe was used for 6 pretest, all tights, 2 sampling station filling 3 bottles, and 1 pumping station.

Tool String


SURFACE EQUIPMENT
MRPP-AA
WITM (EDTS)-A
DOWNHOLE EQUIPMENT
LEH-QT
LEH-QT
EDTC-B
EDTH-B 8071
EDTC-B 8071
EDTG-A/B
EDTA-A
MRPC
MRPC-CA 385
MRMS_1
BOTT_6-AA 2668
BOTT_5-AA 2602
BOTT_4-AA 2590
BOTT_3-AA 2040
BOTT_2-AA 487
BOTT_1-AA 56
MRMS_2
BOTT_6-AA 4083
BOTT_5-AA 3453
BOTT_4-AA 3452
BOTT_3-AA 3450
BOTT_2-AA 3357
BOTT_1-AA 3305
CGA
MRFA-NGA 9137
MRPO_UD
MRPOUD-DU-BA
MRPOUD-CA 541
MRBA_1-AA 68
MRBA_T-AA 68
MRPQ_1
MPMP_AD
MRPQ_1-DB 206
MRHY_1
MRHY_T-BA 635
MRPS_1
MRPS_T-DBZ 87
MRPO_UD_2
MRPOUD_2-DU-AA
MRPOUD_2-CA 610
CGA2 9121
MRFA-GA 9121
MRSC_03
1_GAL-GA 428
MDSB_EDTC
Mud Tempe
CTEM
Gamma Ray
EFTB DIAG
TelStatus
EDTCB Ele
EDTA Stat
PC
MS1
MS2
FA-GA
POUD
PQ1-CQG-G
PQ1 PQ1-RES
HY1
DF ACCZ
PS1-CQG-G HV
PS1 PS1-RES
FA-GA POUD2
Tension SC3
25.24
24.18
23.61
23.26
22.65
21.14
17.12
13.10
11.55
8.31
5.01
2.01
TOOL ZERO
33.22
32.33
30.35
29.74
28.22
24.20
20.18
18.63
15.40
14.40
11.66
9.09
6.65
3.42
1.87
TOOL BOTTOM
MAXIMUM STRING DIAMETER 5.00 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

RUN 4: DSI-FMI-GR

Objectives:

- **DSI run to acquire P&S, Dipole and Cross Dipole.**
- **Acquire high resolution, high quality borehole image log to provide sedimentological/structural information for reservoir modelling, volumetrics and develop geological understanding of the field.**

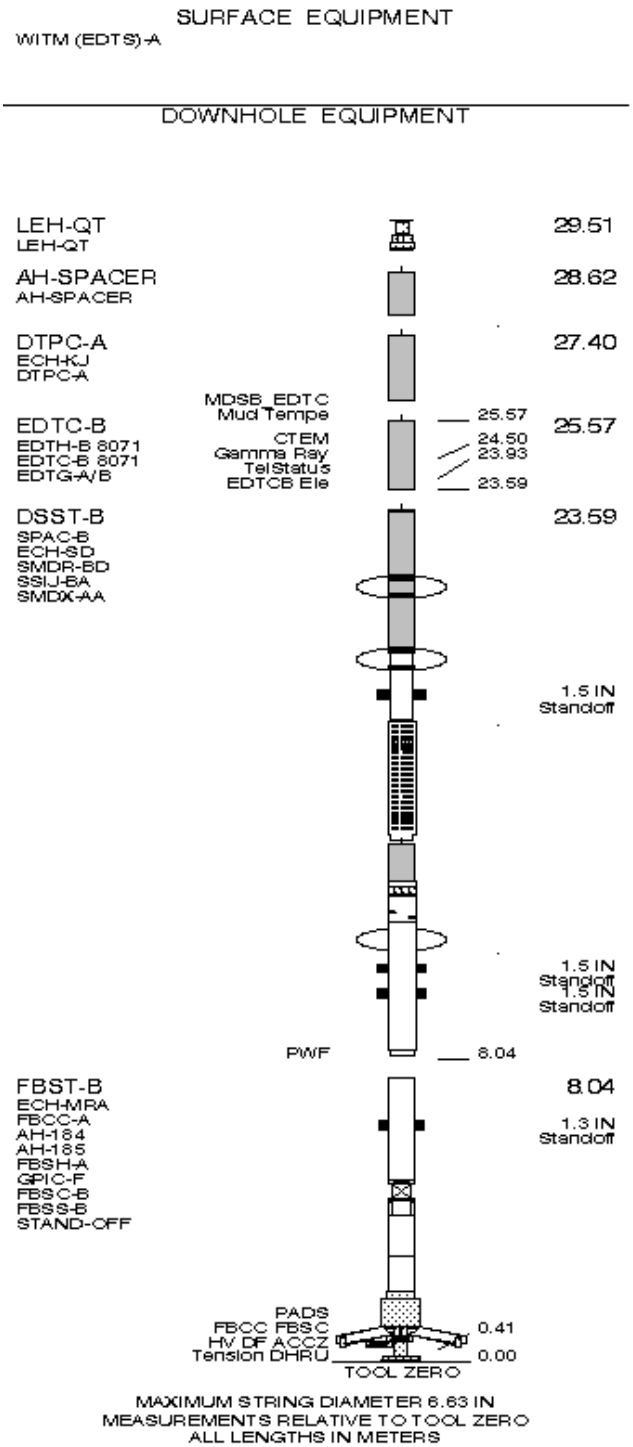
Summary of operation:

Rigged up @	**13:20 (8-Feb-2010)**
Rigged down @	**00:00 (9-Feb-2010)**
Total time:	**11.67 hours**
Down time:	**0.75 hours**

Remarks:

- Rockhopper- 1 ST1 is a deviated well located in T/18P in the Bass Basin.
- Toolstring run as per toolsketch.
- Log correlated to Schlumberger SP-HRLA-PEX-HNGS-CMR+-GR dated on 4-Feb-2010.
- FMI data acquired in mode emex auto and auto low range gain.
- DSI data acquired from 3458.5 m to 1965 m (casing shoe) as per client request.
- Log acquired firing the 2 dipoles and the monopole as per client request, neither Stoneley nor BCR mode acquired, P&S and dipoles

Tool String


SURFACE EQUIPMENT
WITM (EDTS)-A
DOWNHOLE EQUIPMENT
LEH-QT
LEH-QT
29.51
AH-SPACER
AH-SPACER
28.62
DTPC-A
ECH-KJ
DTPC-A
27.40
MDSB_EDTC
Mud Tempe
25.57
EDTC-B
EDTH-B 8071
EDTC-B 8071
EDTG-A/B
CTEM
Gamma Ray
TelStatus
EDTCB Ele
24.50
23.93
23.59
25.57
DSST-B
SPAC-B
ECH-SD
SMDR-BD
SSIJ-BA
SMDX-AA
23.59
1.5 IN
Standoff
1.5 IN
Standoff
1.5 IN
Standoff
PWF
8.04
FBST-B
ECH-MRA
FBCC-A
AH-184
AH-185
FBSH-A
GPIC-F
FBSC-B
FBSS-B
STAND-OFF
8.04
1.3 IN
Standoff
PADS
FBCC FBSC
HV DF ACCZ
Tension DHRU
0.41
0.00
TOOL ZERO
MAXIMUM STRING DIAMETER 6.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

RUN 5: ZVSI-GR

Objectives:

- Provide a confidence in seismic-to-well calibration.
- Calibration of the velocity model
- Seismic to well-tie with sonic log calibration and synthetic seismogram generation

Summary of operation:

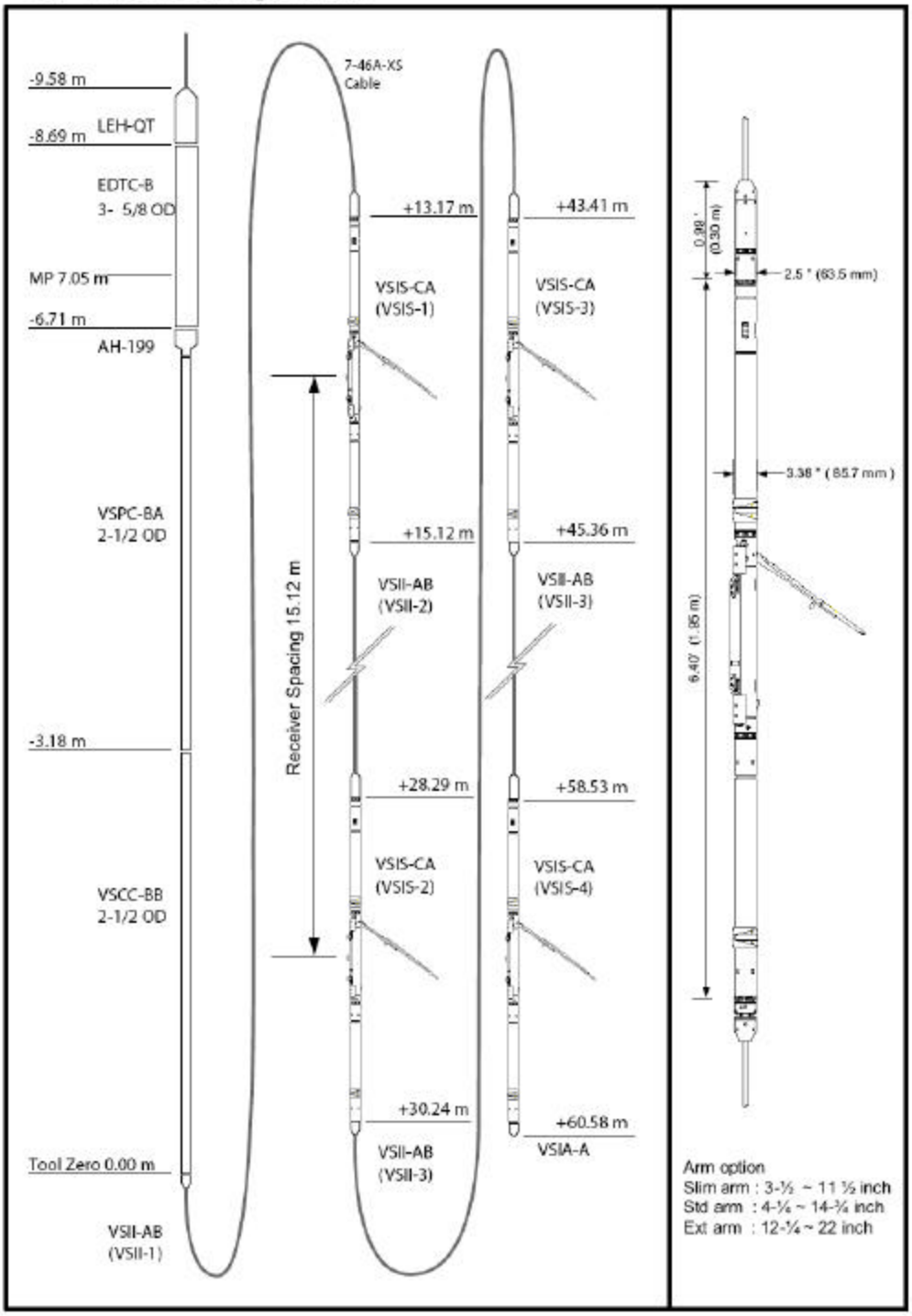
Rigged up @ **01:00 (9-Feb-2010)**
Rigged down @ **12:00 (9-Feb-2010)**
Total time: **12.25 hours**
Down time: **0.25 hours**

Remarks:

- Borehole seismic survey was recorded in Suite 1 Run 5 of the deviated exploration well Rockhopper-1 ST1 on 9-Feb-2010
- This survey included rig source VSP measurements from 3430 m MD to 1615 m MD.
- Data was acquired using 4 levels VSIT-C (15.12 m spacing) downhole tool with a clustered airgun source deployed from the rig.
- A minimum of 5 good shots was recorded for each VSP level (3430 m to 1600 m MD). A minimum of 3 good shots was recorded for check-shot survey.
- Log correlated to Schlumberger SP-HRLA-PEX-HNGS-CMR+-GR dated on 4-Feb-2010.
- Data acquired until 1800 m only as per client request
- Deviation data taken from directional drillers
- Maximum recorded temperature 138 degC from 3 thermometers in logging head.

Tool String

VSI-4 Tool Configuration



RUN 6: MSCT-GR

Objectives:

- Acquire up to 31 good quality side-wall cores to provide biostratigraphic, geochemistry or Palynology and lithological control for field scale development as well as regional assessments.

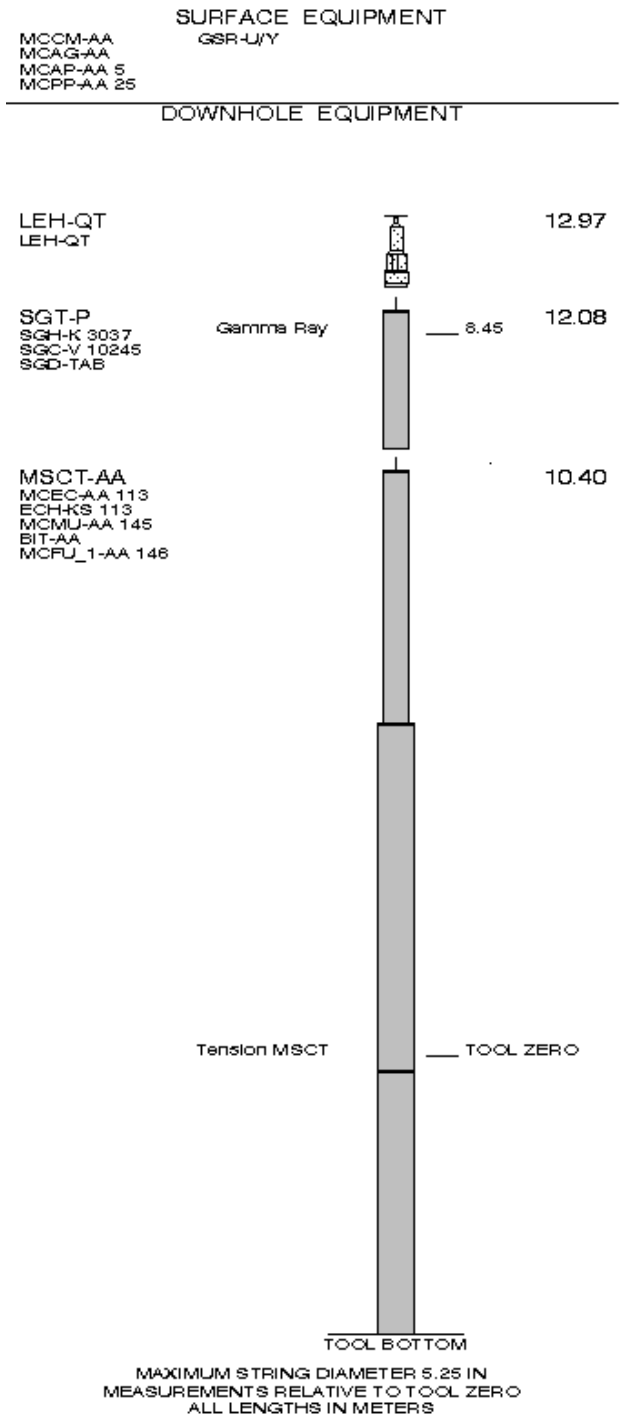
Summary of operation:

Rigged up @ **13:15 (9-Feb-2010)**
Rigged down @ **03:00 (10-Feb-2010)** *Commencement of fishing operation*
Total time: **13.75 hours**
Down time: **0.0 hours**

Remarks:

- Rockhopper- 1 ST1 is a deviated well located in T/18P in the Bass Basin.
- Toolstring run as per toolsketch.
- Log correlated to Schlumberger SP-HRLA-PEX-HNGS-CMR+-GR dated on 4-Feb-2010.
- 31 cores points in the program. 28 attempts before tool got stuck. Cores were cut from bottom to top.
- Weakpoint was released and rig went in for fishing. Fishing was successful.
- Client decided to cancel the rest of the program.
-19 cores were recovered at surface.
- MSCT tool got stuck at 3137 m, 3 cores were not attempted due to tool stuck (3134; 3109; 2941.3 m)

Tool String


SURFACE EQUIPMENT
MCCM-AA
MCAG-AA
MCAP-AA 5
MCPP-AA 25
GSR-U/Y
DOWNHOLE EQUIPMENT
LEH-QT
LEH-QT
12.97
SGT-P
SGH-K 3037
SGC-V 10245
SGD-TAB
Gamma Ray
6.45
12.08
MSCT-AA
MCEC-AA 113
ECH-KS 113
MCMU-AA 145
BIT-AA
MCFU_1-AA 146
10.40
Tension MSCT
TOOL ZERO
TOOL BOTTOM
MAXIMUM STRING DIAMETER 5.25 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

RUN 7:Dual Packer-GR (ECRD)

Objectives:

- **Acquire pressure measurements and fluid sampling, when possible, in low-permeability zones.**
- **Perform Mini-DST to determine the productive capacity, pressure and permeability of a hydrocarbon reservoir.**

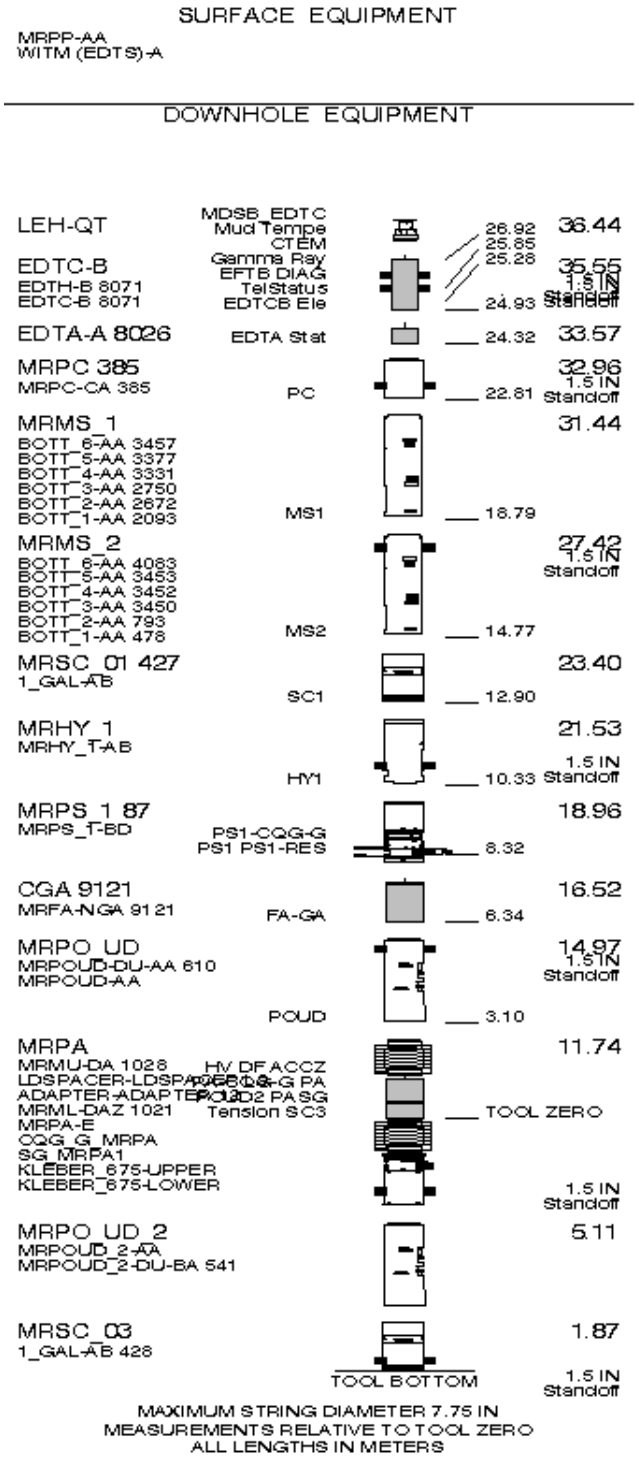
Summary of operation:

Rigged up @	**09:50 (12-Feb-2010)**
Rigged down @	**02:25 (15-Feb-2010)**
Total time:	**66.57 hours**
Down time:	**0.0 hours**

Remarks:

- Toolstring run as per toolsketch. Dual Packer was run with a single probe in the toolstring.
- There were 13 stations on the program.
- Whenever it was possible, pumping was attempted to determined formation fluid.
- In most cases, only mini DST tests were carried out.
- 4 bottles were filled at 2 depths

Tool String


SURFACE EQUIPMENT
MRPP-AA
WITM (EDTS)-A
DOWNHOLE EQUIPMENT
LEH-QT
MDSB_EDTC
Mud Tempe
CTEM
Gamma Ray
EFTB DIAG
TelStatus
EDTCB Ele
26.92
25.85
25.28
24.93
36.44
EDTC-B
EDTH-B 8071
EDTC-B 8071
35.55
1.5 IN Standoff
EDTA-A 8026
EDTA Stat
24.32
33.57
MRPC 385
MRPC-CA 385
PC
22.81
32.96
1.5 IN Standoff
MRMS_1
BOTT_6-AA 3457
BOTT_5-AA 3377
BOTT_4-AA 3331
BOTT_3-AA 2750
BOTT_2-AA 2672
BOTT_1-AA 2093
MS1
18.79
31.44
MRMS_2
BOTT_6-AA 4083
BOTT_5-AA 3453
BOTT_4-AA 3452
BOTT_3-AA 3450
BOTT_2-AA 793
BOTT_1-AA 478
MS2
14.77
27.42
1.5 IN Standoff
MRSC_01 427
1_GAL-AB
SC1
12.90
23.40
MRHY_1
MRHY_T-AB
HY1
10.33
21.53
1.5 IN Standoff
MRPS_1 87
MRPS_T-BD
PS1-CQG-G
PS1 PS1-RES
8.32
18.96
CGA 9121
MRFA-NGA 9121
FA-GA
6.34
16.52
MRPO_UD
MRPOUD-DU-AA 610
MRPOUD-AA
POUD
3.10
14.97
1.5 IN Standoff
MRPA
MRMU-DA 1028
LDSPACER-LDSPACER
ADAPTER-ADAPTER
MRML-DAZ 1021
MRPA-E
OQG_G_MRPA
SG_MRPA1
KLEBER_675-UPPER
KLEBER_675-LOWER
HV DF ACCZ
Tension SC3
TOOL ZERO
11.74
1.5 IN Standoff
MRPO_UD_2
MRPOUD_2-AA
MRPOUD_2-DU-BA 541
5.11
MRSC_03
1_GAL-AB 428
TOOL BOTTOM
1.87
1.5 IN Standoff
MAXIMUM STRING DIAMETER 7.75 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

SAFETY AND SERVICE QUALITY COMMENTS

- All SLB crew members on board actively participated in the STOP card safety program by submitting a minimum of one card per day per person for the entire duration of being on the rig.
- Each SLB crew member attended the daily pre-tower before coming on each shift and at least one supervisor attended the third party contractor meeting each day.
- All safety concerns encountered by both the rig crew and SLB crew were thoroughly discussed prior to the job. All concerns from both parties were resolved and plans made to make the operation as safe as possible.
- All activities whether or not requiring permits were preceded by a JSA conducted with crew involved and a signed copy of all JSA's was returned to rig safety rep for archiving.
- JSA and Risk assessments were performed prior to rig up and rig down. All safety hazards (Explosives and manual handling) were discussed with the rig crews and Woodside representatives. All relevant personnel were present during hazards review. Procedures for Explosive handling were reviewed prior to logging run.

APPENDIX 11: VSP REPORT

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Origin Energy Resources Ltd

Rockhopper-1 / Rockhopper-1 ST1

WELL SEISMIC PROCESSING REPORT

VSP-D / WSC / GEOGRAM

[See also Q-Borehole & QC VSP Reports]

BOREHOLE

origin

FIELD:	Rockhopper (T /18P)
COUNTRY:	Australia
COORDINATES:	Latitude: 39° 47' 34.18" S
:	Longitude: 145° 26' 21.47" E
RIG:	Kan Tan IV
DATE OF SURVEY:	04-Jan-2010 & 09-Feb-2010
SURVEY TYPE:	Rig VSP, Offshore, Airgun, Deviated Well, 2x
REFERENCE NO:	DS 0110-04

Prepared by: L. Dahlhaus
Reviewed by: K. Galybin Date: 30-April-2010

Schlumberger Oilfield Australia Pty Ltd
Level 5, 256 St. Georges Terrace, Perth
WA 6000 Australia

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1 Introduction

Two borehole seismic surveys for VSP processing were recorded in Rockhopper-1 and Rockhopper-1 ST1, both deviated offshore exploration wells (max. 43.5° and 36.7° well deviation) on the 4th of January 2010 and the 9th February 2010 respectively from the rig Kan Tan IV.

The main goals of the surveys, obtaining Time/Depth relations as well as a VSP corridor stacks, have been achieved. Furthermore images underneath the well trajectories were also obtained. Complete field results are reported in the separate "Q-Borehole Survey Reports". Initial QC VSP processing results are reported in the separate "VSP QC Reports". It is important to realize that these initial QC results used single component processing and simple geometry correction only and that, due to the significant well deviation in combination with a rig source, further processing was required to obtain more accurate vertical times and images underneath the well trajectories.

This report describes the 3-C processing of both surveys to obtain combined VSP results with sonic calibration, synthetic seismogram generation and surface seismic to establish a three way tie.

It documents the quality of the acquired data and presents the corrected time-depth-velocity listing as well as VSP processing. Additionally it contains the results of sonic calibration and synthetic seismogram generation using compressional depth-time relationship of compressional velocity logs. It describes the processing techniques used, the parameters chosen and presents the results of the data processing. A comparison is made between the surface seismic, VSP and the synthetics seismograms.

The source signature for both surveys is stable producing reliable and consistent downhole signals. Quality of the data is good and the resultant corridor stacks and images match with the synthetic seismograms produced using the available log data and the surface seismic provided by Origin. Tying of the surface seismic data to the Synthetic/VSP data shows that a good overall match is achieved without any time shift of the surface seismic to match the VSP and Synthetic data.

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2 Data Acquisition

The data were acquired in single logging runs in both open and cased hole, using a four level three component Versatile Seismic Imager Tool (VSI-4 with 15.12 m spacing) fitted with GAC accelerometers. A G-Gun delta cluster (3×150 cui) was used as the source suspended below a buoy. The geometry of the surveys is shown in Figures 1a/b.

Rockhopper-1
This survey included Rig Source VSP / Checkshot measurements from 2614.6 m MD DF to 294.1 m MD DF. It was not possible to descend to the planned TD of 3489 m MD DF.

The source cluster was deployed from the rig with an azimuth of 048 degrees with reference to North. The offset of gun was fixed 51 m from the wellhead. The guns were submerged from a buoy 5 meters below the tide level and fired at 1910 psi using N2 bottles.

Seismic Reference Datum (SRD) for the vertical Time-Depth information in this report is LAT. The average tide level during the VSP survey was 0.3 m above LAT and a bulk correction has been applied to the data. Survey geometry corrections and a static shift to correct the data to SRD were applied. This correction was done with a surface velocity of 1524 m/s.

Rockhopper-1 ST1

This survey included Rig Source VSP measurements from 3431.7 m MD DF to 1615.2 m MD DF.

The source cluster was deployed from the rig with an azimuth of 029 degrees with reference to North. The offset of gun was fixed 46 m from the wellhead. The guns were submerged from a buoy 4.8 meters below the tide level and fired at 1850 psi using N2 bottles.

Seismic Reference Datum (SRD) for the vertical Time-Depth information in this report is LAT. The average tide level during the VSP survey was 2.1 m above LAT and a bulk correction has been applied to the data. Survey geometry corrections and a static shift to correct the data to SRD were applied. This correction was done with a surface velocity of 1524 m/s.

For both surveys a calibrated Near Field (NF) reference hydrophone was deployed 1.25 meters below the center of the gun cluster. Schlumberger's Trisor Gun controller was used for the tuning and firing of the gun cluster, hence no source to hydrophone time correction is required. This new generation of Schlumberger proprietary borehole seismic system provides automated source control and enhanced QC functionality such as Gun depth and pressure measurements. Recording was made on the Schlumberger Maxis Unit using LDF format. The acquired gun source signatures are shown in Figures 2a/b.

Well	Rockhopper-1	Rockhopper-1 ST1
Elevation of DF	26 m above LAT	
Elevation of GL	74.3 m below LAT	
Elevation of SRD	0 m (LAT)	
Well Deviation	max 43.5°	max 36.7°
Energy Sources	3×150 cu in G-Gun cluster	
Time Reference	FTB Signal from TrisorOFS	
Source Offset / Azimuth	51 m / 048°	46 m / 029°
Source / Sensor Depth	5 m / 6.25 m below tide	4.8 m / 6.05 m below tide
Reference Velocity	1524 m/s	
Downhole Tool	VSIT-C (4 shuttles)	
Sensor Type	3-C GAC	

Table 1: Survey Parameters

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3 Well Seismic Edit

The initial preparation of the data is called Well Seismic Edit and consists of:

- Load Data
- Edit bad records & Sort Data
- Median stack
- Geophone Transform
- Pick Break time on Stacked Data

Each shot of the raw GAC data was evaluated and edited to remove bad traces. The hydrophone data were also evaluated for signature changes and timing shifts. The data were stacked at each level using a median stacking technique, to increase the signal to noise ratio of the data. For better comparison with geophone data, a transform to a 10 Hz/70% damped geophone is applied to the GAC data. After stacking the transit time of each trace was re-computed.

The following subsections describe the main aspects of the well seismic edit phase.

3.1 Data Quality

Rockhopper-1

Data quality is considered to be good. This dataset was acquired as a checkshot survey with 3 shots per tool setting and variable level spacing (45.36 m long VSI-4 array moving up 100 m). The top levels of the survey (above 1059.5 m MD DF) are affected by casing ringing noise. The Time-Depth relationship up to 1014.1 m MD DF is estimated using the X, Y and rotated 3C component data, above this no accurate Time-Depth information can be picked. A Gamma Ray log was run for depth correlation and the VSP is within 1 m on depth with the reference GR log. The NF hydrophone sensor and Trisor QC displays indicate that the source signature / Gun pressure were stable.

Even though the checkshot spacing is variable and only 3 shots per level were acquired, the good data quality combined with the fact that a VSI-4 was used allows this data to be processed as a VSP dataset to obtain a Corridor Stack and even a migrated Image. Due to the look-ahead capability of borehole seismic deeper reflectors well below the deepest recorded checkshot level can be distinguished on this data.

Rockhopper-1 ST1

Data quality is considered to be excellent. The VSP levels were acquired with at least 5 good repeatable shots per level. A Gamma Ray log was run for depth correlation and the VSP was shifted down 1.2 m to be on depth with the Run 1 reference log. The NF hydrophone sensor and Trisor QC displays show that the source signature / Gun depth were stable.

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Full 3C VSP processing is required for this borehole seismic dataset due to the 2D geometry. Also the time-depth information needed to be further calibrated using a model-based approach and was used to calibrate sonic slowness and other log curves and subsequently to generate time-indexed calibrated logs and synthetic seismogram traces.

3.2 Stacking

After reordering and selecting the best traces, a median stack was performed on the three component source signature deconvolved data. In this method of stacking, at each sample time, the amplitudes of the input traces are read and sorted in ascending order. The output is the median amplitude value from this ordering. The TRISOR-OFS zero time reference is used as the zero time for stacking. The break time of each trace is recomputed after stacking. The X, Y and Z component stacks for both Rockhopper-1 and Rockhopper-1 ST1 surveys are presented in Figures 3a/c and 4a/c respectively. Figures 3d and 4d show the vertical component aligned with a –TT shift, whilst the amplitude spectrum of the downhole data is shown in Figures 5a and 6a,and the Frequency-Wavenumber (F-K) spectrum is shown in Figures 5b and 6b.

3.3 Transit Time Measurement

The measured compressional transit time corresponds to the difference between arrivals recorded by surface and downhole sensors. The reference time (zero time) for the VSP is the Predicted Fire time determined in a closed feedback system of the TRISOR-OFS shooting system and the measured transit time is from the source and not the reference hydrophone. Hence only static corrections from source to datum are required. An inflection point tangent first break picking algorithm was used on the geophone transformed GAC data.

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4 VSP Processing

This pre-processed VSP data can now be used to derive VSP down going and reflected wavefields, VSP Corridor Stacks and Images for surface seismic matching. The following subsections describe the main aspects of the VSP processing chain:

Rockhopper-1

• Datum and geometry correction	:	Survey Geometry Headers
• 3C Rotations to TRY and V,H	:	Data and Geometry based
• Bandpass Filter	:	Butterworth Zero Phase, 5-200 Hz
• Wavefield Separation Down P (V)	:	Velocity Filter, 7x1 Median, TT
• Wavefield Separation Up P	:	Velocity Filter, 5x1 tri-mean, -TT
• Waveshaping Deconvolution	:	5-100 Hz Zero Phase, Window 2 s
• Spherical Divergence Correction	:	Time Varying Gain, Exponent 1.8
• Wavefield Enhancement Up P	:	Velocity Filter, 7x3 tri-mean, Model Based
• NMO Correction	:	Model Based for Corridor Stack
• Corridor Stack	:	100 ms , 8 deepest traces
• Imaging	:	GRT Migration, TWT

Rockhopper-1 ST1

• Datum and geometry correction	:	Survey Geometry Headers
• 3C Rotations to TRY and V,H	:	Data and Geometry based
• Bandpass Filter	:	Butterworth Zero Phase, 5-200 Hz
• Parametric Wavefield Decomposition	:	WavanaPro, 5-100 Hz, Inverted Model
• Wavefield Separation DP from Up P	:	Velocity Filter, 15x3 Median, TT
• Waveshaping Deconvolution	:	5-80 Hz Zero Phase, Window 2 s
• Spherical Divergence Correction	:	Time Varying Gain, Exponent 1.8
• Wavefield Enhancement Up P	:	Velocity Filter, 7x3 tri-mean, Model Based
• NMO Correction	:	Model Based for Corridor Stack
• Corridor Stack	:	100 ms , 8 deepest traces
• Imaging	:	GRTMigration, TWT

4.1 Correction to Datum

Seismic Reference Datum (SRD) is at LAT (Lowest Astronomical Tide). This is approximately 1.6 m below MSL for this location.

The source was positioned approximately 5 m below local tide levels. Tide corrections were estimated as bulk shifts for each survey and applied to the data. Transit time correction to SRD was initially applied using straight ray geometry to calculate corrected vertical transit time and surface velocity of 1524 m/s. Due to the 2D nature of the survey, a model-based approach was adopted here as described in section 4.4. The time-depth-velocity results of the VSP survey are presented in Attachment 2a (Rockhopper-1) and 2b (Rockhopper-1 ST1).

4.2 Rotation of 3C components

The VSI-4 is equipped with non-gimballed GAC receivers. This means that the Z component is along the tool i.e. wellbore axis. The X and Y components are orthogonal to that with the X component in line with the tool caliper arm. In a vertical well, energy recorded on horizontal components either has traveled along a non vertical path e.g. due to structural dip or faults or has non-vertical particle motion e.g. mode converted shear.

When processing a rig source VSP in a deviated well the 3 component data need to be rotated to the 2D plane containing Source, Receiver and Reflection points. This can be done by first taking the two tool horizontal components X and Y and determining via energy hodograms in a small window around the picked transit time the orientation of the maximum (in-line) component (HMX) and orthogonal to that the minimum (cross-line) component (HMN). Figures 7a/b present examples of the rotated downhole 3C data for both surveys including derived rotation angles and quality control curves.

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The Z and HMX components are then rotated to maximize the first arriving energy in the TRY (Tangent to RaY) direction. The borehole deviation was subsequently used to rotate the Z and HMX components to true vertical (V) and true inline horizontal (H) components. Figures 8a/d and 9a/d show the following rotated components: TRY, HMX, V and H.

4.3 Bandpass Filter

The effective bandwidth of the recorded data is evaluated by examining the amplitude spectrum of the stacked vertical component presented in Figures 5 and 6. A wide zero phase Butterworth Band pass filter was applied to the data limiting the bandwidth to 5-200 Hz.

4.4 Velocity Model building

It was necessary to build a model of the subsurface for the following reasons:

- VSP ray tracing modeling to help understand various ray modes in the subsurface
- Advanced processing techniques require a model to guide the algorithms (wavefield separation, amplitude corrections, etc)
- The GRT migration processes require a background velocity model

A mildly dipping layered model was build from the depth converted surface seismic time section along the well trajectory provided by Origin using the VSP time-depth information of both VSP surveys. This initial model was subsequently adjusted to match the borehole seismic data using ray-tracing and travel time inversion. Figure 10a/b show the seismic, the model, the source-receiver geometry as well as the inverted Vp velocities and direct ray paths and reflection points for some reflectors. The model has been inverted for P velocity using Down P arrival times. The overall RMS residual travel time difference between modeled and measured times is less than 1 ms. Figure 10c shows the simulated Vertical Incidence VSP that provides a QC of the NMO corrected vertical time-depth information for listings and sonic calibration processing This analysis is shown in the attached Time Analysis spreadsheet.. Note that no lateral velocity profile information was provided; constant velocity layers were used in the inversion and diverging residuals of both surveys in the deeper layers indicate that these effects may have an influence here.

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4.5 Wavefield Separation

Two different flows were used to obtain separated down and up going P wavefields for Rockhopper-1 and Rockhopper-1 ST1. Due to the more vertical angles in the Rockhopper-1 survey, down going P wavefields are estimated and removed from the true Vertical component only as there is not sufficient shear energy present to apply parametric wavefield decomposition techniques. These were used on Rockhopper-1 ST1 Vertical and Horizontal component data.

Flow Rockhopper-1

As the maximum up-going P energy is mostly concentrated on the vertical component, this component was used. Firstly a velocity filter (coherency) method is applied to estimate the down going compressional wavefield. Temporary trace equalization was applied by normalizing the RMS amplitude of the first break to correct for transmission losses of the direct wave. A normalization window of 200 milliseconds was used.

The down going coherent compressional energy is estimated using a 7x1 level Median velocity filter parallel to the direct arrival curve. The filter array is moved down one level after each computation and the process is repeated level by level over the entire dataset. The down going P wavefield is displayed in one-way time in Figure 11a.

The residual wavefield is obtained by subtracting the estimated down going coherent energy from the total wavefield. The resulting up going wavefield is shown in Figure 11b.

Next a 5x1 level Tuckey tri-mean velocity filter enhancement was applied to this residual wavefield and the resulting up going P wavefield is shown in Figure 11c.

Flow Rockhopper-1 ST1

A data-driven parametric wavefield decomposition technique (Wavanapro) was used to separate the up going and down going compressional and shear wavefields. This method decomposes downhole multi-component recordings into scalar wavefields using a parametric least-squares minimization where the data are modeled in a given time window as a superposition of several plane wave events. Each wave is defined by its local velocity, its angle of incidence and its waveform. Initial parameters were obtained from the 2D model and used to guide the processing as well as an initial direction guess based on the survey geometry.

The frequency range used is 5-80 Hz (constrained by special aliasing of shear energy) and processing was done in a single time window. The results of the initial pass were inverted and the final stage of separation is QC of inversion results. Figures 12 a/d show the obtained down and up going compressional (P) and converted shear (PS) wavefields.

To clean up the up going P wavefield from some residual down P this down going coherent compressional energy is estimated using a 15x3 level Median velocity filter parallel to the direct arrival curve. Figure 12e shows the separated up going P wavefield.

4.6 Zero Phase Waveshaping Deconvolution

The waveshaping process shortens the seismic pulse within traces and centers their amplitude peak on the reflector. This improves the resolution of the seismic data and helps to clarify the correlation of the seismic events. It is also applied to collapse the recorded multiples.

The waveshaping deconvolution operator is a double-sided Wiener-Levinson waveshaping filter. The operator is computed for each level of the down going wavefield using a window length of 1 s starting 5 ms before the picked break times in order to include the wavelet precisely. The designed outputs were chosen to be zero-phase with a bandwidth of 5-100 Hz for Rockhopper-1 and 5-80 Hz for Rockhopper-1 ST1. Once the design is made upon the down going wavefield, it is applied to the both down going and up going wavefields at the same level as displayed in Figures 13a/b and 14a/b for both surveys respectively.

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4.7 Spherical Divergence Correction

To correct the recorded amplitudes for the loss of energy due to the spherical divergence of the wave front, a time varying gain function of the exponential form:

$$Gain(T) = \left(T / T_0\right)^{\alpha}$$

where T_0 is the recorded transit time. The exponent used here is 1.8.

4.8 Upgoing Enhancement

A velocity filter (coherency) technique was used to enhance the zero phase upgoing wavefield.

The up going coherent compressional energy is estimated using a model-based 7x3 level Tuckey tri-mean velocity filter. This enhanced up going wavefield is displayed in one way time (OWT) in Figures 13c and 14c.

4.9 NMO correction and Corridor Stack

A corridor stack in two way time (TWT) was computed on the enhanced zero phase upgoing wavefield after model-based NMO correction by designing a constant 100 ms timing window along the two-way time depth curve and stacking the data onto a single trace. The deepest 8 traces are stacked entirely. The resulting trace provides the seismic representation of the borehole in vertical two-way time.

This corridor stack is displayed in Figures 15a/b along with the NMO corrected up going wavefield in two way time.

4.10 Migration

Final images were produced using the GRT migration technique.

The Generalized Radon Transform (GRT) migration approach (Miller et al. 1987) based on exact two-point ray-tracing through a 2D medium is used where the theory is similar to that of Kirchhoff migration. In this scheme, each point in the offset-depth (x, z) domain can be regarded as a potential velocity anomaly, capable of scattering seismic energy. Similarly, each point in the data domain (x,t) is based on the contribution of scattered energy from points along an isochron in the (x,z) domain. In a constant velocity medium the isochrones are ellipses with source and receiver points as foci. In a realistic medium with laterally varying parameters, the shapes of the isochrones are distorted. The migration can be carried out either by redistributing the amplitudes of points in the data domain to reproduce points in the (x,z) domain, or by summing along diffraction hyperbolae in the data domain to reproduce points in the (x,z) domain. The former process is known as back projection and the later, used here, is a diffraction stack. The spatial resolution that can be obtained

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for given source-receiver configurations is directly related to the distribution of isochrones in the (x,z) domain. The best resolution is achieved in a direction perpendicular to the isochrones. A point can be only imaged perfectly when isochrones cross it in all directions, similar to the imaging concept in tomography.

Conceptually the method is based on Huygens principle, where the subsurface can be thought of as a grid of diffraction points. The principle implementation of GRT migration consists of summing along diffraction hyperbola in the data domain (T,Z) defined by the ray-traced time, T1, to propagate from the sources to one particular point (x,z) of the subsurface and the time, T2, to propagate from the point (x,z) to the receiver. Wherever a hyperbola is tangent to a seismic event, the data will be summed constructively, whereas amplitudes along the remaining portions will cancel out. A series of possible isochron surfaces, or dip, can be defined at the image point (x,z) by adjusting the aperture.

The data input are the zero phase deconvolved up going compressional scalar wavefields.
Parameters for this processing step are:

Velocity model	2D, Structure from Surface Seismic, Velocities from VSP TT inversion
Input wavefield:	Scalar, Deconvolved upgoing PP VSP
Aperture:	3 Degrees, Dip interpolated from model
CDP/trace spacing:	10 m
Sampling rate:	1 ms
Corrections:	No geometrical spreading

The resulting migrated sections are displayed in TWT in Figures 16a/b for each survey individually and in Figure 16c after combining both migrated images into a single final Image including an extension using the derived corridor stack. To improve the lateral continuity of this image, a 5x3 tri-mean velocity filter was used.

4.11 Composite Displays of Results

Figures 17a/b show composite displays of the provided surface seismic section along the Rockhopper-1 and Rockhopper-1 ST1 well direction (N-S) and the combined VSP migrated image. The composite displays show a good correlation between the surface seismic and the VSP Image without shifting the surface seismic data.

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5 Sonic Calibration Processing

5.1 Sonic Calibration

A 'drift' curve is obtained using the sonic log and the vertical check level times. The term 'drift' is defined as the seismic time (from check shots) minus the sonic time (from integration of edited sonic). Commonly the word 'drift' is used to identify the above difference, or to identify the gradient of drift versus increasing depth, or to identify a difference of drift between two levels.

The gradient of drift, that is the slope of the drift curve, can be negative or positive.

- For a negative drift (Δdrift/Δdepth < 0) the sonic time is greater than the seismic time over a certain section of the log.
- For a positive drift (Δdrift/Δdepth > 0), the sonic time is less than the seismic time over a certain section of the log.

The drift curve, between two levels, is then an indication of the error on the integrated sonic or an indication of the amount of correction required on the sonic to have the TTI of the corrected sonic match the check shot times. Two methods of correction to the sonic log are used.

1. Uniform or block shift. This method applies a uniform correction to all the sonic values over the interval. This uniform correction is applied in the case of positive drift and is the average correction represented by the drift curve gradient expressed in µsec/m .

2. ΔT Minimum. In the case of negative drift a second method is used, called Δ minimum. This applies a differential correction to the sonic log, where it is assumed that the greatest amount of transit time error is caused by the lower velocity sections of the log. Over a given interval the method will correct only Δt values which are higher than a threshold, the Δt_{min} . Values of Δwhich are lower than the threshold are not corrected. The correction is a reduction of the excess of Δt over Δt_{min}, $\Delta t - \Delta t_{min}$.

$\Delta t - \Delta t_{min}$ is reduced through multiplication by a reduction coefficient which remains constant over the interval. This reduction coefficient, named G, can be defined as:

$$G = 1 + \frac{drift}{(\Delta t - \Delta t_{min})\partial z}$$

Where *drift* is the drift over the interval to be corrected and the value $(\Delta t - \Delta t_{min})\partial z$ is the time difference between the integrals of the two curves Δt and Δt_{min} only over the intervals where $\Delta t > \Delta t_{min}$. Hence the corrected sonic:

$$\Delta t = G(\Delta t - \Delta t_{min}) + \Delta t_{min}$$

The resultant drift curve, knee points and calibrated velocity plot are shown in Figure 18a/b and the attached 36" plots.

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5.2 Open Hole Logs

The sonic DTCO curves were used for drift computation. The RHOB, CALI, RT and GR logs were provided by Origin and used as companion curves. The density log was extended to the seabed using Gardner relation.

5.3 Correction to Datum

The sonic calibration processing has been referenced to LAT, which is the seismic reference datum. The calibrated model based NMO results are presented in the listings.

5.4 Sonic Calibration Results

The sonic log was tied to a station (1318.4 m TVDSS) in the seismic log. This station was chosen as the origin for the calibration drift curve as shown in velocity cross plot. The compressional sonic log was extended using the VSP data.

The drift curve is the correction imposed upon the sonic log. The adjusted sonic curve is considered to be the best result using the available data. A mostly positive drift is visible in both VSP section.

One 2D model based synthetic time-depth point was added to the Rockhopper-1 dataset to allow use of logs to TD of this borehole; OWT 1.1436 s at TVDSS 3149 m.

The VSP section residual drift is less than +/-1ms and the calibration process introduced no significant artificial slowness jumps. A list of shifts used on the sonic data is given in A2 Listing (supplied in digital form on Final Results CD-ROM). The Velocity Cross plot is presented in Figures 18a/b and as a separate plot.

6 Synthetic Seismogram Processing

GEOGRAM processing produces synthetic seismic traces based on reflection coefficients generated form sonic and density measurements in the wellbore. The steps in the processing chain are the following:

- Depth to time conversion
- Reflection coefficient generation
- Attenuation coefficient calculation
- Convolution
- Output

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6.1 Depth to Time Conversion

Open hole logs are recorded from the bottom to top with a depth index. This data are converted to two-way time index. Rockhopper-1 ST1 formation tops were provided by Origin Energy Resources Ltd. in MD DF and have been converted to calibrated VSP/Geo two-way time (Table 2):

Marker	Measured Depth (m)	TVDSS (m)	Two-Way Time (s)
EVCM	2068.1	2041.5	1.696
Top 2809	2844.0	2711.0	2.078
P3 (2952)	3058.0	2886.9	2.173
Base Low AI	3238.0	3033.0	2.247
TL60	3350.0	3124.0	2.292
Cret Volcanics	3435.0	3193.4	2.327

Table 2: TWT Formation Markers Rockhopper-1 ST1

6.2 Primary Reflection Coefficients

Sonic and density data are averaged over chosen time intervals (normally 1 ms). Reflection coefficients are then computed using:

$$R = \frac{r_2 v_2 - r_1 v_1}{r_2 v_2 + r_1 v_1}$$

where:

r_1 = density of the layer above the reflection interface
r_2 = density of the layer below the reflection interface
v_1 = compressional wave velocity of the layer above the reflection interface
v_2 = compressional wave velocity of the layer below the reflection interface

This computation is done for each time interval to generate a set of primary reflection coefficients without transmission losses.

6.3 Primaries with Transmission Losses

Transmission loss on two-way attenuation coefficients is computed using:

$$A_n = (1 - R_1^2)(1 - R_2^2)\ldots(1 - R_n^2)$$

A set of primary reflection coefficients with transmission loss is generated using:

$$Primary_n = R_n A_{n-1}$$

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6.4 Primaries plus Multiples

Multiples are computed from these input reflection coefficients using the transform technique from the top of the well to obtain the impulse response of the earth. The transform outputs primaries plus multiples.

6.5 Multiples Only

By subtracting previously calculated primaries form the above result we obtain multiples only.

6.6 Wavelet

A theoretical wavelet is chosen to use for convolution with the reflection coefficients previously generated. Choices available include: Klauder wavelet, Ricker zero phase wavelet, Ricker minimum phase wavelet, Butterworth wavelet, or User defined wavelet. Here 25, 35 and 45 Hz Ricker zero phase wavelets have been selected for computation of the synthetics.

6.7 Polarity Convention

An increase in acoustic impedance gives a positive reflection coefficient, is written to tape as a negative number and is displayed as a white trough under normal polarity. Polarity conventions are displayed in Figure 19.

6.8 Convolution

The standard procedure of convolving the wavelet with reflection coefficients; the output is the synthetic seismogram.

6.9 Results of Synthetic Seismogram Processing

A snapshot of the 40 cm/s composite displays (PLOT-1A/B and PLOT-2A/B) of VSP calibrated logs, VSP and Synthetic and Surface Seismic data is shown in Figures 20a/b and 21a/b respectively.

The 25 Hz, 35 Hz and 45 Hz Ricker wavelets were used to compute the synthetics shown in Figures 22a/b and 23a/b. The computed synthetics were compared to the corridor stack generated from the VSP data and the surface seismic well trace extracted along the well path in time. Overall, there is a good match between the VSP, synthetics and the surface seismic data.

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7 Conclusion

A VSP survey was carried out in the deviated Rockhopper-1 and Rockhopper-1 ST1 wells. The main objectives of the survey were acquisition of a vertical checkshot velocity profile (Time/Depth relation) and a VSP dataset for generation of a corridor stack and a VSP Image. These objectives were achieved.

7.1 VSP and Surface Seismic

Acquisition was carried out using a four shuttle VSI tool by Schlumberger Oilfield Australia Ltd. The quality of the acquired data is excellent. Both Rockhopper-1 and Rockhopper-1 ST1 datasets were processed as VSP data sets. The processed data are used to generate corridor stack and migrated VSP Images. Comparing the VSP results and the PSTM surface seismic along the well trajectory it was found that an overall match is achieved without shifting the surface seismic.

7.2 Synthetics

The synthetics were generated using the compressional velocity log, and density logs. The final calibrated log curves are presented in the attached data CD. The synthetics were generated using 25 Hz, 35 Hz, 45 Hz zero-phase Ricker wavelets. The character match between the 45 Hz synthetic and the VSP generated corridor stack and the surface seismic is good, as seen on Plot-1 and Plot-2. Formation tops provided by Origin in MD DF have been converted to calibrated VSP NMO two-way time (Table 2) and are presented in section 6.1.

7.3 Recommendations

Finally it should be noted that for true vertical time-depth information a Vertical Incidence (or Walk-above) VSP would have been the best survey type. This report describes calibrated model-based results. The model-based approach certainly is a step in the right direction, but it cannot guarantee the correct vertical time-depth answer.

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8 Figures

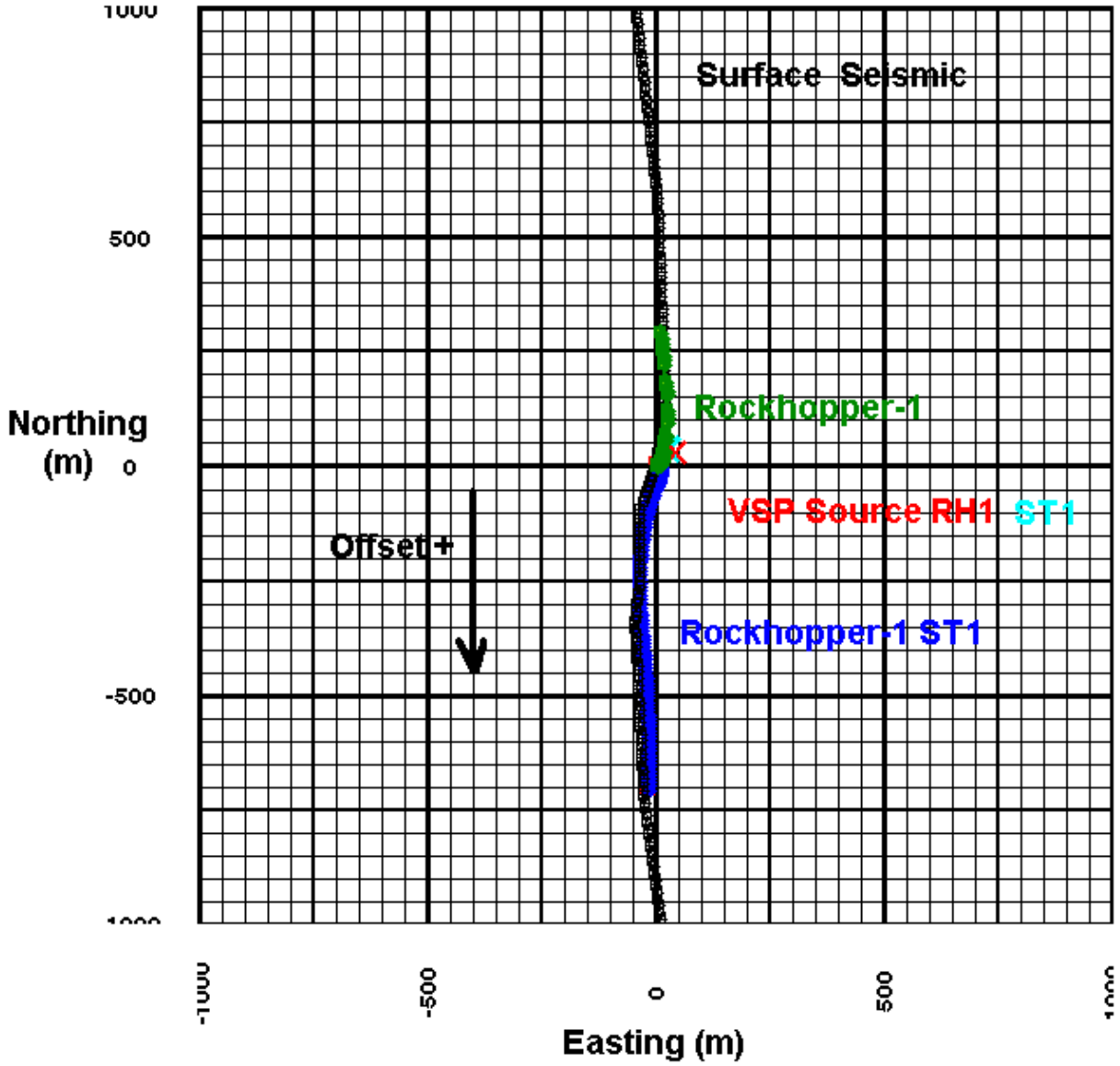

Figure 1a. Top view of both VSP Surveys

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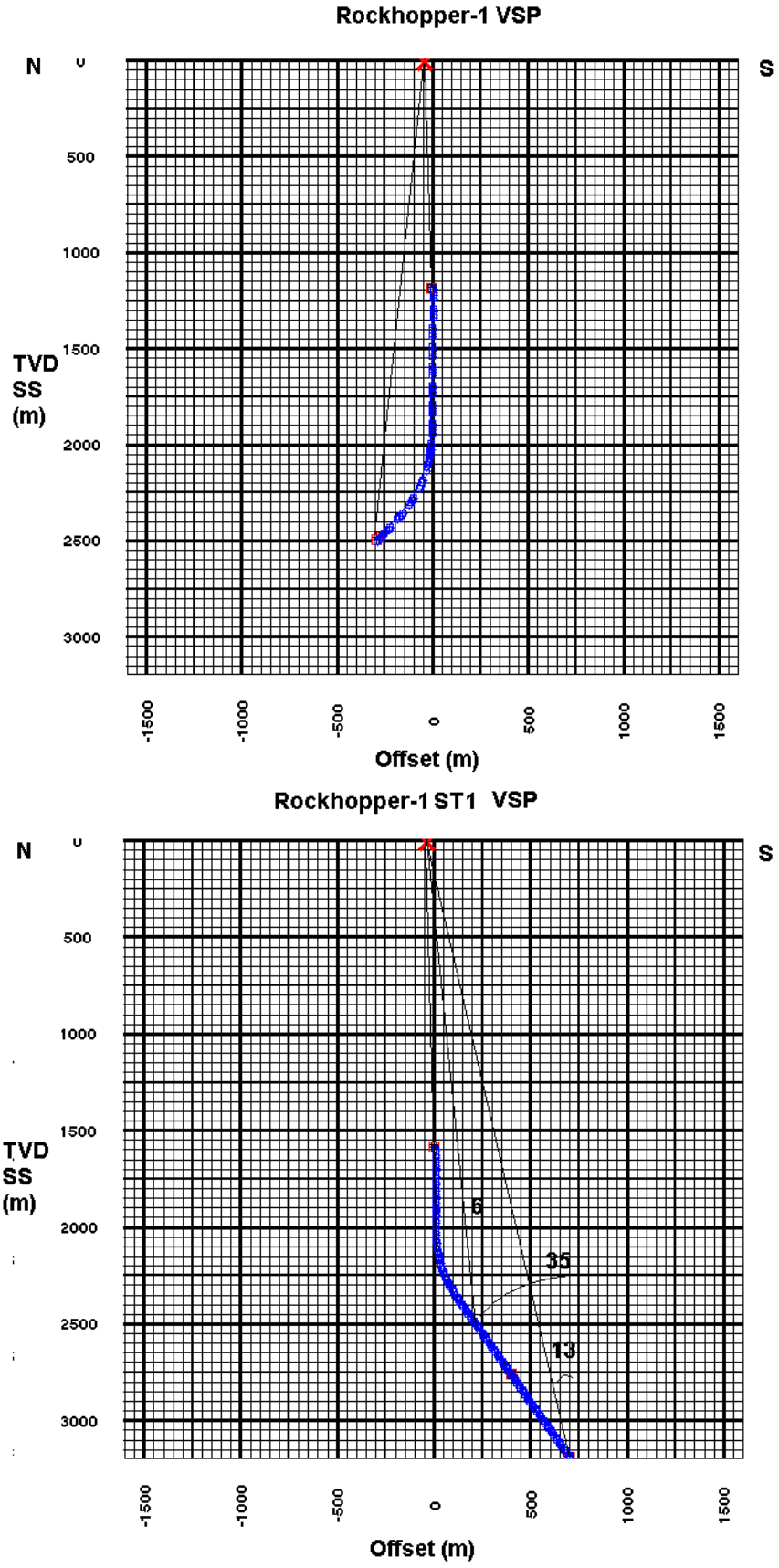

Figure 1b. Side view of both VSP Surveys

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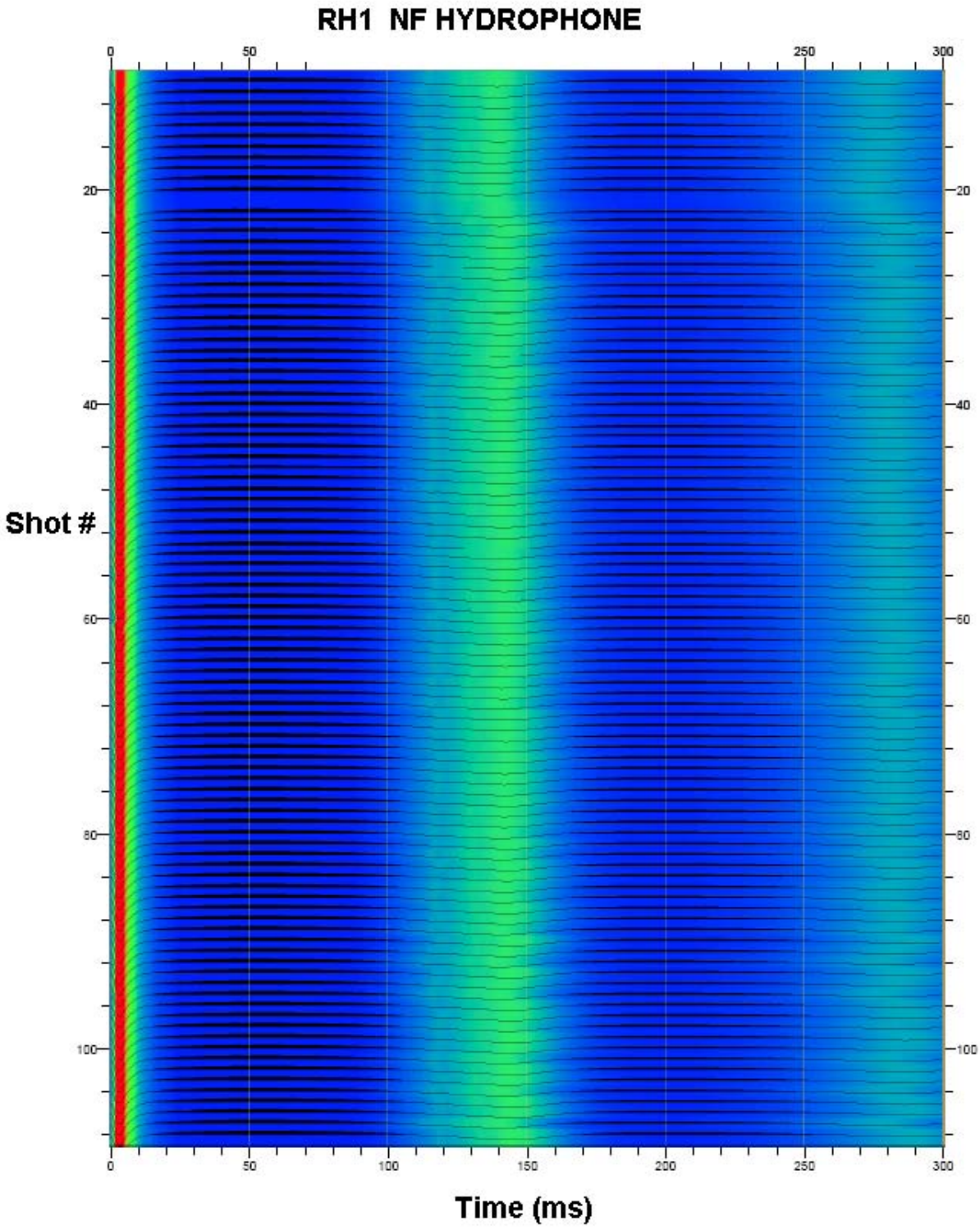

Figure 2a. Near Field Hydrophone QC display of Rockhopper-1 VSP

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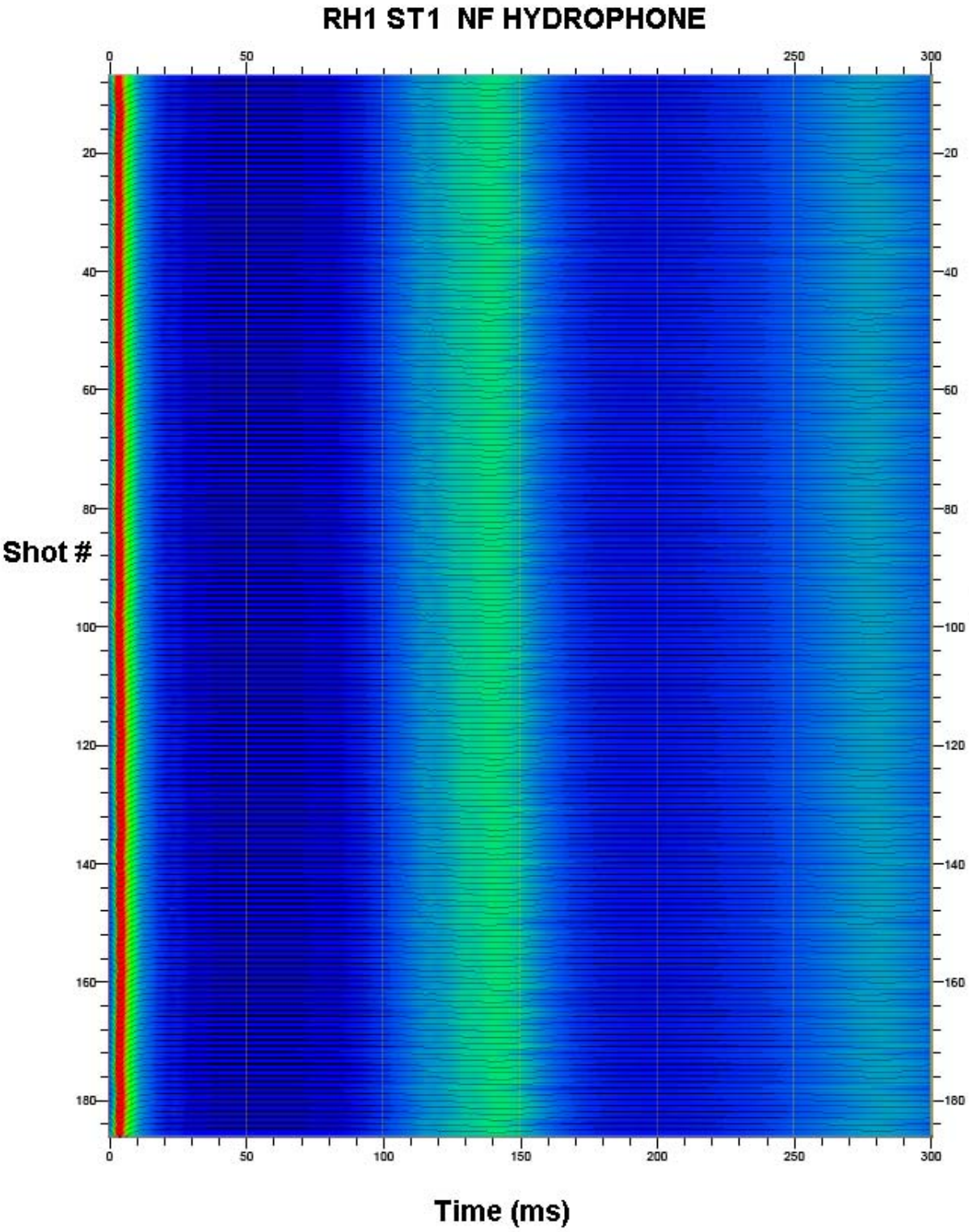

Figure 2b. Near Field Hydrophone QC display of Rockhopper-1 ST1 VSP

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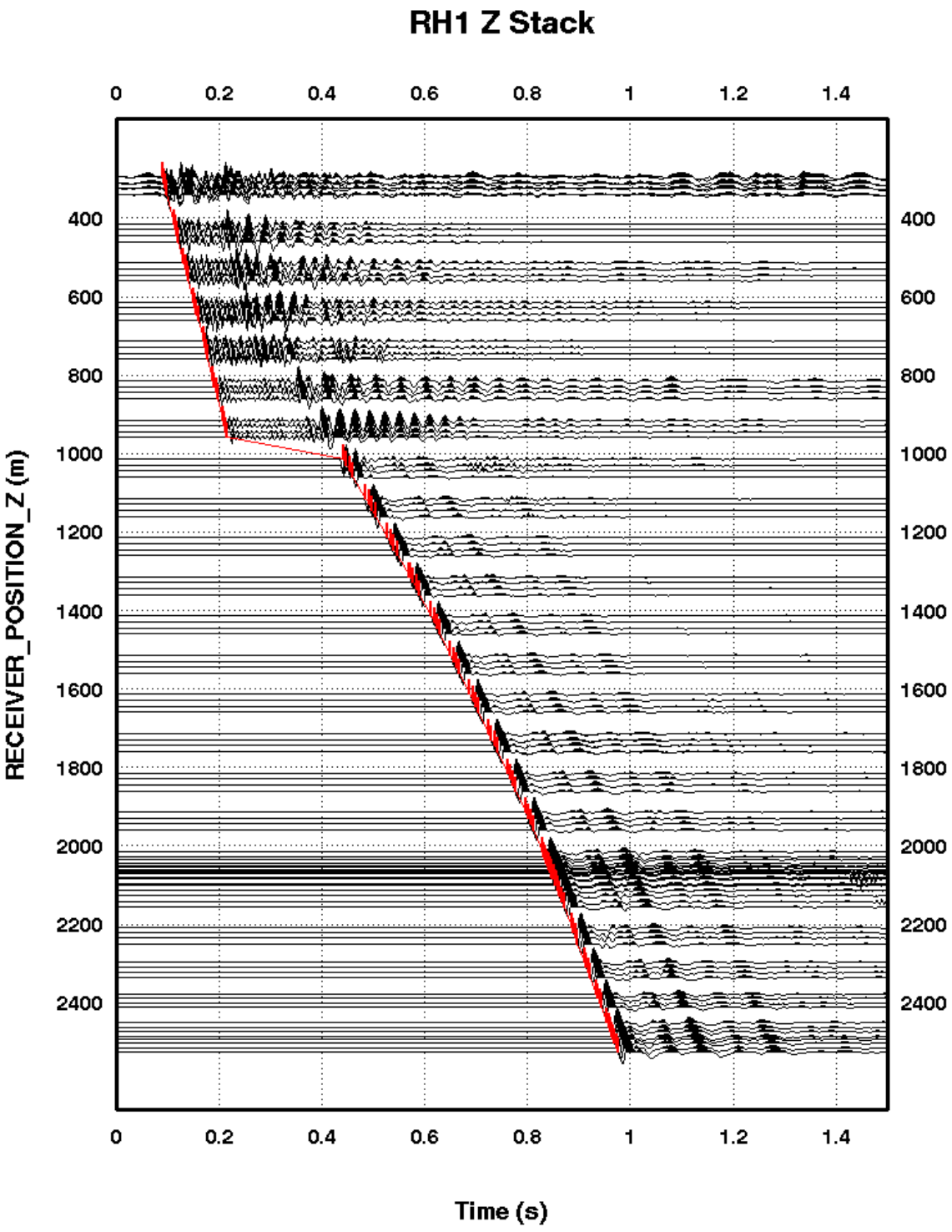

Figure 3a. Rockhopper-1 VSP: Z Component Stack

(Trace Normalised)

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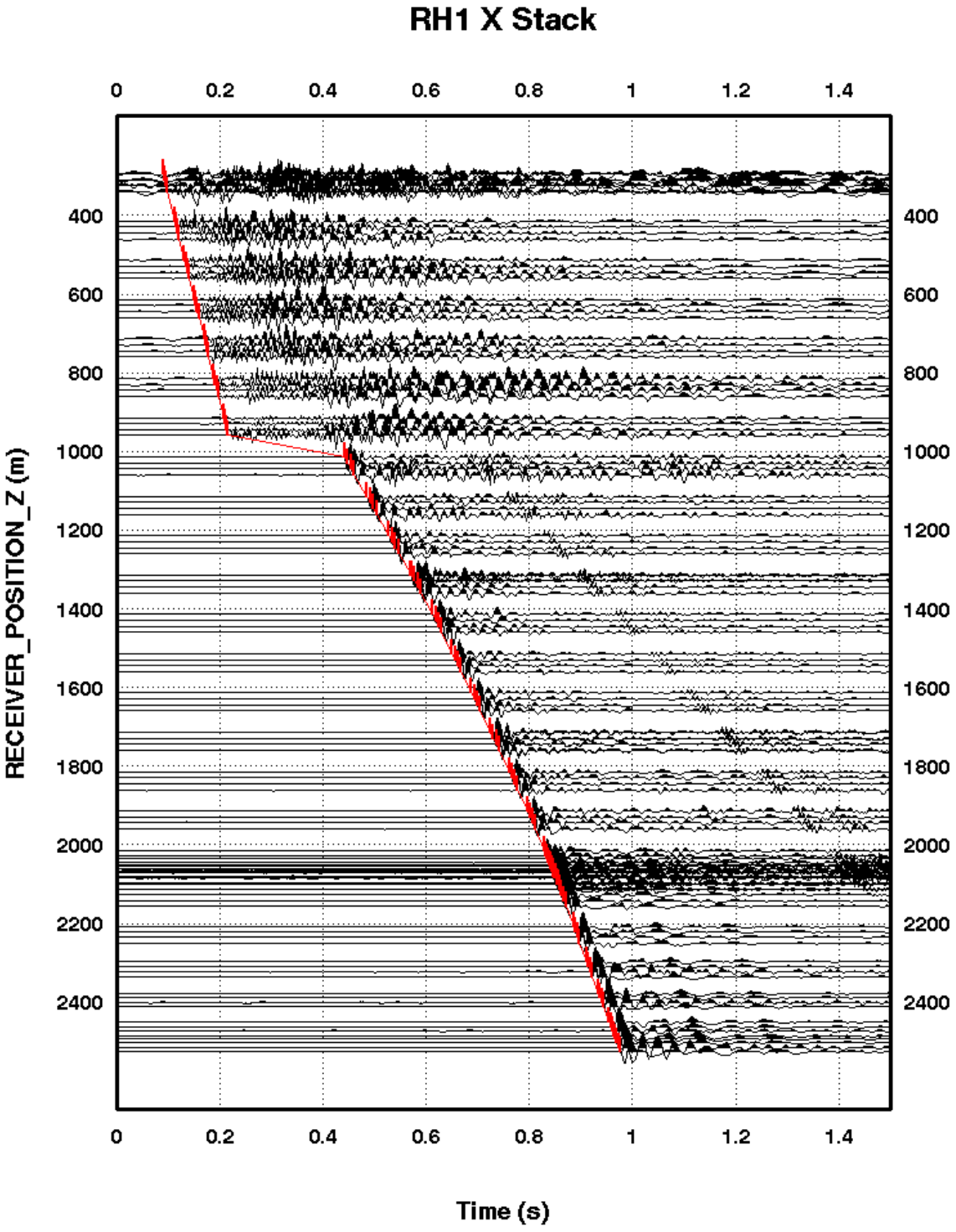

Figure 3b. Rockhopper-1 VSP: X Component Stack

(Trace Normalised)

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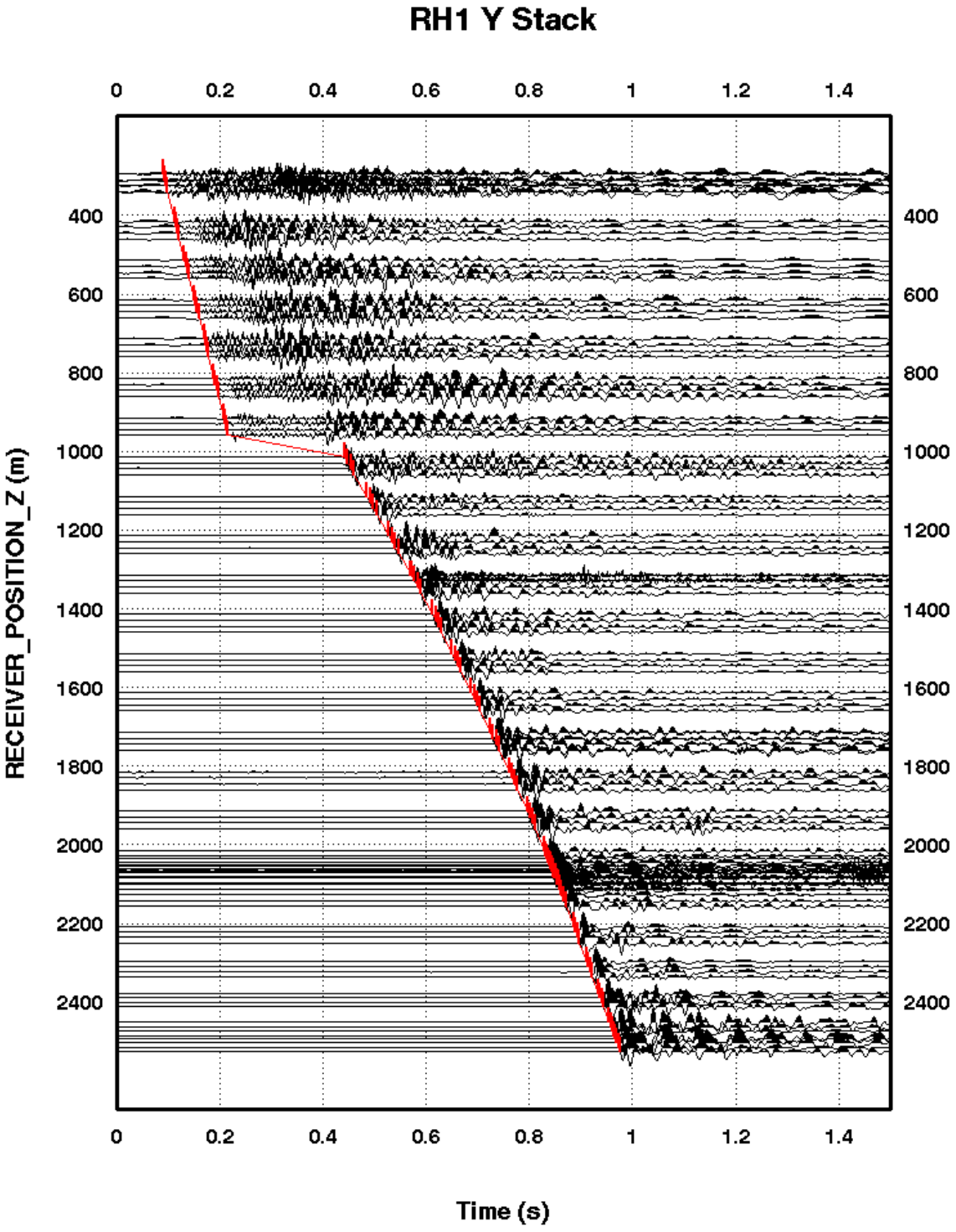

Figure 3c. Rockhopper-1 VSP: Y Component Stack

(Trace Normalised)

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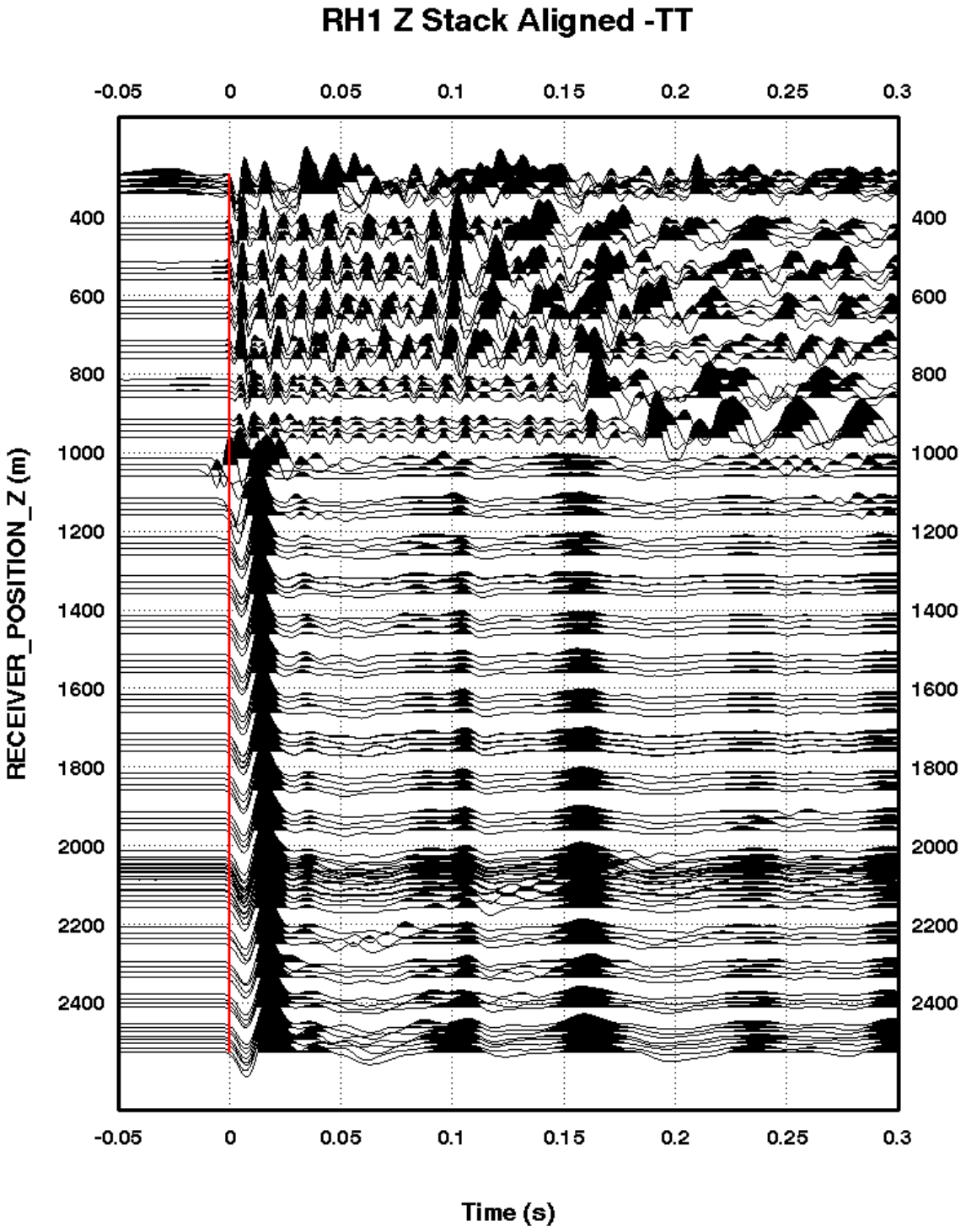

Figure 3d. Rockhopper-1 VSP: Z Component Stack Aligned -TT

(Trace Normalised)

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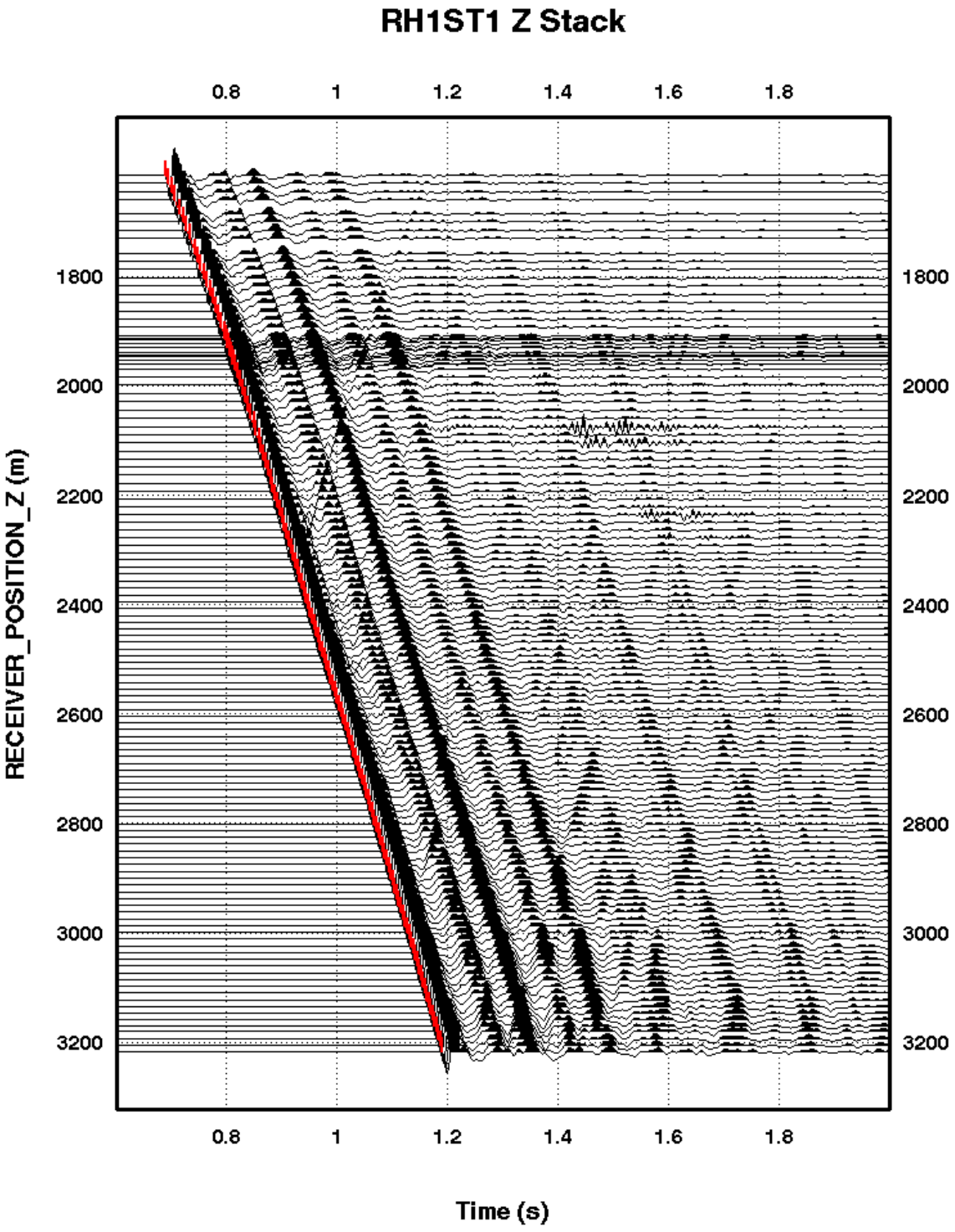

Figure 4a. Rockhopper-1 ST1 VSP: Z Component Stack

(Trace Normalised)

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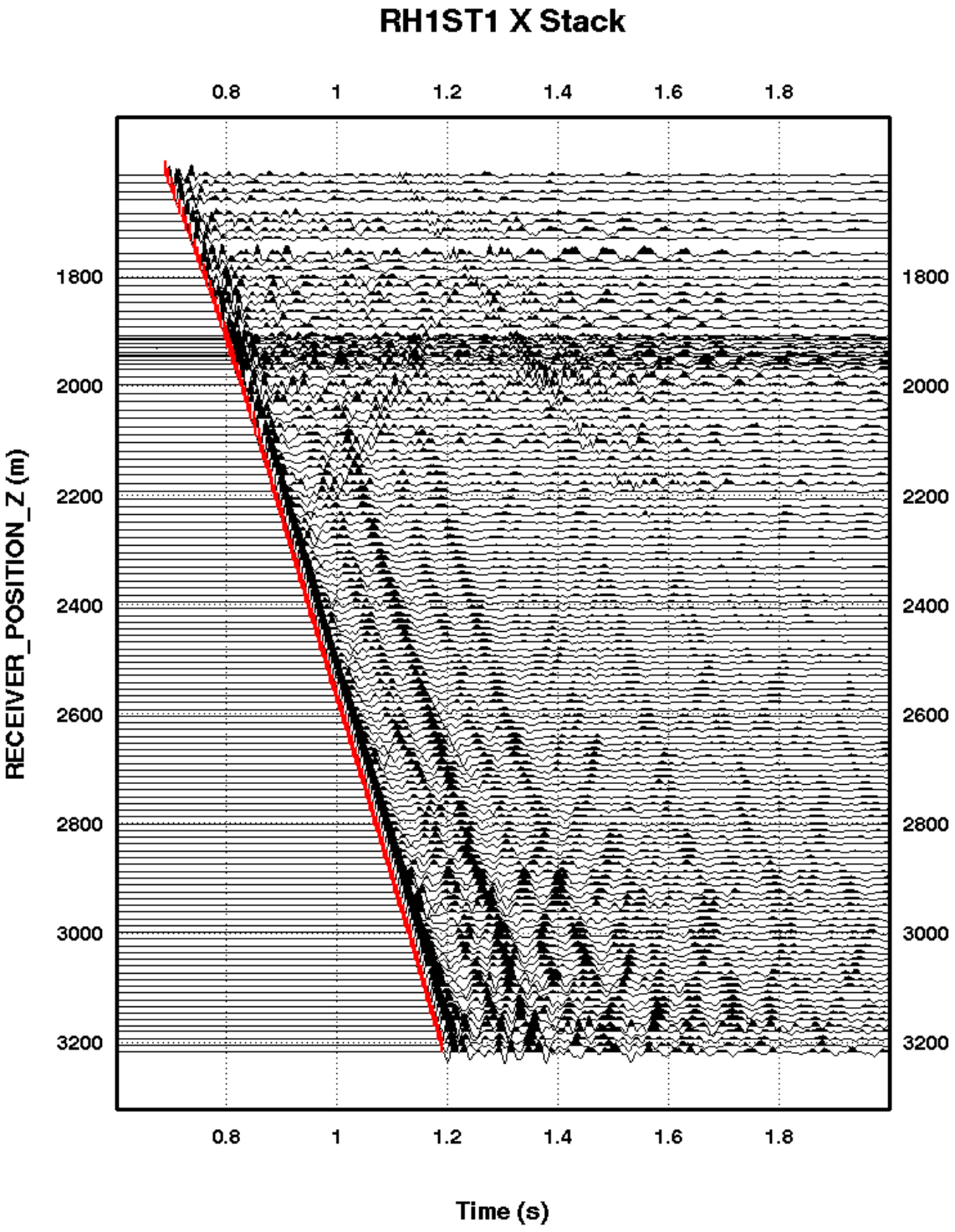

Figure 4b. Rockhopper-1 ST1 VSP: X Component Stack

(Trace Normalised)

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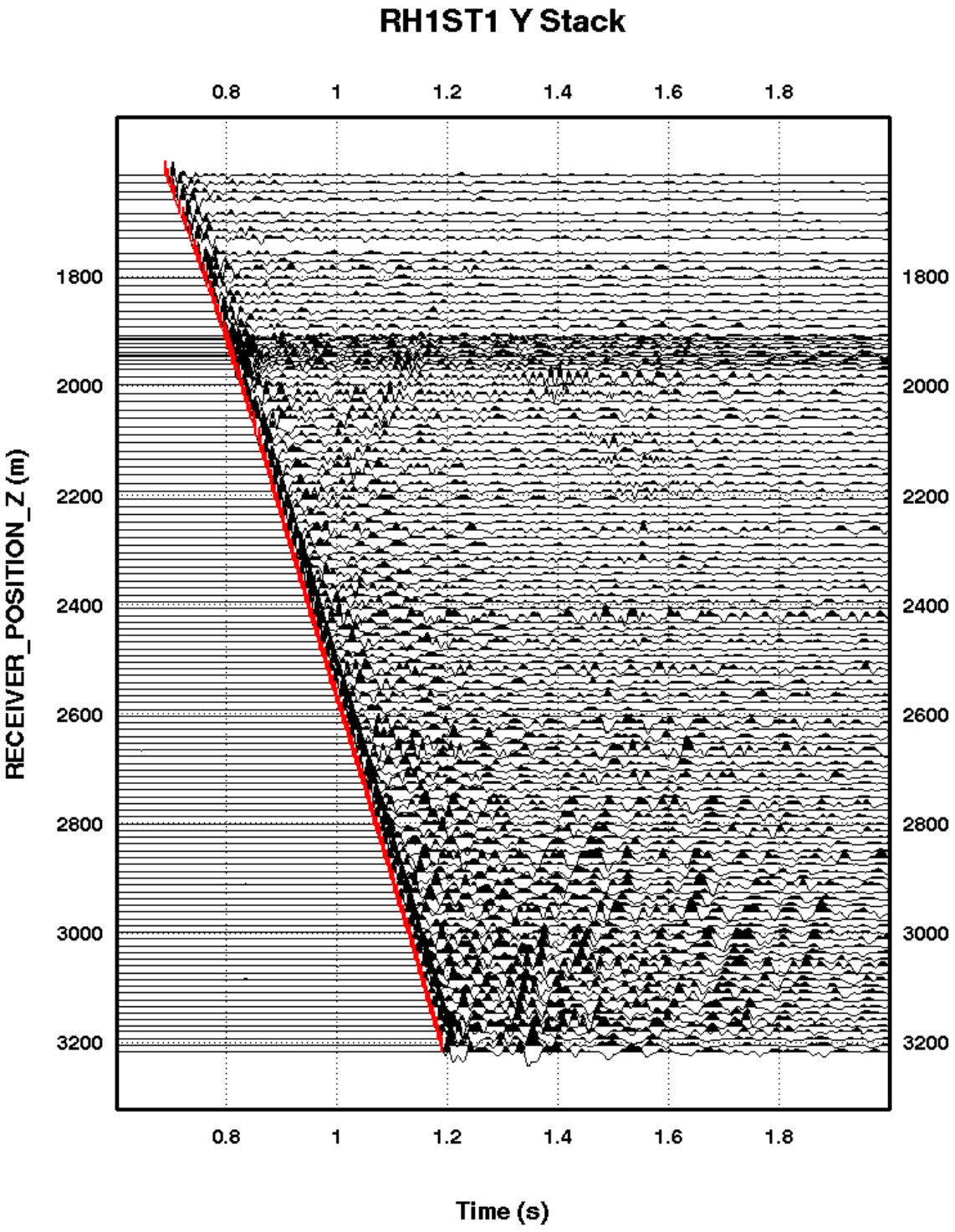

Figure 4c. Rockhopper-1 ST1 VSP: Y Component Stack

(Trace Normalised)

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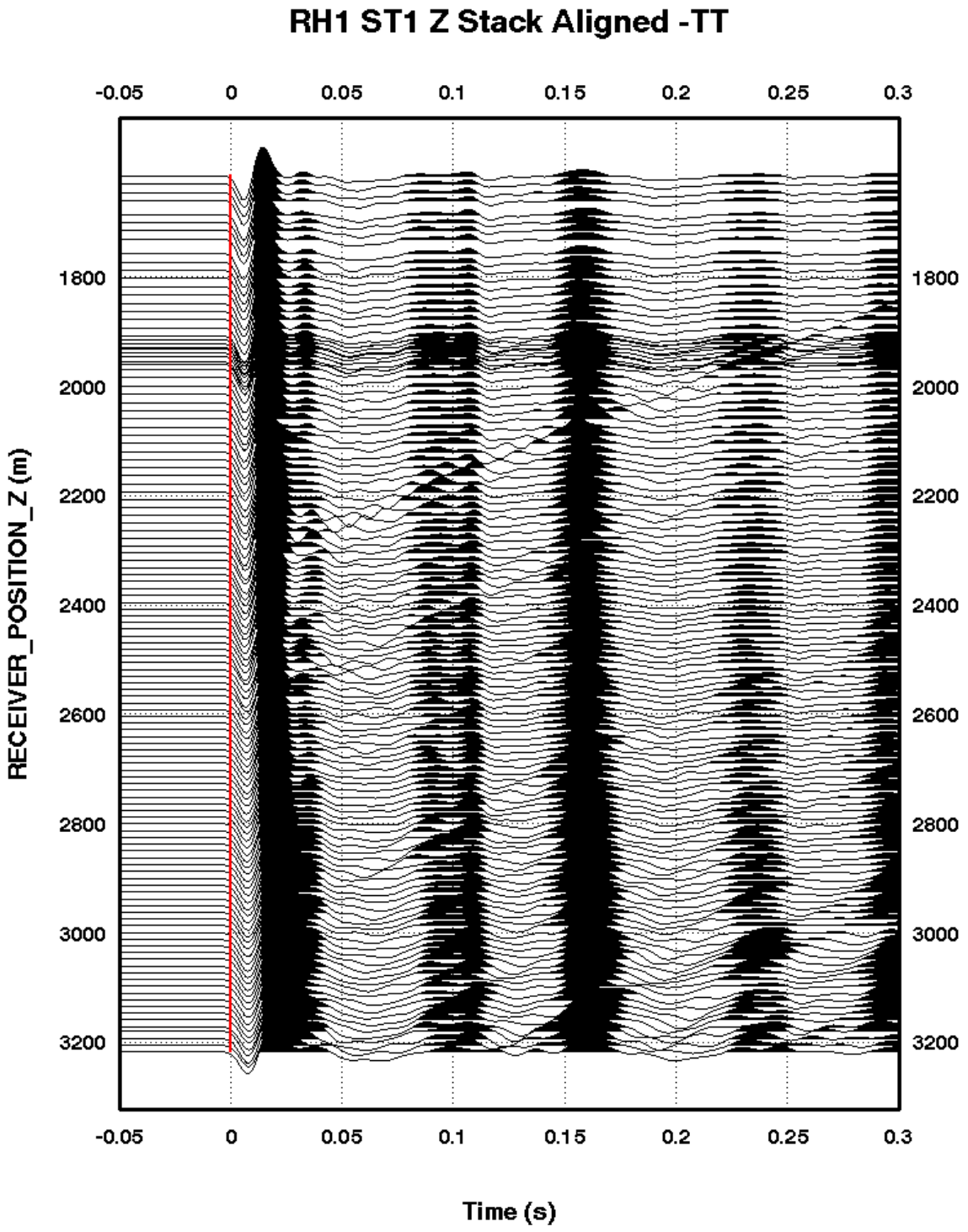

Figure 4d. Rockhopper-1 ST1 VSP: Z Component Stack Aligned -TT

(Trace Normalised)

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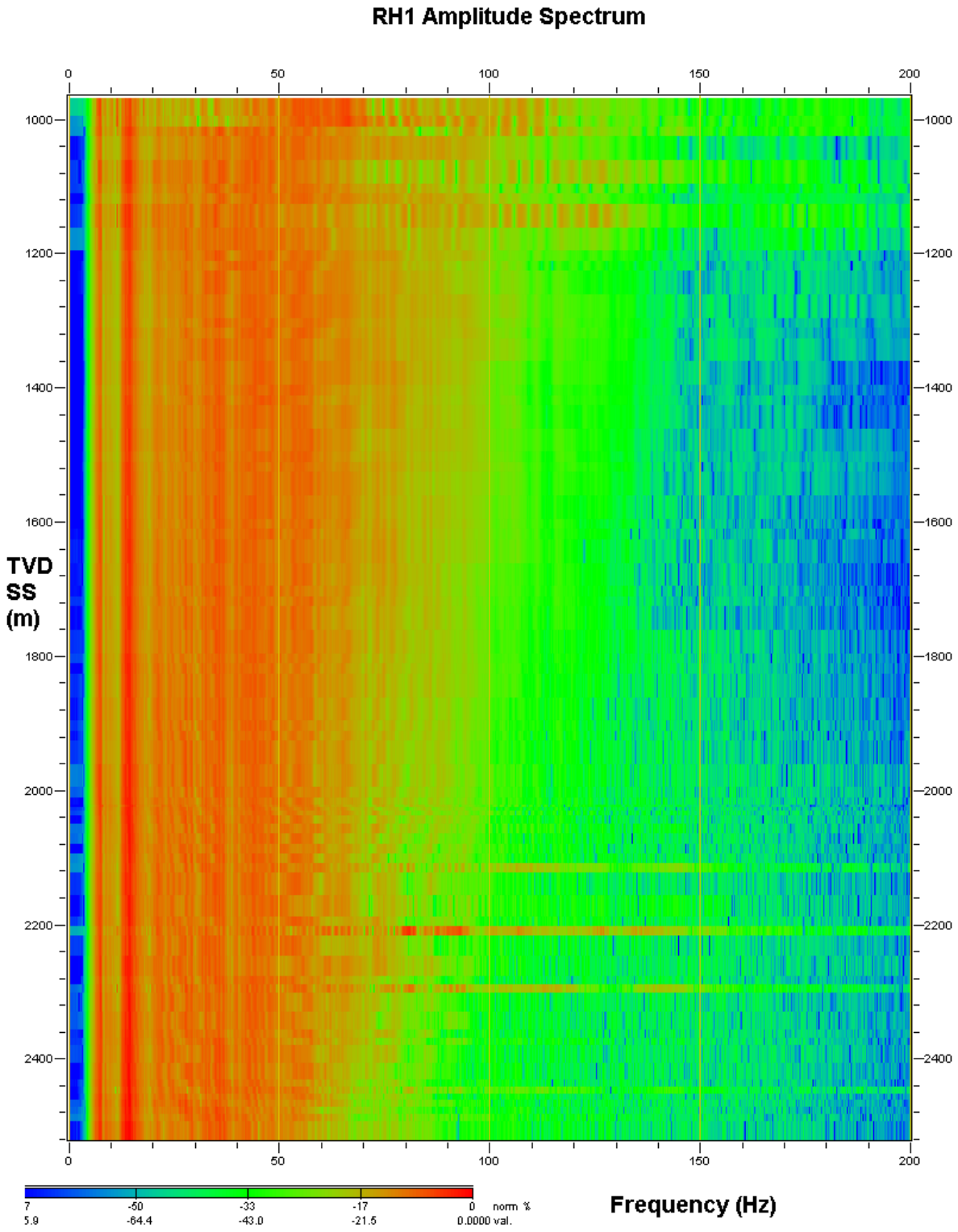

Figure 5a. Rockhopper-1 VSP: Amplitude Spectrum of Downhole Data

(Amplitude in dB)

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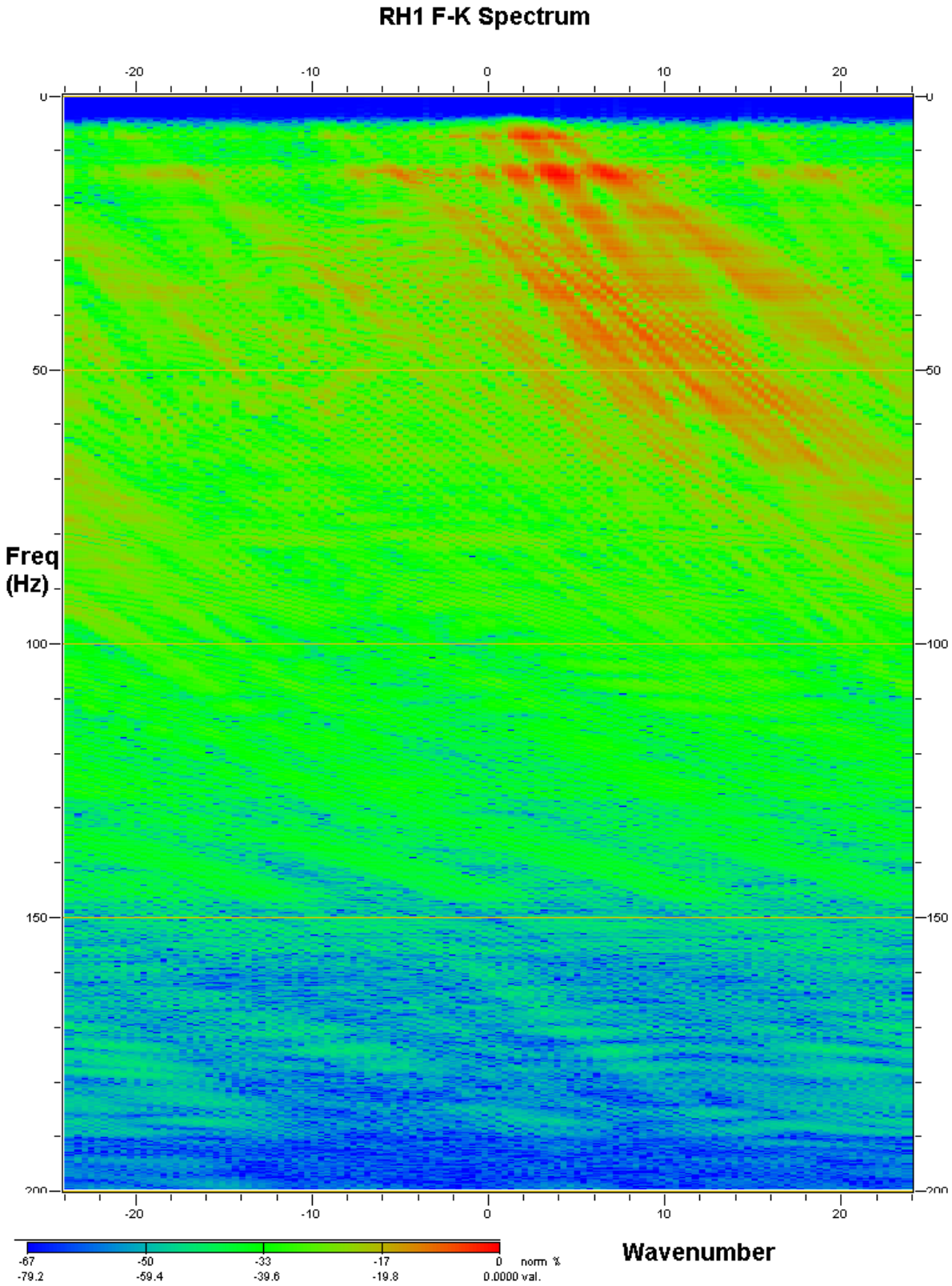

Figure 5b. Rockhopper-1 VSP: F-K Spectrum of Downhole Data

(Amplitude in dB)

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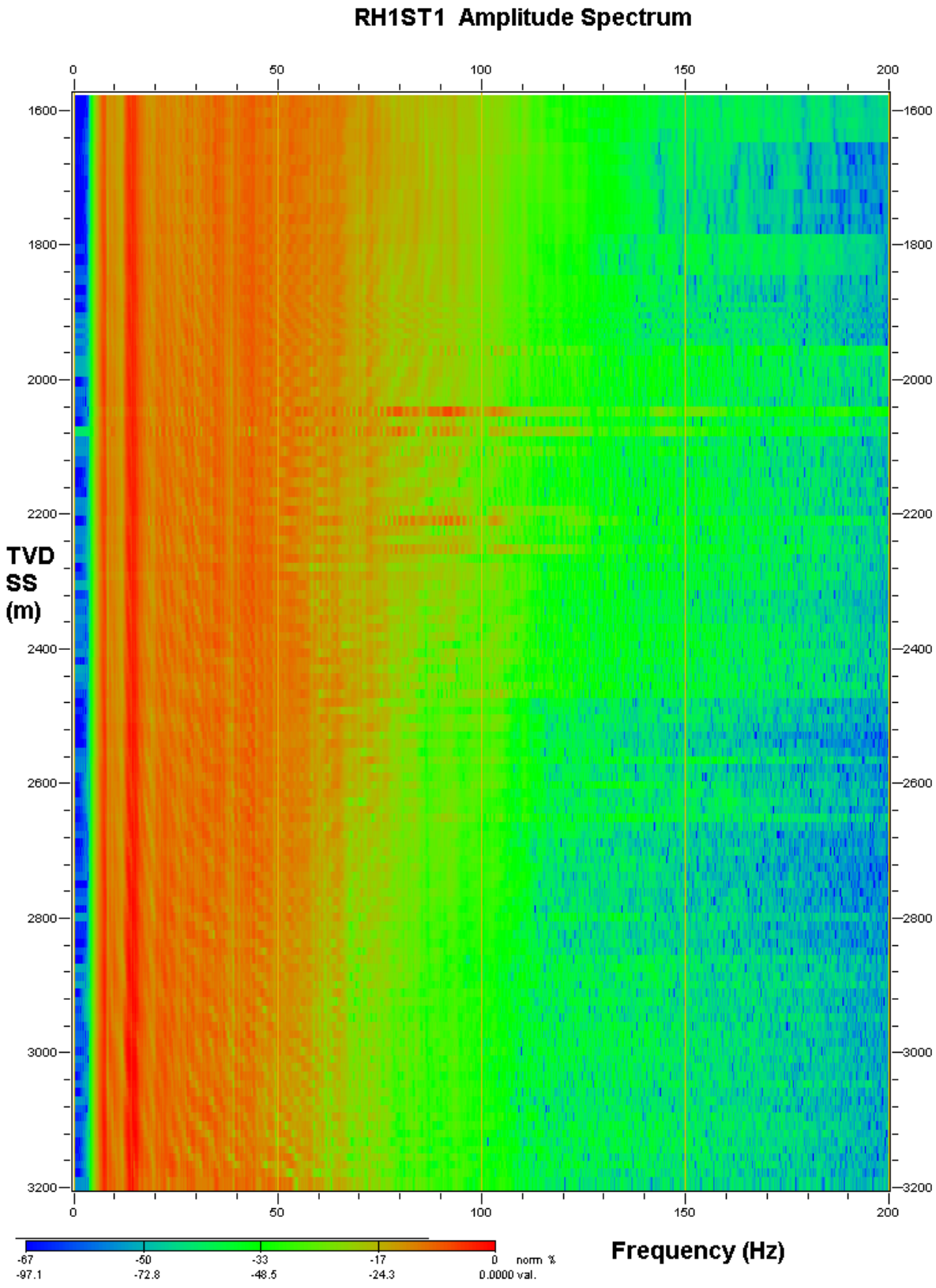

Figure 6a. Rockhopper-1 ST1 VSP: Amplitude Spectrum of Downhole Data

(Amplitude in dB)

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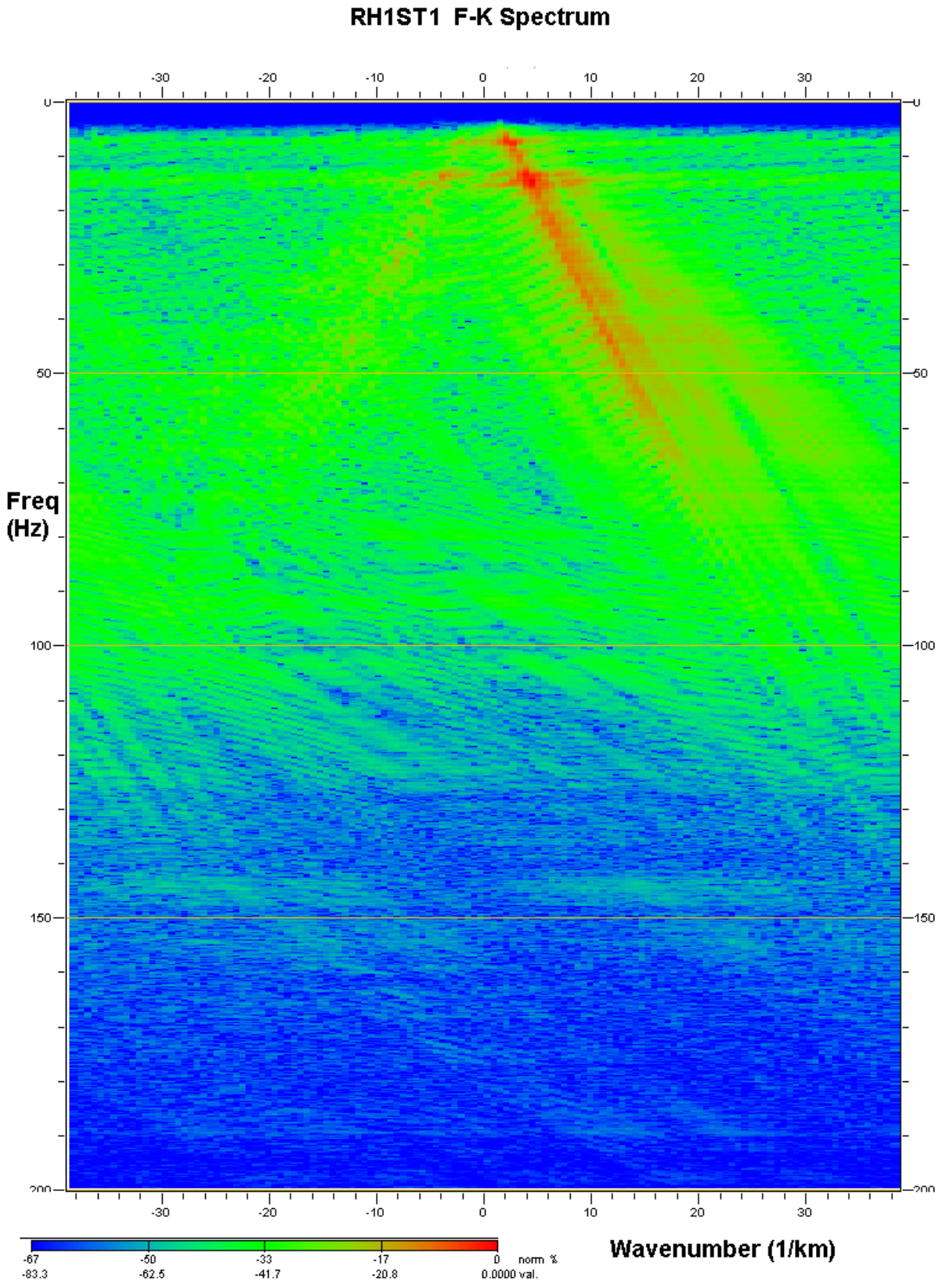

Figure 6b. Rockhopper-1 ST1 VSP: F-K Spectrum of Downhole Data

(Amplitude in dB)

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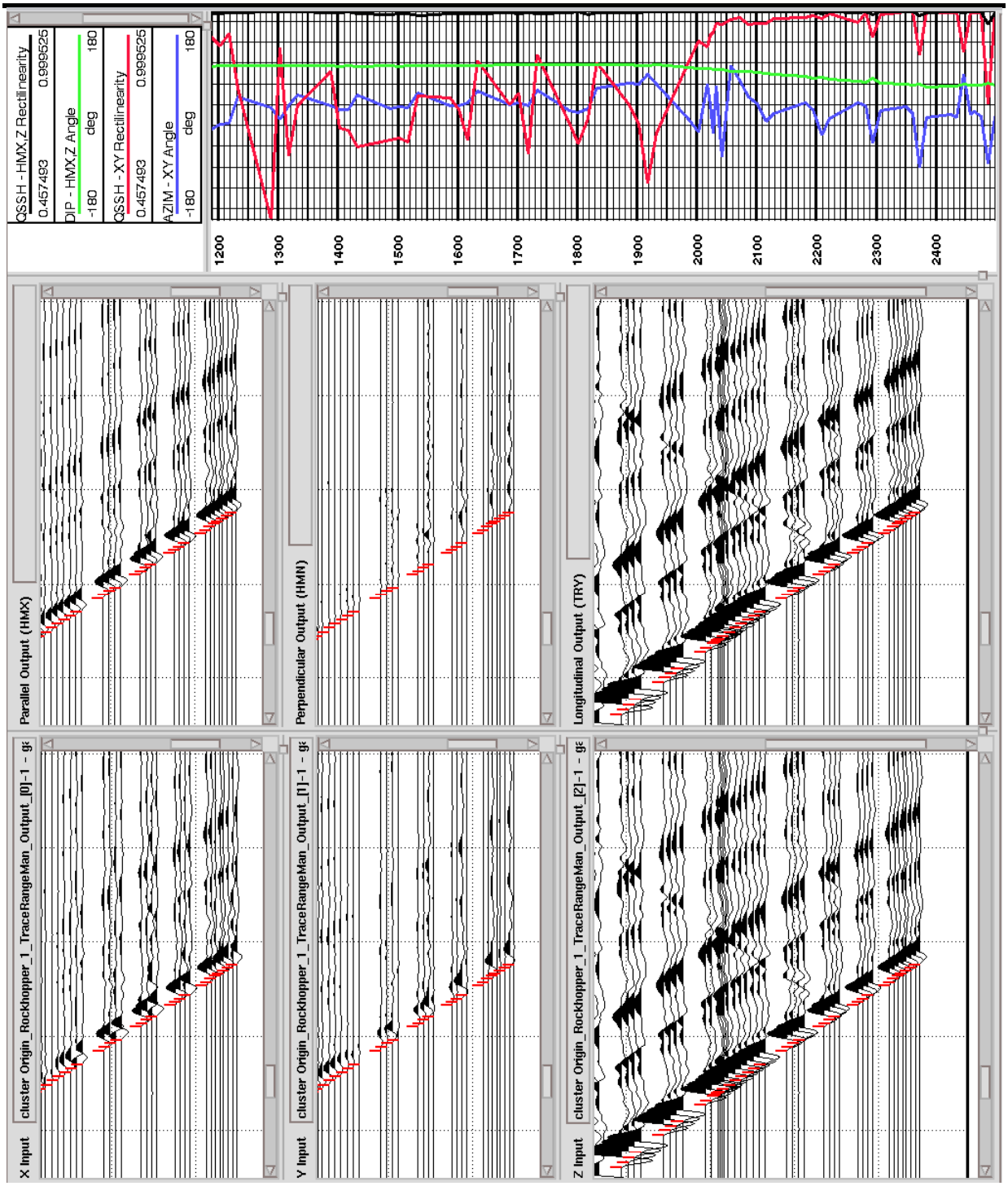

Figure 7a. Rockhopper-1 VSP: Example 3C Rotation

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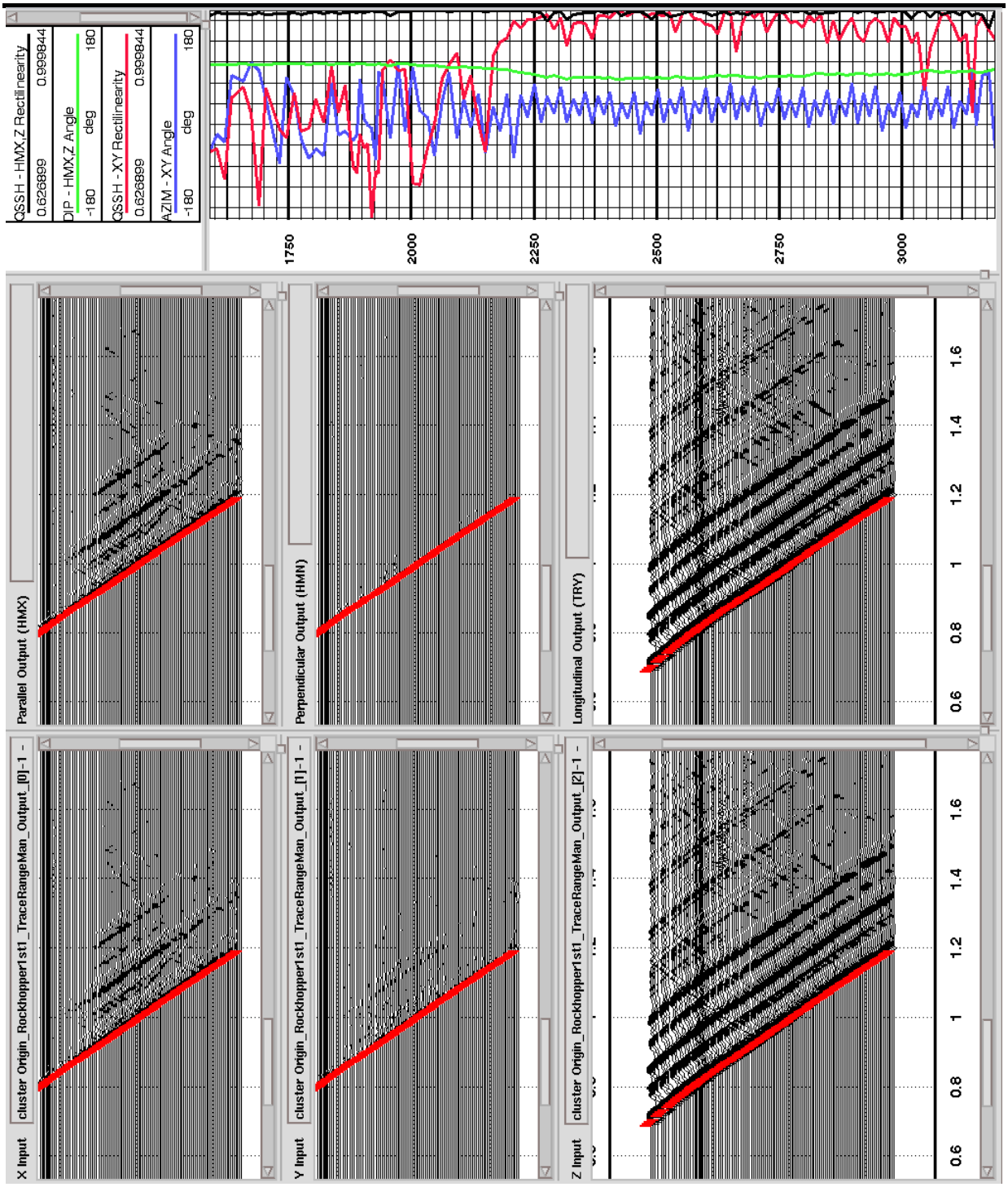

Figure 7b. Rockhopper-1 ST1 VSP: Example 3C Rotation

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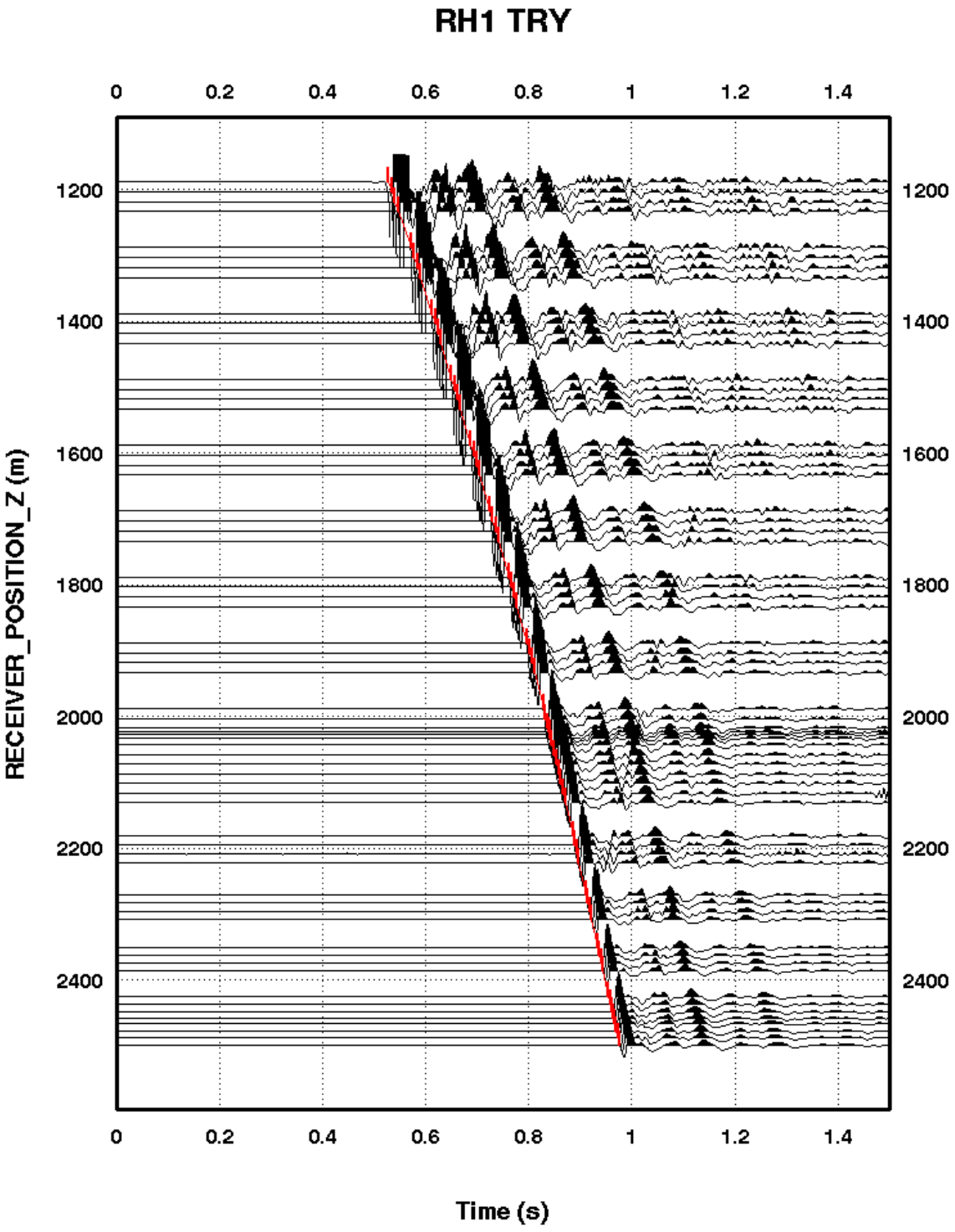

Figure 8a. Rockhopper-1 VSP: TRY Rotated Component

(Gather Normalised)

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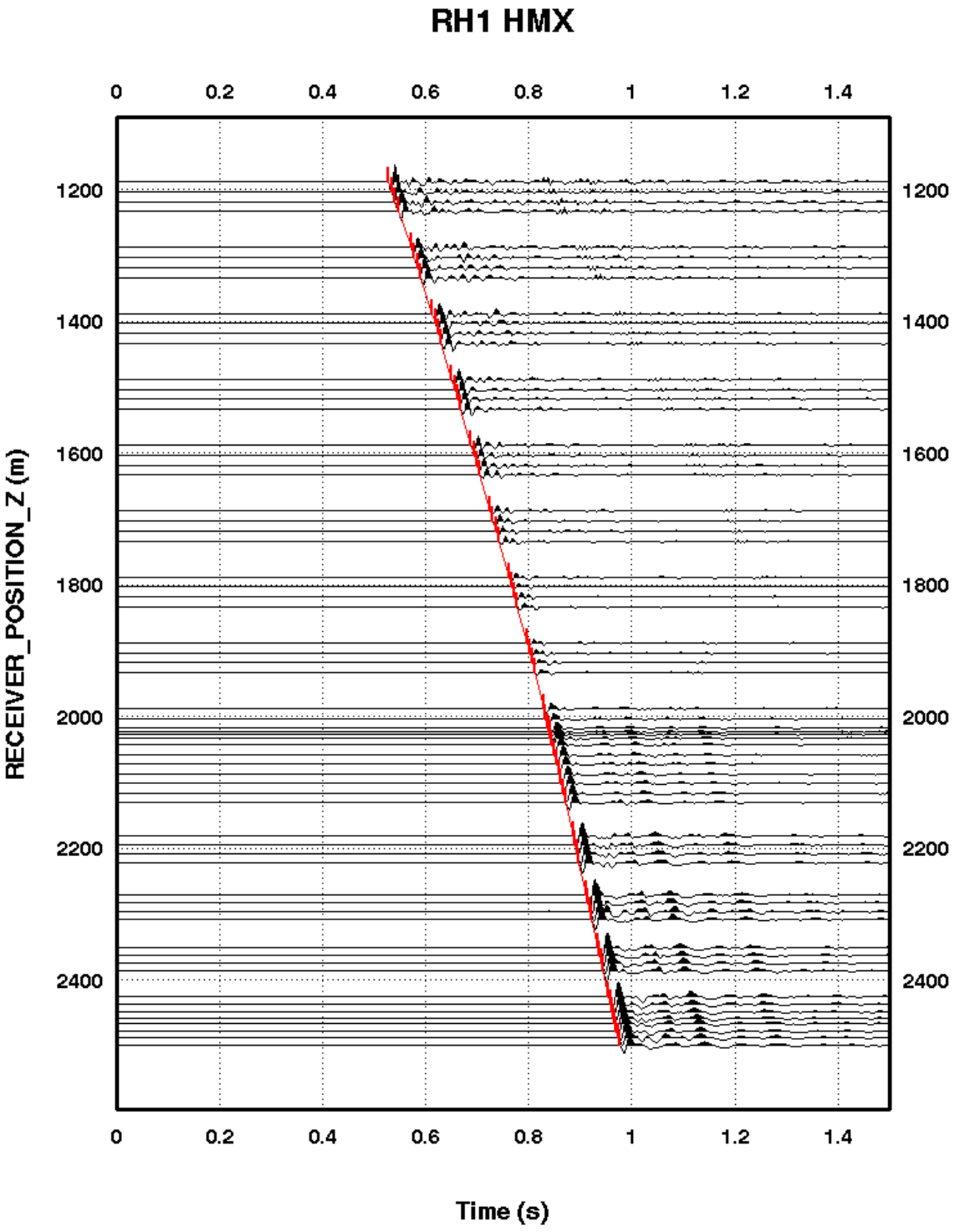

Figure 8b. Rockhopper-1 VSP: HMX Rotated Component

(Gather Normalised)

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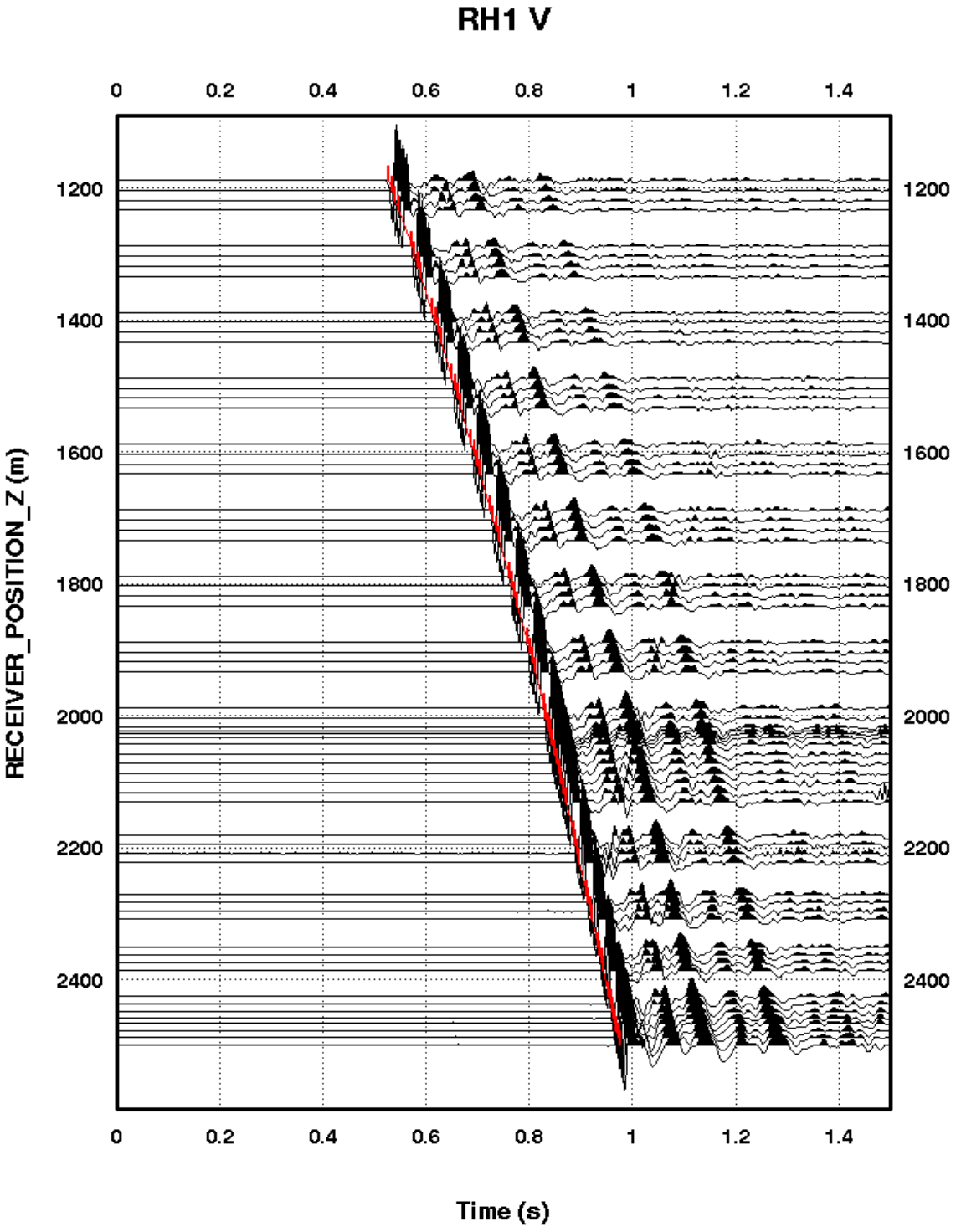

Figure 8c. Rockhopper-1 VSP: V, Rotated True Vertical Component

(Trace Normalised)

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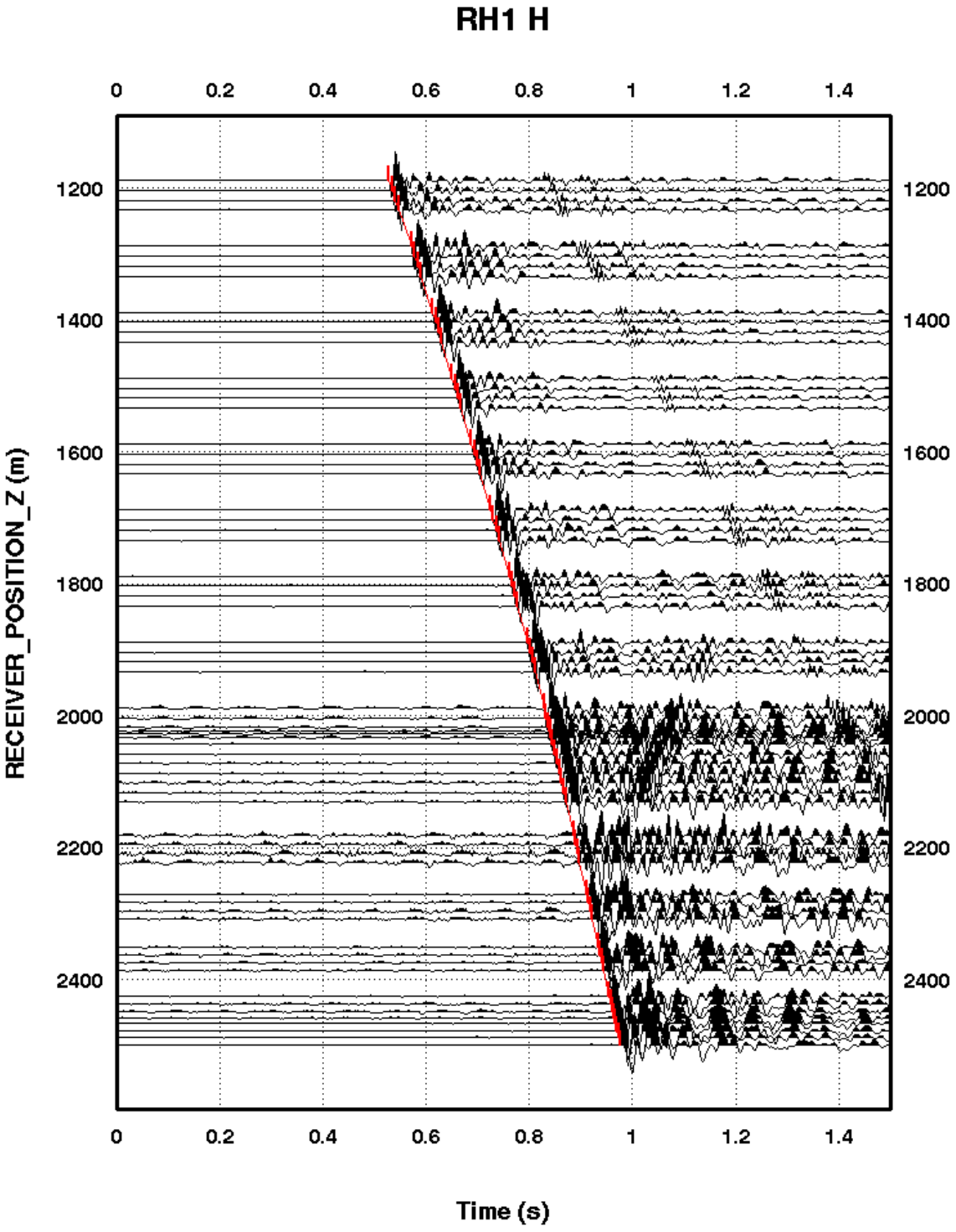

Figure 8d. Rockhopper-1 VSP: H, Rotated True Inline Horizontal Component

(Trace Normalised)

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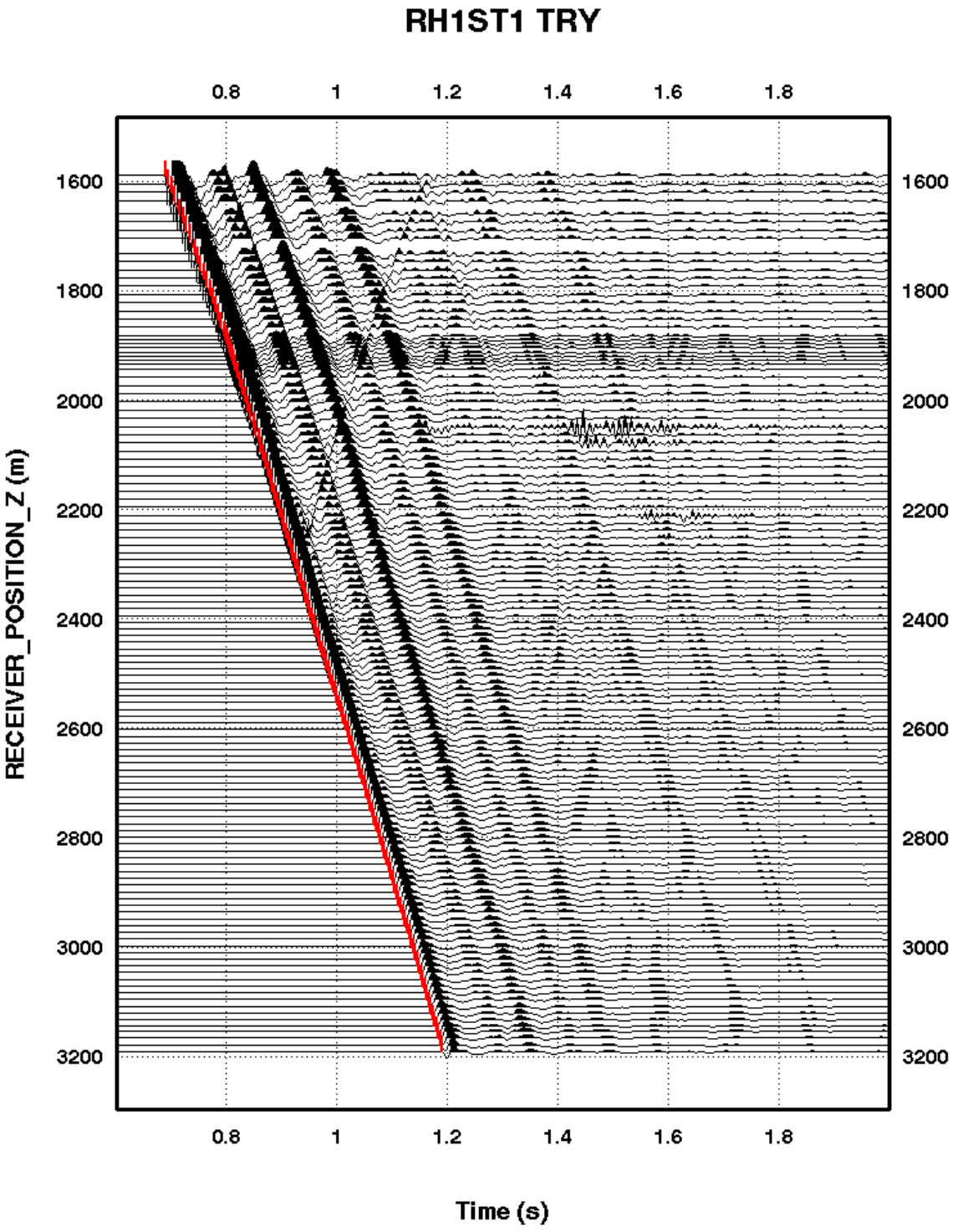

Figure 9a. Rockhopper-1 ST1 VSP: TRY Rotated Component

(Gather Normalised)

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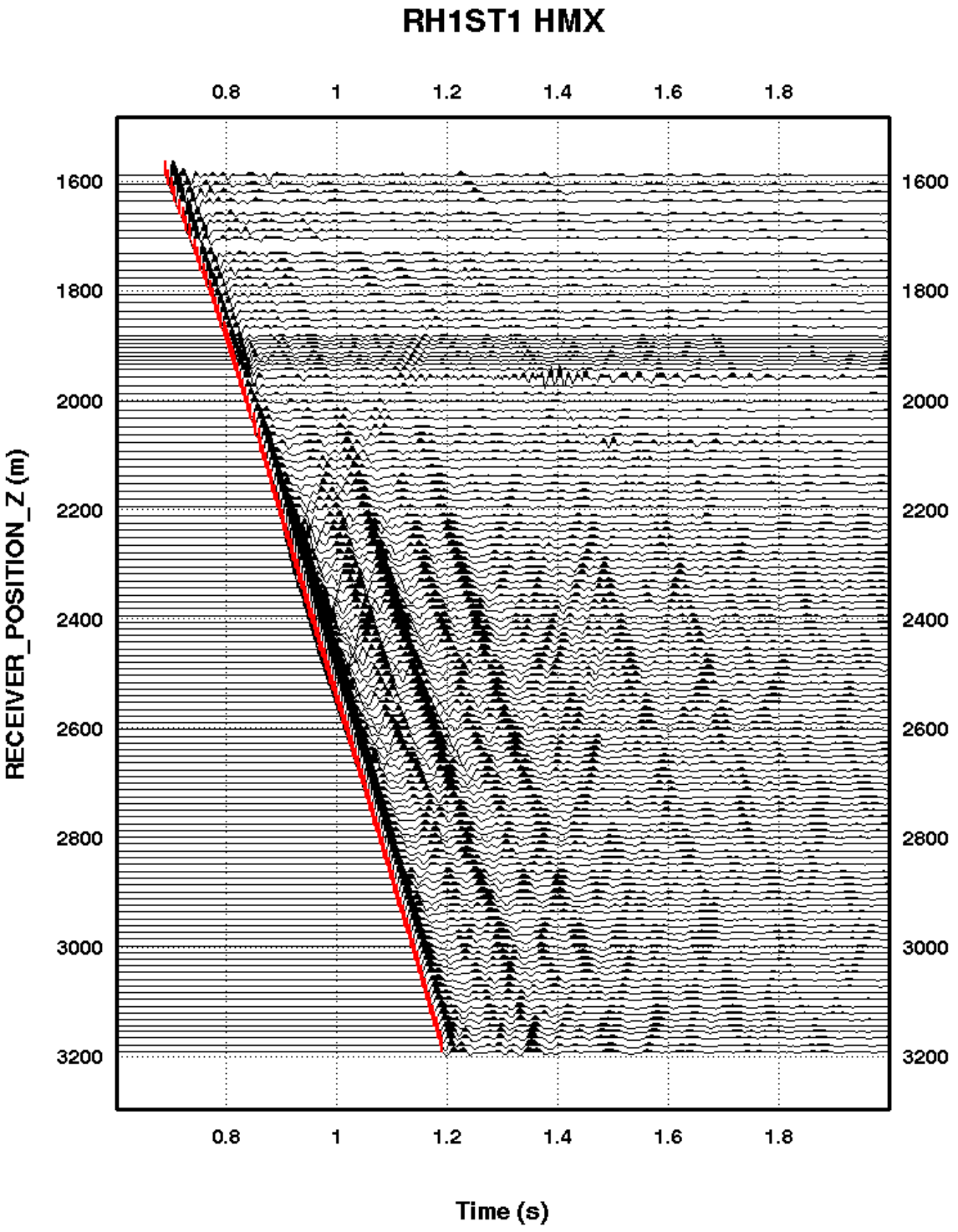


Figure 9b. Rockhopper-1 ST1 VSP: HMX Rotated Component

(Gather Normalised)

Schlumberger Public

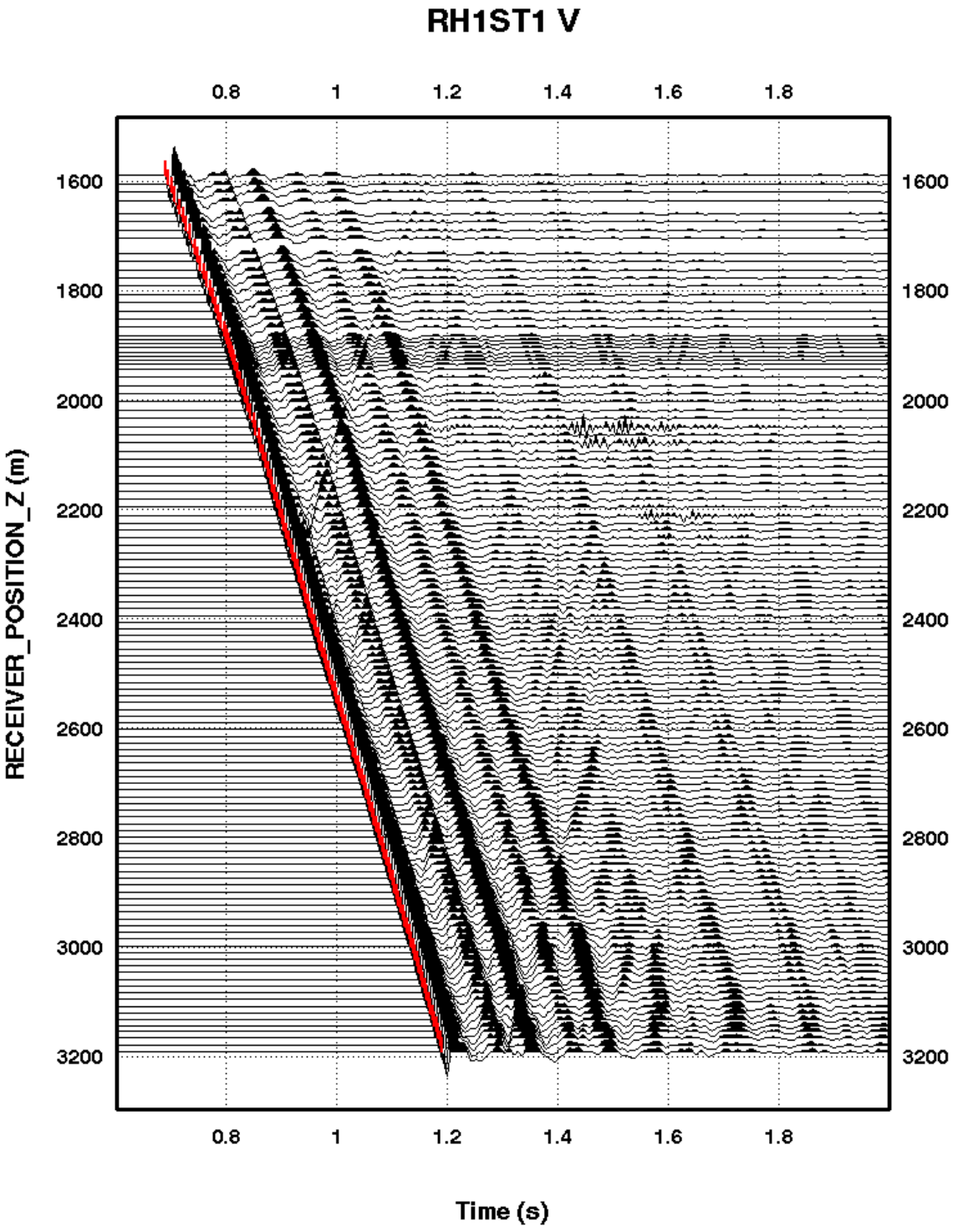


Figure 9c. Rockhopper-1 ST1 VSP: V, Rotated True Vertical Component

(Trace Normalised)

Schlumberger Public

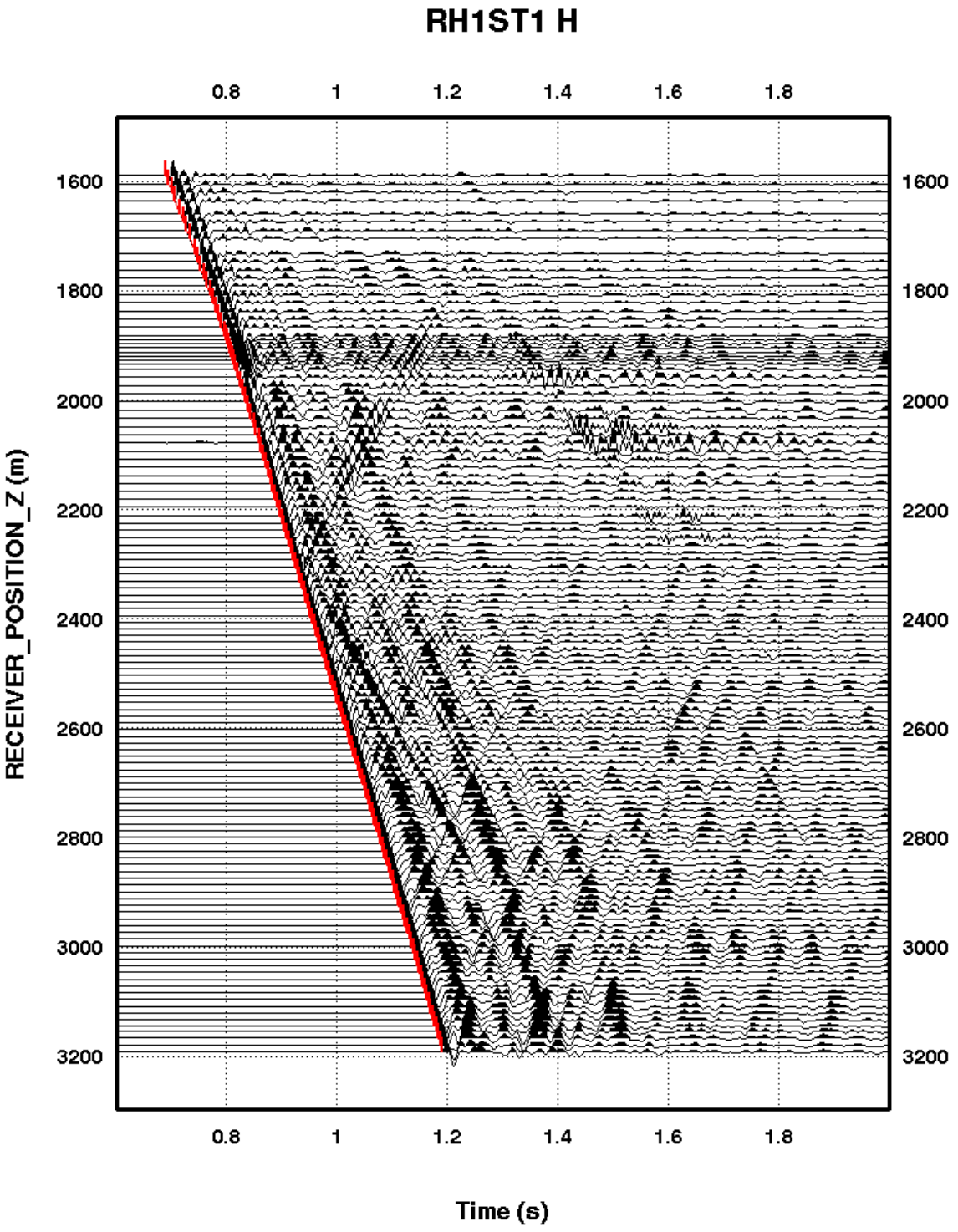
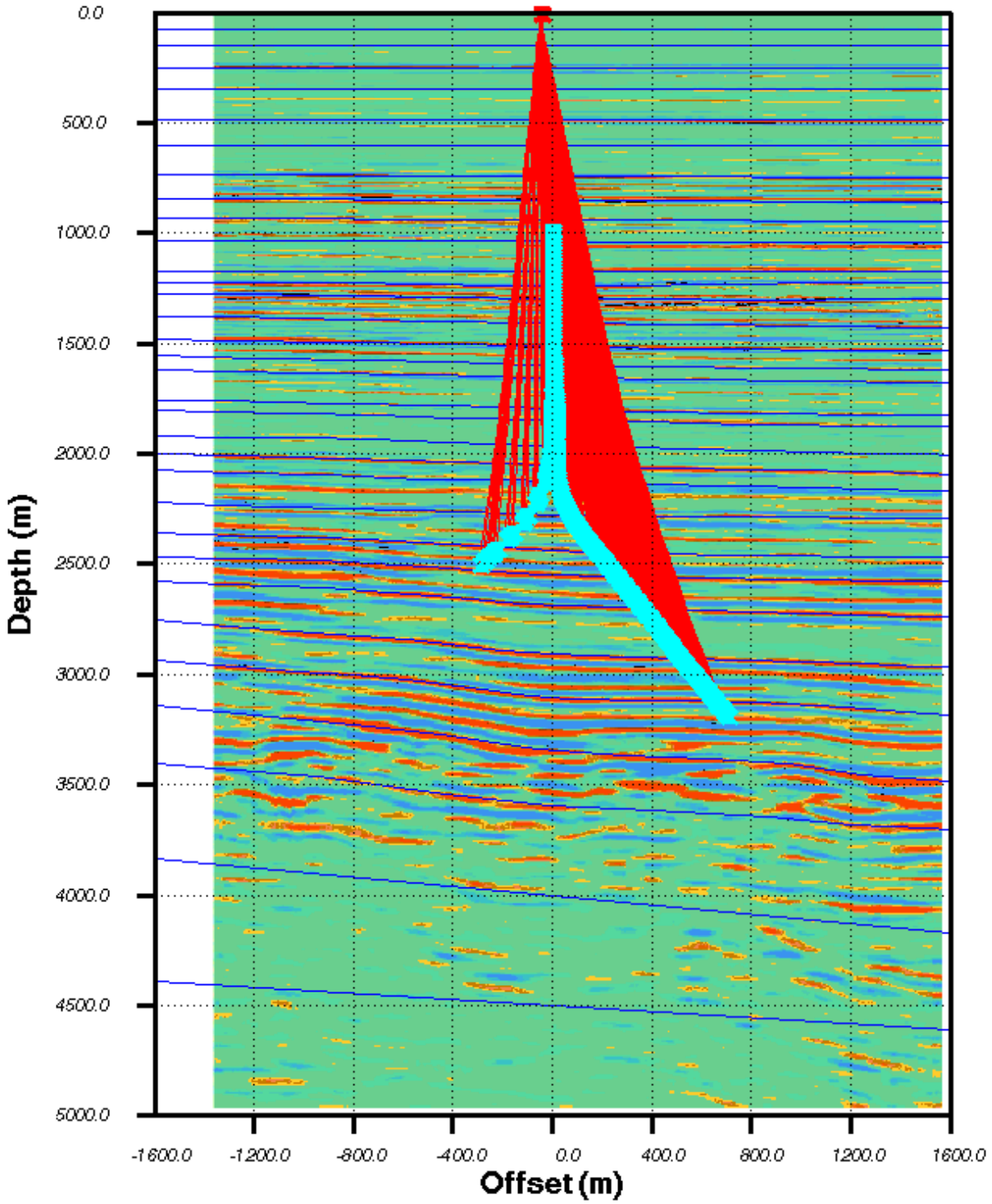


Figure 9d. Rockhopper-1 ST1 VSP: H, Rotated True Inline Horizontal Component

(Trace Normalised)

Schlumberger Public



Schlumberger Public

Figure 10a. 2D Model Building: Surface Seismic Line

RH1 and RH1ST1 Receivers (cyan)
Down P Rays (red)

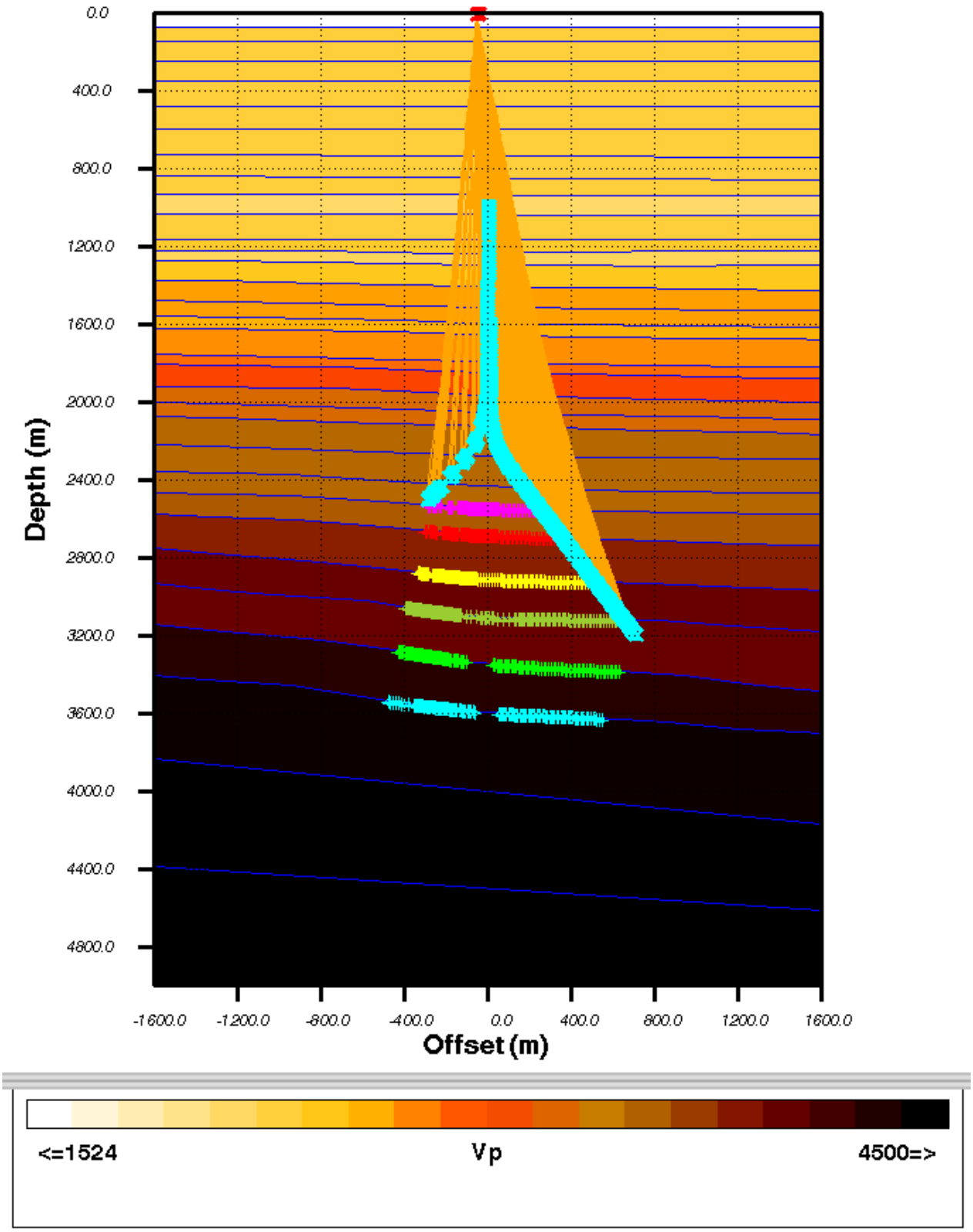


Figure 10b. 2D Model Building: Inverted Velocities

RH1 and RH1ST1 Receivers (cyan)
Down P Rays (orange)
Reflection Points (x)

Schlumberger Public

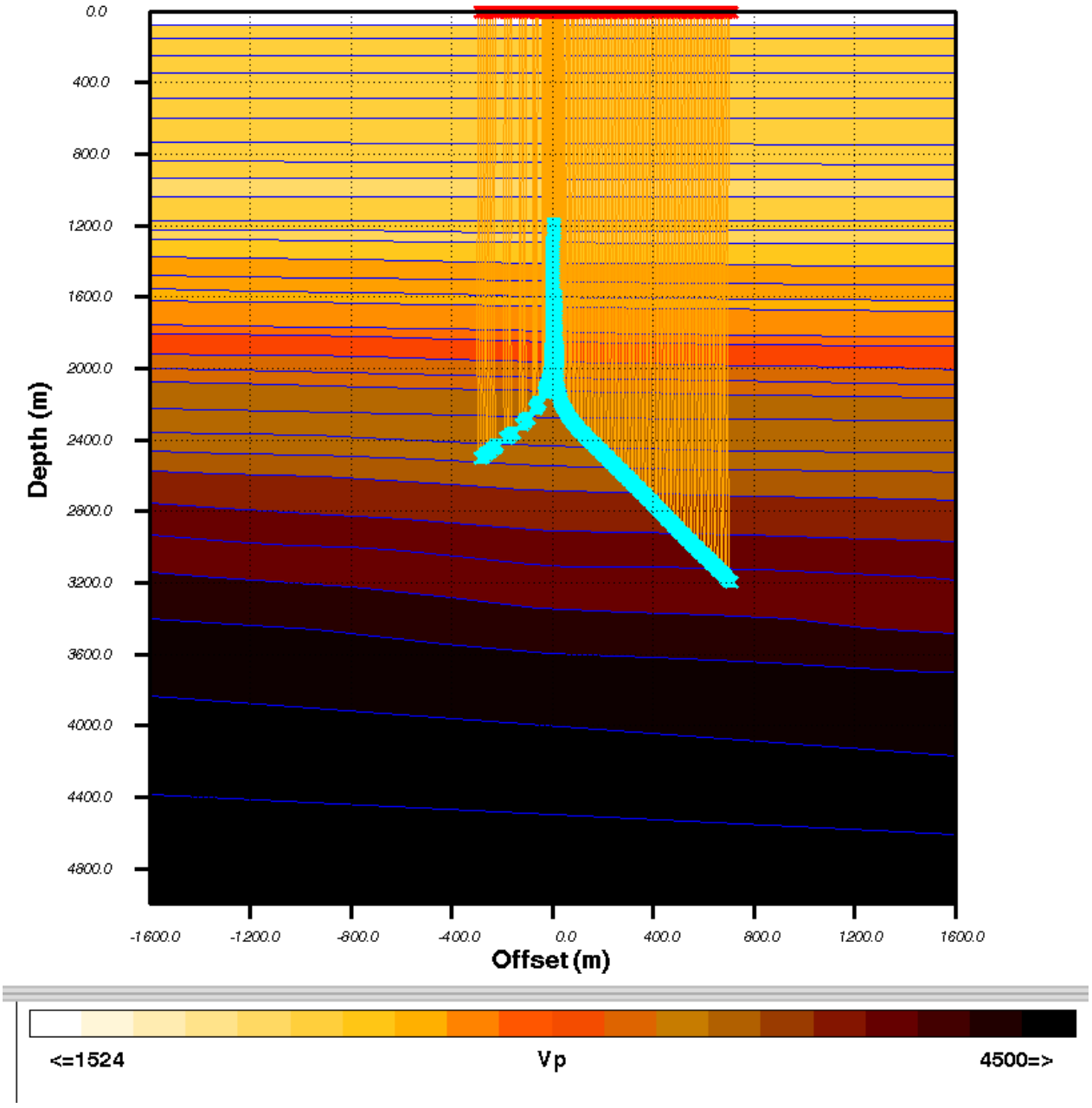


Figure 10c. 2D Model Building: Pseudo VIVSP

RH1 and RH1ST1 Receivers (cyan)
Down VIVSP P Rays (orange)

Schlumberger Public

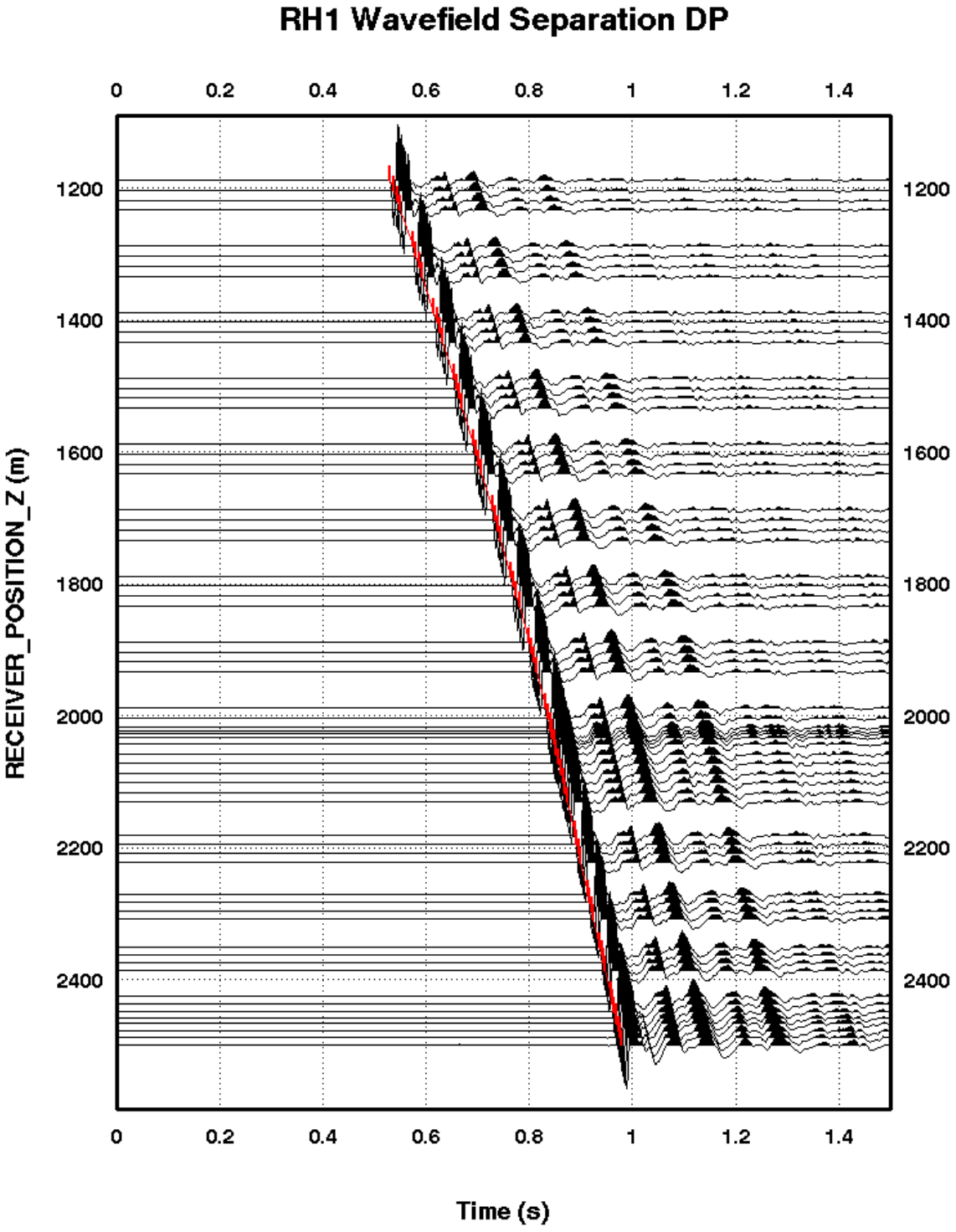


Figure 11a. Rockhopper-1 VSP: Down going P Wavefield after Wavefield Separation

(Trace Normalised)

Schlumberger Public

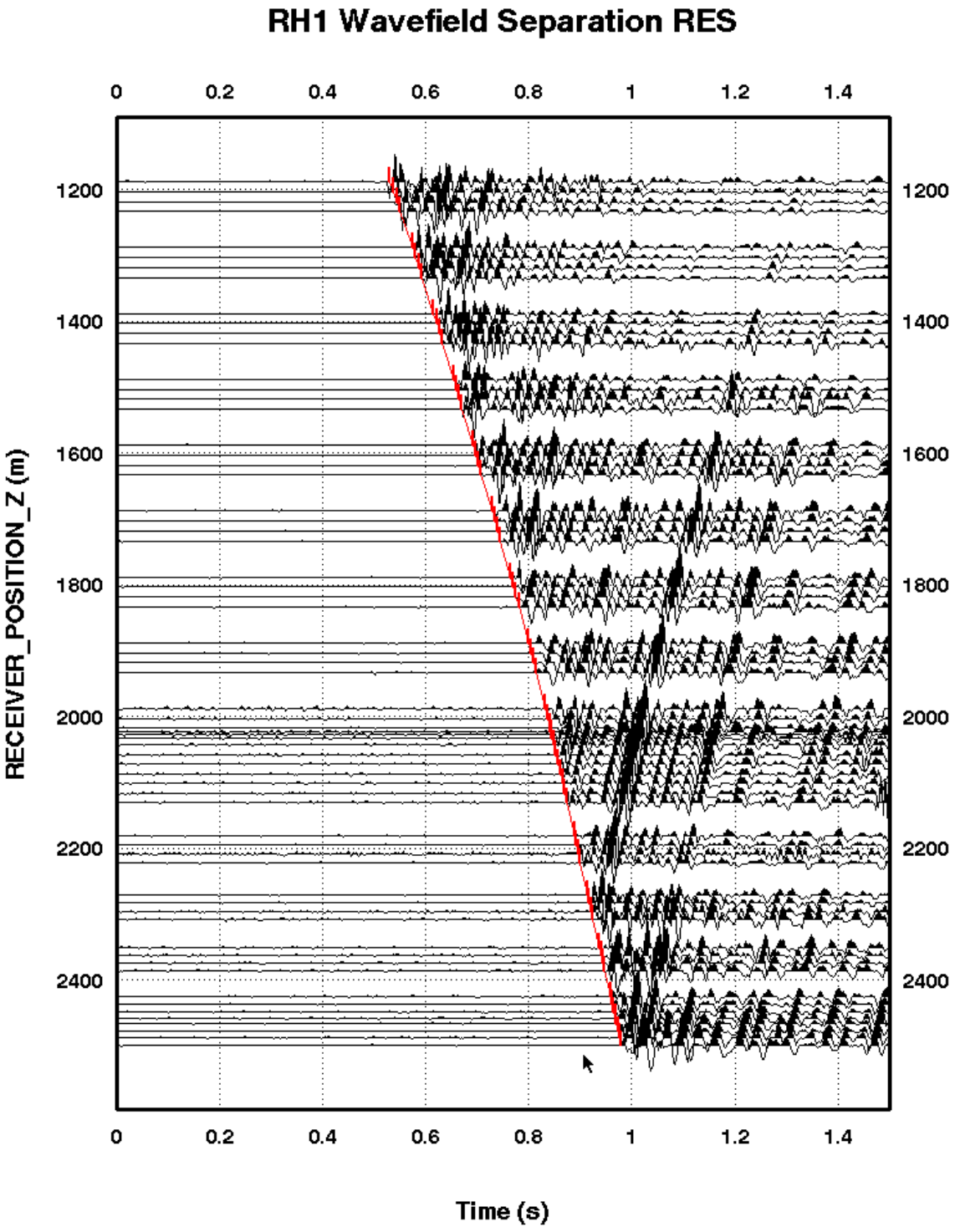


Figure 11b. Rockhopper-1 VSP: Up going P Wavefield after Wavefield Separation

(Trace Normalised)

Schlumberger Public

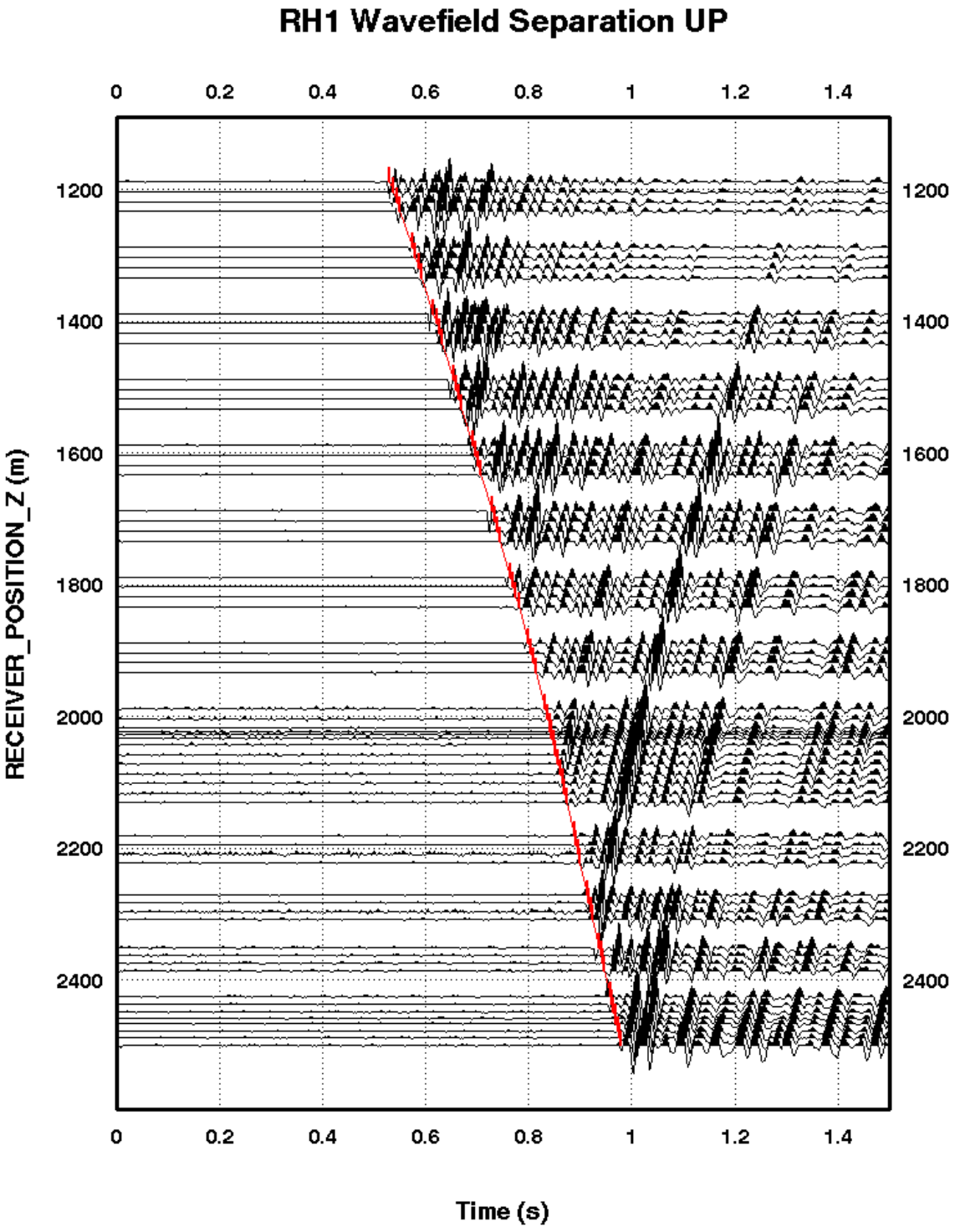


Figure 11d. Rockhopper-1 VSP: Enhanced Up going P Wavefield after Wavefield Separation

(Trace Normalised)

Schlumberger Public

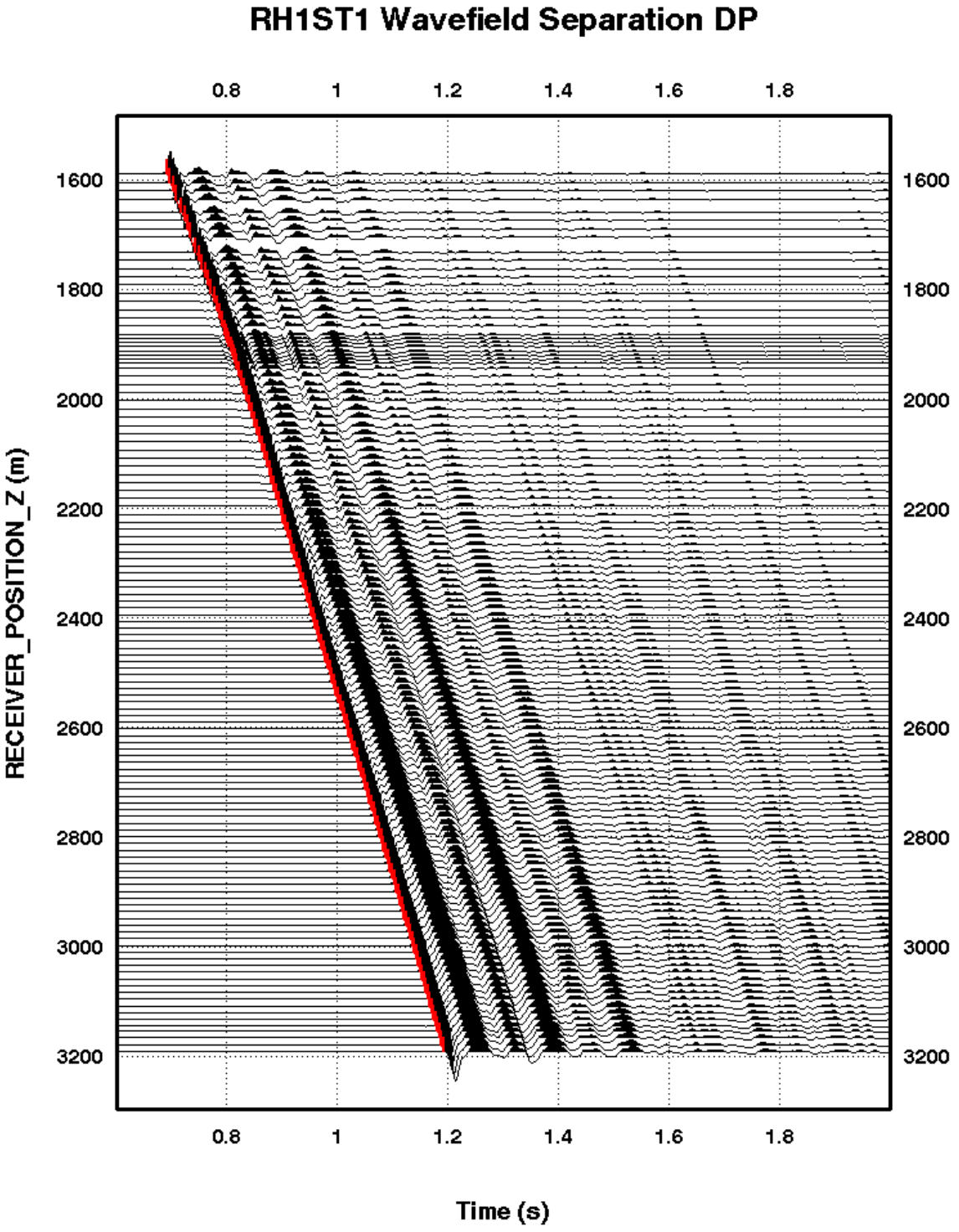


Figure 12a. Rockhopper-1 ST1 VSP: Down going P Wavefield after Wavefield Separation

(Trace Normalised)

Schlumberger Public

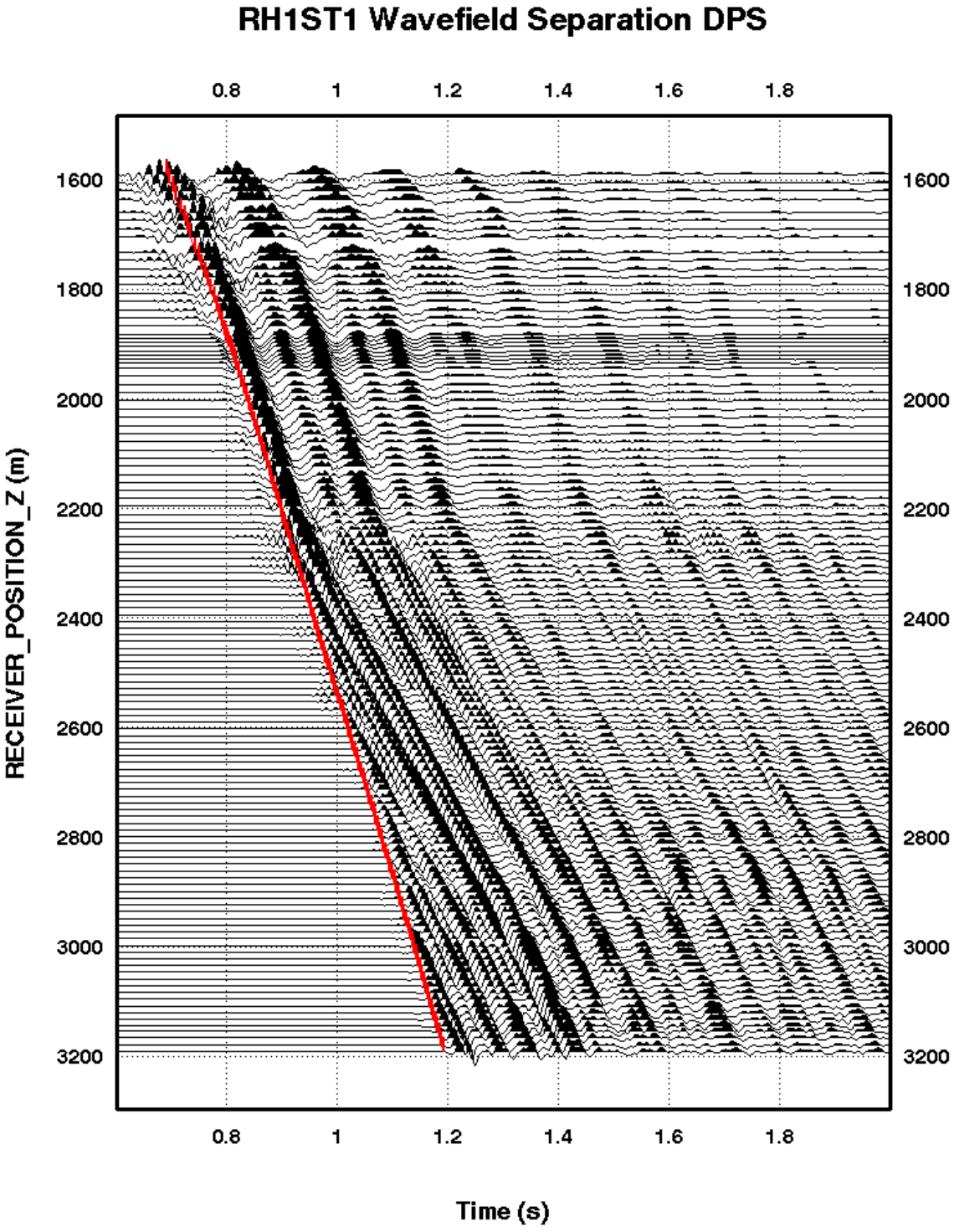


Figure 12b. Rockhopper-1 ST1 VSP: Down going PS Wavefield after Wavefield Separation

(Trace Normalised)

Schlumberger Public

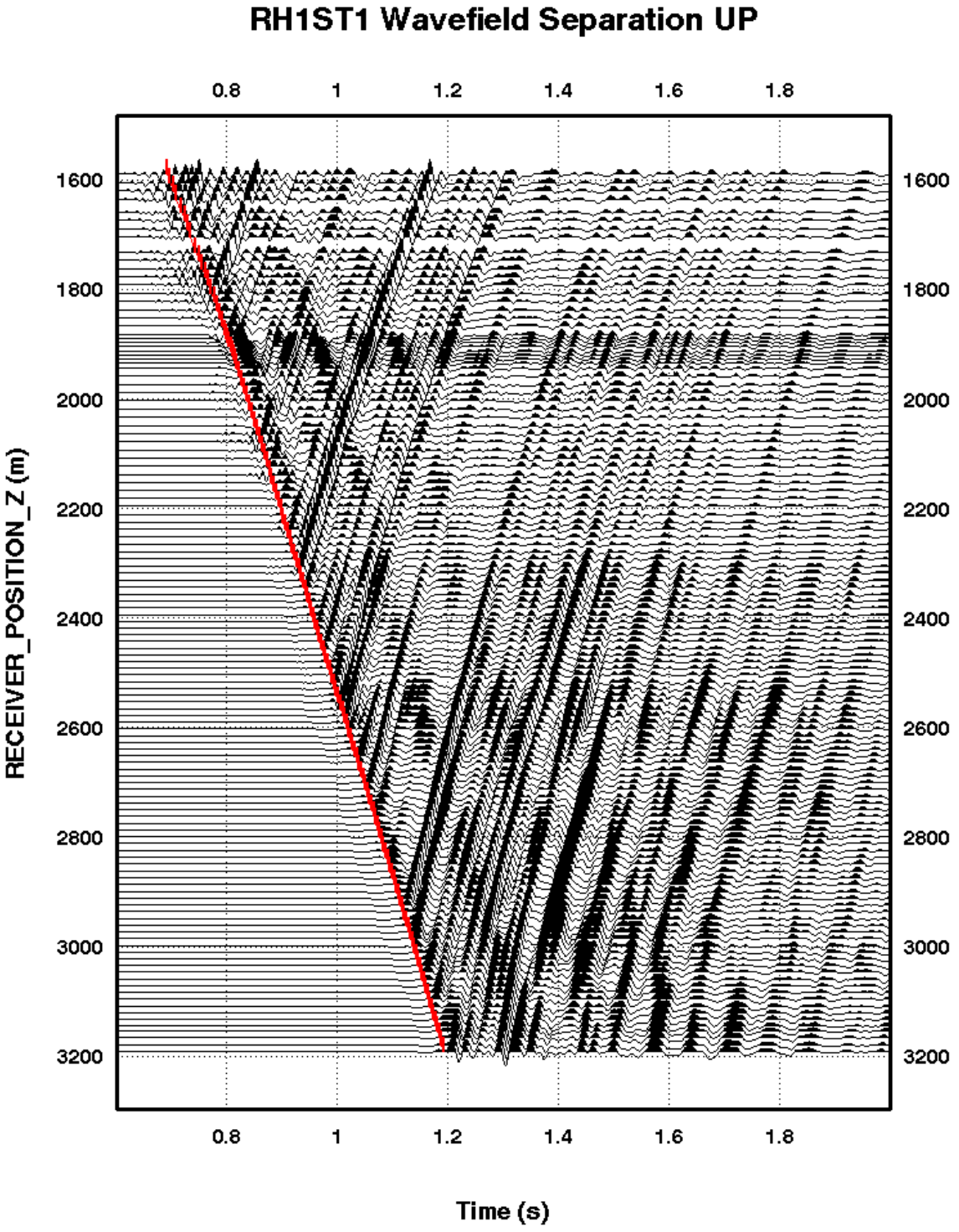


Figure 12c. Rockhopper-1 ST1 VSP: Up going P Wavefield after Wavefield Separation

(Trace Normalised)

Schlumberger Public

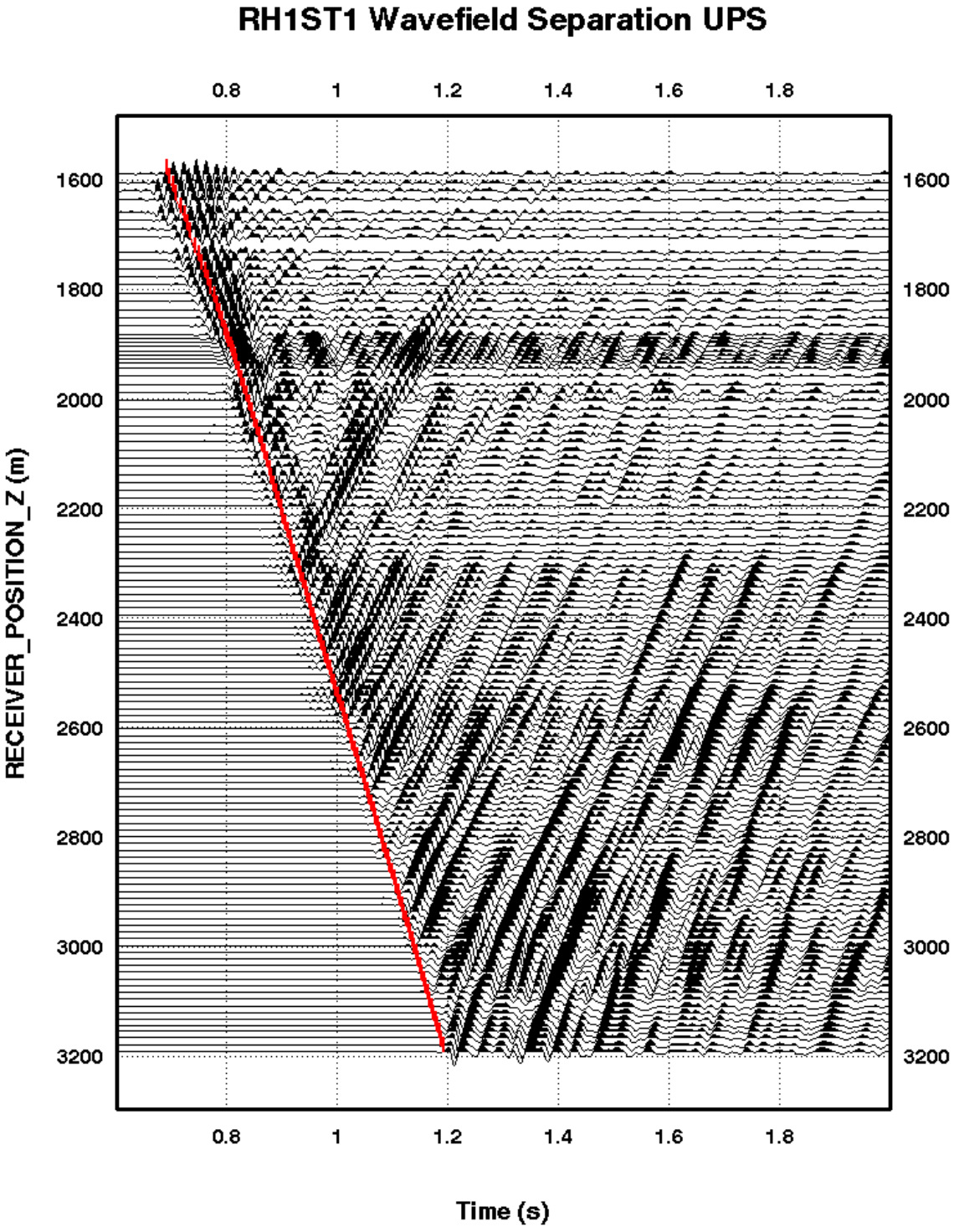


Figure 12d. Rockhopper-1 ST1 VSP: Up going PS Wavefield after Wavefield Separation

(Trace Normalised)

Schlumberger Public

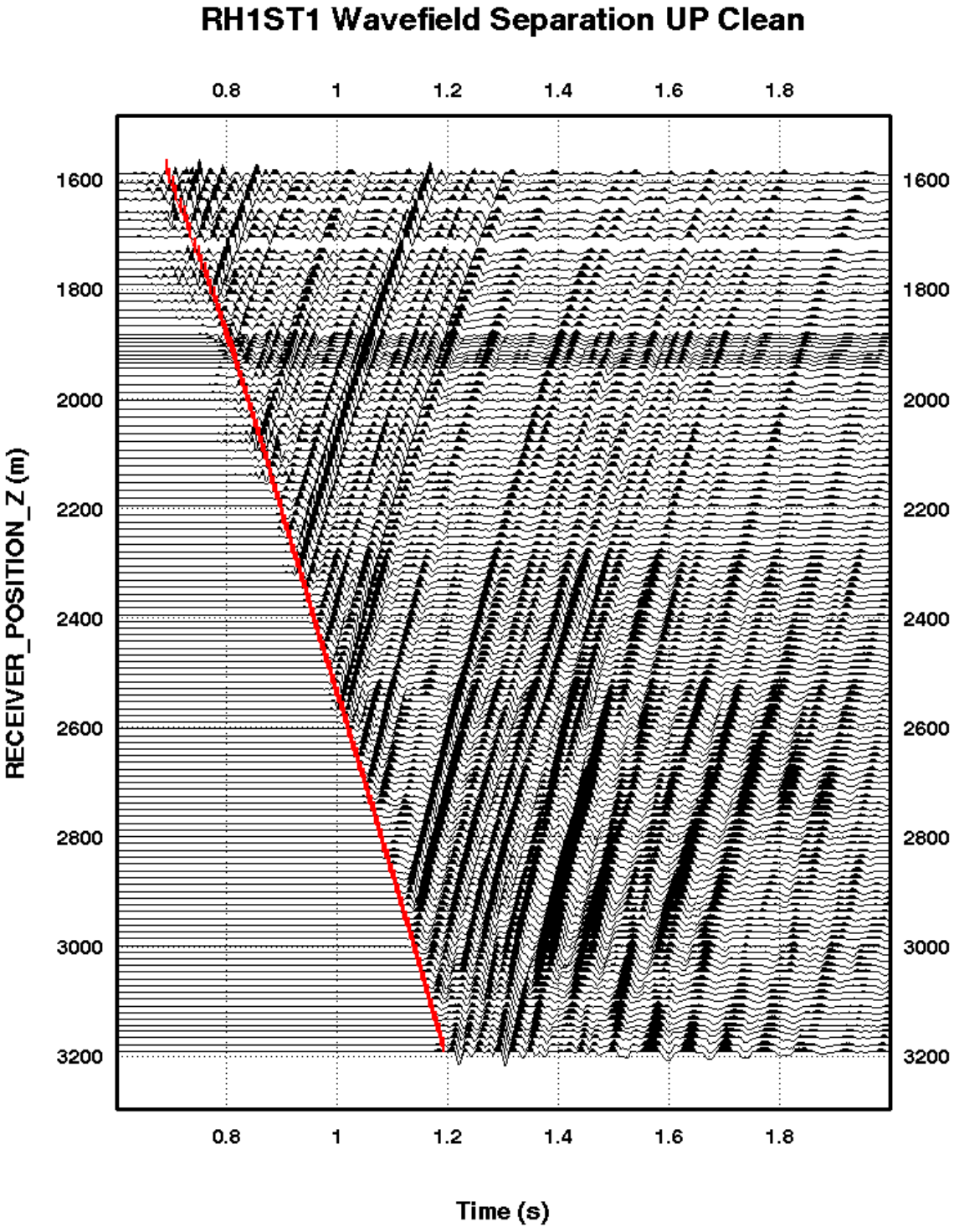


Figure 12e. Rockhopper-1 ST1 VSP: Cleaned Up going P Wavefield after Wavefield Separation

(Trace Normalised)

Schlumberger Public

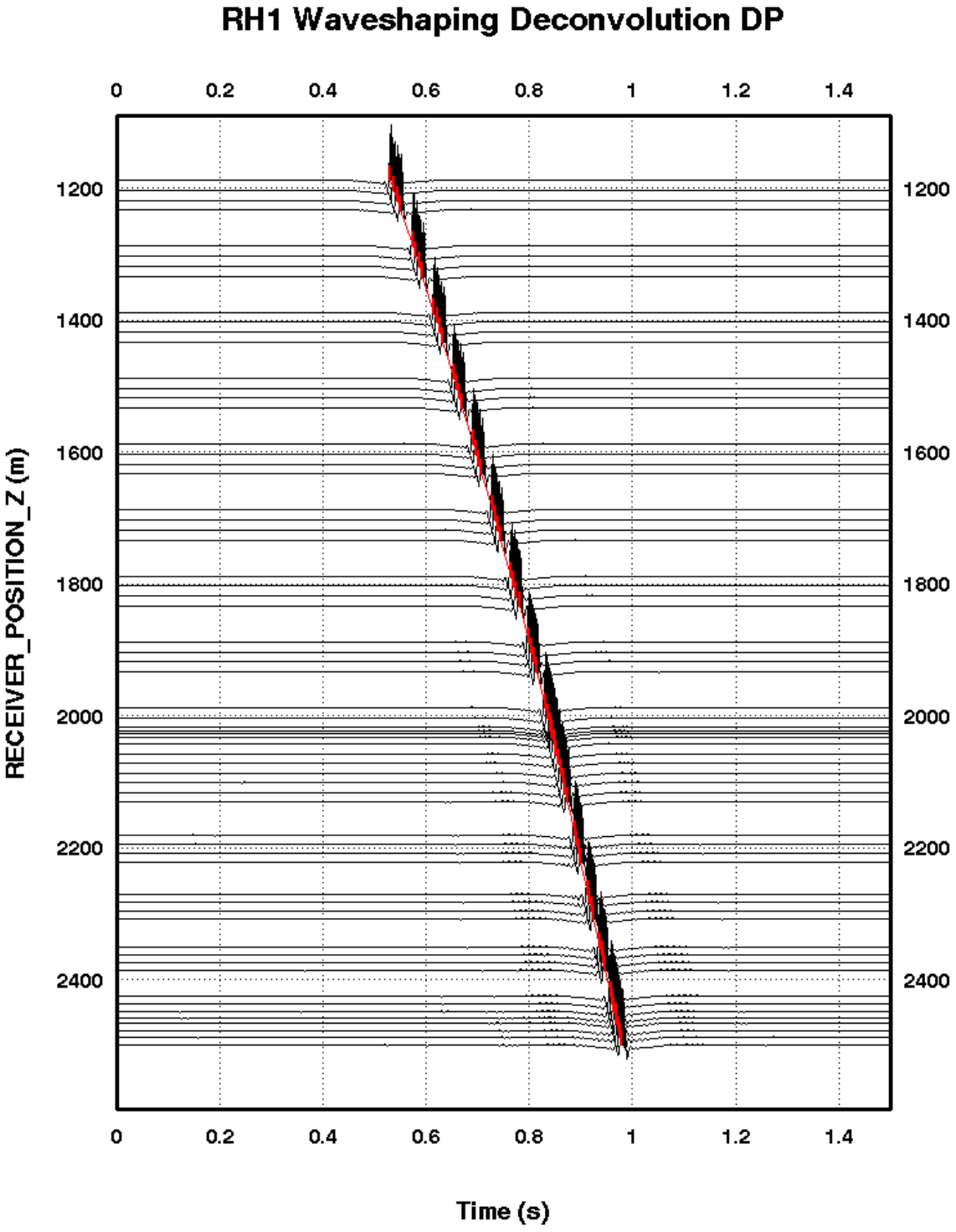


Figure 13a. Rockhopper-1 VSP: Down going P Wavefield after Waveshaping Deconvolution

(Gather Normalised)

Schlumberger Public

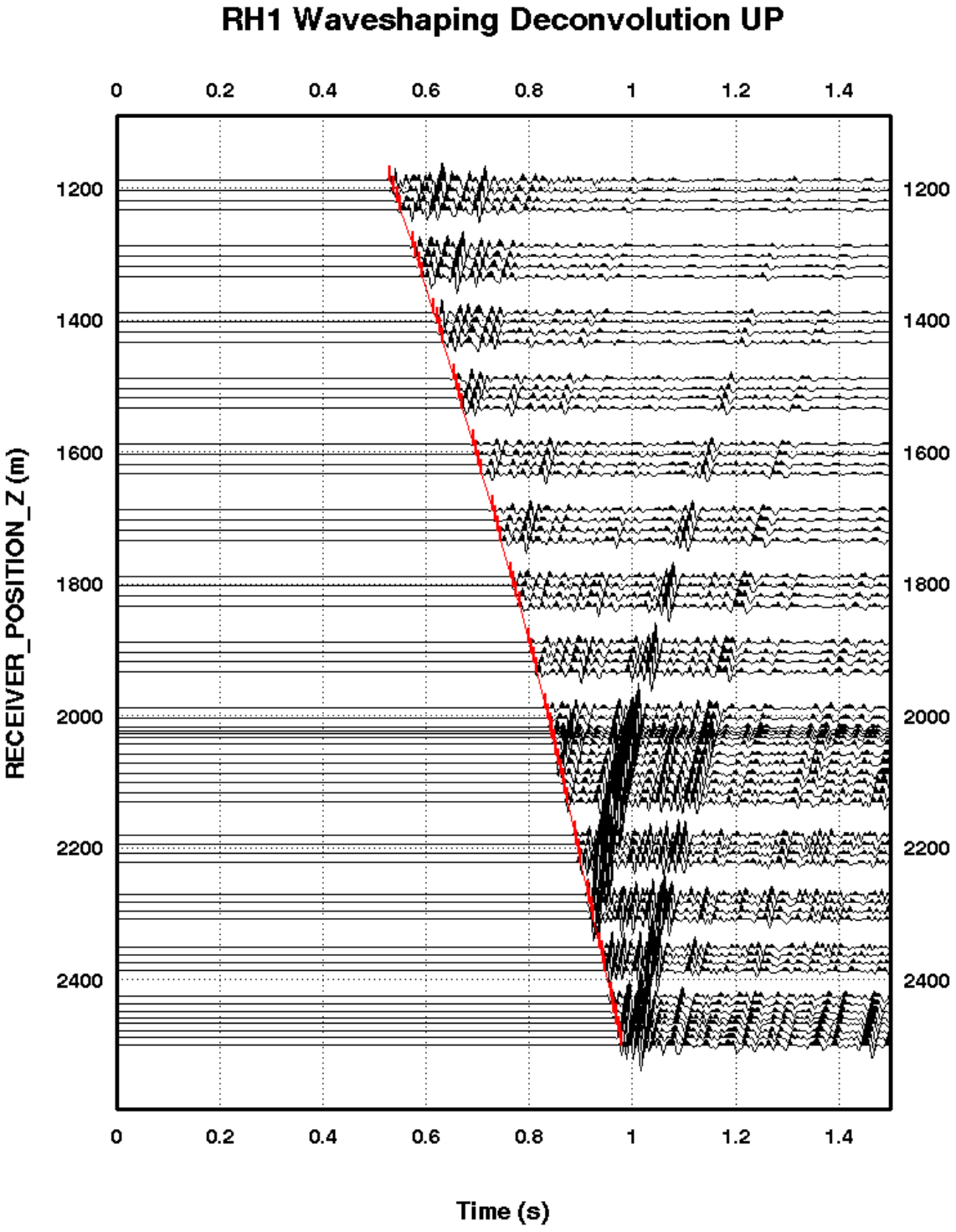


Figure 13b. Rockhopper-1 VSP: Up going P Wavefield after Waveshaping Deconvolution

(Gather Normalised)

Schlumberger Public

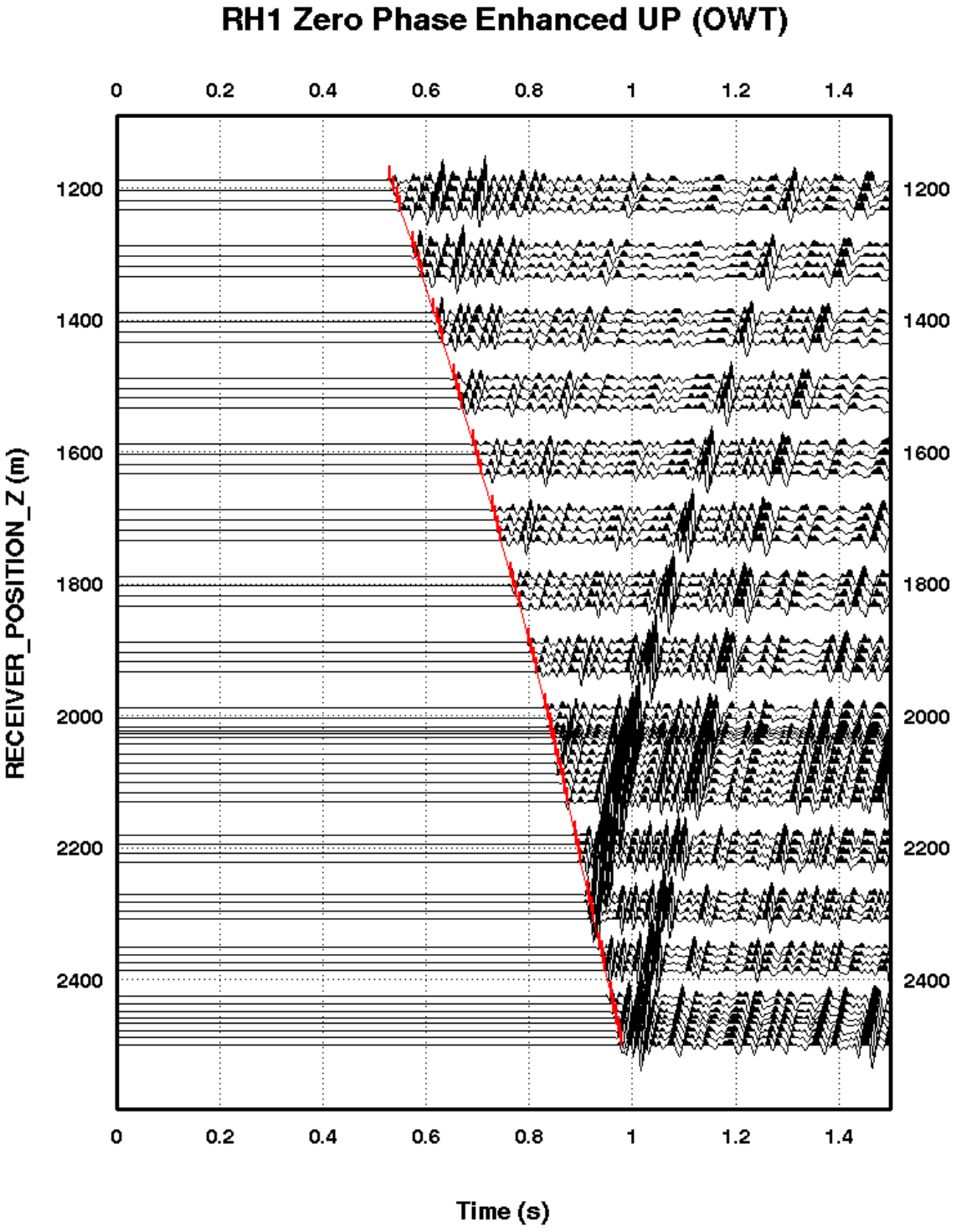


Figure 13c. Rockhopper-1 VSP: Enhanced Zero Phase Up going P Wavefield (OWT)

(Gather Normalised)

Schlumberger Public

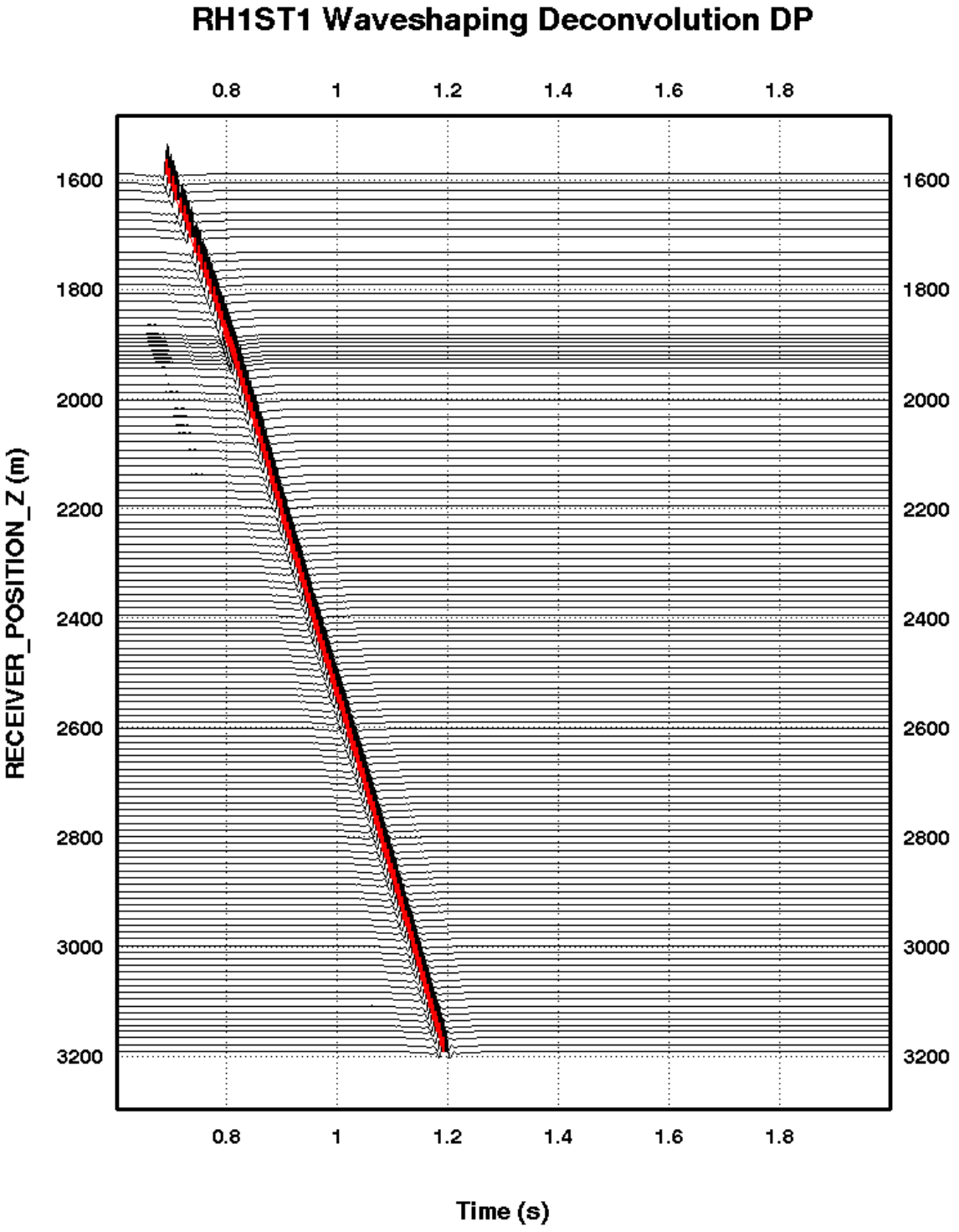


Figure 14a. Rockhopper-1 ST1 VSP: Down going P Wavefield after Waveshaping Deconvolution

(Gather Normalised)

Schlumberger Public

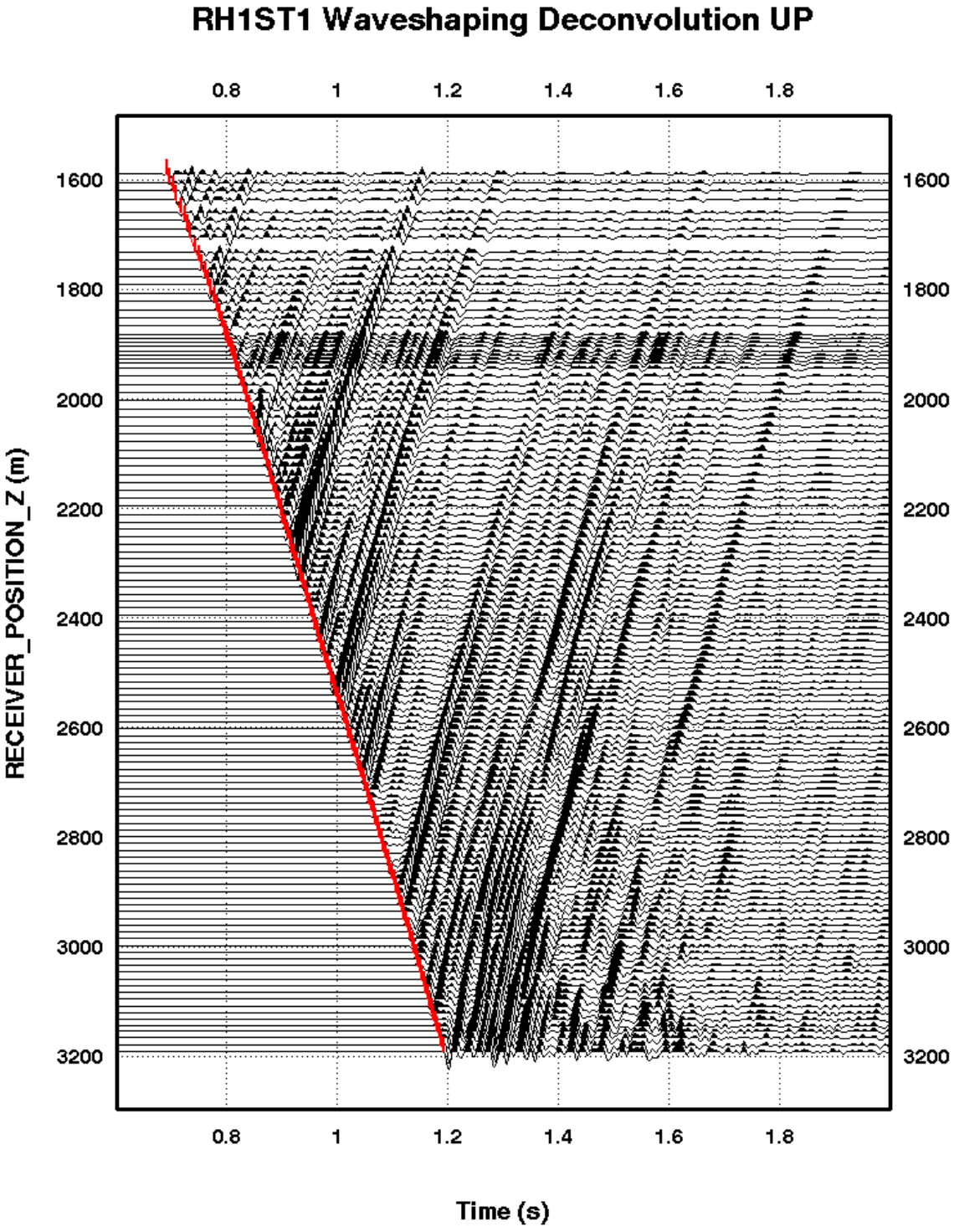


Figure 14b . Rockhopper-1 ST1 VSP: Up going P Wavefield after Waveshaping Deconvolution

(Gather Normalised)

Schlumberger Public

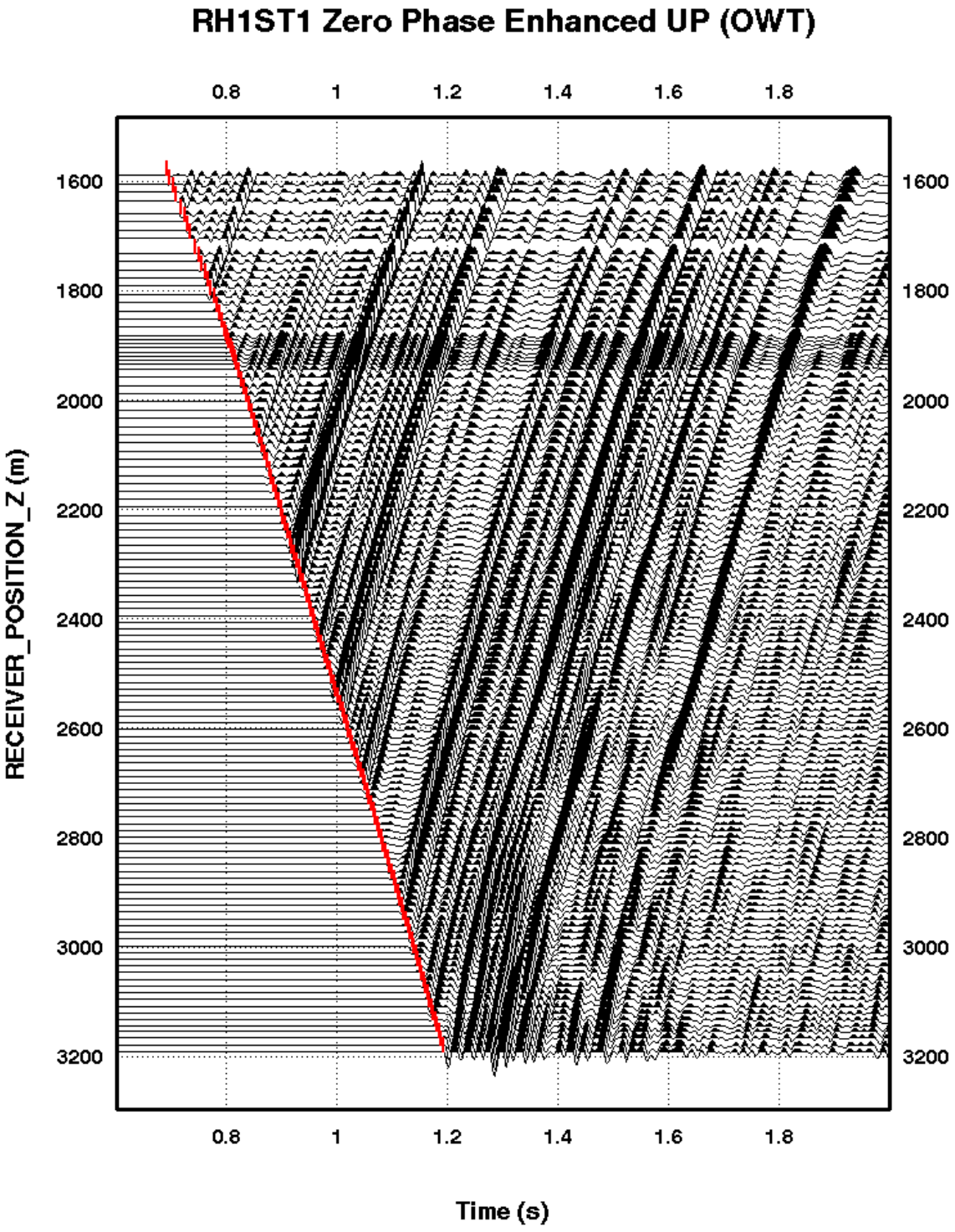


Figure 14c. Rockhopper-1 ST1 VSP: Enhanced Zero Phase Up going P Wavefield (OWT)

(Gather Normalised)

Schlumberger Public

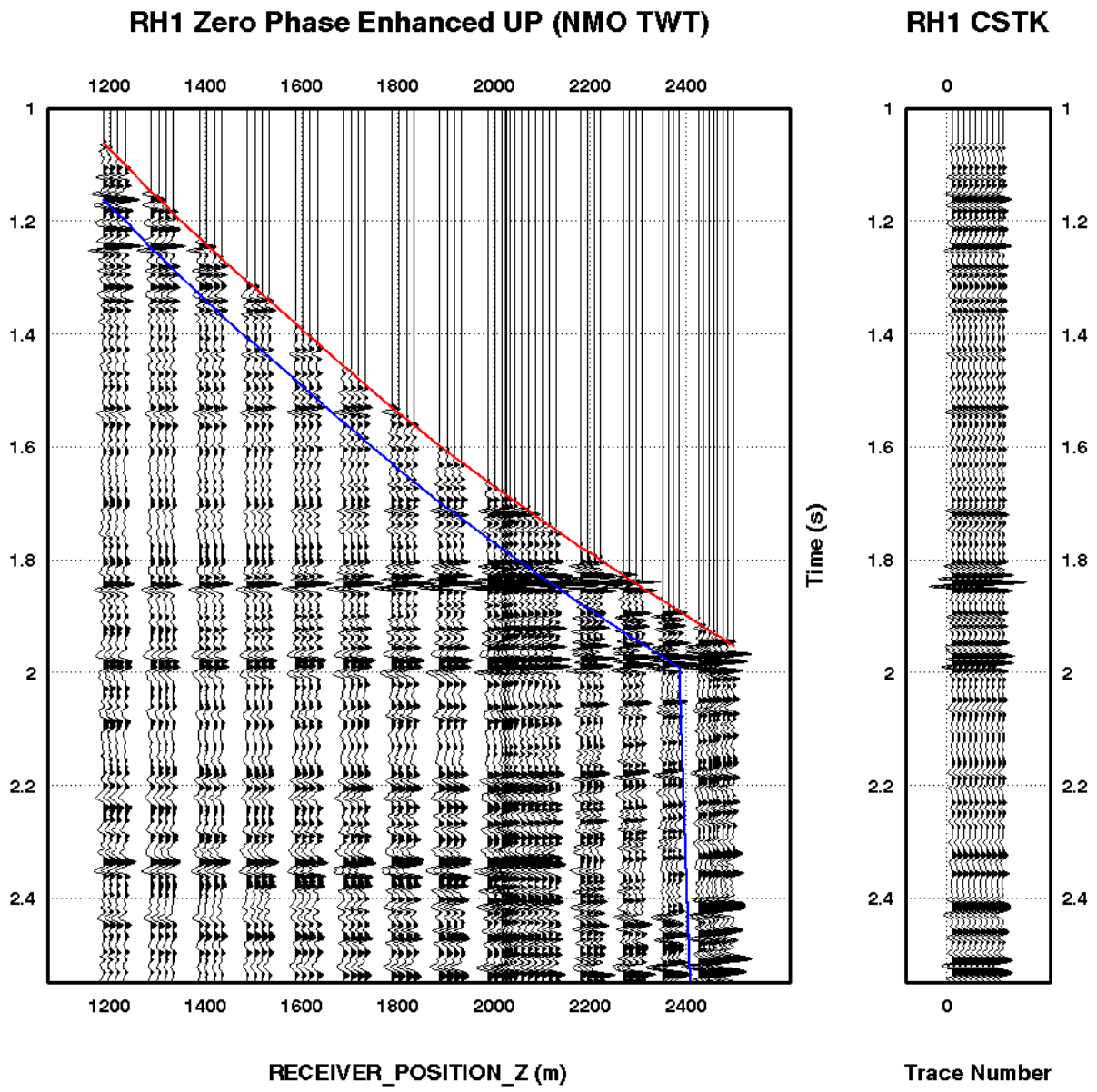


Figure 15a . Rockhopper-1 VSP: Enhanced Zero Phase Up going P Wavefield after NMO correction and Corridor Stack

(Gather Normalised)

The blue line on this plot of the Enhanced Upgoing Wavefield indicates the limit of the corridor stack.

Schlumberger Public

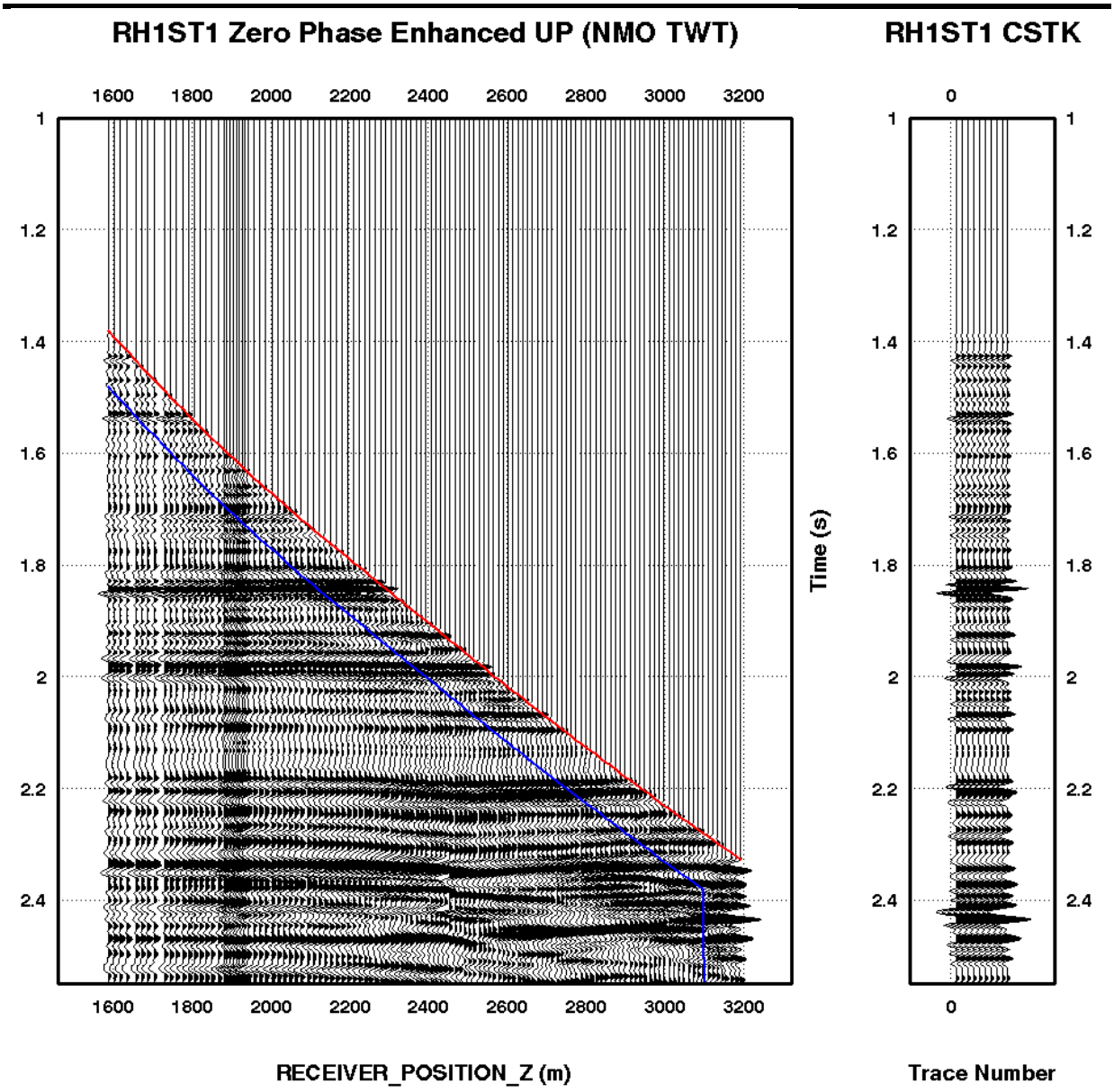


Figure 15b . Rockhopper-1 ST1 VSP: Enhanced Zero Phase Up going P Wavefield after NMO correction and Corridor Stack

(Gather Normalised)

The blue line on this plot of the Enhanced Upgoing Wavefield indicates the limit of the corridor stack.

Schlumberger Public

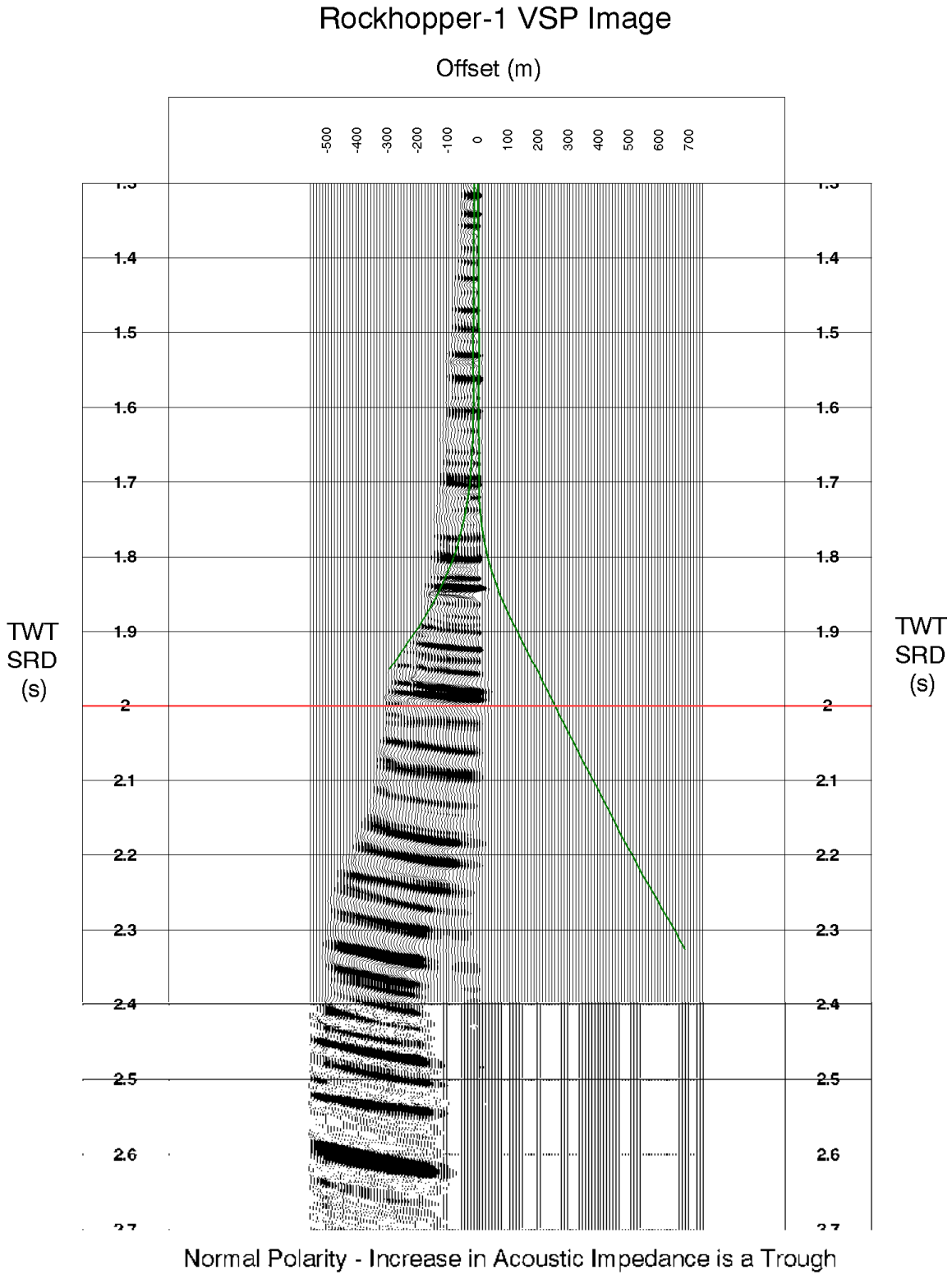


Figure 16a. Rockhopper-1 VSP: VSP GRT Migration Image

Schlumberger Public

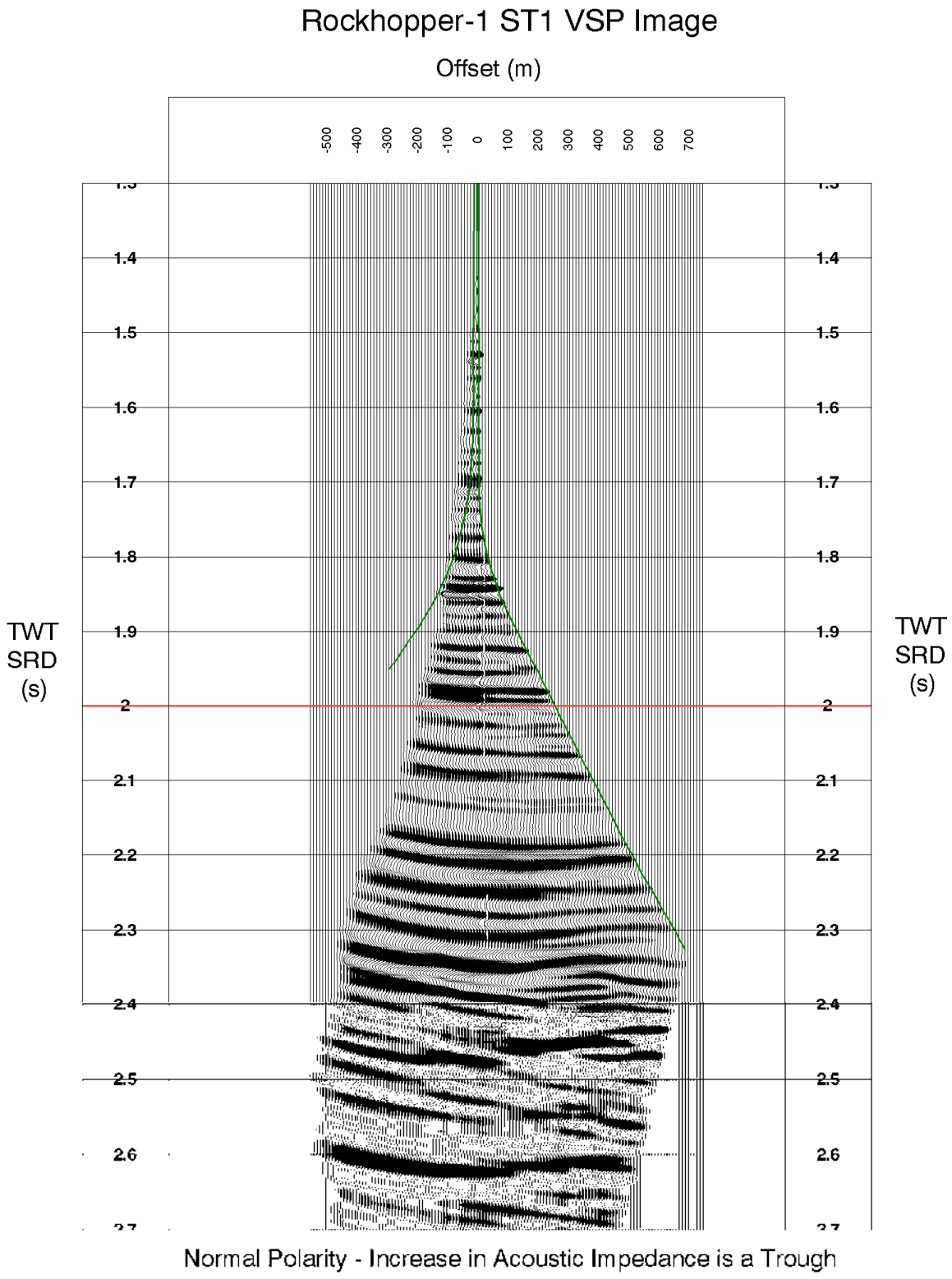


Figure 16b. Rockhopper-1 ST1 VSP: VSP GRT Migration Image

Schlumberger Public

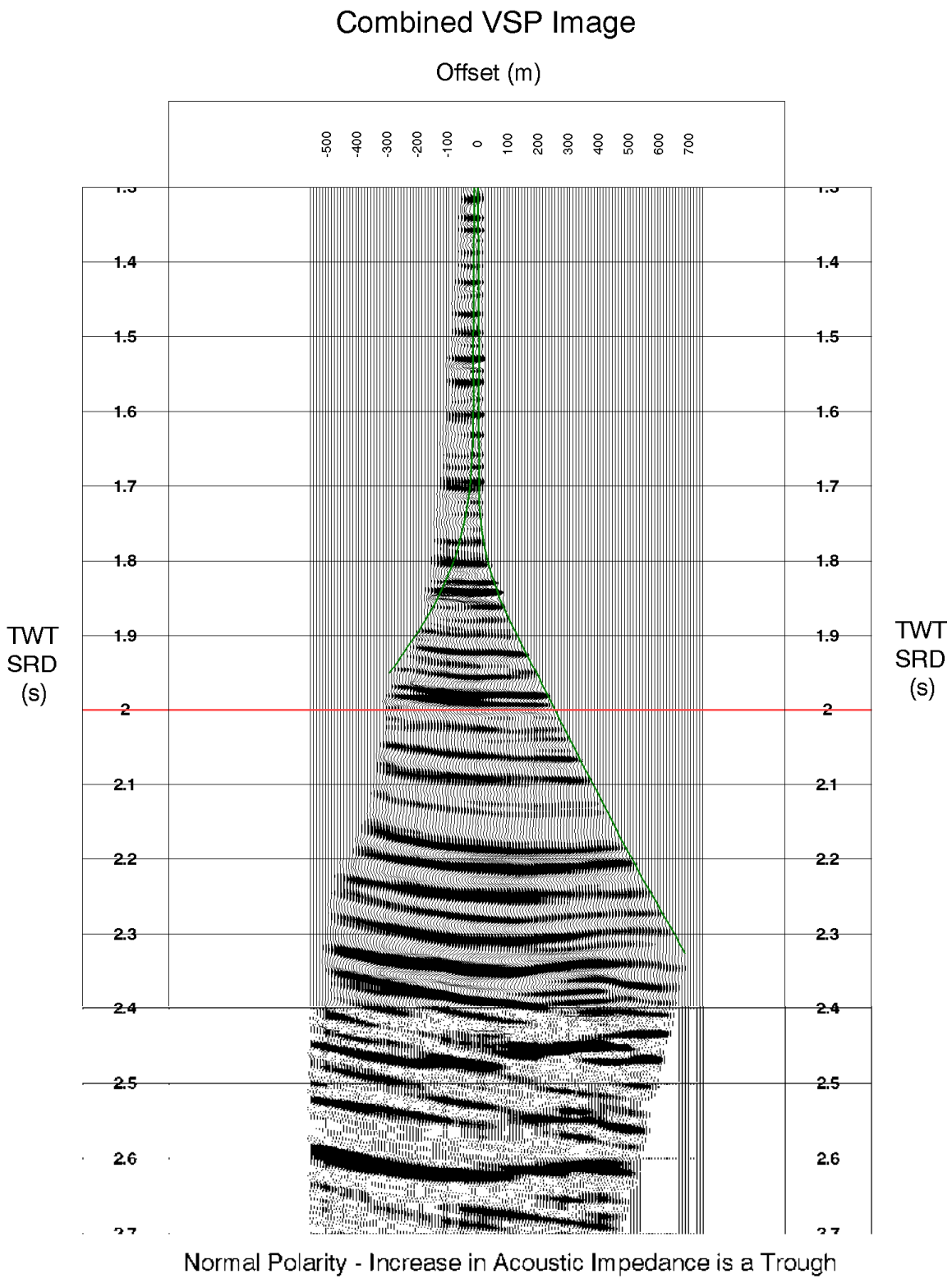


Figure 16c. Rockhopper-1 and ST1 VSP: Combined VSP GRT Migration Image

Schlumberger Public

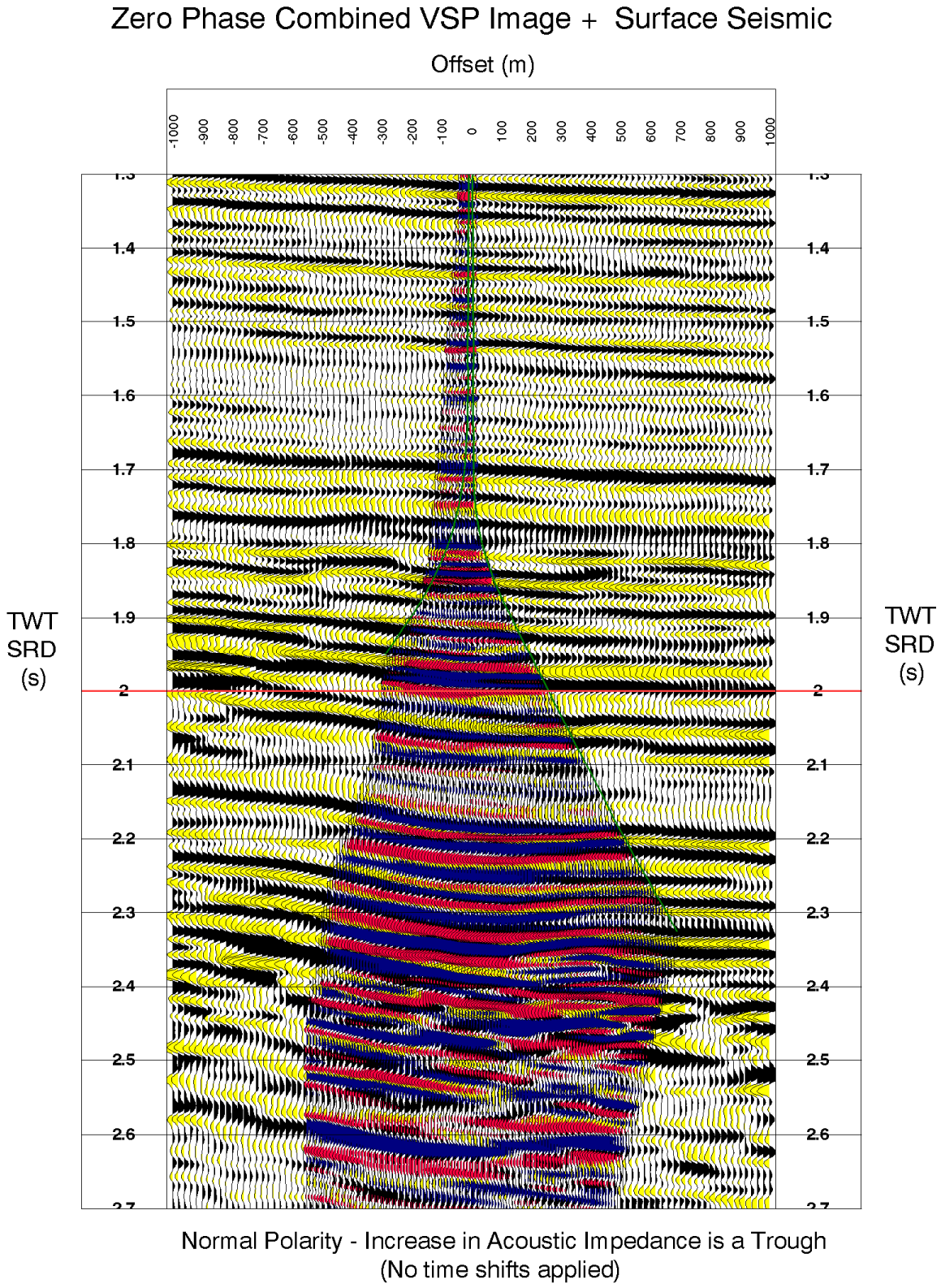


Figure 17a. Combined VSP Image and Surface Seismic (Normal Polarity)

Schlumberger Public

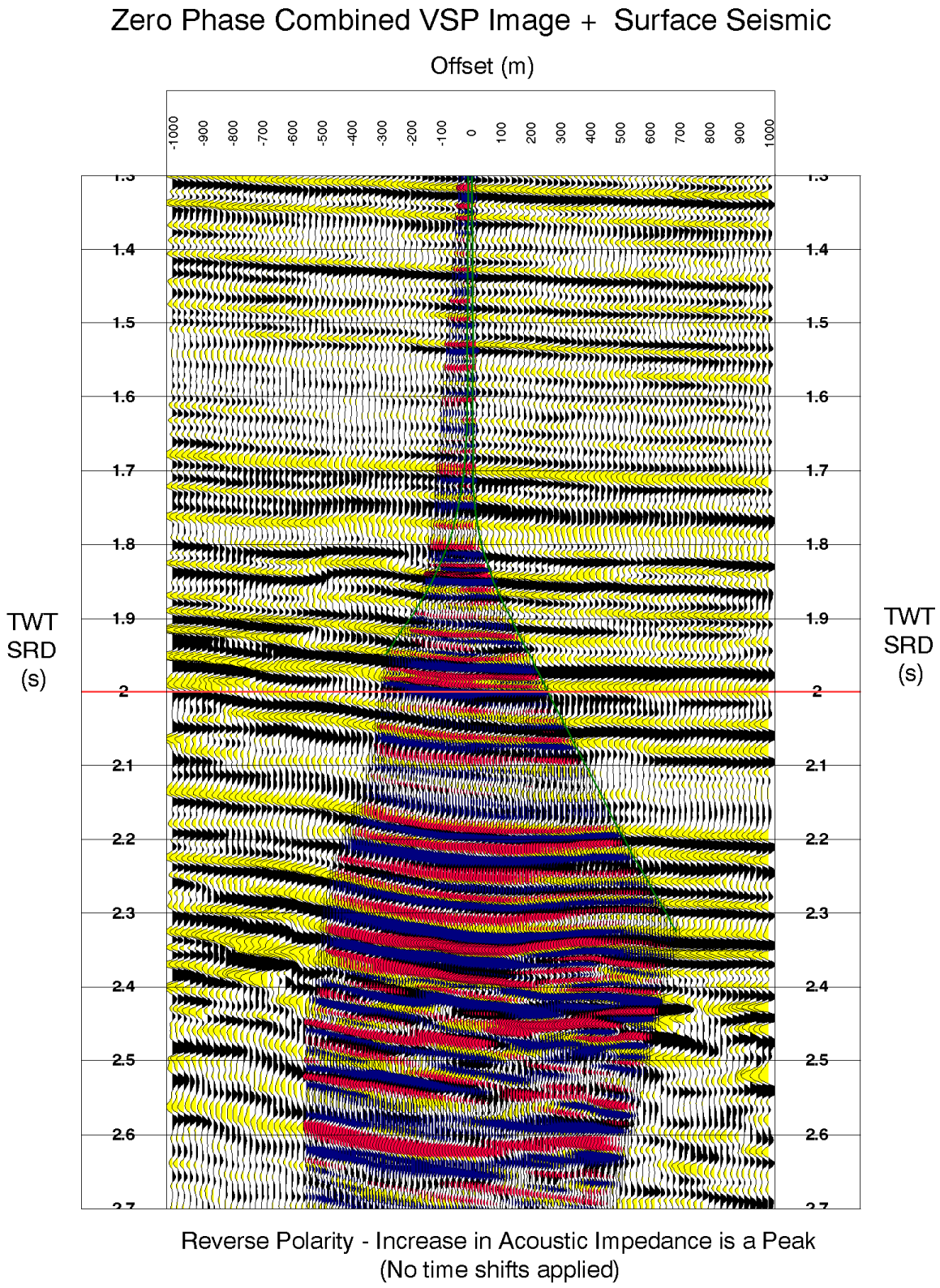


Figure 17b. Combined VSP Image and Surface Seismic (Reverse Polarity)

Schlumberger Public

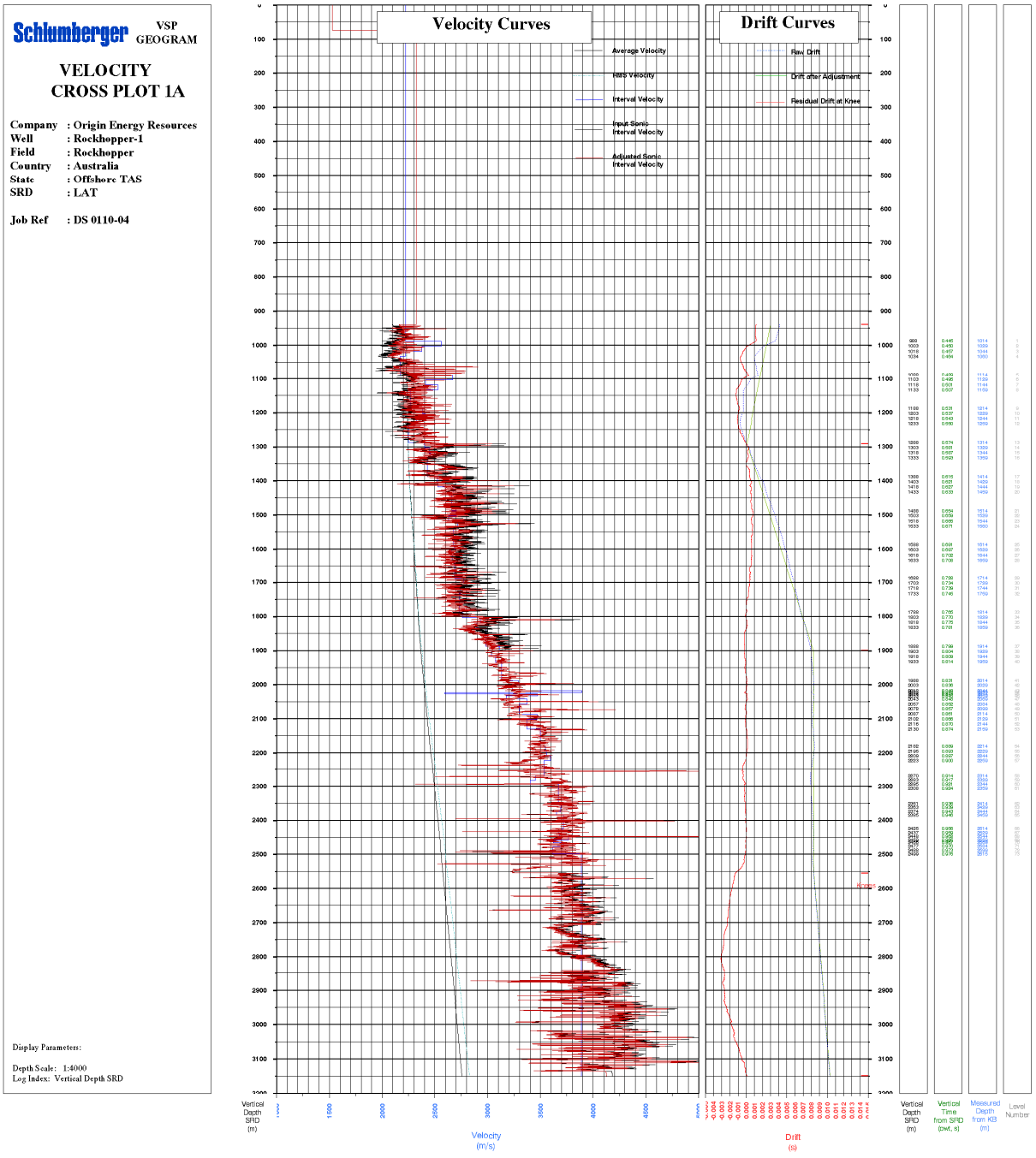


Figure 18a. Time-Depth relation and velocities vs TVD SS and drift curves (RH1)

Note that this plot is provided on the 36" plot with this report.

Schlumberger Public

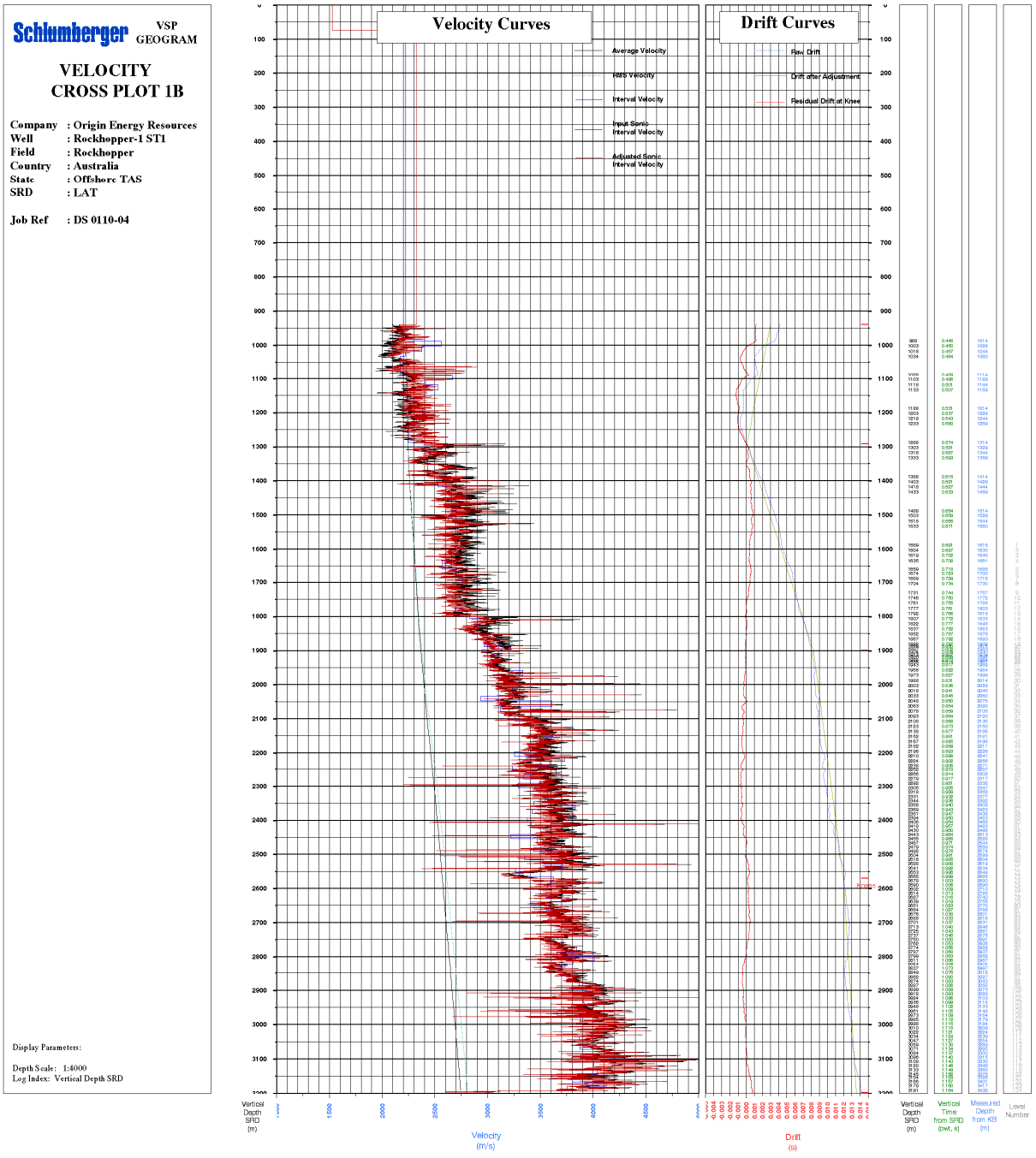


Figure 18b. Time-Depth relation and velocities vs TVD SS and drift curves (RH1 ST1)

Note that this plot is provided on the 36" plot with this report.

Schlumberger Public

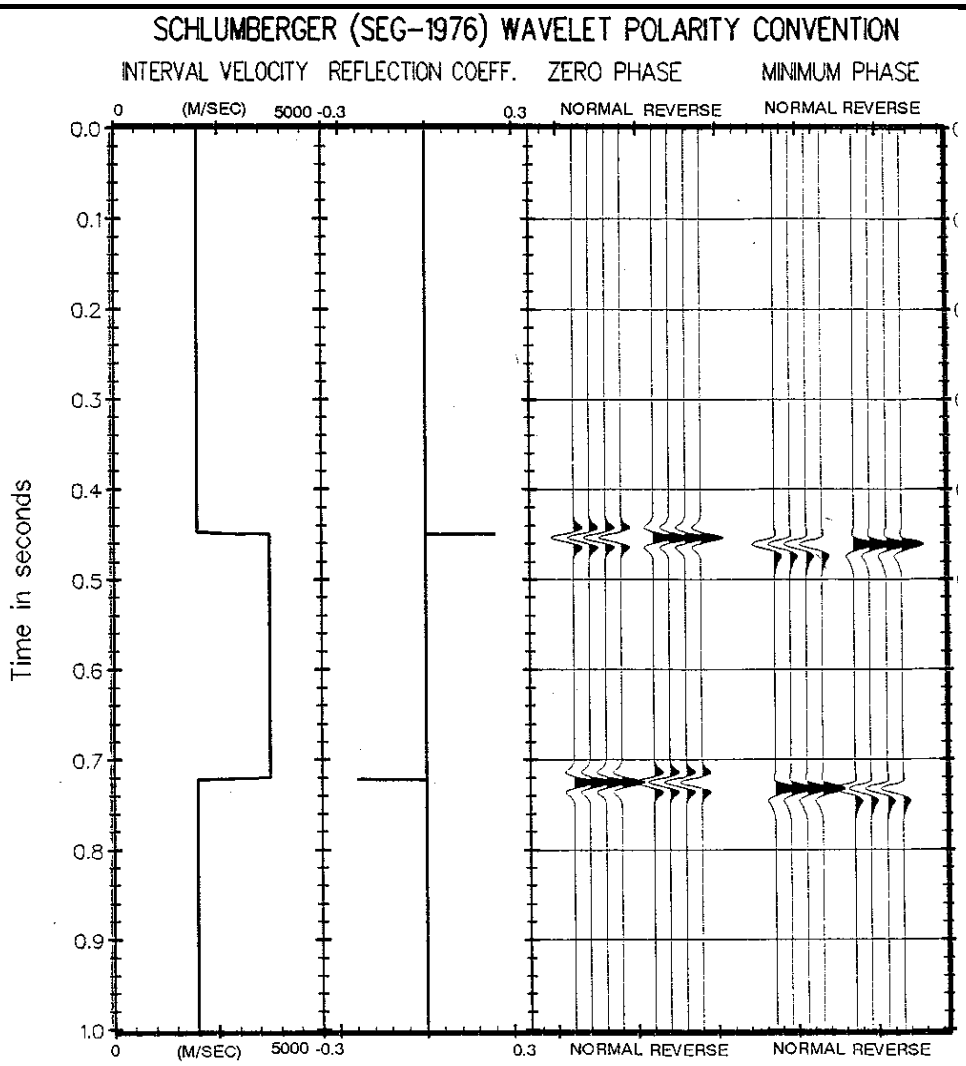


Figure 19. Schlumberger Wavelet Polarity Convention

Schlumberger Public

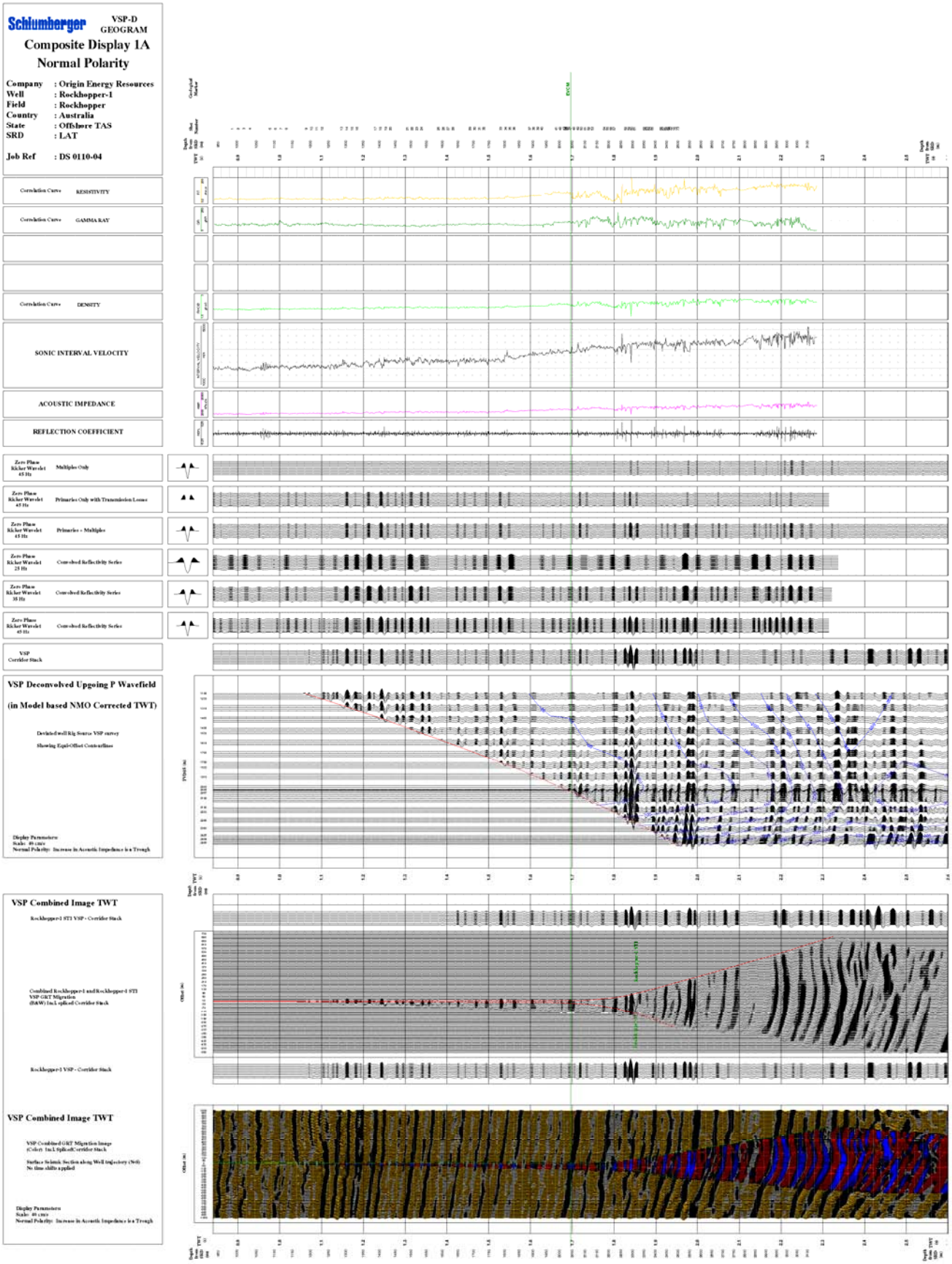


Figure 20a. Rockhopper-1 Composite Display – Normal Polarity (See Plot 1A)

Schlumberger Public

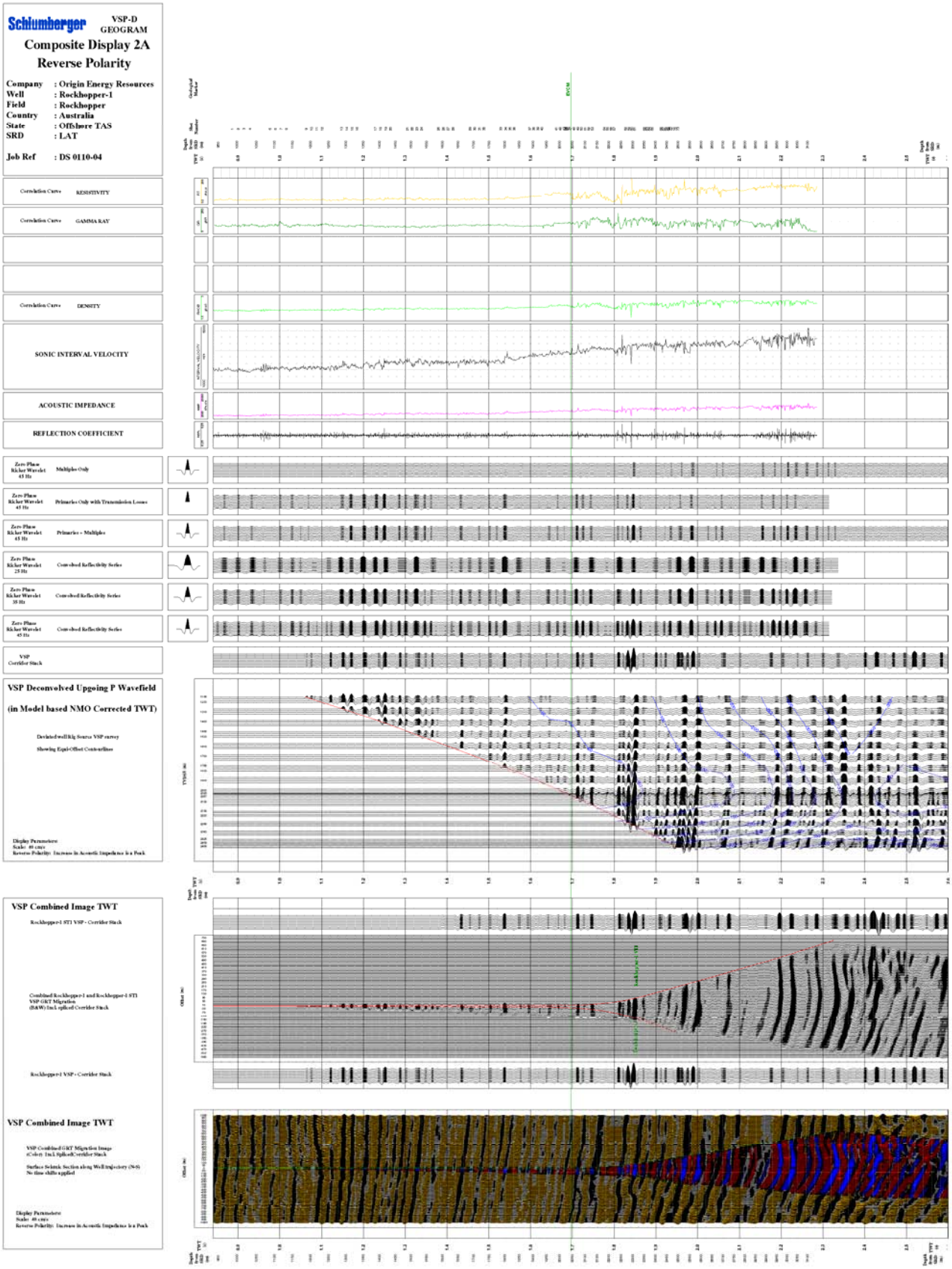


Figure 20b. Rockhopper-1 Composite Display – Reverse Polarity (See Plot 2A).

Schlumberger Public

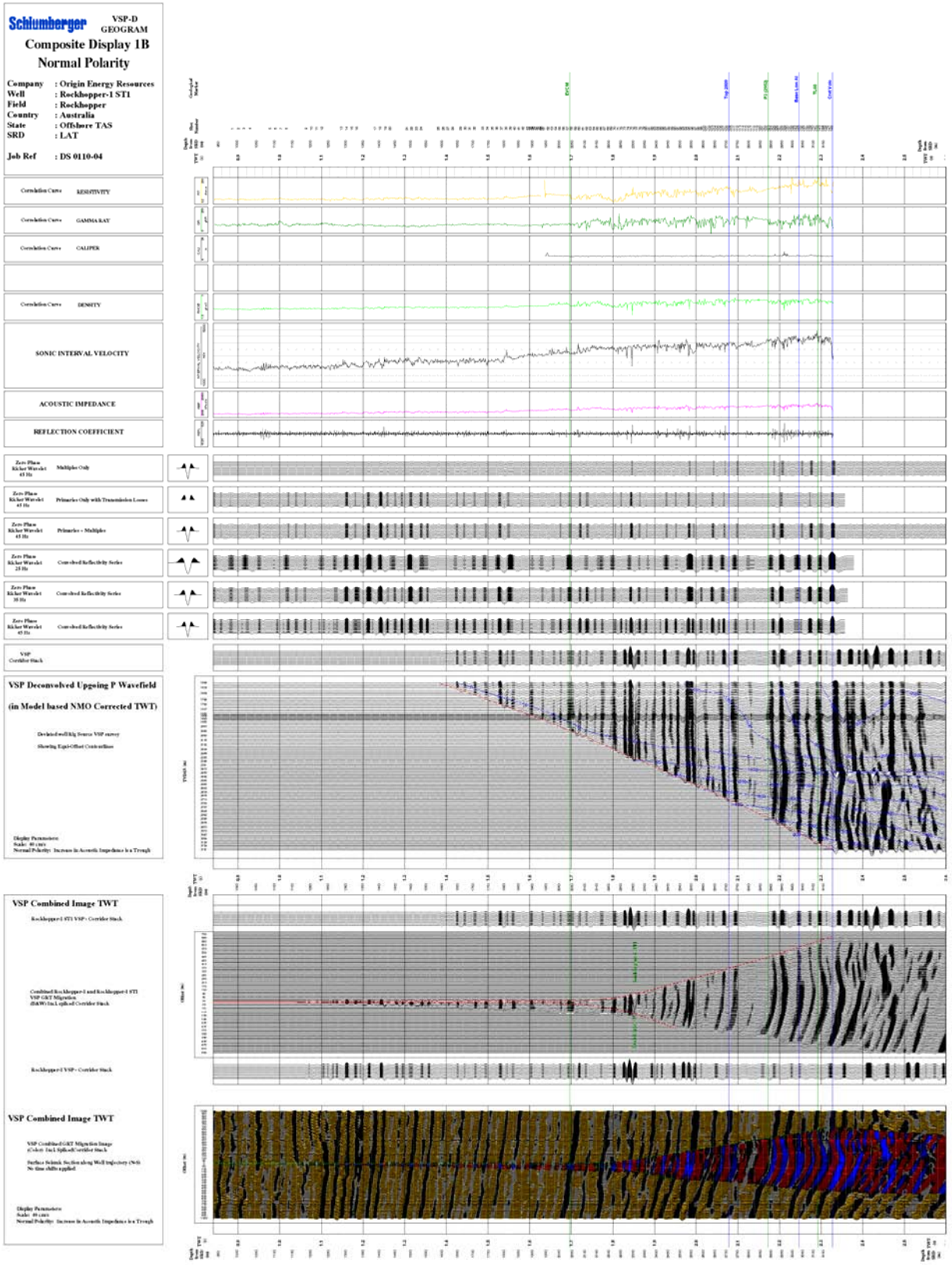


Figure 21a. Rockhopper-1 ST1 Composite Display – Normal Polarity (See Plot 1B)

Schlumberger Public

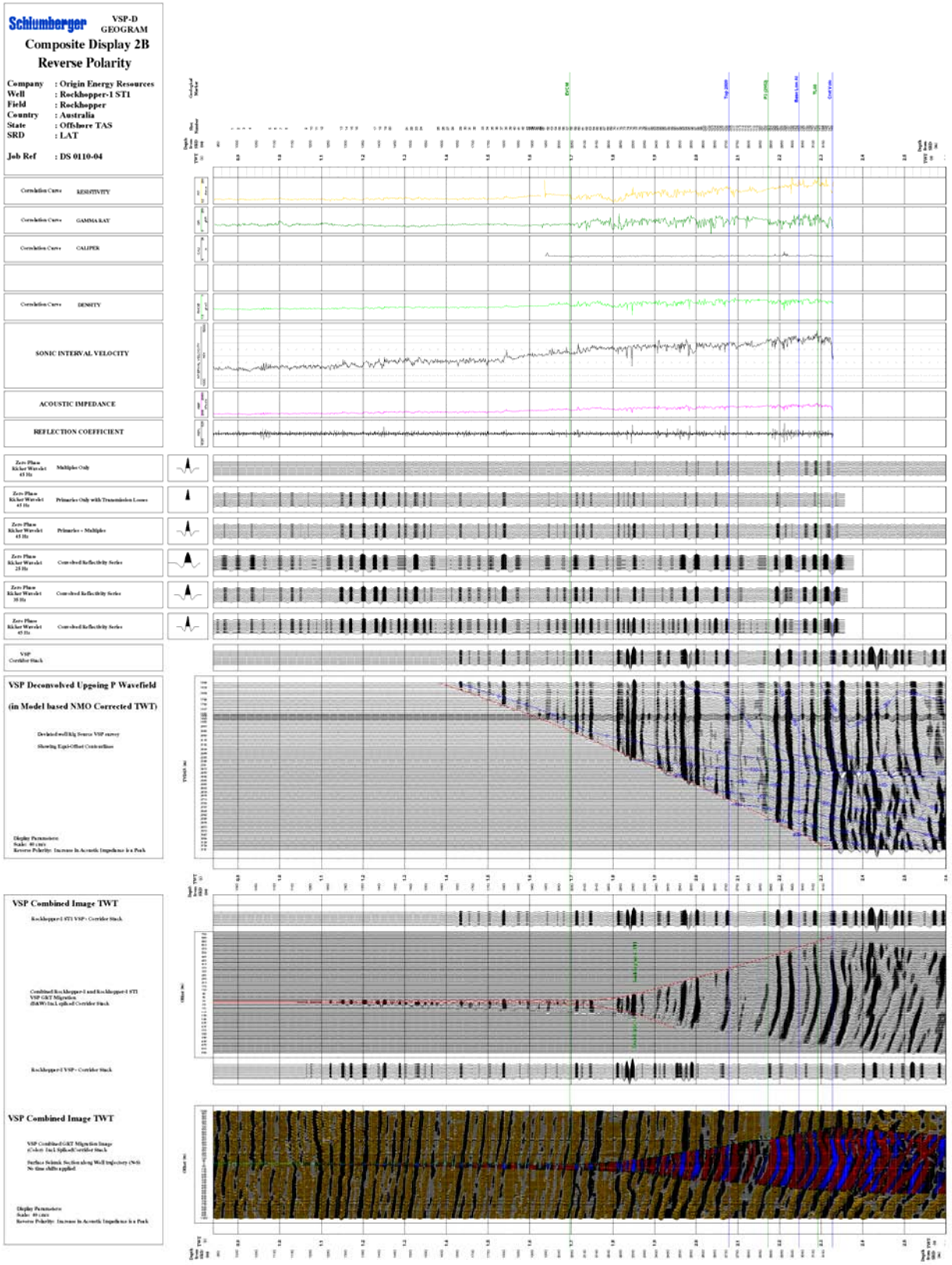


Figure 21b. Rockhopper-1 Composite Display – Reverse Polarity (See Plot 2B)

Schlumberger Public

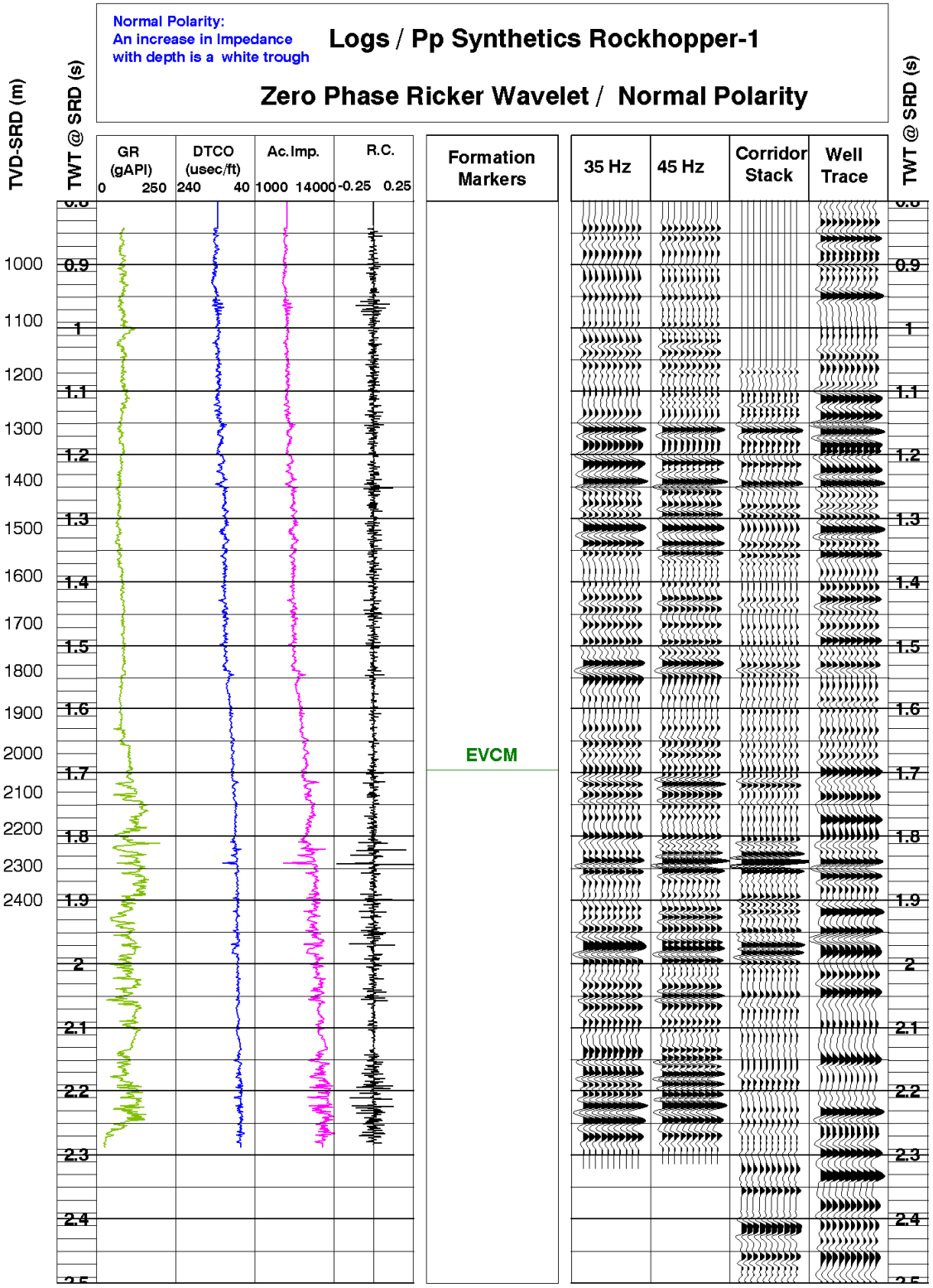


Figure 22a. RH1 Surface Seismic Well trace, Corridor Stack, Synthetics and Logs (Normal polarity)

Schlumberger Public

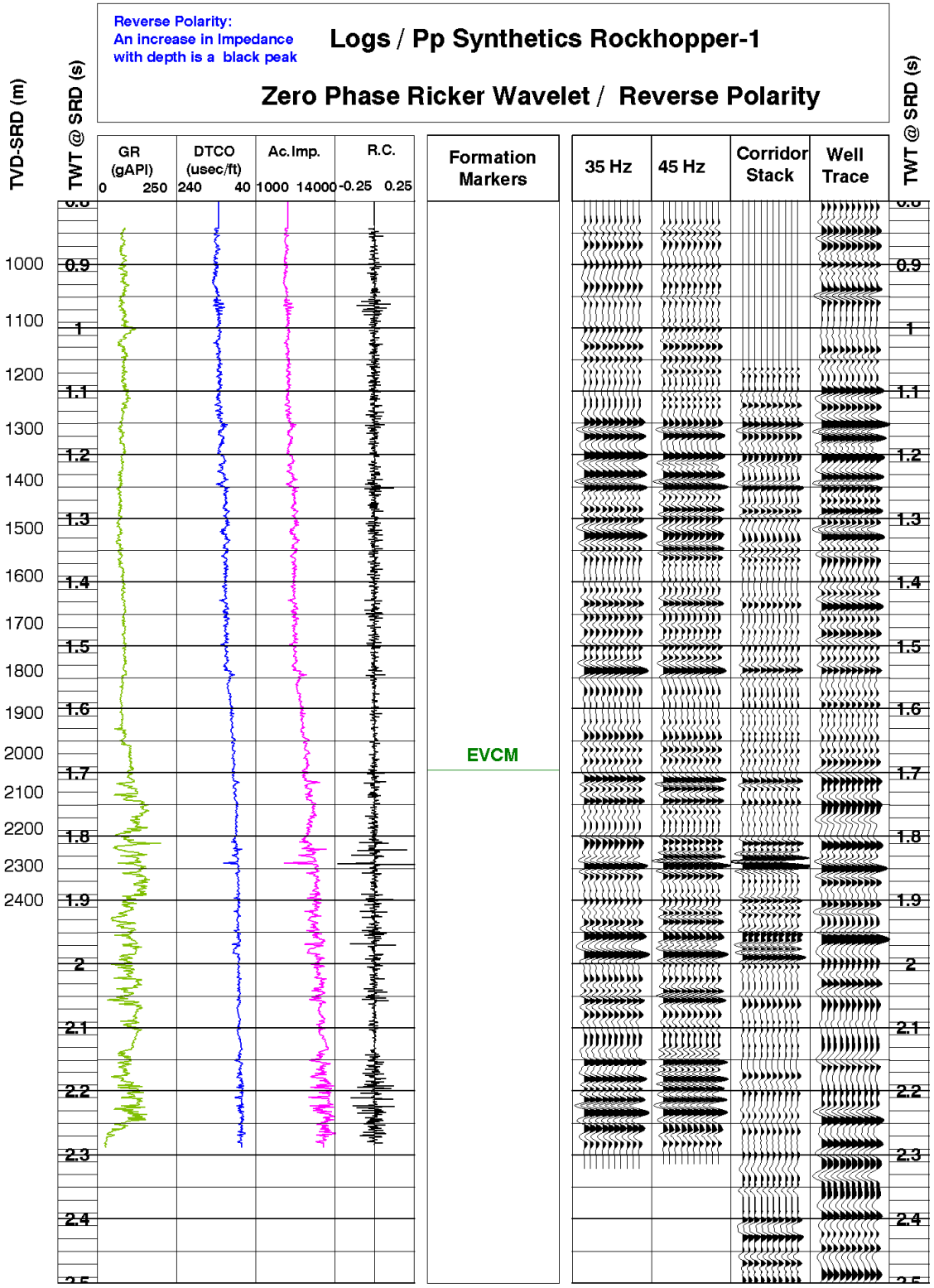


Figure 22b. RH1 Surface Seismic Well trace, Corridor Stack, Synthetics and Logs (Reverse polarity)

Schlumberger Public

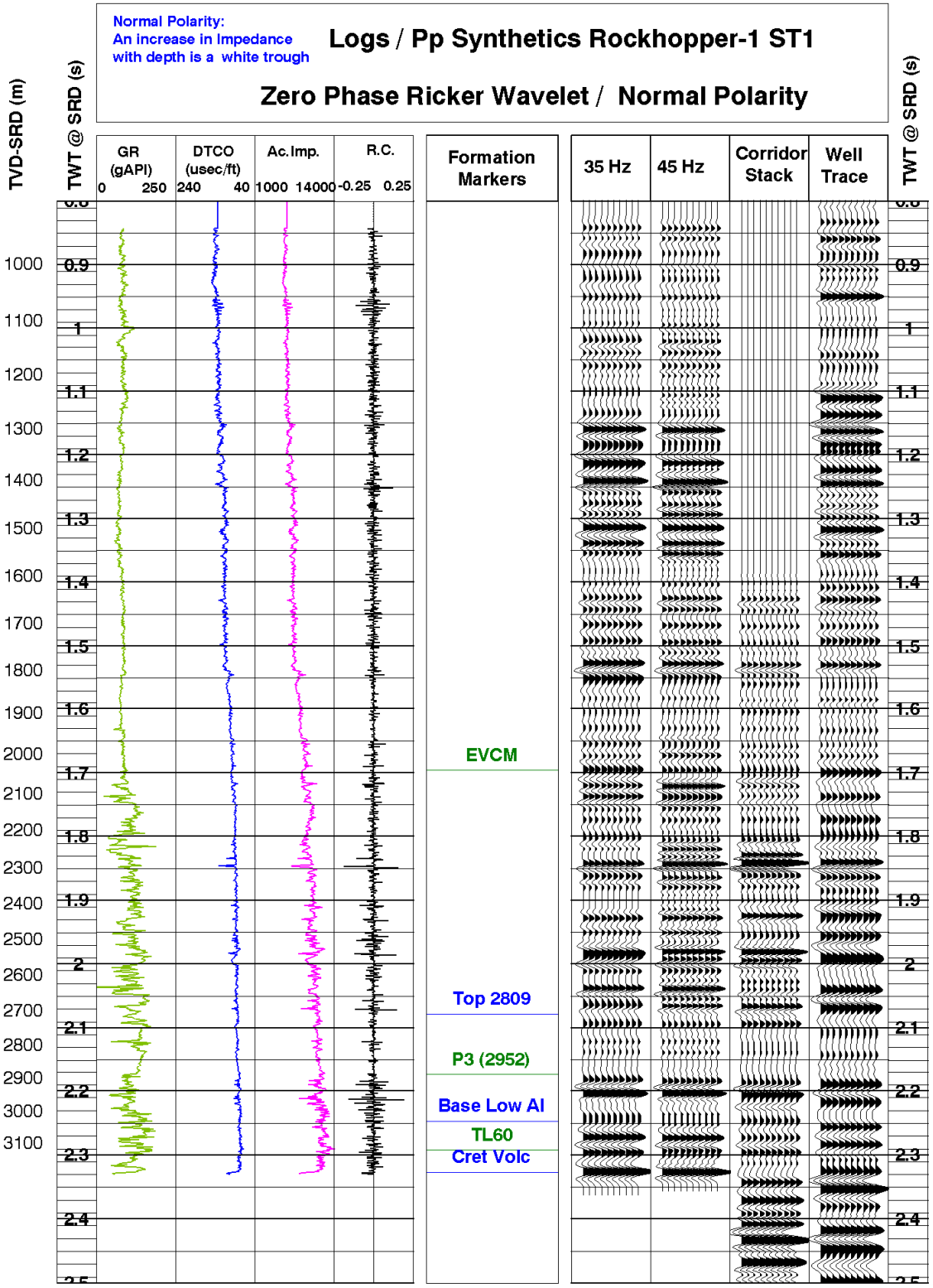


Figure 23a. RH1 ST1 Surface Seismic Well trace, Corridor Stack, Synthetics, Logs (Normal polarity)

Schlumberger Public

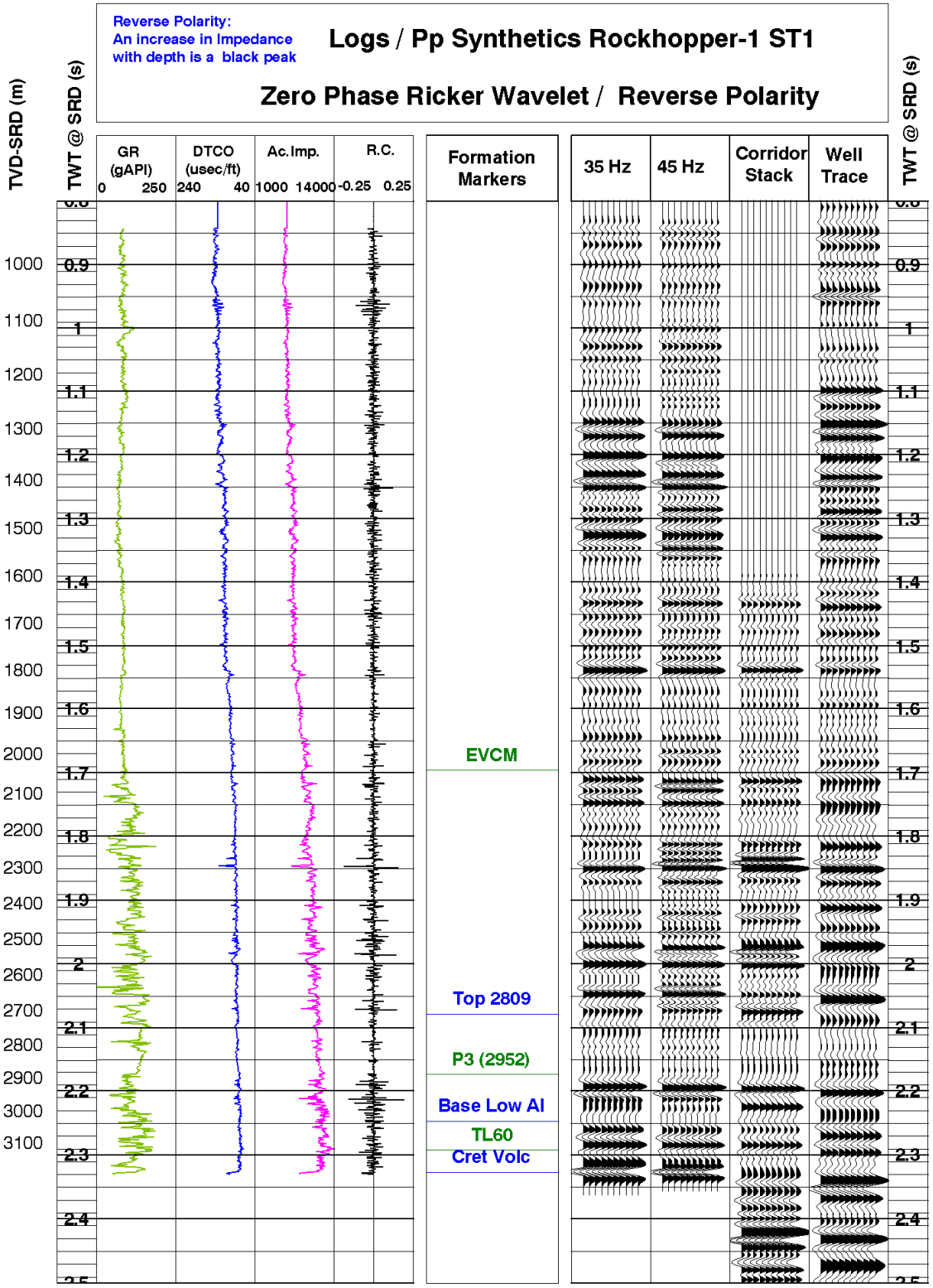


Figure 23b. RH1 ST1 Surface Seismic Well trace, Corridor Stack, Synthetics, Logs (Reverse polarity)

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Attachment 1: Summary of Geophysical Listings

Four geophysical data listings are provided for each survey. A1 is included in the report; A2, A3 and A4 are provided in electronic form on the CD-ROM. Following is a brief description of the format.

A1 Check Shot Data

1. Level number: the level number starting from the top level (includes any imposed shots).
2. Vertical depth form SRD: *dsrd*, the depth in meters from seismic reference datum (LAT).
3. Measured depth from DF: *dkb*, the depth in meters from DF.
4. Observed travel time HYD to GEO: *tim*0, the transit time picked form the stacked data by subtracting the surface sensor first break time from the downhole sensor first break time.
5. Vertical travel time SRD to GEO: *shtm*, is *timv* – vertical time, corrected for the vertical distance between source and datum. Here calculated using model based NMO correction.
6. Delta depth between shots: Δ*depth*, the vertical distance between each level.
7. Delta time between shots: Δ*time*, difference in vertical travel time (*shtm*) between each level.
8. Interval velocity between shots: average velocity between each level, Δ*depth*/Δ*time*
9. Average velocity SRD to GEO: average velocity from datum to checkshot level, shtm/dsrd
10. RMS velocity SRD to GEO: RMS velocity from datum to the checkshot level

A2 Drift & Sonic Adjustment

Zone Set Data

1. Knee number: the knee number starting from the highest knee. (The first knees listed will generally be at SRD and the top of sonic. The drift imposed at the knees will normally be zero.)
2. Measured depth from DF: the depth in meters from DF
3. Vertical depth from SRD: the depth in meters from seismic reference datum.
4. Selected Drift at knee: the value of drift imposed at each knee.
5. Shift: the change in drift divided by the change in depth between any two levels.
6. Delta-T: see section 5 of report for an explanation of Δt_{min}.
7. Reduction factor G: see section 5 of report.
8. Selected Drift Gradient: the gradient of the imposed drift curve.

Sonic Adjustment Data

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1. Measured depth from DF: the depth in meters from DF
2. Vertical depth from SRD: the depth in meters from seismic reference datum.
3. Vertical shot time SRD to GEO: the calculated vertical travel time from datum to geophone.
4. Adjusted Sonic Time.
5. Computed drift at level: the checkshot time minus the integrated raw sonic time.
6. Residual Shot Time - Adjusted Sonic Time.
7. Adjusted Interval Velocity.
8. Adjusted RMS Velocity.
9. Adjusted Average Velocity.

A3 Velocity Report

1. The data in this listing has been resampled in time.
2. Two way travel time from SRD: this is the index for the data in this listing. The first value is at SRD (0 ms) and is reported every 10 ms.
3. Measured depth from DF: the depth from DF at each corresponding value of two way time.
4. Vertical depth from SRD: the vertical depth from SRD at each corresponding value of two way time.
5. Average velocity SRD to GEO: the vertical depth from SRD divided by half the two way time.
6. RMS velocity: the root mean square velocity from datum to the corresponding value of two way time.

$$V_{rms} = \sqrt{\sum v_i^2 t_i / \sum t_i}$$

where v_i is the velocity between each 2 ms interval.

7. Interval velocity: the velocity between each sampled depth.

A4 Time to Depth

1. Two Way Sonic Time from SRD

2-11. Depth at Time, ms: times every 1 ms

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Attachment 2a: A1 Well Seismic Report (Rockhopper-1)

Client and Well Information

Country	**Australia**
Logging Date	**4 Jan 2010**
Company	Origin Energy Resources Ltd
Field	Rockhopper
Well	Rockhopper-1

Seismic Reference Datum : LAT Reference Velocity : 1524 m/s

DF Elevation above SRD : 26 m Time Picking on Geophone Transformed GAC Stacks

Table 4. VSP Data (Model based NMO Vertical Times)

LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
1	0.0			0.0000					
							2223		
2	988.1	1014.1	0.4420	0.4446				2223	2223
					15.1	0.0059	2560		
3	1003.3	1029.3	0.4479	0.4505				2227	2228
					15.1	0.0064	2373		
4	1018.4	1044.4	0.4542	0.4568				2229	2230
					15.1	0.0068	2216		
5	1033.5	1059.5	0.4611	0.4637				2229	2229
					54.6	0.0252	2168		
6	1088.1	1114.1	0.4862	0.4888				2226	2226
					15.1	0.0057	2666		
7	1103.2	1129.2	0.4919	0.4945				2231	2232
					15.1	0.0063	2408		
8	1118.3	1144.4	0.4982	0.5008				2233	2234
					15.1	0.0060	2528		
9	1133.5	1159.5	0.5041	0.5068				2237	2238
					54.6	0.0240	2268		
10	1188.1	1214.1	0.5281	0.5309				2238	2239
					15.1	0.0064	2384		
11	1203.2	1229.2	0.5344	0.5372				2240	2241
					15.1	0.0063	2408		
12	1218.3	1244.4	0.5407	0.5435				2242	2243
					15.1	0.0067	2325		
13	1233.5	1259.5	0.5474	0.5500				2243	2244
					54.7	0.0243	2247		
14	1288.1	1314.1	0.5717	0.5743				2243	2244
					15.1	0.0061	2402		
15	1303.2	1329.3	0.5778	0.5806				2245	2246
					15.1	0.0062	2444		
16	1318.4	1344.4	0.5840	0.5868				2247	2248
					15.1	0.0061	2456		
17	1333.5	1359.5	0.5901	0.5930				2249	2250
					54.6	0.0227	2429		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
18	1388.1	1414.1	0.6128	0.6155				2255	2257
					15.1	0.0058	2523		
19	1403.2	1429.2	0.6186	0.6214				2258	2260
					15.1	0.0061	2527		
20	1418.4	1444.4	0.6246	0.6274				2261	2262
					15.1	0.0056	2675		
21	1433.5	1459.5	0.6302	0.6331				2264	2266
					54.7	0.0206	2659		
22	1488.1	1514.1	0.6508	0.6536				2277	2280
					15.1	0.0055	2702		
23	1503.2	1529.3	0.6563	0.6592				2280	2284
					15.1	0.0059	2627		
24	1518.4	1544.4	0.6621	0.6650				2283	2287
					15.1	0.0055	2715		
25	1533.5	1559.5	0.6677	0.6706				2287	2291
					54.5	0.0205	2678		
26	1588.0	1614.0	0.6881	0.6909				2298	2303
					15.1	0.0056	2681		
27	1603.1	1629.1	0.6937	0.6965				2302	2306
					15.1	0.0057	2656		
28	1618.2	1644.3	0.6994	0.7022				2304	2310
					15.1	0.0056	2665		
29	1633.4	1659.4	0.7050	0.7079				2307	2313
					54.7	0.0204	2685		
30	1688.1	1714.1	0.7254	0.7283				2318	2324
					15.1	0.0054	2771		
31	1703.2	1729.2	0.7308	0.7338				2321	2327
					15.1	0.0056	2718		
32	1718.3	1744.3	0.7364	0.7393				2324	2331
					15.1	0.0055	2743		
33	1733.4	1759.5	0.7419	0.7448				2327	2334
					54.6	0.0200	2730		
34	1788.1	1814.1	0.7619	0.7648				2338	2345
					15.1	0.0056	2761		
35	1803.2	1829.2	0.7674	0.7703				2341	2348
					15.1	0.0051	2927		
36	1818.3	1844.4	0.7725	0.7755				2345	2353
					15.1	0.0052	2894		
37	1833.4	1859.5	0.7777	0.7807				2348	2357
					54.6	0.0184	2981		
38	1888.1	1914.1	0.7961	0.7990				2363	2373
					15.1	0.0048	3115		
39	1903.2	1929.2	0.8008	0.8039				2367	2378
					15.1	0.0050	3035		
40	1918.3	1944.4	0.8058	0.8089				2372	2383
					15.1	0.0049	3074		
41	1933.4	1959.5	0.8107	0.8138				2376	2387
					54.5	0.0175	3130		
42	1988.0	2014.1	0.8282	0.8312				2392	2405
					15.0	0.0046	3286		
43	2003.0	2029.2	0.8328	0.8358				2397	2411

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
					15.0	0.0048	3231		
44	2018.0	2044.4	0.8375	0.8404				2401	2416
					5.4	0.0011	3894		
45	2023.4	2049.8	0.8387	0.8418				2404	2420
					4.3	0.0020	2592		
46	2027.7	2054.2	0.8407	0.8435				2404	2420
					5.3	0.0014	3474		
47	2033.0	2059.5	0.8421	0.8450				2406	2422
					9.7	0.0032	3175		
48	2042.7	2069.3	0.8453	0.8480				2409	2425
					14.6	0.0043	3371		
49	2057.3	2084.1	0.8495	0.8524				2414	2431
					14.8	0.0045	3295		
50	2072.1	2099.2	0.8540	0.8569				2418	2436
					14.5	0.0044	3298		
51	2086.6	2114.1	0.8584	0.8613				2423	2442
					14.9	0.0041	3467		
52	2101.5	2129.5	0.8625	0.8656				2428	2448
					14.4	0.0042	3370		
53	2115.9	2144.4	0.8667	0.8698				2432	2453
					14.5	0.0043	3373		
54	2130.4	2159.5	0.8710	0.8742				2437	2458
					51.1	0.0147	3498		
55	2181.6	2214.1	0.8857	0.8888				2455	2479
					13.9	0.0039	3548		
56	2195.4	2229.2	0.8896	0.8927				2459	2485
					13.9	0.0038	3559		
57	2209.3	2244.4	0.8934	0.8966				2464	2490
					13.6	0.0037	3594		
58	2222.8	2259.5	0.8971	0.9003				2469	2496
					47.4	0.0134	3534		
59	2270.2	2314.1	0.9108	0.9138				2484	2514
					12.7	0.0038	3451		
60	2282.9	2329.2	0.9147	0.9174				2488	2519
					12.5	0.0039	3401		
61	2295.4	2344.4	0.9186	0.9211				2492	2523
					12.4	0.0033	3672		
62	2307.8	2359.5	0.9220	0.9245				2496	2528
					43.4	0.0115	3668		
63	2351.2	2414.1	0.9342	0.9363				2511	2546
					11.6	0.0030	3696		
64	2362.8	2429.2	0.9374	0.9395				2515	2550
					11.4	0.0030	3689		
65	2374.2	2444.4	0.9407	0.9425				2519	2555
					11.3	0.0030	3651		
66	2385.5	2459.5	0.9439	0.9456				2523	2559
					40.0	0.0103	3718		
67	2425.5	2514.1	0.9552	0.9564				2536	2575
					11.1	0.0029	3667		
68	2436.5	2529.2	0.9584	0.9594				2540	2579
					11.1	0.0029	3680		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
69	2447.6	2544.3	0.9616	0.9624				2543	2584
					11.0	0.0027	3763		
70	2458.6	2559.4	0.9646	0.9653				2547	2588
					7.2	0.0019	3622		
71	2465.8	2569.2	0.9668	0.9673				2549	2591
					11.1	0.0028	3718		
72	2476.9	2584.4	0.9699	0.9703				2553	2595
					11.1	0.0030	3618		
73	2487.9	2599.5	0.9733	0.9734				2556	2599
					11.0	0.0030	3613		
74	2499.0	2614.6	0.9766	0.9764				2559	2602

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Attachment 2b: A1 Well Seismic Report (Rockhopper-1 ST1)

Client and Well Information

Country	Australia
Logging Date	9 Feb 2010
Company	Origin Energy Resources Ltd
Field	Rockhopper
Well	Rockhopper-1 ST1

Seismic Reference Datum : LAT Reference Velocity : 1524 m/s

DF Elevation above SRD : 26 m Time Picking on Geophone Transformed GAC Stacks

Table 5. VSP Data (Model based NMO Vertical Times / merged with RH1)

LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
1	0.0			0.0000					
							2223		
2	988.1	1014.1	0.4420	0.4446				2223	2223
					15.1	0.0059	2560		
3	1003.3	1029.3	0.4479	0.4505				2227	2228
					15.1	0.0064	2373		
4	1018.4	1044.4	0.4542	0.4568				2229	2230
					15.1	0.0068	2216		
5	1033.5	1059.5	0.4611	0.4637				2229	2229
					54.6	0.0252	2168		
6	1088.1	1114.1	0.4862	0.4888				2226	2226
					15.1	0.0057	2666		
7	1103.2	1129.2	0.4919	0.4945				2231	2232
					15.1	0.0063	2408		
8	1118.3	1144.4	0.4982	0.5008				2233	2234
					15.1	0.0060	2528		
9	1133.5	1159.5	0.5041	0.5068				2237	2238
					54.6	0.0240	2268		
10	1188.1	1214.1	0.5281	0.5309				2238	2239
					15.1	0.0064	2384		
11	1203.2	1229.2	0.5344	0.5372				2240	2241
					15.1	0.0063	2408		
12	1218.3	1244.4	0.5407	0.5435				2242	2243
					15.1	0.0067	2325		
13	1233.5	1259.5	0.5474	0.5500				2243	2244
					54.7	0.0243	2247		
14	1288.1	1314.1	0.5717	0.5743				2243	2244
					15.1	0.0061	2402		
15	1303.2	1329.3	0.5778	0.5806				2245	2246
					15.1	0.0062	2445		
16	1318.4	1344.4	0.5840	0.5868				2247	2248
					15.1	0.0061	2456		
17	1333.5	1359.5	0.5901	0.5930				2249	2250
					54.6	0.0227	2429		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
18	1388.1	1414.1	0.6128	0.6155				2255	2257
					15.1	0.0058	2523		
19	1403.2	1429.2	0.6186	0.6214				2258	2260
					15.1	0.0061	2527		
20	1418.4	1444.4	0.6246	0.6274				2261	2262
					15.1	0.0056	2676		
21	1433.5	1459.5	0.6302	0.6331				2264	2266
					54.7	0.0206	2659		
22	1488.1	1514.1	0.6508	0.6536				2277	2280
					15.1	0.0055	2702		
23	1503.2	1529.3	0.6563	0.6592				2280	2284
					15.1	0.0059	2627		
24	1518.4	1544.4	0.6621	0.6650				2283	2287
					15.1	0.0055	2715		
25	1533.5	1559.5	0.6677	0.6705				2287	2291
					54.5	0.0205	2715		
26	1589.2	1615.2	0.6894	0.6911				2300	2305
					15.1	0.0056	2683		
27	1604.3	1630.4	0.6950	0.6967				2303	2308
					15.1	0.0057	2657		
28	1619.5	1645.5	0.7007	0.7024				2306	2311
					15.1	0.0056	2658		
29	1634.6	1660.6	0.7063	0.7081				2308	2314
					24.5	0.0098	2568		
30	1659.1	1685.1	0.7162	0.7176				2312	2317
					15.1	0.0056	2718		
31	1674.2	1700.2	0.7217	0.7232				2315	2321
					15.1	0.0056	2721		
32	1689.3	1715.3	0.7273	0.7287				2318	2324
					15.1	0.0054	2766		
33	1704.4	1730.4	0.7327	0.7342				2321	2328
					26.8	0.0097	2743		
34	1731.3	1757.3	0.7425	0.7440				2327	2334
					15.1	0.0055	2730		
35	1746.4	1772.4	0.7480	0.7495				2330	2337
					15.1	0.0056	2712		
36	1761.5	1787.5	0.7536	0.7551				2333	2340
					15.1	0.0054	2761		
37	1776.6	1802.7	0.7590	0.7606				2336	2343
					15.2	0.0058	2690		
38	1791.9	1817.9	0.7648	0.7663				2338	2346
					15.1	0.0054	2831		
39	1807.0	1833.0	0.7701	0.7716				2342	2350
					15.1	0.0050	2932		
40	1822.1	1848.1	0.7752	0.7767				2346	2354
					15.1	0.0052	2873		
41	1837.2	1863.3	0.7804	0.7820				2349	2358
					14.4	0.0052	2847		
42	1851.6	1877.7	0.7856	0.7871				2353	2361
					15.1	0.0051	3020		
43	1866.8	1892.8	0.7906	0.7921				2357	2366

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
					15.1	0.0049	3054		
44	1881.9	1907.9	0.7956	0.7970				2361	2371
					7.4	0.0026	2964		
45	1889.3	1915.3	0.7981	0.7995				2363	2373
					7.7	0.0023	3217		
46	1897.0	1923.0	0.8004	0.8019				2366	2376
					7.4	0.0026	2944		
47	1904.4	1930.5	0.8030	0.8044				2367	2378
					8.4	0.0028	3038		
48	1912.8	1938.8	0.8058	0.8072				2370	2381
					6.7	0.0022	3075		
49	1919.5	1945.6	0.8080	0.8094				2372	2383
					8.4	0.0028	3027		
50	1927.9	1954.0	0.8108	0.8122				2374	2385
					6.7	0.0021	3119		
51	1934.6	1960.7	0.8129	0.8143				2376	2387
					8.4	0.0028	3023		
52	1943.0	1969.1	0.8157	0.8171				2378	2390
					15.1	0.0050	3022		
53	1958.2	1984.2	0.8207	0.8221				2382	2394
					15.0	0.0042	3333		
54	1973.1	1999.2	0.8249	0.8266				2387	2400
					15.1	0.0049	3197		
55	1988.2	2014.3	0.8298	0.8313				2392	2406
					15.1	0.0047	3254		
56	2003.3	2029.4	0.8345	0.8359				2396	2411
					15.0	0.0047	3233		
57	2018.3	2044.5	0.8392	0.8406				2401	2416
					15.0	0.0047	3233		
58	2033.3	2059.6	0.8439	0.8452				2406	2422
					15.0	0.0057	2937		
59	2048.3	2074.8	0.8496	0.8503				2409	2425
					14.9	0.0037	3606		
60	2063.2	2089.9	0.8534	0.8545				2415	2432
					14.9	0.0050	3118		
61	2078.1	2105.0	0.8584	0.8593				2419	2437
					14.9	0.0042	3413		
62	2093.1	2120.2	0.8626	0.8636				2424	2442
					14.9	0.0046	3259		
63	2107.9	2135.3	0.8673	0.8682				2428	2447
					14.8	0.0041	3423		
64	2122.7	2150.4	0.8714	0.8725				2433	2453
					14.8	0.0041	3520		
65	2137.5	2165.5	0.8756	0.8767				2438	2459
					14.8	0.0039	3617		
66	2152.3	2180.8	0.8795	0.8808				2444	2466
					14.7	0.0042	3493		
67	2167.0	2195.9	0.8838	0.8850				2449	2472
					14.6	0.0042	3462		
68	2181.6	2211.0	0.8880	0.8892				2453	2478
					14.5	0.0044	3389		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
69	2196.0	2226.1	0.8925	0.8935				2458	2483
					14.3	0.0047	3252		
70	2210.3	2241.2	0.8972	0.8979				2462	2487
					14.1	0.0035	3728		
71	2224.4	2256.3	0.9008	0.9017				2467	2494
					13.9	0.0037	3583		
72	2238.3	2271.4	0.9046	0.9055				2472	2499
					13.7	0.0045	3233		
73	2252.0	2286.6	0.9092	0.9098				2475	2503
					13.5	0.0035	3646		
74	2265.6	2301.7	0.9128	0.9135				2480	2509
					13.3	0.0041	3341		
75	2278.9	2316.8	0.9171	0.9175				2484	2513
					13.3	0.0037	3547		
76	2292.2	2331.9	0.9209	0.9212				2488	2518
					13.1	0.0042	3287		
77	2305.3	2347.1	0.9253	0.9252				2492	2522
					13.0	0.0036	3566		
78	2318.3	2362.2	0.9291	0.9289				2496	2527
					12.8	0.0035	3562		
79	2331.1	2377.3	0.9328	0.9325				2500	2532
					12.8	0.0036	3540		
80	2343.8	2392.4	0.9366	0.9361				2504	2536
					12.6	0.0037	3436		
81	2356.4	2407.5	0.9405	0.9397				2508	2540
					12.6	0.0030	3831		
82	2369.0	2422.7	0.9437	0.9430				2512	2546
					12.4	0.0037	3420		
83	2381.4	2437.8	0.9476	0.9466				2516	2550
					12.4	0.0030	3813		
84	2393.8	2452.9	0.9508	0.9499				2520	2555
					12.2	0.0037	3377		
85	2406.0	2468.0	0.9548	0.9535				2523	2559
					12.2	0.0037	3411		
86	2418.2	2483.1	0.9588	0.9571				2527	2563
					12.2	0.0031	3698		
87	2430.4	2498.2	0.9622	0.9604				2531	2568
					12.2	0.0033	3594		
88	2442.6	2513.3	0.9657	0.9638				2534	2572
					12.3	0.0041	3217		
89	2454.9	2528.4	0.9701	0.9676				2537	2575
					12.3	0.0035	3469		
90	2467.2	2543.6	0.9740	0.9711				2541	2579
					12.2	0.0030	3731		
91	2479.4	2558.8	0.9773	0.9744				2545	2583
					12.2	0.0036	3438		
92	2491.7	2573.9	0.9812	0.9780				2548	2587
					12.2	0.0032	3662		
93	2503.9	2589.0	0.9847	0.9813				2552	2591
					12.2	0.0038	3349		
94	2516.1	2604.1	0.9887	0.9850				2555	2595

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
					12.3	0.0034	3528		
95	2528.4	2619.2	0.9925	0.9884				2558	2598
					12.3	0.0031	3713		
96	2540.7	2634.3	0.9959	0.9918				2562	2603
					12.3	0.0040	3261		
97	2553.0	2649.4	1.0002	0.9955				2564	2606
					12.3	0.0038	3404		
98	2565.4	2664.5	1.0043	0.9992				2568	2609
					12.3	0.0033	3622		
99	2577.7	2679.7	1.0080	1.0026				2571	2613
					12.3	0.0034	3594		
100	2589.9	2694.8	1.0118	1.0060				2575	2617
					12.2	0.0034	3568		
101	2602.2	2709.9	1.0155	1.0094				2578	2621
					12.3	0.0031	3735		
102	2614.5	2725.1	1.0190	1.0127				2582	2625
					12.3	0.0034	3556		
103	2626.8	2740.2	1.0229	1.0162				2585	2629
					12.3	0.0031	3747		
104	2639.1	2755.3	1.0264	1.0194				2589	2633
					12.3	0.0037	3417		
105	2651.4	2770.4	1.0305	1.0230				2592	2637
					12.3	0.0035	3554		
106	2663.7	2785.6	1.0343	1.0265				2595	2640
					12.3	0.0034	3591		
107	2676.0	2800.7	1.0381	1.0299				2598	2644
					12.3	0.0034	3583		
108	2688.3	2815.8	1.0419	1.0334				2601	2648
					12.3	0.0034	3575		
109	2700.5	2830.9	1.0458	1.0368				2605	2651
					12.3	0.0031	3840		
110	2712.8	2846.0	1.0493	1.0400				2609	2656
					12.3	0.0032	3815		
111	2725.1	2861.1	1.0529	1.0432				2612	2660
					12.3	0.0032	3817		
112	2737.5	2876.3	1.0565	1.0464				2616	2664
					12.3	0.0034	3664		
113	2749.8	2891.4	1.0603	1.0498				2619	2668
					12.2	0.0033	3711		
114	2762.0	2906.4	1.0641	1.0531				2623	2672
					12.3	0.0033	3715		
115	2774.3	2921.6	1.0678	1.0564				2626	2676
					12.3	0.0031	3842		
116	2786.6	2936.7	1.0714	1.0596				2630	2680
					12.3	0.0034	3656		
117	2798.9	2951.8	1.0753	1.0630				2633	2684
					12.5	0.0029	4010		
118	2811.4	2967.0	1.0786	1.0661				2637	2689
					12.6	0.0032	3810		
119	2823.9	2982.1	1.0823	1.0694				2641	2693
					12.6	0.0034	3697		

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
120	2836.5	2997.2	1.0862	1.0728				2644	2697
					12.6	0.0035	3663		
121	2849.2	3012.3	1.0901	1.0762				2647	2700
					12.6	0.0034	3745		
122	2861.8	3027.4	1.0939	1.0796				2651	2704
					12.5	0.0032	3834		
123	2874.3	3042.6	1.0976	1.0829				2654	2708
					12.5	0.0031	3864		
124	2886.8	3057.7	1.1012	1.0861				2658	2713
					12.4	0.0032	3804		
125	2899.2	3072.8	1.1048	1.0894				2661	2716
					12.4	0.0030	3925		
126	2911.5	3087.9	1.1083	1.0925				2665	2721
					12.3	0.0032	3814		
127	2923.8	3103.0	1.1120	1.0957				2668	2725
					12.3	0.0031	3905		
128	2936.1	3118.2	1.1156	1.0989				2672	2729
					12.3	0.0031	3911		
129	2948.4	3133.3	1.1192	1.1020				2675	2733
					12.3	0.0034	3721		
130	2960.8	3148.4	1.1232	1.1053				2679	2736
					12.3	0.0035	3656		
131	2973.1	3163.6	1.1272	1.1087				2682	2740
					12.3	0.0032	3881		
132	2985.4	3178.7	1.1309	1.1119				2685	2743
					12.3	0.0032	3872		
133	2997.7	3193.8	1.1346	1.1151				2688	2747
					12.3	0.0026	4260		
134	3009.9	3208.9	1.1378	1.1179				2692	2752
					12.3	0.0029	4043		
135	3022.2	3224.0	1.1412	1.1210				2696	2757
					12.3	0.0030	3987		
136	3034.5	3239.1	1.1447	1.1240				2700	2761
					12.3	0.0032	3865		
137	3046.7	3254.3	1.1484	1.1272				2703	2764
					12.3	0.0031	3942		
138	3059.0	3269.4	1.1520	1.1303				2706	2768
					12.3	0.0032	3872		
139	3071.3	3284.5	1.1558	1.1335				2710	2772
					12.3	0.0028	4111		
140	3083.7	3299.6	1.1591	1.1365				2713	2776
					12.3	0.0032	3878		
141	3096.0	3314.7	1.1628	1.1397				2717	2780
					12.2	0.0026	4293		
142	3108.1	3329.7	1.1659	1.1425				2720	2785
					12.3	0.0030	4007		
143	3120.4	3344.8	1.1695	1.1456				2724	2789
					12.3	0.0030	3996		
144	3132.7	3360.0	1.1730	1.1487				2727	2793
					12.3	0.0029	4034		
145	3145.0	3375.1	1.1765	1.1517				2731	2797

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LEVEL NUMBER	VERTICAL DEPTH FROM SRD m	MEASURED DEPTH FROM KB m	OBSERVED TRAVEL TIME s	VERTICAL NMO OWT FROM SRD s	DELTA DEPTH m	DELTA TIME s	ACOUSTIC INTERVAL VELOCITY m/s	ACOUSTIC AVERAGE VELOCITY m/s	ACOUSTIC RMS VELOCITY m/s
					9.1	0.0027	3608		
146	3154.1	3386.3	1.1796	1.1542				2733	2799
					12.3	0.0033	3799		
147	3166.4	3401.4	1.1835	1.1575				2736	2802
					12.2	0.0028	4124		
148	3178.6	3416.5	1.1869	1.1604				2739	2806
					12.2	0.0034	3751		
149	3190.9	3431.7	1.1908	1.1637				2742	2809

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Attachment 3: Transit Time Picking Algorithms

The time picking can be broken down into several tasks:

First of all focus on the relevant parts of a data trace by selecting time intervals in form of constraints. To this end the user can select velocity, time header and/or initial guess constraints.

Detect a signal or a first break using a detection algorithm.

Tune on a particular phase of the event (e.g. zero-crossing, peak, trough, etc). It should be clear that tuning is only happening if a pick was either detected by an algorithm or retrieved from a header as initial guess.

Despike the picked transit time curve in order to eliminate mispicks either by median filtering or by cross-correlation. The cross-correlation option does not only have filtering features but also allows picking correlated events within a section after having picked only one event.

Detection algorithm

Energy break: the algorithm determines the maximum of the so-called energy function, which is the integrated signal energy within a sliding time window normalized by the total energy accumulated since the first time of data.

For a trace S(t) an energy function F(□) is calculated with algorithm proposed by (Coppens, 1985)

Geophone break: finds the first break of a downhole sensor. The algorithm compares amplitudes and slopes in consecutive arches. Input parameters are the center frequency of the data to be picked, a linear fit gate time which should be about half a wavelet period, and a detection threshold between 0.0 and 0.5.

Hydrophone break: provides the first break of a downhole sensor. The routine finds the global minimum and maximum amplitude along a trace, takes the smaller one of the corresponding sample indices and outputs the time of the preceding zero-crossing as the first break. The zero-crossing time is determined by linear regression over a selected length (linear fit gate time).

Tuning:

Peak: finds the time of the closest local maximum amplitude in the vicinity of an input break time.
Trough: finds the time of closest local minimum amplitude in the vicinity of an input break time.

Zero-crossing: finds the time of the closest zero-crossing in the vicinity of an input break time. The routine stores the sign of the derivative at the zero crossing that can be passed on for the tuning of the following trace. Thus artifacts created by cycle skipping can be reduced.

Inflection: finds the time of the closest inflection point in the vicinity of an input break time. The routine stores the sign of the derivative at the inflection point, which can be passed on for the tuning of the following trace. Thus artifacts created by cycle skipping can be reduced.

Inflection point tangent: finds the time of the closest inflection point in the vicinity of an input break time. The tuned break time is the zero-crossing time of the corresponding tangent at this inflection point. The routine stores the sign of the derivative at the inflection point which can be passed on for the tuning of the following trace. Thus artifacts created by cycle skipping can be reduced.

Cross-correlation

This option allows to tune transit times by considering the picked phase of a selected reference trace. The cross-correlation gate in time or length units can be specified in the Motif parameter panel of this option. The default value for the gate is three times the estimated center frequency of the first five traces of the seismic section to be picked. The window is put symmetrically around the transit times of the two traces to be cross-correlated if the option Use Existing Picks for the Gate Center Time is enabled and the

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transit times are not absent.

If the option Use Existing Picks for the Gate Center Time is disabled then the cross-correlation is started with the ambient traces around the reference trace. Those two traces, in turn, will be taken to set the time gates for the following ones, and so on. Thus an automatic picking can be provided after having picked only the reference trace.

Retuning can be selected to follow the cross-correlation. In this case the cross-correlation serves as a transit time curve despiker.

The cross correlation process can be stopped automatically if the picking quality degrades. This happens if the time difference between the break of the current and the previous trace exceeds a threshold value derived from a user-specified apparent velocity.

A polynomial amplitude interpolation is proposed in order provide "real" extreme values instead of extreme values at the nearest sample. The algorithm works as follows: the global extreme values are detected with the gate together with the corresponding sample indices. A minimum and maximum amplitude tuning provides an exact time estimate of these amplitudes. Polynomial interpolation determines the amplitudes at these times, which generally fall in between samples.

There are a variety of selectable and non-exclusive constraints available in order to stabilize the time picking process . The objective is to extract only the relevant part of the trace for the detection, tuning and/or cross-correlation process using.

Reference:

Coppens, F., 1985, First arrival picking on common offset trace collections for automatic estimation of static corrections, Geophys. Prosp. 33, 1212-1231.

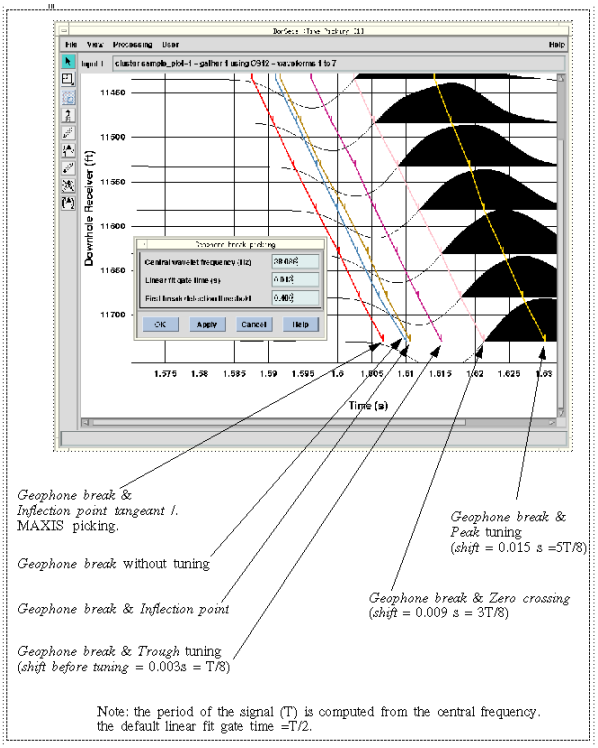

Figure A1 . Time Picking Options

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Attachment 4: Listing of Deliverables (CD-ROM)

Report:

VSP_report	VSP/Geogram Processing Report	PDF
QC_VSP_report	VSP Level 1 QC Report	PDF
QBH_report	Q-Borehole Field Survey Report	PDF

Graphics Displays:

comp1A/B	Plot 1. Composite Display 1 – Normal Polarity	TIF / PDF / PDS / CGM
comp2A/B	Plot 2. Composite Display 2 – Reverse Polarity	TIF / PDF / PDS / CGM
vel1A/B	Plot 3. Velocity Crossplot	TIF / PDF / PDS / CGM

Data files plus Verification (.txt) listings:

Raw data is provided in nascent LDF format		LDF
xstk.sgy	stacked x axis data	SEGY
ystk.sgy	stacked y axis data	SEGY
zstk.sgy	stacked z axis data	SEGY
upp1.sgy	VSP enhanced upgoing wavefield (OWT)	SEGY
upp2.sgy	VSP enhanced upgoing wavefield (NMO Corrected TWT)	SEGY
corstk.sgy	VSP corridor stack	SEGY
Image.sgy	VSP GRT Migration Image (Time)	SEGY
R25.sgy	Zero Phase Synthetic Seismograms – Ricker 25Hz	SEGY
R35.sgy	Zero Phase Synthetic Seismograms – Ricker 35Hz	SEGY
R45.sgy	Zero Phase Synthetic Seismograms – Ricker 45Hz	SEGY
logs_depth.las	Depth indexed Logs	ASCII (LAS)
logs_time.las	Time indexed Logs	ASCII (LAS)
synthetics.las	Synthetic Compressional Seismograms and Corridor Stack	ASCII (LAS)

Listings:

A1	Well_Seismic_Report	EXCEL
A2	Drift_and_Sonic_Adjustment_Report	EXCEL
A3	Velocity_Report	EXCEL
A4	Time_to_Depth_Report	EXCEL
	Time_Analysis_All	EXCEL

NOTE: The filename pre-fix indicates if the data is for Rockhopper-1 (**RH1**) Rockhopper-1 ST1 (**RH1ST1**) or combined results (**RH1andST1**).

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APPENDIX 12: PALYNOLOGICAL BASIC DATA REPORT

MORGAN PALAEO ASSOCIATES

PALYNOLOGICAL/PETROLEUM GEOLOGICAL CONSULTANTS

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Phone (08) 8832 2795 Fax (08) 8832 2798

Palynostratigraphic age determinations,

ORIGIN ENERGY ROCKHOPPER-1 ST-1 BASIC

T/18P, Bass Basin, Tasmania

Mike Macphail & Roger Morgan

Palaeontological report prepared 24 July 2010 for _Origin Energy Resources_ Ltd.
John Oxley Centre, 339 Coronation Drive, Milton, Qld. 4064

Consultant Palynological Services/Morgan Palaeo Associates,
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REF: BAS.ROCKHOPPER-1 ST-1 BASIC REPORT

1 Basic data

Basic data are presented in Table 2. Yields and preservation were variable depending on the degree of downhole contamination.

Table 2 Basic data

Well	Depth (mRT)	Type	Yield			Preservation	
			kerogen	dinocysts	spore-pollen	dinocysts	spore-pollen
Rockhopper-1 ST-1	3102	cuttings	very high	trace	low	poor	poor
	3249-3258	cuttings	medium	low	medium	very poor	very poor
	3264	cuttings	very high	trace	high	poor	very poor
	3293.0	core	medium	-	medium	-	very poor
	3345	cuttings	medium	trace	medium	fair	poor
	3378	cuttings	very high	trace	medium	fair	poor
	3414	cuttings	very high	trace	medium	fair	poor

TABLE 3A: QUANTITATIVE DATA ROCKHOPPER-1 ST-1

	ROCKHOPPER-1 ST1						
	cuttings	cuttings	cuttings	core	cuttings	cuttings	cuttings
Depth mRT	3102	3249-3258	3264	3293.00	3345	3378	3414
Australopollis obscurus						1	
Forcipites longus						1	
Gambierina spp.		3		1			2
Haloragacidites harrisii							
Malvacipollis spp.							
Milfordia spp.							
Myrtaceidites spp.							
Nothofagidites emarcidus-heterus							
Nothofagidites endurus/senectus	1	1			1		2
Nothofagidites flemingii	1						
Nothofagidites (unassigned spp.).							
Peninsulpollis gillii			2	2		2	1
Periporopollenites spp.				4	2		
Polycolpites langstonii							
Proteacidites pachypolus							
Proteacidites spp.	1	3	5			1	4
Tricolpites spp.				2		1	1
Tricolporites/Rhoipites spp.	1						
unassigned angiosperms							
TOTAL ANGIOSPERMS	**4**	**7**	**7**	**9**	**3**	**6**	**10**
Aracuariacites australis	12	1	4	3		10	7
Dilwynites spp.	9	8	17	10	3		3
Lygistepollenites balmei							
Lygistepollenites florinii							1
Microcachrydites antarcticus			1	1			2
Phyllocladidites mawsonii	25	9	9	6	10	12	11
Phyllocladiidtes reticulosaccatus/verrucosus			1				
Podosporites/Trichotomosaccites		7	5	9	3	6	5
Podocarpidites (*sensu lato*)	33	17	21	30	39	21	19
TOTAL GYMNOSPERMS	**79**	**42**	**58**	**59**	**55**	**49**	**48**
Aequitriradites							
Baculatisporites spp.	1	5	3	5	7		1
Clavifera triplex							
Cyathidites splendens	1		1		1		
Cyathidites (> 45 microns)	1	5	2		4	2	11
Gleicheniidites spp.	4	2		1	1	3	
Herkosporites/Neoraistrickia		1		3	1		1
Latrobosporites spp.							
Laevigatosporites spp.		1					
*Peromonolites*spp.							
Perotrilites spp.							2
Polypodiisporites spp.							
Retitriletes spp.	1		1				4
Stereisporites spp.	1	1		2			
Trilites/Ischyosporites					1	1	
Verrucosisporites							
psilate trilete spores incl. *Cyathidites* (< 45 microns)	7	28	27	17	24	30	19
Unassigned trilete spores	1	8	1	4	3	9	4
TOTAL CRYPTOGAMS	**17**	**51**	**35**	**32**	**42**	**45**	**42**
FUNGAL SPORES	**2**	**1**	**2**	**3**	**1**	**4**	**1**
Botryococcus							
Morkallacysta pyramidalis				1			
Saeptodinium							
unassigned cysts		1		3			
TOTAL FRESH- & BRACKISHWATER ALGAE	**0**	**1**	**0**	**4**	**0**	**0**	**0**
Paracaniella							
Spiniferites spp.							
Tectatodinium							
unassigned dinoflagellates							
TOTAL DINOCYSTS	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Palaeozoic-Mesozoic spores						1	
Palaeozoic-Mesozoic gymnosperm pollen		1					
TOTAL RECYCLED	**0**	**1**	**0**	**0**	**0**	**1**	**0**
Angiosperm pollen	1		2		1		
Gymnosperm pollen							
TOTAL CONTAMINANTS	**1**	**0**	**2**	**0**	**1**	**0**	**0**

TABLE 3B: DISTRIBUTION DATA ROCKHOPPER-1 ST-1

WELL	**ROCKHOPPER-1, ST-1**						
Sample Type	cuttings	cuttings	cuttings	core	cuttings	cuttings	cuttings
DEPTH (mRT)	3102	3249-3258	3264	3293.00	3345	3378	3414
Amosopollis cruciformis							
Apectodinium hyperacanthum							
Ap[ectodinium reburrus							
Botryococcus							
Ceratopsis obliquipes							
Cordosphaeridinium inodes							
Fibrocysat bipolare		?			X		
Homotryblium tasmaniense		X					
Hystrichosphaeridium tubiferum		X					
Impagidinium sp.							cf.
Kenleyia							
Morkallacysta pyramidalis	X		X	X	X	X	X
Operculodinium				X	X		
Paralacaniella indentata							
Polysphaeridium zoharyi							
Saeptodinium					X		
Spiniferites spp.		X					
Tectatodinium							
Thallasiphora		X					
trabeculate sp. cf. *Glaphyracysta*							
unassigned dinoflagellates	X	X					
Pesavis [fungal spore]		X	X	X	X	X	
Aequitriradites spinulosus							cf.
Alisporites grandis		X	X	X		X	
Alisporites similis					X		
Alisporites/Falcisporites						X	
Annulispora folliculosa				X			
Araucariacites australis	X	X	X	X			
Australopollis obscurus						X	
Baculatisporites spp.	X			X		X	X
Battenipollis sectilis		X					X
Beaupreaidites orbiculatus							X
Bluffopollis scabratus							
Callialiasporites dampieri		X	X				?
Camarozonosporites apiculata ms		cf.			X		
Camarozonosporites australiaens					X		X
Camarozonosporites bullatus		X		X			X
Cingutriletes congruens		X	X	X			
Clavifera triplex	X				X		
Concacavissimisporites/Converrucosisporites							
Contignisporites glebulentus							
Cooksonites			?				
Corollinia simplex							
Corollinia torosa							
Cranwellia palisadus							X
Crassiretitriletes vanraadshoovenii							
Cupanieidites orthoteichus							
Cyathidites australis/minor	X	X	X	X	X	X	X
Cyathidites splendens	X	X	X	X	X	X	X
Cycadopites spp.			X				X
Dacrycarpites australiensis						X	
Densoisporites vellatus					cf.	X	
Dicotetradites clavatus							
Dilwynites granulatus	X	X	X	X	X	X	
Dilywnites pusillus				X			X
Dilwynites tuberculatus	X				X		
Evansispora senonica					X		X
Fischeripollis sp.							
Foraminisporis asymmetricus						X	
Forcipites longus			X		?	X	X
Forcipites sabulosus						X	?
Forcipites stipulatus					X		X
Forcipites spp.		?	X		X		
Foveogleicheniidites sp.							X
Foveosporites pseudoalveolatus							
Gambierina edwardsii	X	X			X		X
Gambierina bulbosa ms							X
Gambierina rudata	X	X	X	X	X	X	X
Gleicheniidites ancorus		X		X	X		X
Gleicheniidites spp.	X	X	X	X	X	X	X
Grapnelispora evansii						X	X
Haloragacidites harrisii		X	X		X	X	X
Herkosporites elliotii	X		X	X	X	X	X
Ilexpollenites spp.							
Ischyosporites gremius							
Kuylisporites waterbolkii							
Laevigaptosporites major	X		X			X	
Laevigatosporites ovatus	X	X	X			X	
Latrobosporites amplus complex	X		X	X	X		X
Latrobosporites marginis							
Latrobosporites crassus					X		X
Leptolepidites verrucatus							X
Liliacidites peroreticulosus						cf.	
Liliacidites spp.							
Lygistepollenites balmei		X	X		X		
Lygistepollenites florinii							X
Malvacipollis diversus		X					X
Malvacipollis robustus							
Malvacipollis subtilis		X					
Margocolporites vanwijhi							
Matonisporites gigantis							
Microcachrydites antarcticus complex			X	X	X	X	X
Milfordia homeopunctata							
Myrtaceoipollenites australis							
Myrtaceidites parvus-mesonesus							

Myrtaceidites tenuis							
Neoraistrickia equalis		X	X	X	X	X	X
Neoraistrickia truncata							
Neoraistrickia spp.		X		X			X
Nevesisporites dailyii							
Nothofagidites asperus							
Nothofafgidites brachyspinulosus							
Nothofagidites emarcidus-heterus				X			
Nothofagiidtes endurus/kaitangataensis	X	X	X	X	X	X	X
Nothofagidites flemingii		X	X	X	X	X	
Nothofagidites senectus complex	X		X			X	X
Nothofagidites (unassigned spp.)	X						X
Ornamentifera sentosa				?			
Penisulapollis askinae			X				
Peninsulapollis gillii	X	X	X	X	X	X	X
Periporopollenites demarcatus							
Periporopollenites polyoratus	X			X	X		
Peromonolites densus							
Peromonolites digitabulum ms			X		X		
Perotriletes majus complex				X	X	X	X
Perotrilites spp.							
Phimopollenites pannosus							cf.
Phyllocladites mawsonii	X	X	X	X	X	X	X
Phyllocladidites reticulosaccatus		X	X	X			
Plicatipollenites spp.							
Podocarpidites spp.	X	X	X	X	X	X	X
Podosporites microsaccatus complex	X	X	X	X	X	X	X
Polycolpites langstonii							
Polypodiisporites spp.		X	X				
Propylipollis annularis							
Propylipollis amolosexinus		cf.		X	cf.		X
Proteaciidtes adenanthoides							
Proteacidites angulatus			cf.				
Proteaciidtes asperopolus							
Proteacidites crassus							
Proteacidites crotonoides							cf.
Proteacidites grandis		X			X		X
Proteacidites cf. *grandis*							
Proteacidites incurvatus					X		
Proteaciidtes kopiensis							
Proteacidites latrobensis						X	
Proteaciidtes leightonii							
Proteaciidtes obesolabrus							
Proteacidites obscurus					cf.		
Proteaciidtes ornatus							
Proteacidites pachypolus							
Proteacidites prepolus ms							X
Proteacidites recavus							
Proteaciidtes rectus	cf.		cf.				
Proteaciidtes reticuloconcavus ms		X	X		?	X	X
Proteacidites tuberculiformis							
Proteacidites wahooensis ms			X				
Proteacidites spp.	X		X	X	X	X	X
Protohaploxypinus amplus							
Protohaploxypinus limpidus							
Pseodoreticulatispora pseudoreticulatus							
Pseudowinterapollis wahooensis					?	X	
Quadraplanus brossus						X	
Retitriletes australoclavatidites complex	X	X	X	X			X
Retitriletes circolumenus							
Retitriletes facetus							
Retitriletes spp.		X	X	X			X
Rhoipites spp.							X
Rosannia (al. *Lactoripollenites*) *sp.*							X
Rotverrusporites stellatus				X			
Rouseisporites						X	
Ruffordiaspora australiensis							
Rugulatisporites mallatus complex	X						
Sellaspora asperata complex		X			X	X	
Spinizonocolpites prominatus							X
Stereisporites antiquisporites	X				X	X	X
Stereisporites australis	X	X	X	X	X	X	X
Stereisporites maastrichtensis ms	X	X	X	X	X		X
Stereisporites regium					X		X
Striatella spp.							
Tensucolpites lilliei					X	X	X
Tetracolporites multistrixus ms							
Tetracolporites textus ms							
Tetracolporites verrucosus	X		X	X		X	X
Tetradopollis spp.							X
Tricolpites adelaidensis							
Tricolpites spp. s.l.				X			X
Tricolporites leuros							
Tricolporites moultonii ms							
Tricolporites spp. s.l.				X			X
Trilites tuberculiformis complex		cf.			X	X	X
Triporoletes reticulatus						X	
Triporopollenites spp.							
Verrucosisporites kopukuensis						X	
Acacia							
Casuarinaceae		X					
Chenopodiaceae					X	X	X
Eucalyptus							X
Liliaceae							
Pinus		X			X		X
Poaceae						X	

Well Name : ROCKHOPPER-1 ST1 QUANTIT

Operator : ORIGIN ENERGY

Interval : 3082m - 3434m — **Palynological Data Chart : BASIC DATA**

Scale : 1:10000 — **% Abundance histogram : Highest occurrence**

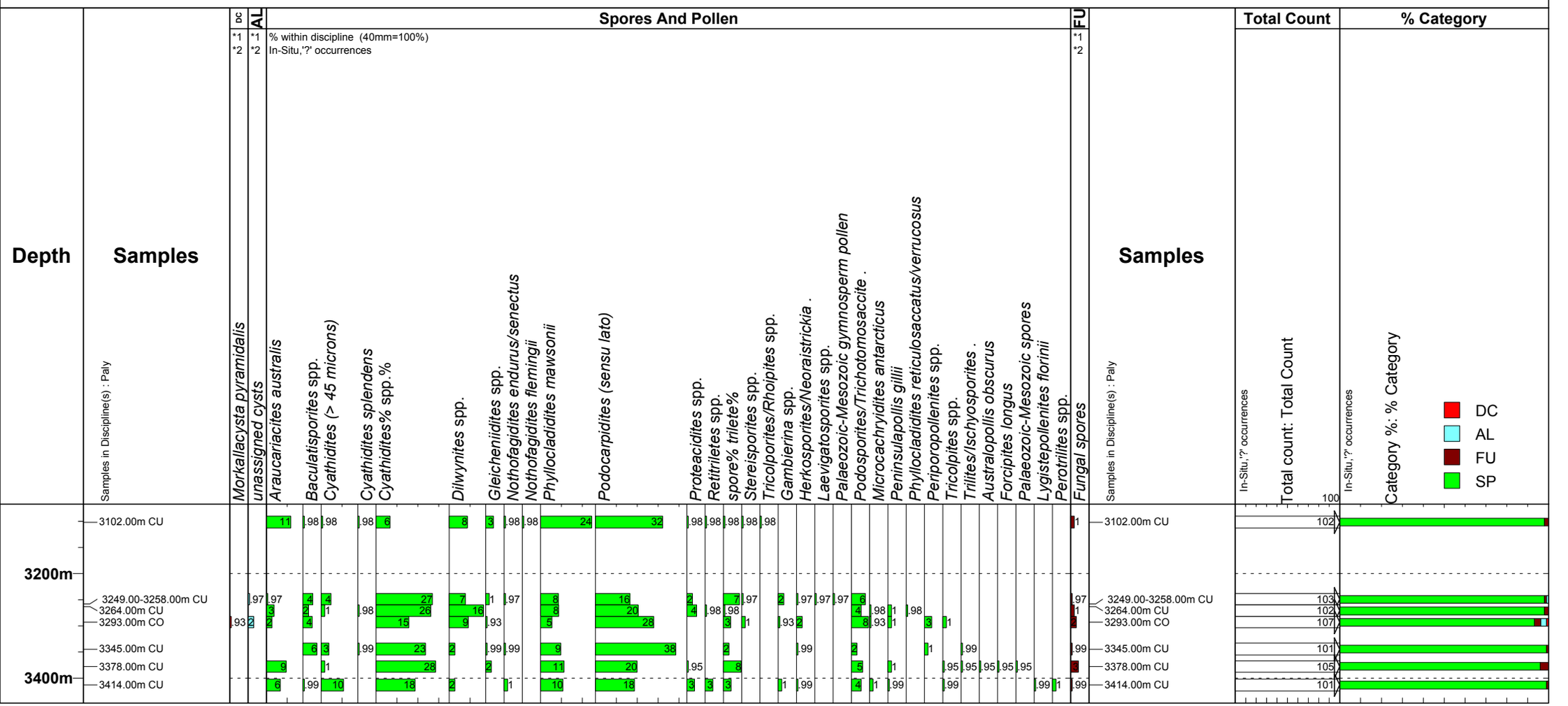
Chart date: 02 August 2010 — **Mike Macphail**

Morgan Palaeo Associates
Maitland, South Australia

Enclosure 4

Sampling
- Cutting
- Core
- Sidewall core

Text Keys
*1 % within discipline (40mm=100%)
*2 In-Situ,'?' occurrences



Well Name : ROCKHOPPER-1 ST1 OCCURENC

Operator : ORIGIN ENERGY

Interval : 3082m - 3434m — **Palynological Data Chart : BASIC DATA**

Scale : 1:10000 — **% Abundance histogram : Highest occurrence**

Chart date: 02 August 2010 — **Mike Macphail**

Morgan Palaeo Associates
Maitland, South Australia

Enclosure 3

Sampling
- Cutting
- Core
- Sidewall core

Text Keys
*1 % within discipline (40mm=100%)
*2 In-Situ,'?' occurrences

Depth | **Samples** | Samples in Discipline(s) : Paly

Dinoflagellate Cysts

% within discipline (40mm=100%) *1
In-Situ,'?' occurrences *2

Dinocysts indet
Morkallacysta pyramidalis
Fibrocysta bipolaris
Homotryblium tasmaniense
Hystrichosphaeridium tubiferum
Spiniferites spp.
Thalassiphora spp.
Operculodinium spp.
Saeptodinium spp.
Impagidinium sp.

§

Quadraplanus brossus

Spores And Pollen

% within discipline (40mm=100%) *1
In-Situ,'?' occurrences *2

Araucariacites australis
Baculatisporites spp.
Clavifera triplex
Cyathidites splendens
Cyathidites spp.
Dilwynites granulatus
Dilwynites tuberculatus
Gambierina edwardsii
Gambierina rudata
Gleicheniidites spp.
Herkosporites elliottii
Laevigatosporites major
Laevigatosporites ovatus
Latrobosporites amplus
Nothofagidites endurus/kaitangataensis
Nothofagidites senectus
Nothofagidites sp.
Peninsulapollis gillii
Periporopollenites polyoratus
Phyllocladidites mawsonii
Podocarpidites spp.
Podosporites microsaccatus
Proteacidites rectus
Proteacidites spp.
Retitriletes austroclavatidites complex
Rugulatisporites mallatus
Stereisporites antiquasporites
Stereisporites australis
Stereisporites maastrichtensis ms
Tetracolporites verrucosus
Alisporites grandis
Batteripollis sectilis
Callialasporites dampieri
Camarozonosporites apiculata ms
Camarozonosporites bullatus
Casuarinaceae .
Cingutriletes congruens
Forcipites spp.
Gleicheniidites ancorus
Haloragacidites harrisii
Lygistepollenites balmei
Malvacipollis diversus
Malvacipollis subtilis
Neoraistrickia equalis
Neoraistrickia spp.
Nothofagidites flemingii
Phyllocladidites reticulosaccatus
Pinus .
Polypodiisporites sp.
Propylipollis amolosexinus
Proteacidites grandis
Proteacidites reticuloconcavus ms
Retitriletes spp.
Sellaspora asperata
Trilites tuberculiformis
Cooksonites spp.
Cycadopites spp.
Forcipites longus
Microcachryidites antarcticus
Peninsulapollis askinae
Peromonolites digitabulum ms
Proteacidites angulatus
Proteacidites wahooensis ms
Annulispora folliculosa
Asteraceae .
Dilwynites pusillus ms
Nothofagidites emarcidus-heterus
Ornamentifera sentosa
Perotriletes majus
Rotverrusporites stellatus
Tricolpites spp.
Tricolporites spp.
Alisporites similis
Camarozonosporites australiensis
Chenopodiaceae spp.
Densoisporites velatus
Evansispora senonica
Forcipites stipulatus
Latrobosporites crassus
Proteacidites incurvatus
Proteacidites obscurus
Pseudowinterapollis wahooensis
Stereisporites regium
Tensucolpites lilliei
Australopollis obscurus
Dacrycarpites australiensis
Falcisporites spp.
Foraminisporis asymmetricus
Forcipites sabulosus
Grapnelispora evansii
Liliacidites peroreticulatus
Poaceae .
Proteacidites latrobensis
Rouseisporites .
Triporoletes reticulatus
Verrucosisporites kopukuensis
Aequitriradites spinulosus
Beaupreaidites orbiculatus
Cranwellia palisadus
Eucalyptus .
Foveogleicheniidites spp.
Gambierina bulbosa ms
Leptolepidites verrucatus
Lygistepollenites florinii
Phimopollenites pannosus
Proteacidites crotonoides
Proteacidites prepolus ms
Rhoipites spp.
Rosannia (al. Lactoripollenites) sp.
Spinizonocolpites prominatus
Tetradopollis .
Fungal spore

FU

Depth	Samples
3200m	3102.00m CU
	3249.00-3258.00m CU
	3264.00m CU
	3293.00m CO
	3345.00m CU
	3378.00m CU
3400m	3414.00m CU

Samples in Discipline(s) : Paly
Samples

APPENDIX 13: MDT PRESSURE DATA

Test No.	Depth mMDRT	Depth mTVDRT	Depth mTVDSS	Date	Total Test Time (hh:mm)	SAPPHIRE GAUGE (PSIA)		QUARTZ GAUGE (PSIA)		SAPPHIRE GAUGE (PSIA)	QUARTZ GAUGE (PSIA)	Temp°C	Mobility	Pump Out (Yes/No)	Sample Taken (Yes/No)	Comments
						Hydrostatic pressure BEFORE	Formation pressure	Hydrostic Pressure BEFORE	Formation pressure	Hydrostatic Pressure AFTER	Hydrostaic Pressure AFTER					
1	2135.5	2134.1	2108.1	5/02/2010	0:05	3486.60	3101.68	3483.49	3098.57	3486.4	3483.36	97.3	162.3	No	No	Valid
2	2248.0	2242.7	2216.7	5/02/2010	0:07	3662.28	3256.64	3658.53	3253.38	3661.27	3657.85	97.4	44.1	No	No	Valid
3	2287.0	2278.5	2252.5	5/02/2010	0:05	3718.70	3307.45	3714.94	3303.79	3718.93	3715.50	99.19	170	No	No	Valid
4	2383.7	2362.5	2336.5	5/02/2010	0:05	3855.47	3433.61	3851.73	3429.77	3854.61	3850.85	100.4	10.4	No	No	Valid
5	2525.5	2478.6	2452.6	5/02/2010	0:07	4041.67	3595.81	4037.67	3591.93	4040.98	4037.42	104.7	37.5	No	No	Valid
6	2551.5	2499.6	2473.6	5/02/2010	0:09	4074.46	3623.56	4070.84	3620.06	4073.92	4070.49	105.32	19.4	No	No	Valid
7	2565.0	2510.5	2484.5	5/02/2010	0:06	4091.71	3639.03	4088.26	3635.58	4091.86	4088.40	106.1	58.2	No	No	Valid
8	2672.2	2597.6	2571.6	5/02/2010	0:06	4233.03	3730.06	4228.99	3726.27	4231.70	4227.84	107	44.7	No	No	Valid
9	2766.7	2674.4	2648.4	5/02/2010	0:06	4354.42	3819.14	4350.15	3814.79	4353.61	4349.77	108.2	307.5	No	No	Valid
10	2818.6	2716.5	2690.5	5/02/2010	0:16	4421.60	3874.89	4417.40	3871.30	4420.33	4416.54	110.9	1.5	No	No	Supercharged
11	2876.2	2763.4	2737.4	5/02/2010	0:10	4495.65	3996.15	4491.73	3992.41	4494.80	4491.12	112.22	2	No	No	Valid
12	2941.2	2816.2	2790.2	5/02/2010	0:10	4577.92	4005.90	4575.16	4002.44	4577.46	4574.50	119.3	27.7	No	No	Valid
13	3066.3	2919.8	2893.8	5/02/2010	0:14	4743.55	4443.34	4739.72	4439.26	4742.82	4738.90	118.25	6.9	No	No	Valid
14	3109.8	2955.3	2929.3	5/02/2010	0:19	4799.57	4641.68	4795.70	4637.87	4798.79	4795.98	119.68	0.1	No	No	Supercharged
15	3134.9	2975.7	2949.7	5/02/2010	0:19	4832.68	4544.63	4829.34	4541.05	4829.81	4826.41	120.97	4.1	No	No	Supercharged
16	3139.0	2979.1	2953.1	5/02/2010	0:16	4835.11	4547.65	4831.74	4544.09	4834.64	4831.26	121.02	1.1	No	No	Supercharged
17	3184.9	3016.4	2990.4	5/02/2010	0:20	4895.34	4583.23	4891.65	4579.69	4894.34	4890.80	122.7	0.2	No	No	Tight
18	3184.0	3015.7	2989.7	5/02/2010	0:10	4893.59	4564.09	4890.02	4560.46	4893.65	4890.08	122.82	14.4	No	No	Valid
19	3191.6	3021.9	2995.9	5/02/2010	0:08	4903.48	4558.95	4899.86	4555.37	4903.28	4899.81	123.45	9.9	No	No	Valid
20	3204.0	3031.9	3005.9	5/02/2010	0:07	4919.66		4916.10		4918.37	4915.27	123.78	0.06	No	No	Tight
21	3213.0	3039.3	3013.3	5/02/2010	0:05	4931.25	4539.61	4927.86	4535.81	4931.05	4927.55	123.88	1.9	No	No	Tight
22	3213.5	3039.7	3013.7	5/02/2010	0:09	4948.95	4541.24	4928.04	4537.53	4931.46	4927.96	124.52	1.6	No	No	Tight
23	3216.0	3041.7	3015.7	5/02/2010	0:20	4935.60	4584.91	4931.90	4581.27	4934.74	4931.30	124.89	0.4	No	No	Tight
24	3231.9	3054.6	3028.6	5/02/2010	0:05	4958.17		4954.36		4954.36	4950.79	125.11	0.06	No	No	Tight
25	3239.2	3060.5	3034.5	5/02/2010	0:13	4966.95	4965.99	4963.30	4962.24	4966.01	4962.22	125.52	1.3	No	No	Seal Fail
26	3257.0	3075.0	3049.0	5/02/2010	0:08	4990.42	4502.63	4986.63	4498.79	4988.98	4985.58	125.86	3.7	No	No	Tight
27	3258.0	3075.8	3049.8	5/02/2010	0:05	4990.05		4986.28		4990.39	4986.73	126.1	0.3	No	No	Tight
28	3257.5	3075.4	3049.4	5/02/2010	0:12	4990.73	4510.89	4987.08	4507.26	4989.78	4986.36	126.8	0.4	No	No	Tight
29	3293.5	3104.7	3078.7	5/02/2010	0:12	5039.56	4855.43	5036.01	4851.74	5037.21	5033.54	127.32	2.3	No	No	Tight
30	3293.7	3104.9	3078.9	5/02/2010	0:19	5037.38	4911.73	5033.98	4907.81	5037.63	5034.09	128.09	1.1	No	No	Supercharged?
31	3301.5	3111.2	3085.2	5/02/2010	0:18	5047.89	4736.79	5044.05	4733.06	5047.80	5043.64	128.63	0.9	No	No	Tight
32	3304.0	3113.2	3087.2	5/02/2010	0:09	5050.49		5046.78		5050.66	5047.14	128.93	0.04	No	No	Tight
33	3302.5	3112.0	3086.0	5/02/2010	0:10	5048.64		5045.12		5048.81	5045.43	129.3	0.06	No	No	Tight
34	3309.5	3117.7	3091.7	5/02/2010	0:14	5058.57	4905.12	5054.62	4901.46	5058.26	5054.36	129.59	1.7	No	No	Tight
35	3312.3	3120.0	3094.0	5/02/2010	0:28	5061.67	4669.55	5057.91	4665.60	5061.79	5057.86	129.96	1.1	No	No	Tight
36	3316.5	3123.4	3097.4	5/02/2010	0:14	5066.62	4728.77	5062.79	4724.98	5066.63	5062.95	130.66	0.4	No	No	Tight
37	3323.4	3129.0	3103.0	5/02/2010	0:09	5076.21	4997.18	5072.41	4993.26	5076.08	5072.23	130.89	4.8	No	No	Valid?
38	3328.3	3133.0	3107.0	5/02/2010	0:10	5082.55	4839.08	5078.78	4835.23	5082.40	5078.49	131.11	0.9	No	No	Tight
39	3330.8	3135.1	3109.1	5/02/2010	0:12	5085.14	4693.53	5081.84	4689.69	5084.69	5080.88	131.32	1.8	No	No	Tight
40	3331.2	3135.3	3109.3	5/02/2010	0:14	5084.67	4693.00	5080.98	4689.18	5084.53	5080.74	131.68	1.9	No	No	Tight
41	3356.1	3155.6	3129.6	5/02/2010	0:07	5118.68		5114.90		5117.65	5113.87	132.01	0.06	No	No	Tight
42	3360.0	3158.8	3132.8	5/02/2010	0:06	5120.85		5117.06		5120.24	5116.73	132.28	0.1	No	No	Tight
43	3360.5	3159.2	3133.2	5/02/2010	0:13	5122.91	5009.31	5119.17	5005.57	5122.78	5119.05	132.9	2.5	No	No	Tight
44	3398.0	3189.6	3163.6	5/02/2010	0:09	5171.08		5167.12		5170.44	5166.79	133.8	0.03	No	No	Tight
45	3402.0	3192.9	3166.9	5/02/2010	0:08	5175.39		5171.77		5174.86	5171.71	134.5	0.08	No	No	Tight
46	3404.3	3194.7	3168.7	5/02/2010	0:12	5178.13		5174.74		5177.40	5174.55	135.4	0.01	No	No	Tight
47	3409.0	3198.6	3172.6	5/02/2010	0:07	5182.46	4937.05	5179.46	4933.96	5183.18	5180.39	136	13.8	No	No	Valid
48	3410.5	3199.7	3173.7	5/02/2010	0:04	5184.52		5181.54		5184.28	5181.53	136.2	0.1	No	No	Tight
49	3410.0	3199.3	3173.3	5/02/2010	0:22	5183.83	4938.56	5180.97	4935.80	5183.23	5180.51	136.8	0.6	No	No	Supercharged?
50	3409.5	3198.9	3172.9	5/02/2010	0:11	5182.88	4936.69	5180.05	4934.16	5182.47	5179.91	136.9	13.3	No	No	Valid
51	3398.5	3190.0	3164.0	5/02/2010	0:11	5168.83	5030.10	5166.26	5028.11	5168.47	5166.18	136.9	0.5	No	No	Supercharged
52	3359.5	3158.3	3132.3	5/02/2010	0:10	5118.97	5005.11	5116.91	5003.20	5118.83	5116.67	136.2	1.4	No	No	Supercharged
53	3331.0	3135.2	3109.2	5/02/2010	0:12	5081.49	4692.87	5079.16	4690.02	5081.81	5079.04	134.9	1.8	No	No	Supercharged
54	3319.4	3125.8	3099.8	5/02/2010	0:06	5067.24		5064.41		5067.45	5064.73	134.2	0.1	No	No	Tight
55	3311.8	3119.6	3093.6	5/02/2010	0:11	5058.52	4676.65	5055.43	4673.15	5058.59	5055.05	133.2	1.4	No	No	Supercharged
56	3303.0	3112.5	3086.5	5/02/2010	0:09	5047.68		5044.04		5047.14	5043.70	132.6	0.1	No	No	Tight
57	3293.5	3104.7	3078.7	6/02/2010	0:11	5034.62	4856.56	5031.33	4852.78	5035.05	5031.10	130.8	0.8	No	No	Tight
58	3259.0	3076.6	3050.6	6/02/2010	0:12	4990.95	4507.83	4987.17	4504.04	4990.66	4986.86	130.5	2.1	No	No	Supercharged
59	3239.5	3060.8	3034.8	6/02/2010	0:13	4965.80	4963.62	4962.10	4960.02	4965.66	4961.88	129.8	7.6	No	No	Valid
60	3204.5	3032.4	3006.4	6/02/2010	0:12	4936.50	4567.61	4916.85	4564.18	4919.60	4916.36	128.1	0.6	No	No	Tight
61	3170.3	3004.6	2978.6	6/02/2010	0:06	4876.64		4873.39		4876.08	4873.44	127.4	0.3	No	No	Tight
62	3140.0	2979.9	2953.9	6/02/2010	0:10	4837.15	4545.49	4834.19	4542.36	4837.49	4834.55	126.5	4.9	No	No	Valid
63	3109.2	2954.8	2928.8	6/02/2010	0:10	4799.04		4796.05		4799.07	4795.99	125	0.03	No	No	Tight
64	3082.5	2933.1	2907.1	6/02/2010	0:09	4764.99		4761.39		4764.80	4761.27	122.8	0.1	No	No	Tight
65	3063.3	2917.5	2891.5	6/02/2010	0:09	4741.13		4737.81		4741.23	4737.60	122.7	0.08	No	No	Tight

66	2817.4	2715.6	2689.6	6/02/2010	0:12	4432.74	3872.29	4415.65	3869.05	4419.39	4416.16	119	6.4	No	No	Valid
67	2941.2	2816.2	2790.2	6/02/2010	3:14	4570.29	4004.16	4570.18	4003.40	4570.80	4570.47	118.6	67	Yes	Yes	Valid
68	2766.7	2674.4	2648.4	6/02/2010	1:53	4323.54	3792.11	4346.04	3814.65	4321.90	4344.76	115	100	Yes	Yes	Valid
69	3409.0	3198.6	3172.6	6/02/2010	0:11	5150.12		5174.87		5150.57	5175.02	134.5	0.1	No	No	Tight
70	3408.5	3198.1	3172.1	6/02/2010	0:07	5150.31		5175.00		5150.06	5174.94	135.1		No	No	Seal Fail
71	3409.5	3198.9	3172.9	6/02/2010	0:10	5150.43		5176.06		5140.43	5175.99	136.7	0.5	No	No	Tight
72	3410.0	3199.3	3173.3	6/02/2010	0:44	5151.81	4910.81	5177.65	4936.65	5149.77	5176.57	136.6	27	No	No	Valid
73	3410.2	3199.5	3173.5	6/02/2010	0:40	5150.71	4907.80	5177.45	4934.47	5149.09	5176.03	137.8	36	Yes	No	Valid
74	3410.2	3199.5	3173.5	6/02/2010	2:38	5149.66	4907.80	5176.55	4934.47	5146.89	5173.70	139.5	36	Yes	No	Valid
75	3401.9	3192.8	3166.8	7/02/2010	0:13	5138.64		5164.55		5138.70	5164.39	137.5	0.08	No	No	Tight
76	3397.5	3189.2	3163.2	7/02/2010	0:12	5133.54		5159.42		5133.88	5159.43	137.6	0.1	No	No	Tight
77	3398.0	3189.6	3163.6	7/02/2010	0:12	5134.45		5160.14		5134.32	5160.11	137.7	0.1	No	No	Tight
78	3360.0	3158.8	3132.8	7/02/2010	0:07	5086.01		5111.56		5086.67	5111.69	137.7		No	No	Seal Fail
79	3360.6	3159.3	3133.3	7/02/2010	0:10	5087.35		5112.39		5087.17	5112.17	136.7		No	No	Seal Fail
80	3359.5	3158.3	3132.3	7/02/2010	0:09	5086.76		5111.77		5086.38	5111.59	136.2		No	No	Seal Fail
81	3359.4	3158.3	3132.3	7/02/2010	0:08	5163.02		5110.37		5162.78	5110.21	137.6		No	No	Seal Fail
82	3356.2	3155.7	3129.7	7/02/2010	0:06	5082.66		5107.72		5082.49	5107.43	136.1		No	No	Seal Fail
83	3331.0	3135.2	3109.2	7/02/2010	0:10	5049.65		5074.47		5049.87	5074.03	135.3	0.3	No	No	Tight
84	3331.5	3135.6	3109.6	7/02/2010	0:12	5053.19	4684.17	5076.72	4707.47	5052.77	5076.45	134.3	2.1	No	No	Tight
85	3330.5	3134.8	3108.8	7/02/2010	0:07	5051.07		5074.81		5051.48	5074.72	134.2	0.2	No	No	Tight
86	3328.2	3132.9	3106.9	7/02/2010	0:08	5047.98		5071.39		5040.49	5071.44	134.4	0.3	No	No	Tight
87	3319.5	3125.9	3099.9	7/02/2010	0:07	5037.86		5060.94		5037.69	5060.70	134.5		No	No	Seal Fail
88	3319.3	3125.7	3099.7	7/02/2010	0:09	5038.12		5060.86		5038.18	5060.83	134.3		No	No	Seal Fail
89	3312.0	3119.8	3093.8	7/02/2010	0:12	5029.54		5052.36		5028.73	5051.20	133.9	0.06	No	No	Tight
90	3311.5	3119.4	3093.4	7/02/2010	0:13	5028.49		5050.89		5028.03	5050.70	134	0.5	No	No	Tight
91	3313.0	3120.6	3094.6	7/02/2010	5:28	5030.48	4655.92	5053.15	4678.24	5025.05	5047.90	134.2	5.2	Yes	Yes	Valid
92	3303.5	3112.9	3086.9	7/02/2010	0:12	5014.02	4734.92	5035.86	4756.65	5013.22	5035.52	134.4	~5	No	No	Valid
93	3301.0	3110.8	3084.8	7/02/2010	0:10	5009.93	4869.43	5032.13	4891.57	5009.35	5031.63	134.1	2.8	No	No	Tight
94	3303.5	3112.9	3086.9	7/02/2010	0:10	5013.59		5036.00		5013.24	5035.67	134.3		No	No	Seal Fail
95	3303.3	3112.7	3086.7	7/02/2010	0:15	5013.10	4734.00	5035.64	4756.08	5013.07	5035.45	134.4	2.6	No	No	Tight
96	3301.3	3111.1	3085.1	7/02/2010	0:35	5011.21	4725.90	5033.60	4747.65	5011.53	5033.62	134.2	11	No	No	Valid
97	3293.4	3104.6	3078.6	7/02/2010	0:10	5001.24		5023.18		5001.23	5023.00	134.4	0.3	No	No	Tight
98	3293.2	3104.4	3078.4	7/02/2010	0:20	5023.46		5001.56		5001.46	5023.16	133.8	0.2	No	No	Tight
99	3293.9	3105.0	3079.0	7/02/2010	0:22	5002.65	4825.86	5024.52	4847.59	5002.51	5024.32	133.8	1.3	No	No	Tight
100	3257.0	3075.0	3049.0	7/02/2010	0:06	4955.76		4977.33		4956.18	4977.39	133.2	0.8	No	No	Tight
101	3258.5	3076.2	3050.2	7/02/2010	0:12	4957.73		4978.95		4957.65	4979.06	132.1	1	No	No	Tight
102	3239.1	3060.5	3034.5	7/02/2010	0:10	4934.30		4955.69		4934.27	4955.27	131.8		No	No	Seal Fail
103	3239.6	3060.9	3034.9	7/02/2010	0:11	4935.00		4955.86		4935.15	4956.04	131.2		No	No	Seal Fail
104	3213.0	3039.3	3013.3	7/02/2010	0:11	4901.76		4922.42		4902.11	4922.35	130.5	0.8	No	No	Tight
105	3213.5	3039.7	3013.7	7/02/2010	0:08	4902.01		4922.34		4901.70	4922.28	130	0.4	No	No	Tight
106	3212.5	3038.8	3012.8	7/02/2010	0:09	4900.40		4920.96		4900.64	4920.89			No	No	Seal Fail
107	3204.0	3031.9	3005.9	7/02/2010	0:09	4899.18		4909.44		4889.23	4909.24			No	No	Seal Fail
108	3203.9	3031.9	3005.9	7/02/2010	0:08	4965.61		4909.75		4965.83	4909.80	131.2	2.8	No	No	Tight
109	3225.0	3049.0	3023.0	7/02/2010	0:06	4917.54		4938.15		4916.84	4937.88	130.1		No	No	Seal Fail
110	3212.5	3038.8	3012.8	7/02/2010	0:08	4977.77		4922.03		4977.85	4921.85	132.3	0.6	No	No	Tight
111	3203.9	3031.9	3005.9	7/02/2010	0:12	4965.78		4910.25		4965.39	4909.76	132	0.17	No	No	Tight
112	3184.0	3015.7	2989.7	7/02/2010	0:09	4940.56		4988.35		4940.94	4885.54	131.2	2.9	No	No	Tight
113	3185.0	3016.5	2990.5	7/02/2010	0:12	4942.27		4886.40		4941.02	4886.27	130.7	2.6	No	No	Tight
114	3183.2	3015.1	2989.1	7/02/2010	0:05	4939.69		4884.42						No	No	Operational Fault
115	3183.2	3015.1	2989.1	7/02/2010	4:30	4938.96	4613.42	4884.26	4562.03	4935.72	4879.83	130.7	8.9	Yes	No	Valid
116	3140.0	2979.9	2953.9	8/02/2010	3:48	4879.84	4594.75	4824.57	4543.06	4878.38	4823.90	130.4	5.1	Yes	Yes	Valid
117	3135.0	2975.8	2949.8	8/02/2010	4:17	4873.07	4951.50	4817.72	4539.83	4872.21	4817.51	130.7	10	Yes	Yes	Valid
118	3109.5	2955.1	2929.1	8/02/2010	0:07	4840.90		4785.52		4841.10	4785.46	130	0.2	No	No	Tight
119	3109.0	2954.7	2928.7	8/02/2010	0:08	4839.11		4784.47		4838.98	4784.63	129.1	0.13	No	No	Tight
120	3301.7	3111.4	3085.4	12/02/2010	4:15	5048.80	4674.00		4674.00	5045.24			0.440476	Yes	No	Valid
121	3293.4	3104.5	3078.5	12/02/2010	3:07	5039.90	4805.00		4805.00	5049.20			0.297619	Yes	No	Supercharged
122	3213.2	3039.5	3013.5	13/02/2010	4:54	4938.40	4508.00		4508.00	4937.10			1.095238	Yes	No	Valid
123	3204.2	3032.1	3006.1	13/02/2010	1:54	4923.70	4552.00		4552.00	4924.70			0.595238	Yes	No	Supercharged
124	3109.2	2954.8	2928.8	13/02/2010	2:18	4800.70	4590.00		4590.00	4803.20			0.178571	Yes	No	Supercharged
125	3139.2	2979.3	2953.3	13/02/2010	7:07	4836.40	4536.00		4536.00				24.52381	Yes	Yes	Valid
126	3183.4	3015.2	2989.2	14/02/2010	8:53	4889.40	4561.00		4561.00	4886.20		131.7	11.66667	Yes	Yes	Valid
127	3081.8	2932.4	2906.4	14/02/2010	0:50	4758.10				4754.20				Yes	No	Tight
128	3171.6	3005.6	2979.6	14/02/2010	1:12	4871.10				4875.70				Yes	No	Tight
129	3330.8	3135.0	3109.0	14/02/2010	3:15	5076.30	4690.00		4690.00	5080.10			1.202381	Yes	No	Valid
130	3312.0	3119.8	3093.8	14/02/2010	2:10	5049.90	4684.00		4684.00	5064.00			1.309524	Yes	No	Supercharged
131	3257.4	3075.2	3049.2	15/02/2010	3:58	4979.80	4495.00		4495.00	4986.00			10.83333	Yes	No	Valid

APPENDIX 14: DAILY ACTIVITY REPORT

DFE above MSL : 26.0m | Lat : 39 Deg 47 Min 34.1828 Sec | Spud Date : 30 Nov 2009 | Release Date :
Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time :

Activity Report For Rockhopper-1/ST1

Date : 19 Jan 2010 **Daily Cost : US$ 209116** **Report Number : 1**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1985.0	P17	P	G7		1.5	Rockhopper-1/ST1 commenced at 17:30 hrs. Made up 8½" bit to mud motor. Oriented bent housing to MWD tool. Installed HOC probe and programmed tool.
1985.0	P17	P	G6		2	Continued to make up 8½" sidetrack kick off BHA to 216m. Surface tested MWD/LWD tools - ok.
1985.0	P17	P	G8		3	RIH with 8½" kick off assembly from 216m to 1964m. Filled pipe every 20 stands. Held trip drill - 27sec to stab and close IBOP.

Date : 20 Jan 2010 **Daily Cost : US$ 670027** **Report Number : 2**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
1985.0	P17	P	F4		1	Established circulation. Recorded parameters. Circulated bottoms up. Recorded SCRs.
1990.0	P17	P	D1		2	Drilled out cement plug from 1970m to 1990m (550gpm, 2000psi, 5/10klbs WOB, 50rpm, 3k ft-lbs torque).
2005.0	P17	P	D3		7.5	Commenced kick off at 1990m. Time slide drilled from 1990m to 1996m at (550gpm, 2000psi, 2/4klbs WOB, 9.3+ppg MW). Slide oriented drilled from 1996m to 2005m (550gpm, 2000psi, 23klbs WOB). 1990m - returns 100% cement. 1992m - returns 75% cement, 25% formation. 1994m - returns 65% cement, 35% formation. 1996m - returns 60% cement, 40% formation. 1998m - returns 02% cement, 98% formation. 2000m - returns 0% cement, 100% formation.
2020.0	P17	P	D2		5	Rotary drilled 8½" hole from 2005m to 2020m (550gpm, 2000psi, 50rpm, 20klbs WOB, 3k ft-lbs torque).
2033.0	P17	P	D3		1.5	Slide oriented drilled 8½" hole from 2020m to 2033m (550gpm, 1950psi, 30klbs WOB).
2065.0	P17	P	D2		7	Rotary drilled 8½" hole from 2033m to 2065m (550gpm, 1930psi, 65rpm, 25klbs WOB, 3k ft-lbs torque).

Date : 21 Jan 2010 **Daily Cost : US$ 711880** **Report Number : 3**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2070.0	P17	P	D2		1	Rotary drilled 8½" hole from 2065m to 2070m (550gpm, 1930psi, 65rpm, 25klbs WOB, 3k ft-lbs torque).
2080.0	P17	P	D3		0.5	Slide oriented drilled 8½" hole from 2070m to 2080m (550gpm, 1950psi, 25klbs WOB).
2098.0	P17	P	D2		1.5	Rotary drilled from 2080m to 2098m (550gpm, 1950psi, 60rpm, 20klbs WOB, 3k ft-lbs torque).
2100.0	P17	P	D3		0.5	Slide oriented drilled 8½" hole from 2098m to 2100m (550gpm, 1950psi, 25klbs WOB).
2102.0	P17	P	D2		0.5	Rotary drilled from 2100m to 2102m (550gpm, 1950psi, 60rpm, 20klbs WOB, 3k ft-lbs torque).
2106.0	P17	P	D3		2	Slide oriented drilled 8½" hole from 2102m to 2106m (600gpm, 2100psi, 20klbs WOB).
2111.0	P17	P	D2		1	Rotary drilled 8½" hole from 2106m to 2111m (550gpm, 1950psi, 60rpm, 20klbs WOB, 3k ft-lbs torque).
2112.0	P17	P	D3		0.5	Slide oriented drilled 8½" hole from 2111m to 2112m (600gpm, 2100psi, 20klbs WOB).
2112.0	P17	P	F4		1	Circulated 15mins, pumped 15bbl Barolift pill and circulated same out of hole.
2112.0	P17	P	G8		1	Flow checked well. POOH to 1951m.
2112.0	P17	P	G11		0.5	Serviced TDS. Flow checked well. Pumped slug.
2112.0	P17	P	G8		3	POOH from 1951m to 216m. Flow checked prior to BHA entering BOP.
2112.0	P17	P	G6		2.5	Racked back BHA. Laid out HOC, PM sub, 8 1/8" Stab, mud motor and bit.
2112.0	P17	P	G7		1.5	Held PJSM. Picked up Geopilot, NM Flex joint, RLL, PWD, BAT Sonic and TM/HOC tools.
2112.0	P17	P	G7		1.5	Programmed and tested MWD/LWD tool connectivity. Loaded radioactive sources.
2112.0	P17	P	G6		1	Made up BHA and RIH to 244m with 8½" Geopilot assembly.
2112.0	P17	TP	G7	TP	1.5	Shallow tested Geopilot and MWD/LWD tools. Failed to obtain MWD survey.
2112.0	P17	TP	G8	TP	1.5	POOH. Removed radioactive sources. Downloaded tools.

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DFE above MSL : 26.0m | Lat : 39 Deg 47 Min 34.1828 Sec | Spud Date : 30 Nov 2009 | Release Date :
Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time :

Date : 21 Jan 2010 **Daily Cost : US$ 711880** **Report Number : 3**

2112.0	P17	TP	G7	TP	0.5	Changed out NM Flex joint and PCDC probe.
2112.0	P17	TP	G7	TP	1	Programmed MWD/LWD tools and loaded radioactive sources.

Date : 22 Jan 2010 **Daily Cost : US$ 767065** **Report Number : 4**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2112.0	P17	TP	G6	TP	0.5	RIH with Geopilot BHA to 244m.
2112.0	P17	P	G15		0.5	Shallow tested Geopilot assembly - OK.
2112.0	P17	P	G8		3.5	RIH with 8½" Geopilot drilling assembly from 244m to 1945m. Filled pipe every 20 stands.
2112.0	P17	P	F1		1	Washed down from 1945m to 1970m. Recorded SCRs and broke in Geopilot seals.
2112.0	P17	P	F1		3.5	Reamed and logged hole from 1970m to 2112m at 60m/hr (500gpm, 1500psi, 60rpm).
2368.0	P17	P	D4		15	Drilled 8½" hole with Geopilot drilling assembly from 2112m to 2368m (120/150rpm, 15/25klbs WOB, 525gpm, 1850psi, 4/20k ft-lbs torque.) High torque experienced with 30klbs drag up and down on connection at 2350m. Drag reduced to 5klbs up and down without rotation.

Date : 23 Jan 2010 **Daily Cost : US$ 693340** **Report Number : 5**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2706.0	P17	P	D4		24	Drilled 8½" hole with Geopilot drilling assembly from 2368m to 2706m (120/160rpm, 15/20klbs WOB, 600gpm, 2200psi, 4/20k ft-lbs torque). Pumped 15bbl Barolift pill after connection at 2523m to assist with cuttings removal. Boosted pill in riser by pumping down kill line. 20% increase in cuttings at shakers with pill return - mostly fine solids. Choke and kill lines flushed with fresh 9.3+ppg mud. SCRs taken.

Date : 24 Jan 2010 **Daily Cost : US$ 665761** **Report Number : 6**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
2926.0	P17	P	D4		19.5	Drilled 8½" hole with Geopilot drilling assembly from 2706m to 2926m (120/160rpm, 10/20klbs WOB, 600gpm, 2350psi, 4/20k ft-lbs torque). No excess torque or drag on connections. Pumped 20bbl Barolift pill after connection at 2784m to assist with cuttings removal. Boosted pill in riser by pumping down kill line. 20% increase in cuttings at shakers with pill return - mostly fine solids.
2926.0	P17	TP	G11	RE	1.5	Saver sub top connection broke out on connection at 2926m. Racked stand back. Installed new saver sub on TDS and replaced pipe handler dies. Continued circulating and moving pipe at regular intervals while undertaking repairs.
2973.0	P17	P	D4		3	Drilled 8½" hole with Geopilot drilling assembly from 2926m to 2973m (115/140rpm, 10/20klbs WOB, 610gpm, 2520psi, 6/20k ft-lbs torque). No excess torque or drag on connections. Pumped 15bbl Barolift pill after connection at 2926m to assist with cuttings removal. Boosted pill in riser by pumping down kill line. 15% increase in cuttings at shakers with pill return - mostly fine solids. Max gas peak 13.9% from formation at 2943m.

Date : 25 Jan 2010 **Daily Cost : US$ 699368** **Report Number : 7**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3158.0	P17	P	D4		17	Drilled 8½" hole with Geopilot drilling assembly from 2973m to 3158m. Sperry downhole tool failed (120/140rpm, 10/20klbs WOB, 610gpm, 2520psi, 3/20k ft-lbs torque). No excess torque or drag on connections.
3158.0	P17	TP	F4	DH	1	Pumped 15bbl Barolift pill and circulated out of well.
3158.0	P17	TP	G15	DH	0.5	Sperry attempted to reset downhole tools - no success.
3158.0	P17	TP	G8	DH	5.5	Flow checked well. POOH from 3158m to 2492m. Washed and reamed tight spots from 2980m to 2975m, 2885m to 2841m, 2803m to 2755m, 2720m to 2697m and 2645m to 2588m. Hole "ratty" with numerous tight spots. Continued to pump out of hole from 2588m to 2492m. Reamed tight spots as necessary. Max drag 30klbs.

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DFE above MSL : 26.0m | Lat : 39 Deg 47 Min 34.1828 Sec | Spud Date : 30 Nov 2009 | Release Date :
Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time :

Date : 26 Jan 2010 **Daily Cost : US$ 677312** **Report Number : 8**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3158.0	P17	TP	G8	DH	5	Pumped out of hole from 2492m to 1914m (550gpm, 2000psi). Hole "ratty" with numerous tight spots. Reamed tight spots as necessary. Max drag 30klbs.
3158.0	P17	TP	F4	DH	0.5	Circulated bottoms up at shoe.
3158.0	P17	TP	G11	DH	0.5	Flow checked well. Serviced TDS and pumped slug.
3158.0	P17	TP	G8	DH	4	POOH from shoe to 39m. Held trip drill - 45 secs to stab and close IBOP
3158.0	P17	TP	G7	DH	1	Downloaded LWD tools and removed radioactive source.
3158.0	P17	TP	G7	DH	1.5	Laid out LWD/MWD tools and Geopilot. Broke off bit.
3158.0	P17	TP	G7	DH	2.5	Held PJSM. Picked up replacement MWD/LWD tools and Geopilot. Made up 8½" bit.
3158.0	P17	TP	G7	DH	1.5	Programmed downhole tools and installed radio active source.
3158.0	P17	TP	G6	DH	1	Continued to make up 8½" BHA and RIH to 239m.
3158.0	P17	TP	G15	DH	0.5	Shallow tested MWD/LWD tools (600gpm, 1400psi) - ok.
3158.0	P17	TP	G8	DH	3	RIH with 8½" Geopilot drilling assembly from 239m to 1918m. Held trip drill - 23secs to stab and close IBOP.
3158.0	P17	TP	G11	DH	1.5	Slipped and cut drilling line.
3158.0	P17	TP	G15	DH	0.5	RIH from 1918m to 2000m. Went through procedure to break in Geopilot seals as per Directional Drillers instruction.
3158.0	P17	TP	G8	DH	1	RIH from 2000m to 2525m. No excess drag observed.

Date : 27 Jan 2010 **Daily Cost : US$ 780381** **Report Number : 9**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3158.0	P17	TP	G8	DH	1.5	RIH from 2525m to 3090m. Held up with 30klbs weight at 3090m.
3158.0	P17	TP	F1	DH	0.5	Established circulation and reamed tight section from 3090m to 3094m. Continued to wash in hole to 3103m. RIH from 3103m to 3132m.
3158.0	P17	TP	F1	DH	2	Established parameters with Geoservices and Sperry. Washed in hole from 3132m and tagged fill at 3152m. Washed and reamed fill from 3152m to tag bottom at 3158m tide corrected.
3158.0	P17	TP	E3	DH	1	Relogged interval 3130m to 3139m to tie in logs with depth (bit depths 3141m to 3150m).
3182.0	P17	P	D4		3	Drilled 8½" hole from 3158m to 3182m (600gpm, 2500psi, 10klbs WOB, 120rpm, 7k ft-lbs torque).
3182.0	P17	P	F4		2	Circulated while LWD information was being sent to town for evaluation.
3191.0	P17	P	D4		1	Drilled 8½" hole from 3182m to 3191m (600gpm, 2500psi, 10k WOB, 120rpm, 7k ft-lbs torque).
3191.0	P17	P	F4		2	Circulated while LWD information was being sent to town for evaluation.
3196.0	P17	P	D4		1	Drilled 8½" hole from 3191m to 3196m (600gpm, 2500psi, 10k WOB, 120rpm, 7k ft-lbs torque).
3196.0	P17	P	F4		0.5	Circulated with 3rd pump boosting riser (1000 strokes). Took survey, racked back stand. Flow checked well.
3196.0	P17	P	G8		4.5	POOH to shoe at 1965m. Maximum overpull 10klbs.
3196.0	P17	P	G8		2	Flow checked well. Pumped slug and POOH from 1965m to 213m.
3196.0	P17	P	G6		1	Racked back BHA to 43m.
3196.0	P17	P	G7		0.5	Laid out ACAL tool, float sub, and 8½" stabiliser.
3196.0	P17	P	G7		1.5	Held PJSM. Sperry removed radioaction source from tool. Down loaded data from MWD/LWD tools.

Date : 28 Jan 2010 **Daily Cost : US$ 633057** **Report Number : 10**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3196.0	P17	P	G7		1	Laid out HOC and BAT Sonic tools. Broke off bit and racked back stand in mast.
3196.0	P17	P	G7		2.5	Held PJSM. Made up 30m of outer and inner core barrels with core head as per Corpro instructions.
3196.0	P17	P	G6		2	Made up core barrel BHA to 258m.
3196.0	P17	P	G8		5.5	RIH with core barrel assembly from 258m to 3182m. Held trip drill - 30secs to stab and close IBOP.

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DFE above MSL : 26.0m | Lat : 39 Deg 47 Min 34.1828 Sec | Spud Date : 30 Nov 2009 | Release Date :
Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time :

Date : 28 Jan 2010 **Daily Cost : US$ 633057** **Report Number : 10**

3196.0	P17	P	F1	1.5	Washed in hole from 3182m to 3196m. Recorded SCRs and parameters as instructed by Corpro Engineer.
3196.0	P17	P	E7	1	Dropped ball and spaced out string for coring. Ball landed with 120psi differential. Re-established parameters.
3212.5	P17	P	E7	4	Cut core #1 from 3196m to 3212.5m. Core head jammed at 3212.5m (16.5m of core cut).
3212.5	P17	P	G8	4	Flow checked well. Racked back stand and laid out space out pup jointt. Pumped slug and POOH at controlled rate of 3min per stand to 1935m.
3212.5	P17	P	P3	0.5	Flow checked at shoe and serviced top drive. Held trip drill - 22secs to stab and close IBOP.
3212.5	P17	P	G8	2	POOH at controlled rate of 3min per stand from 1935m to 1097m.

Date : 29 Jan 2010 **Daily Cost : US$ 754396** **Report Number : 11**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3212.5	P17	P	G8		5	POOH with core barrel at controlled rate from 1079m to core barrel tophead at 32m. 1079m to 600m 5mins/stand. 600m to 150m 6mins/stand. 150m to core barrel tophead 11mins/stand.
3212.5	P17	P	G6		3.5	Held PJSM. Removed core barrel top head and laid out inner barrel with core to pipe deck. Racked outer barrel back in mast. 13.38m of core recovered (81%).
3212.5	P17	P	G6		0.5	Cleaned and cleared the drill floor of excess equipment.
3212.5	P17	P	G11		1	Serviced TDS, travelling block and inspected mast.
3212.5	P17	P	G7		2	Held PJSM. Made up 8½" Geopilot BHA. Made up bit, picked up ACAL, Bat Sonic and HOC from pipe deck. Uploaded MWD/LWD tools. Installed radio active source.
3212.5	P17	P	G6		1.5	RIH with BHA to 215m.
3212.5	P17	P	G15		0.5	Shallow tested MWD/LWD downhole tools.
3212.5	P17	P	G8		5.5	RIH from 215m to 3132m. Filled pipe every 20 stands. No excess drag encountered. Trip drill held - 29 secs to stab and close IBOP.
3212.5	P17	P	F1		0.5	Established circulation. Recorded SCRs. Washed from 3132m to 3161m.
3212.5	P17	P	F1		1.5	Reamed from 3161m to 3175m. Logged well from 3175m to 3212.5m at 60m/hr (500gpm, 1750psi, 60rpm).
3234.0	P17	P	D4		2.5	Drilled 8½" hole from 3212.5m to 3234m (580gpm, 2340psi, 5/20klbs WOB, 120/160rpm, 13/20k ft-lbs torque).

Date : 30 Jan 2010 **Daily Cost : US$ 688209** **Report Number : 12**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3283.0	P17	P	D4		7	Drilled 8½" hole from 3234m to 3283m (580gpm, 2340psi, 5/20klbs WOB, 120/160rpm, 13/20k ft-lbs torque).
3283.0	P17	P	F4		0.5	Circulated bottoms up while boosting riser with third mud pump.
3283.0	P17	P	P3		1	Flow checked well. Racked back one stand and pumped slug.
3283.0	P17	P	G8		4	POOH to shoe. Max excess drag encountered in open hole 15klbs. Trip drill held - 29secs to stab and close IBOP.
3283.0	P17	P	G11		0.5	Serviced top drive.
3283.0	P17	P	G8		5	POOH from shoe.
3283.0	P17	P	G7		1.5	Sperry removed radioactive source from tool and down loaded MWD/LWD data. Laid out HOC, ACAL, and BAT Sonic tools. Racked back Geopilot stand.
3283.0	P17	P	G7		1.5	Held PJSM. Ran outer core barrel from mast. Made up core head and inner barrel assembly.
3283.0	P17	P	G11		0.5	Secured loose PCS hoses in mast to prevent being blown against travelling block. High easterly winds.
3283.0	P17	P	G6		1	RIH core barrel BHA to 258m.
3283.0	P17	P	G8		1.5	RIH with core run assembly #2 from 258m to 1125m.

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Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time :

Date : 31 Jan 2010 **Daily Cost : US$ 669605** **Report Number : 13**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3283.0	P17	P	G8		4.5	RIH with core run assembly #2 from 1125m to 3236m. Broke circulation and recorded SCRs at shoe. Flushed kill and choke lines. Trip drill held - 26 secs to stab and close IBOP.
3283.0	P17	P	F1		0.5	Washed in hole from 3236m to 3283m. Tagged bottom with 15klbs.
3283.0	P17	P	E7		0.75	Spaced out for coring. Dropped ball at 05:23 and circulated ball down with 350gpm, 880psi. Ball landed at 05:36 and pressure increased to 1140psi. Recorded parameters prior to commencing coring.
3298.5	P17	P	E7		2.75	Cored from 3283m to 3298.5m as per coring engineers instructions. Corehead jammed at 3298.5m (15.5m of formation cored).
3298.5	P17	P	E7		0.5	Break core. Pulled back one stand. Flow checked well and pumped slug.
3298.5	P17	P	G8		4.5	POOH at controlled rate of 3mins/std to shoe. Held trip drill - 27secs to stab and close IBOP.
3298.5	P17	P	G11		0.5	Flow checked at shoe. Serviced top drive
3298.5	P17	P	G8		9	POOH from shoe to core barrel top sub at controlled rate. Flow checked with BHA below BOPs. Shoe - 600m 3min/std. 600m - 150m 6min/std. 150m to surface 11min/std.
3298.5	P17	P	G7		1	Held PJSM. Laid out inner barrels and core. A total 14.08m of core recovered (90.8% recovery).

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Activity Report For Rockhopper-1/ST1

Date : 01 Feb 2010 **Daily Cost : US$ 659895** **Report Number : 14**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3298.5	P17	P	G7		0.5	Picked up outer core barrel. Inspected core head and bearings.
3298.5	P17	P	G7		1	Made up inner barrels to outer core barrel as per coring engineers instructions.
3298.5	P17	P	G6		1	RIH with core BHA #3 to 258m.
3298.5	P17	P	G8		0.5	RIH with core run #3 from 258m to 547m.
3298.5	P17	P	G11		2	Slipped and cut 40m of drilling line.
3298.5	P17	P	G8		5	RIH with core BHA #3 from 547m to 3236m. Circulated at shoe for 5mins on RIH. Trip drill held - 26secs to stab and close IBOP.
3298.5	P17	P	F1		1	Washed in hole from 3236m to 3298.5m. Spaced out for coring and dropped ball.
3309.0	P17	P	E7		1.5	Cut core from 3298.5m to 3309m. Core jammed.
3309.0	P17	P	F4		0.5	Circulated well while boosting riser.
3309.0	P17	P	P3		0.5	POOH from 3309m to 3256m. Flow checked well and pumped slug.
3309.0	P17	P	G8		4	POOH at controlled rate of 3min/std to 1935m.
3309.0	P17	P	G11		0.5	Flow checked well at shoe and serviced top drive.
3309.0	P17	P	G8		6	POOH from 1935m to 374m at controlled rate. Flow checked well at 274m. 1935m to 600m at 3min/std. 600m to 150m at 6min/std.

Date : 02 Feb 2010 **Daily Cost : US$ 690110** **Report Number : 15**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3309.0	P17	P	G8		2.5	POOH from 374m to core barrel at surface at controlled rate. 374m to 150m at 6min/std. 150m to 50m at 8min/std. 50m to core barrel at 11min/std.
3309.0	P17	P	G7		1	Laid out inner barrels and core. A total of 9.5m of core recovered (90% recovery).
3309.0	P17	P	G7		1	Laid out core barrel outer sections and removed corehead. Cleared drill floor of Corpro equipment.
3309.0	P17	P	G7		2.5	Made up 8½" bit to Geopilot stand. Picked up and made up float sub, ACAL, HOC and BAT Sonic tools. Installed radio active source and uploaded to MWD/LWD downhole tools.
3309.0	P17	P	G6		2	RIH with BHA to 221m. Replaced drilling jars.
3309.0	P17	P	G15		0.5	Shallow tested MWD/LWD tools - ok.
3309.0	P17	P	G8		3	RIH with 8½" Geopilot BHA from 221m to 1965m. Held trip drill - 27secs to stab and close IBOP.
3309.0	P17	P	G13		1	Established circulation. Function tested BOPs.
3309.0	P17	P	G8		2	RIH with 8½" Geopilot BHA from 1965m to 3260m.
3309.0	P17	P	F1		3.5	Reamed and logged well from 3260m to 3309m. 5.8% CO2 gas and 0.926% hydrocarbon gas with bottoms up.
3357.0	P17	P	D4		5	Drilled 8½" hole from 3309m to 3357m (600gpm, 2360psi, 160rpm, 7/15kft-lbs torque, 5/15klbs WOB).

Date : 03 Feb 2010 **Daily Cost : US$ 712482** **Report Number : 16**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	D4		14.5	Drilled 8½" hole from 3357m to 3482m (600gpm, 2450psi, 140/160rpm, 7/15kft-lbs torque, 5/15klbs WOB).
3482.0	P17	P	F4		2	Circulated 15mins and flow checked well. Pumped 200bbl Barolift pill and circulated out of well. Boosted riser once pill above BOP.
3482.0	P17	P	G8		2	Performed wiper trip from 3482m to 3309m. Max excess drag on trip 30klbs. No fill tagged on return to bottom.
3482.0	P17	P	F4		1	Circulated hole clean.

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Date : 03 Feb 2010 **Daily Cost : US$ 712482** **Report Number : 16**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	G8		1	Flow checked well 15mins - well static. POOH wet from 3482m to 3300m. Hole displacement correct.
3482.0	P17	P	G8		3.5	Pumped slug and POOH from 3300m to shoe at 1965m. Max excess drag in open hole 15klbs. Held trip drill - 30secs to stab and close IBOP.

Date : 04 Feb 2010 **Daily Cost : US$ 827197** **Report Number : 17**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	G11		0.5	Flow checked well. Serviced top drive at shoe.
3482.0	P17	P	G8		3	POOH from 1965m to 212m. Trip drill held - 30 secs to stab and close IBOP.
3482.0	P17	P	G6		1	Racked back BHA.
3482.0	P17	P	G7		3.5	Laid out Sperry stab and float sub. Removed radio active source. Downloaded and powered down downhole tools. Laid out MWD/LWD tools, Geopilot and bit.
3482.0	P17	P	G1		2.5	Held PJSM. Rigged up wireline equipment. Made up SP-HRLA-HNGS-CMR toolstring.
3482.0	P17	P	C2		13.5	Schlumberger performed log run#1 with SP-HRLA-HNGS-CMR toolstring: 10:35 - 12:15 Logged down from 150m to 3480.5m. 12:15 - 12:45 Relogged 3330m - 3285m. 12:45 - 16:30 Logged up from 2480.5 to 1965m. 16:30 - 20:03 RIH. Calibrated CRM. Relogged section at 3387m. 20:03 - 24:00 Logged up CMR main run from 3480.5m to 3256.5m.

Date : 05 Feb 2010 **Daily Cost : US$ 756356** **Report Number : 18**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	C2		2	Performed log run#1 with SP-HRLA-HNGS-CMR Toolstring. 00:00 - 00:30 Completed logging CMR main run to 3256.5m. 00:30 - 02:00 POOH with wireline run #1.
3482.0	P17	P	C2		3.5	Laid down #1 toolstring (SP-HRLA- HMGS-CMR) and made up run #2 toolstring XPT-MDT-DR. Swapped out "weak point" head for ECRD head. Surface tested tools.
3482.0	P17	P	C2		18.5	RIH with run #2 XPT-MDT-DR toolstring. Set compensator @ 180m. RIH to correlation point @ 2166m. Correlated and commenced pretest program.

Date : 06 Feb 2010 **Daily Cost : US$ 878678** **Report Number : 19**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	C2		3.75	Continued with wireline run #2 (XPT-MDT-DR).
3482.0	P17	P	C2		2.25	POOH with wireline tools run #2 (XPT-MDT-DR) and laid out same.
3482.0	P17	P	C2		4.5	Rigged up MDT. Checked tools at surface RIH. Performed regular tension checks on way in hole.
3482.0	P17	P	C2		0.5	Experienced drag from 2900m to 3010m. Tool hung up at 3010m and then again coming up at 2980m. Freed tool with 25klbs overpull (9200lbs cable tension) on both occassions. Cable head tension reading 2500lbs over normal tool weight.
3482.0	P17	P	C2		1	Correlate up from 2960m to 2850m. Moved to first sampling point at 2941.2m.
3482.0	P17	P	C2		3	Conducted fall off test and set tool on point at 2941.2m. Conducted pretest to confirm seal. Mobility reading of 67 MD recorded. Commenced pumping out with Quicksilver probe. Pumped out 180 litres to bore hole. Filled 2 x MPSRs at 2941.2m. MPSR#1 (Serial Number 56) and MPSR#2 (Serial Number 487).
3482.0	P17	P	C2		3	Correlated out of hole (added 1.0m) and moved to next sampling point at 2766.7m. Set probe at 2766.7m. Pumped out 120 litres to bore hole. Took two water samples at 2766.7m. MPSR#3 (Serial Number 2040) and MPSR#4 (Serial Number 2590).
3482.0	P17	P	C2		6	RIH and attempted to pass 3010.0m. Held up at 2950m. Picked up and made another attempt - successful. Continued to RIH to 3435m for correlation. Correlated from 3435m and tried to find a good mobility sample point close to 3409m. Set probe and started pump out at 3410.2m. Increased pump rate and Quicksilver drew too much power and shut down. Retracted probe and rebooted software. Set probe and commenced pump out at 3410.2m.

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Date : 07 Feb 2010 **Daily Cost : US$ 878602** **Report Number : 20**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	C2		1	Set probe and commenced pumpout at 3410.2m. Attempted to correlate (0.2m off depth - shallow).
3482.0	P17	TP	C2	TP	1.5	Schlumberger computers crashed. Rebooted system.
3482.0	P17	P	C2		3.5	Set probe and commenced pretest at 3402m. Tight conditions and test aborted. Moved to next sample points at 3397.5m, 3398m, 3360m and 3360.5m. All tight conditions and tests aborted. Moved to next sample point. Set probe and start pretest at 3359.5m. Could not obtain a seal due to washed out hole conditions. Switched to PS probe. Still unable to obtain seal. Moved to next sample point. Set probe and commenced pretest at 3356.2m. Could not obtain a seal due to washed out hole conditions. Moved to next sample point. Set probe and commenced pretest at 3331m.
3482.0	P17	P	C2		8	Set probe and started pretest at 3330.5 m Tight formation and test aborted. 3328.2m Tight formation and test aborted. 3319.5m Tight formation and test aborted. Continued with sampling program. Pumped out at 3313m and filled one MPSR#5 (Serial Number #2602) after pumping 38.0 litres. Correlated and moved to 3303.5m. Set tool at 3303.5m and conducted pretest. Mobility 5 mD. Retracted and moved to 3301.0m. Moved tool to 3301.0m and set tool. Mobility too low. Moved to 3303.5m and then 3303.3m.
3482.0	P17	P	C2		5	Oil leaking from oscillation unit. Replaced hose and refilled oil and restarted engine. Set probe at 3301.3mMDRT and started pumpout. Could not pumpout - too much drawdown. Retracted and moved on to 3293.4m. Set tool and conducted pretest at 3293.4m. Mobility too low. Retracted and moved on to 3293.2m. Mobility too low. Set tool at 3293.5m and pretested. Realtime mobility 1.3 mD. Moved to 3257.0m and pretested. Moved to 3258.5m and pretested. Completed pretests at 3239.0, 3239.5, 3213.0 and 3212.5m. Moved on to 3204.0m - no seal. Suspected possible packer worn. Moved off point and use LDP instead of Quicksilver. Moved on to 3212.5m. Tight formation and test aborted.
3482.0	P17	TP	C2	TP	0.5	Winch engine failure. Oil change required.
3482.0	P17	P	C2		4.5	Set probe and started pretest at 3204m. Tight formation and test aborted. Moved to next sample points at 3184m and 3185m. Tight formation and tests aborted. Set probe and commenced pretest at 3183.2m. Software crash occured. Rebooted software. Set probe and started pretest at 3183.2m. Mobility = 9mD. Commenced pumping out at 20:29hrs. Completed pumping at 3183.2m at 00:17hrs (approximately 88 litres into the borehole).

Date : 08 Feb 2010 **Daily Cost : US$ 886307** **Report Number : 21**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	C2		9.5	Completed pumping out at 3183.2m at 00:17hrs (approximately 88 litres into the bore hole). Attempted to acquire a sample but upwards pump stalled. Troubleshot and resolved issue. Observed pressure build up. Moved to next sample point. Set probe and started pretest at 3140m. Pumped out 79 litres between 01:18hrs and 04:26hrs. Filled one MPSR# 6 (Serial Number #2668). Moved to next sample point. Continued with pretests and pump outs. Schlumberger mechanic worked on the units engine while retrieving samples.
3482.0	P17	P	C2		2	Pulled out of hole to surface with MDT.
3482.0	P17	P	G1		2	Rigged down MDT.
3482.0	P17	P	G1		2.5	Rigged up and made up wireline run #4 (FMI-DSI-GR tools).
3482.0	P17	P	C2		0.5	RIH to casing shoe and caliper checked. Read 8.63" and 8.75" (nominal ID=8.68").
3482.0	P17	P	C2		0.5	Logged down from casing shoe to TD (basic acquisition only).
3482.0	P17	TP	C2	TP	1	Troubleshot tools as having power/software issues with tool string. Moved tool string up and down slowly while troubleshooting. Appeared tool string could not log down but could log up.
3482.0	P17	P	C2		4.5	Ran in hole to bottom for repeat pass. Tool string unable to log down. Logged up repeat section from 3375m to 3275m. RIH to HUD of 3458.5m. Logged up main section (FMI to 2800m / DSI to 1965m).
3482.0	P17	P	C2		1.5	POOH to surface with FMI-DSI-GR-ECRD-LEHQT tool string.

Date : 09 Feb 2010 **Daily Cost : US$ 862914** **Report Number : 22**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	G1		1	Rigged down FMI-DSI-GR-ECRD-LEHQT tool string.
3482.0	P17	P	G1		1	Rig up VSI-GR-LEHQT tool string and checked tools, guns and telemetry.

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Date : 09 Feb 2010 **Daily Cost : US$ 862914** **Report Number : 22**

3482.0	P17	P	C2		0.5	RIH to 250m and conducted check shot.
3482.0	P17	TP	C2	TP	0.5	Software/hardware issue prevented data acquisition at check shot depth of 250m. Troubleshot problem.
3482.0	P17	P	C2		8	Conducted check shot at 250m. RIH to 1899m (approximate top cement) and conduct check shot. Continued running and conducted VSP seismic program.
3482.0	P17	P	C2		1	Pulled out of hole to surface with VSI tools.
3482.0	P17	P	G1		1	Rigged down VSI tools.
3482.0	P17	P	G1		2.5	Rigged up MSCT. Checked motor functions and cut test core using marble block. Cut time= 1 mins 40 seconds. Loaded marker chip tube and sample storage tube.
3482.0	P17	P	C2		6	Ran in hole to 3420m. Correlated and began to cut cores. Cut cores over the interval 3410.5m to 3139.5m.
3482.0	P17	TP	C2	TP	2	At core depth 3137m (#27 of #33) tool arm would not close. Recorded arm position and powered down tool. Powered tool back up and retracted arm. High tension at 3137 m. Attempted to work tool passed 3137m pulling to maximum tension (8000 Lbf) - unsuccessful. Continued to try and work tool past 3137m. Unknown if tool or wireline was stuck.
3482.0	P17	TP	C2	TP	0.5	Proceeded to work wire line and hold over pull of 8500 Lbf (80%).

Date : 10 Feb 2010 **Daily Cost : US$ 881093** **Report Number : 23**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	TP	C2	TP	2	Continued to work wire line and held overpull of 8500lbs (80%).
3482.0	P17	TP	C2	TP	2.5	Attempted to break weak link on down hole wire line tools. Schlumberger unit could not pull sufficent weight to break weak link. Rigged down wire line sheave and connected T-bar to the wire line and installed in the elevators. Pulled wire line using the draw works. Weak link parted at 10klbs placing the top of fish at 3124m.
3482.0	P17	TP	G1	TP	1.5	Pulled wire line to surface and noted that weak link parted in correct manner. Rigged down same.
3482.0	P17	TP	G1	TP	1	Cleared rig floor. Picked up overshot assembly and made up to stand of 5" drill pipe.
3482.0	P17	TP	G11	TP	0.5	Serviced TDS.
3482.0	P17	TP	G11	TP	0.5	Performed dropped object survey on TDS, blocks and compensator.
3482.0	P17	TP	G8	TP	4	RIH with fishing assembly to 1965m.
3482.0	P17	TP	F4	TP	0.5	Established circulating rates and increased to 700gpm / 1630psi.
3482.0	P17	TP	G8	TP	2	Continued to RIH from 1965m to 3110m.
3482.0	P17	TP	F4	TP	1.5	Circulated and conditioned mud at 140spm/700gpm/1630psi. Took SCRs (15spm = 150psi, 20 spm = 200psi).
3482.0	P17	TP	G21	TP	0.5	Reduced strokes to 15spm. Lowered overshot and engaged fish @ 3124m. Observed pressure increase form 150psi to 350psi. Shut down pump and pulled up to 3117m. Pumped 15spm and observed pressure at 350psi (confirmed fish still engaged). Ruptured disk with 40spm/1220psi.
3482.0	P17	TP	G8	TP	5	Flow checked for 15min. Pumped slug and POOH from 3117m to 1965m.
3482.0	P17	TP	G11	TP	0.5	Performed trip drill - 30 sec. Flow checked at the 9 5/8" shoe. Serviced topdrive. Filled trip tank.
3482.0	P17	TP	G8	TP	2	Continued to POOH in casing from 1965m to 954m at 3 mins per stand.

Date : 11 Feb 2010 **Daily Cost : US$ 872977** **Report Number : 24**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	TP	G8	TP	2.5	Continued to POOH with fishing assembly from 954m to surface.
3482.0	P17	TP	G1	TP	2	Laid out fish and fishing assembly. No damage to MSCT tools observed or reported by Schlumberger. A total of 19 acceptable cores recovered from the total of 27 cores cut.
3482.0	P17	P	G6		2	Removed diverter insert bag. Picked up and ran 8-1/2" BHA for wiper trip. RIH to 89m.
3482.0	P17	P	G12		0.5	Jetted wellhead and BOPs with the bit - 600gpm/120spm/450 psi.
3482.0	P17	P	G6		0.5	Continued to RIH with BHA from 89m to 174m.
3482.0	P17	P	G6		1	Made up BOP test tool and RIH. Landed out in 18-3/4" wellhead with 40klbs down weight.

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DFE above MSL : 26.0m | Lat : 39 Deg 47 Min 34.1828 Sec | Spud Date : 30 Nov 2009 | Release Date :
Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time :

Date : 11 Feb 2010 **Daily Cost : US$ 872977** **Report Number : 24**

3482.0	P17	P	G13	5	Held PJSM. Tested BOP Stack as per Maersk procedures: Annular BOP - 300psi/5 min and 3000psi/10 min. Pipe Rams - 300psi/5 min and 5000psi/10 min.
3482.0	P17	P	G13	1	Unseated BOP Test tool with 10klbs overpull. POOH test tool to surface and laid out BOP test tool. Installed diverter packer insert.
3482.0	P17	P	G8	2	RIH from 174m to 1965m.
3482.0	P17	P	F4	0.5	Established circulation at the 9-5/8" shoe (700gpm/140spm/1670 psi).
3482.0	P17	P	G8	2.5	Continued to RIH at controlled rate in open hole from 1965m to 3100m. Hole good with no excess drag.
3482.0	P17	P	F1	4.5	Precautionary washed and reamed from 3100m to bottom at 3482m. Encountered minor resistance of 15-20klbs over the hole drag - cleaned out same. Significant flow of cuttings and fine solids with nominal filter cake in returns over the shale shakers.

Date : 12 Feb 2010 **Daily Cost : US$ 872976** **Report Number : 25**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	F4		3	Circulated and conditioned well 1x bottoms up. Pumped 20bbl Lo weight 8.8ppg and 20bbl Hi weight pills to assist and maximise the potential for hole cleaning. Circulated 2x bottoms up untill the returns over the shakers clean @ 670gpm/130spm/2200 psi. Observed significant and continuous flow of a mixture of cuttings, fine solids and filter cake in returns during the initial stages of circulation.
3482.0	P17	P	G8		5.5	Performed flow check. POOH on elevators from 3482m to 3400m - hole good. Pumped slug and continued to POOH to 9-5/8" shoe. Flow checked - well static. Continued to POOH to 174m.
3482.0	P17	P	G6		1	POOH BHA to surface and racked back in mast.
3482.0	P17	P	G1		1	Held PJSM. Rigged up to run wireline logs.
3482.0	P17	P	C1		2.5	Made up wireline toolstring for run #7 - Dual packer.
3482.0	P17	P	C2		3	RIH wireline tools run #7 to 3400m. Tight hole encountered at 2740m and 2793m. Worked the toolstring to get past 2795m. Tool hanging up on the way down. Pulled back up to 2740m and attempted to pass with the maximum total pull of 9400lbs - unsuccessful. Pulled maximum on winch (5000lbs on tools). RIH again and held up at 2810m. Worked tool down to 2835m. Continued to work tool down with difficulty to 3400m.
3482.0	P17	P	C2		8	Correlated up from 3400m. Pulled with maximum tension at 3396m. Tried to work tools up from 3396m and cable appeared to be dragging. The tool and cable were able to move down hole freely but high drag up. The drag approached maximum safe working load to get the tool moving when coming up hole. Pulled and held maximum safe working load on cable (9700lbs). Continued to work tools up the hole. Attempted to come up to second point at 3302.5m - fiirst point @ ~3395m cancelled. Correlated up and moved to second point at 3302.5m. Set packers and commenced station sampling operations. Deflated packers and RIH to 3340m to correlate. Correlated up to 3294.2m - on depth. Set packers at third station point.

Date : 13 Feb 2010 **Daily Cost : US$ 848297** **Report Number : 26**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	C2		7	Continued to test fluids at station no.3. Deflated packers and correlated up to 3230m (0.1 m off depth - deep). Moved to station no.4 and set packers at 3214m. Commenced testing at station no 4. Pumped out 40 litres to the borehole. Completed station and deflated packers.
3482.0	P17	P	C2		4.5	Attempted to move off station no.4 @ 3214.4m - unable to move up/down. Cycled several times. Maximum pull of 9700lbs with slacking off the total weight of the wireline cable - unsuccessful. Decision was made to inflate packers and continue pumping out at the station point no.4 before releasing at ECRD and run an overshot to fish the dual packer tool. While inflating the packers it was noticed that the fluid volume to inflate fully was low thus suggesting that the packers were not fully deflated when attempting to come off the wall and move the toolstring. Deflated packers once more and tool came free. Correlated up hole - on depth. Moved to next point.
3482.0	P17	P	C2		2.5	Set packers at station no.5 @ 3205.4m. Pumped out 31 litres and allowed pressure to build up for 90 minutes. Deflated packers and moved tool to the next station and correlated point no.6 @ 3110.4m.
3482.0	P17	P	C2		2.5	Inflated packers at station point no.6 @ 3110.4m. Performed station measurements. Pumped out 3 litres. Allowed formation pressure to build up. Mini-DST with 2 hours build-up.
3482.0	P17	P	C2		7.5	Deflated packers and correlated @ 3110.4m. Moved tool down hole to the next station point no.7 @ 3140.4m. Correlated up - added 0.5m. Set packers at 3140.4m and pumped out 559 litres.

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Date : 14 Feb 2010 **Daily Cost : US$ 848641** **Report Number : 27**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	C2		2	Acquired 2x 450cc MPSR samples at station point no.7 @ 3140.4m. Cancelled station no 8. Moved the toolstring down the hole to station point no.9 at 3184.6m. Correlated on depth from 3140.4m to 3218m - added 0.7m.
3482.0	P17	P	C2		7.5	Set packers at station point no.9 @ 3184.6m and pumped out 445 litres. Stopped pumpout and waited for build up. Pumped out again for several minutes (481 litres total). Took 2 samples (MPSR#2750 and MPSR#3331). Problems with isolation valve in MDT probe. Valve leaking making it difficult to sample correctly.
3482.0	P17	P	C2		1.5	Moved tools to next station point no.10 at 3083.0m. Recorrelated on the way up. Set packers at 3083m and commenced testing. Pumped out 3 litres and waited for build up. Released packers and moved to the next point.
3482.0	P17	P	C2		2.5	Correlated on depth and moved to next station point no.11 at 3172.8m and set packers. Test attempt aborted due to packers not setting. Repositioned and reset packers at 3172.8m and performed repeat test.
3482.0	P17	P	C2		4.5	RIH to 3350.0m to correlate up. Moved to next station point no.12 at 3332.0m. Set packers and pumped out 30 litres followed by pressure build-up. Moved tool and correlated on depth. Continued to the next point at 3313.2m.
3482.0	P17	P	C2		2	Opened packers at 3313.2m and commenced testing. Pumped out 39 litres. Moved tool and correlated on depth. Continued to the next station point no.13 at 3258.6m.
3482.0	P17	P	C2		4	Set packers at 3258.6m and commenced testing. Pumped out 131.8 litres.

Date : 15 Feb 2010 **Daily Cost : US$ 924111** **Report Number : 28**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P17	P	C2		0.5	Continued testing point no.13 at 3258.6m. Pumped out 131.8 litres.
3482.0	P17	P	C2		1.5	Deflated packers and moved toolstring off position. POOH packer assembly to surface.
3482.0	P17	P	C1		2.5	Recovered samples and laid out packer assembly and associated tools.
3482.0	P17	P	G1		0.5	Rigged down wireline equipment.
3482.0	P21	P	G11		1.5	Held PJSM. Hung-off blocks in mast. Slipped and cut drilling line as per Maersk procedures.
3482.0	P21	P	G1		0.5	Rigged up 2-7/8" handling equipment.
3482.0	P21	P	G2		2	Picked up 17x joints of 2-7/8" tubing and mule shoe to 168m.
3482.0	P21	P	G8		2.5	RIH with 2-7/8" tubing on 5" drill pipe from 168m to 1961m.
3482.0	P21	P	G11		0.5	Flow checked and serviced TDS.
3482.0	P21	P	G8		2.5	Continued to RIH 5" drill pipe from 1961m to 3482m. Tagged bottom with 5klbs down weight.
3482.0	P21	P	F4		2	Circulated and conditioned mud to even out MW @ 9.4ppg with 580gpm / 116spm / 1630psi.
3482.0	P21	P	G1		0.5	Held PJSM. Made up cement swedge assembly with Lo-Torq and cement hose.
3482.0	P21	P	F3		1	Lined up cement unit and pumped 10bbl drillwater spacer. Pressure tested surface lines to 1000psi / 5min. Mixed and pumped cement plug #1A as per program from 3482m to 3322m. Pumped 40.4bbl of 15.8 ppg cement slurry followed by 4bbl of drillwater spacer behind.
3482.0	P21	P	F3		0.5	Lined up rig pumps and displaced cement with 187bbls of mud.
3482.0	P21	P	G8		1	Rigged down cementing swedge assembly with cement hose and POOH from 3482m to 3322m.
3482.0	P21	P	F4		1	Circulated 1.5 times bottoms up. Diverted 30bbl of cement contaminated mud for treatment.
3482.0	P21	P	F3		0.5	Rigged up cement swedge assembly with Lo-Torq and cement hose and lined up cement unit. Pumped 10bbl of drill water spacer ahead and pressure tested surface lines to 1000psi / 5mins. Mixed and pumped cement plug #1B as per program from 3322m to 3162m. Pumped 40.4bbl of 15.8ppg cement slurry followed by 4bbl of drill water behind.
3482.0	P21	P	F3		0.5	Lined up rig pumps and displaced cement with 177bbl of mud.
3482.0	P21	P	G8		0.5	Rigged down cementing swedge assembly with cement hose and POOH from 3322m to 3162m.
3482.0	P21	P	F4		1	Circulated 1.5 times bottoms up. Diverted 19bbls of cement contaminated mud for treatment.
3482.0	P21	P	F3		1	Rigged up cement swedge assembly with Lo-Torq and cement hose and lined up cement unit. Pumped 10bbl of drill water spacer ahead and pressure tested surface lines to 1000psi / 5mins. Mixed and pumped cement plug #1C as per program from 3162m to 3002m. Pumped 40.4bbl of 15.8ppg cement slurry followed by 4bbl of drill water behind.

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Date : 16 Feb 2010 **Daily Cost : US$ 631575** **Report Number : 29**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P21	P	F3		0.5	Displaced cement plug #1C with 165bbl of mud.
3482.0	P21	P	G8		0.5	Rigged down cementing swedge and POOH from 3002m to 2965m.
3482.0	P21	P	F4		1	Dropped wiper ball. Made up TDS and circulated 1.5 times bottoms up. Diverted 10.5bbl of cement contaminated mud for treatment. Lined up slug pit and pumped 12bbl of Hi-Vis @ 9.4ppg mud. Displaced a balanced pill from 2965m to 2915m with 164bbl of mud.
3482.0	P21	P	G8		0.5	POOH from 2965m to 2915m.
3482.0	P21	P	F3		0.5	Rigged up cementing swedge assembly and lined up cement unit. Pumped 10bbl of drill water ahead and pressure tested lines to 1000psi/5 mins - ok. Mixed and pumped cement plug #2 as per program from 2915m to 2765m. Pumped 38bbl of 15.8ppg slurry followed by 3.5bbl of drill water spacer.
3482.0	P21	P	F3		0.5	Lined up rig pumps and displaced cement with 155bbl of mud.
3482.0	P21	P	G8		0.5	Rigged down cement swedge and POOH from 2915m to 2760m.
3482.0	P21	P	F4		1	Dropped wiper ball. Made up TDS and circulated 1.5 times bottoms up. Diverted 9bbl of cement contaminated mud.
3482.0	P21	P	G2		3.5	Held PJSM. POOH sideways and laid down drill pipe from 2760m to 1932m.
3482.0	P21	P	G8		1.5	RIH from 1932m to 2655m.
3482.0	P21	P	F4		3.5	Circulated and conditioned mud @ 500gpm/100spm/1250psi. WOC prior to tagging plug #2.
3482.0	P21	P	G8		0.5	RIH from 2655m to 2768m and tagged top of cement plug #2 with 5klbs. Top of cement plug #2 found 3m below the theoretical TOC.
3482.0	P21	P	G8		1.5	POOH from 2768m to 2115m.
3482.0	P21	P	F3		1	Pumped 25bbl Hi-Vis pill and displaced as balanced pill from 2115m to 2015m.
3482.0	P21	TP	F3	WB	1.5	Rigged up cementing swedge assembly and lined up cement unit. Pumped 10bbl of drillwater ahead and pressure tested lines to 1000psi/5 mins - ok. Mixed and pumped cement plug #3 as per program from 2015m to 1915m to place the TOC 50 m above 9-5/8" casing shoe. Pumped 25bbl of 15.8ppg slurry followed by 2bbl of drill water.
3482.0	P21	TP	G8	WB	0.5	POOH from 2015m to 1730m.
3482.0	P21	TP	F4	WB	1	Dropped wiper ball and made up TDS. Circulated 1.5 times bottoms up @ 580gpm/116spm/1170 psi. Diverted 21bbl of cement contaminated mud.
3482.0	P21	P	G2		2.5	Held PJSM. POOH laying down excess drill pipe (81 joints laid out).
3482.0	P21	P	G2		2	Excess BHA items laid from the mast (8 joints of 5" HWDP, 6-3/4" drilling jars, 3 joints of 6-3/4" DC, 2 x 8-1/2" string stabiliser).

Date : 17 Feb 2010 **Daily Cost : US$ 302454** **Report Number : 30**

Depth (m)	Phase	Cls	Op	R.C.	Hrs	Activity
3482.0	P21	P	G2		1	Continued to lay out from the mast 8 joints of 5" HWDP, 6-3/4" drilling jars, 3 joints of 6-3/4" DC and 2 x 8-1/2" stabilisers.
3482.0	P21	TP	F3	WB	1.5	Held PJSM. Lined up cememt unit to perform pressure test on cement plug#3 against pipe rams. Circulated 5bbl of water through cement line. Closed choke line failsafe valve on BOP stack and pressure tested lines to 2500psi / 5 min. Bled off pressure to 300psi and opened failsafe valve to confirm line up. Spaced out tool joint and closed the pipe rams. Performed pressure test on cement plug #3 pumping at 0.5bbl/min. At 1475psi pressure started to bleed off down to 1200 psi over 2 min. Checked triptank and confirmed rams integrity - no bleed back into triptank. Bled off pressure at cement unit. Opened up piperams.
3482.0	P21	TP	G8	WB	2.5	RIH from 960m to 1978m and tagged top of cement with 5klbs. Confirmed top of cement 13m below 9-5/8" casing shoe.
3482.0	P21	TP	F4	WB	3.5	Circulated and conditioned mud while preparing to reset cement plug #3A to spot on top of cement plug #3.
3482.0	P21	P	G1		0.5	Held PJSM. Rigged up cementing swedge assembly and lined up cement unit.
3482.0	P21	P	F3		1.5	Pumped 12bbl of drillwater spacer ahead and pressure tested lines to 1000psi / 5 mins. Mixed and pumped cement plug #3A as per program from 1978m to 1905m to place the TOC 60m above 9-5/8" casing shoe. Mixed and pumped 18.7bbl (91 sx) of 15.8ppg slurry. Displaced with 2bbl drillwater spacer including 1bbl for surface Lines. Lined up rig pumps and and continued displacement with 103.8bbl mud (873 strokes).
3482.0	P21	P	G8		1	POOH 10 stands from 1977m to 1701m.

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Date : 17 Feb 2010	**Daily Cost : US$ 302454**	**Report Number : 30**

*** End of Rockhopper-1 ST1 at 11:30hrs ***

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APPENDIX 15: NET PRODUCTIVE TIME ANALYSIS

DFE above MSL : 26.0m	Lat : 39 Deg 47 Min 34.1828 Sec	Spud Date : 30 Nov 2009	Release Date :
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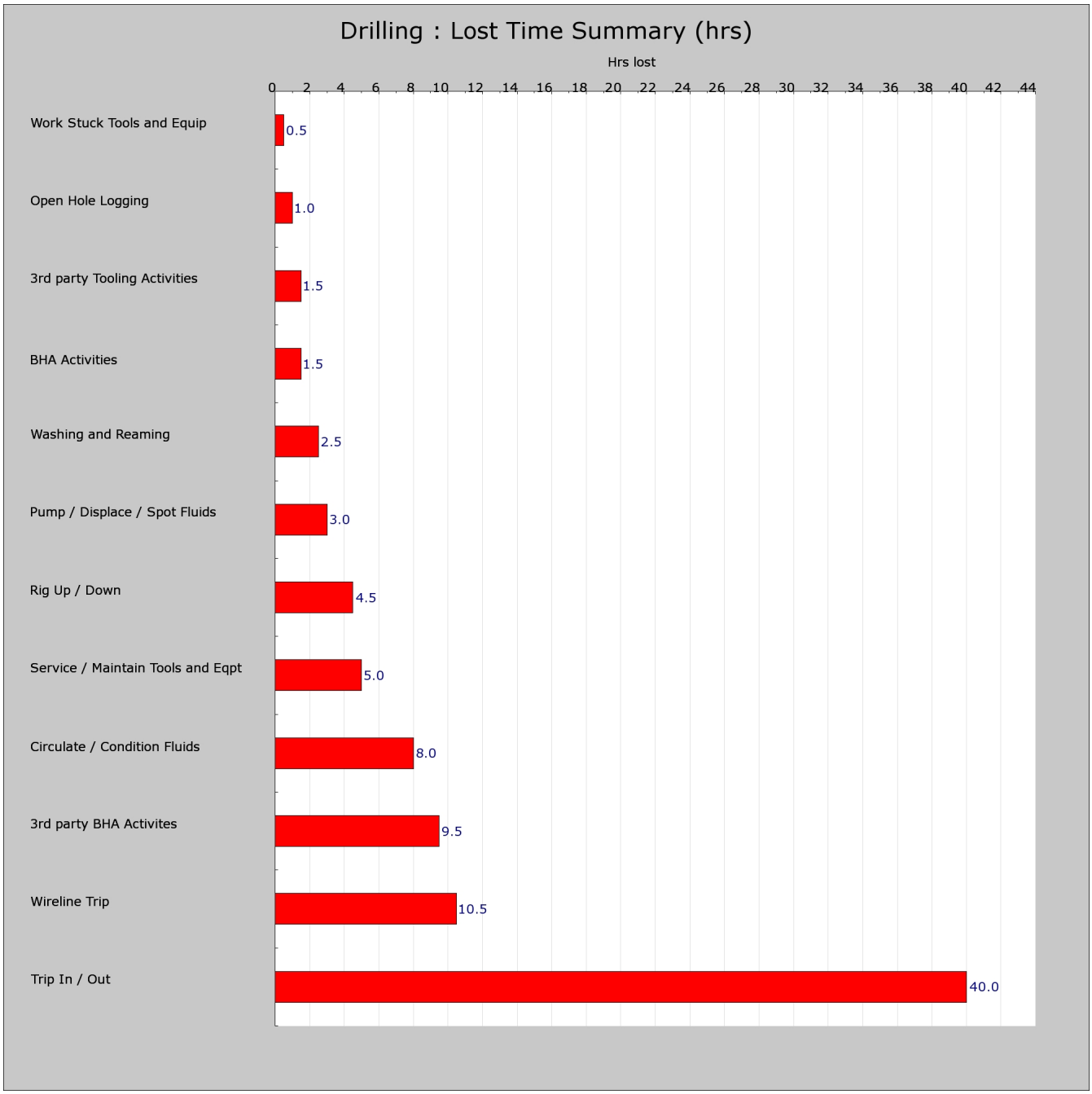
Trouble



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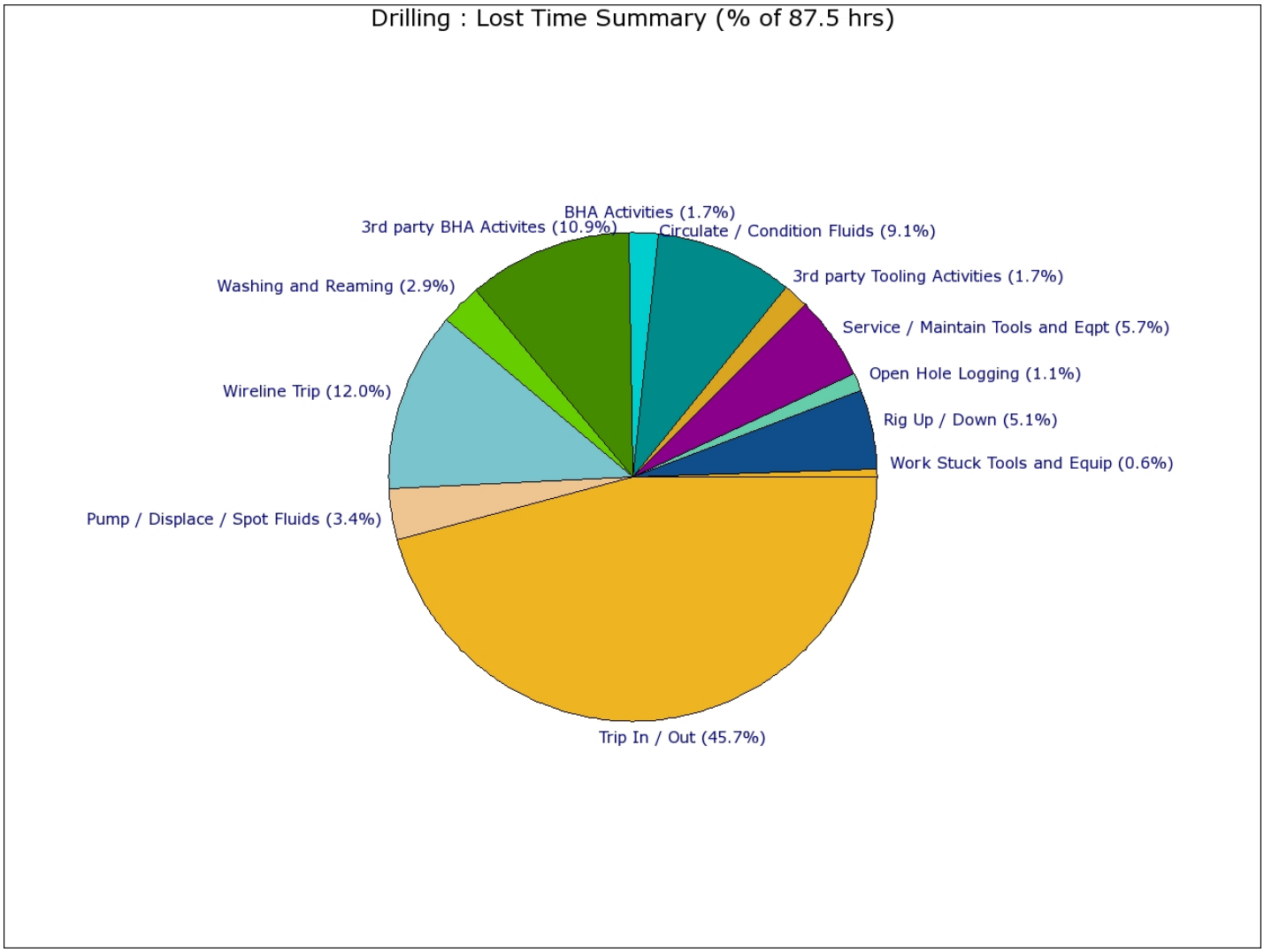
Wellname : Rockhopper-1/ST1	Drilling Co. : Maersk		Rig : Kan Tan IV
DFE above MSL : 26.0m	Lat : 39 Deg 47 Min 34.1828 Sec	Spud Date : 30 Nov 2009	Release Date :
Water Depth : 74.3m	Long : 145 Deg 26 Min 21.466 Sec	Spud Time : 23:30	Release Time :



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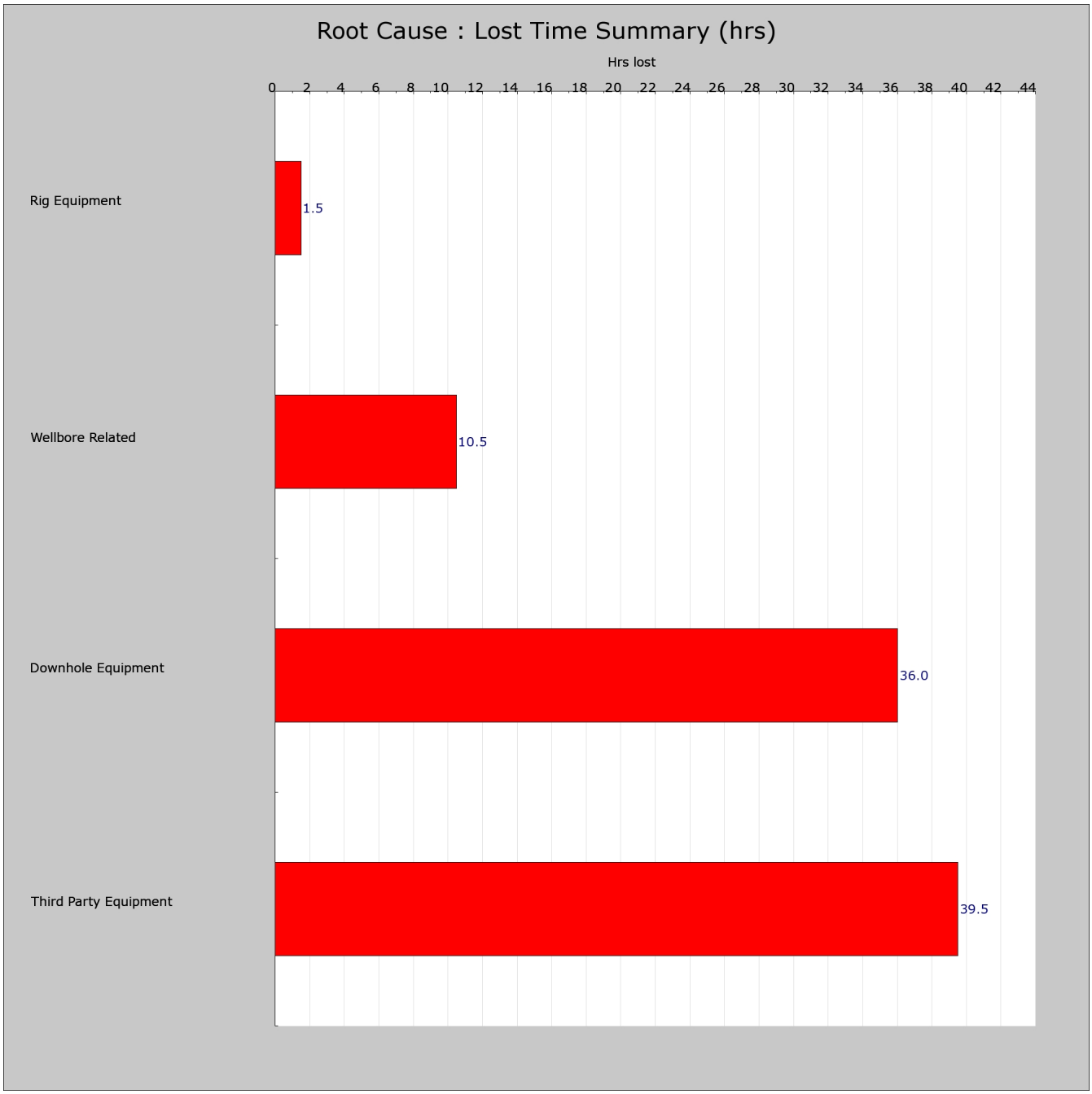
Wellname : Rockhopper-1/ST1	Drilling Co. : Maersk		Rig : Kan Tan IV
DFE above MSL : 26.0m	Lat : 39 Deg 47 Min 34.1828 Sec	Spud Date : 30 Nov 2009	Release Date :
Water Depth : 74.3m	Long : 145 Deg 26 Min 21.466 Sec	Spud Time : 23:30	Release Time :



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Wellname : Rockhopper-1/ST1	Drilling Co. : Maersk		Rig : Kan Tan IV
DFE above MSL : 26.0m	Lat : 39 Deg 47 Min 34.1828 Sec	Spud Date : 30 Nov 2009	Release Date :
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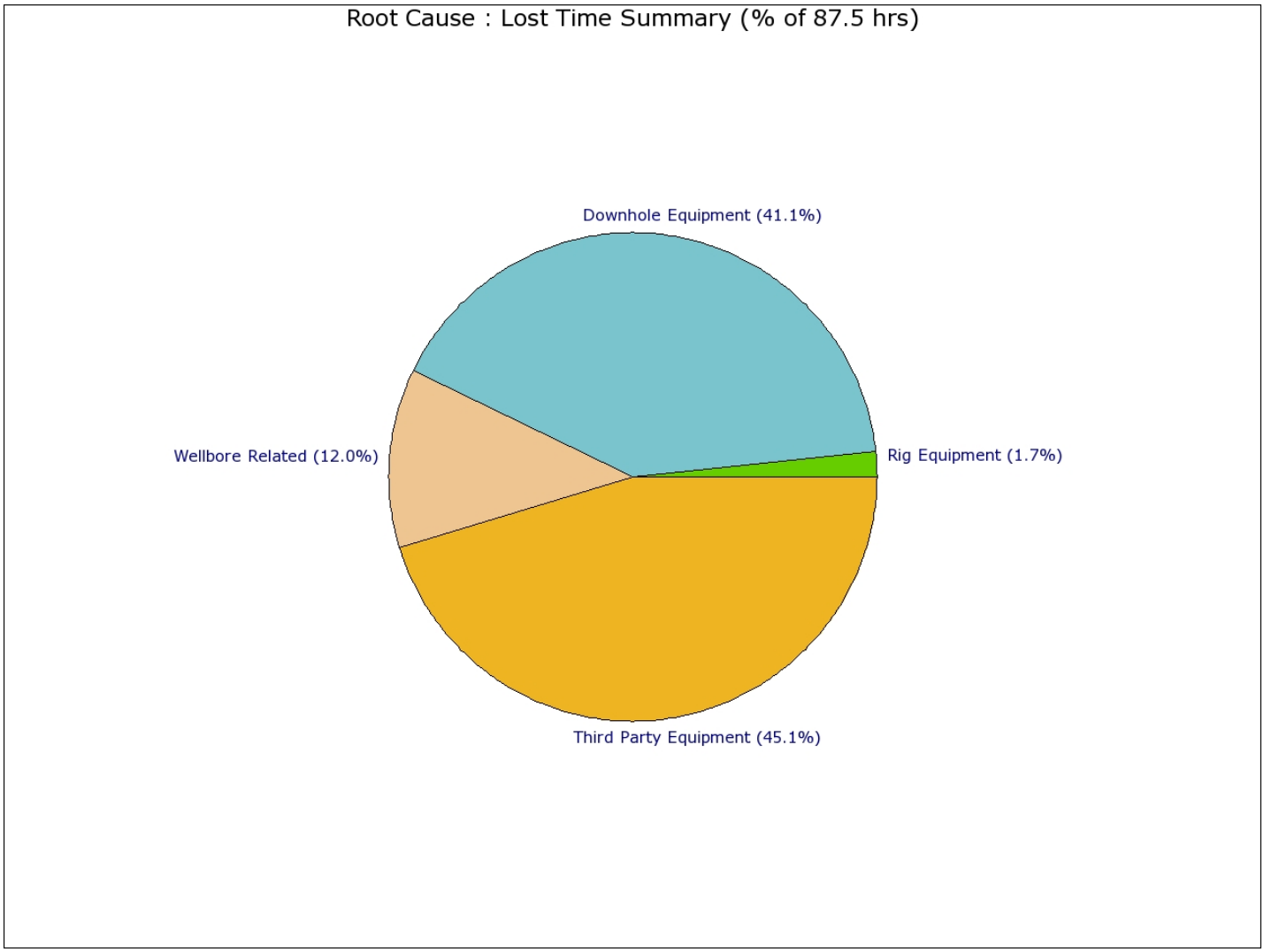

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DFE above MSL : 26.0m | Lat : 39 Deg 47 Min 34.1828 Sec | Spud Date : 30 Nov 2009 | Release Date :
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Trouble During Programmed Time for Rockhopper-1/ST1

Date	PHS	Operation	NPT	Depth	Description of Programmed Trouble Time
21 Jan 2010	P17	3rd party BHA Activites	1.5	2112.0	Shallow tested Geopilot and MWD/LWD tools. Failed to obtain MWD survey.
21 Jan 2010	P17	Trip In / Out	1.5	2112.0	POOH. Removed radioactive sources. Downloaded tools.
21 Jan 2010	P17	3rd party BHA Activites	0.5	2112.0	Changed out NM Flex joint and PCDC probe.
21 Jan 2010	P17	3rd party BHA Activites	1	2112.0	Programmed MWD/LWD tools and loaded radioactive sources.
22 Jan 2010	P17	BHA Activities	0.5	2112.0	RIH with Geopilot BHA to 244m.
24 Jan 2010	P17	Service / Maintain Tools and Eqpt	1.5	2926.0	Saver sub top connection broke out on connection at 2926m. Racked stand back. Installed new saver sub on TDS and replaced pipe handler dies. Continued circulating and moving pipe at regular intervals while undertaking repairs.
25 Jan 2010	P17	Circulate / Condition Fluids	1	3158.0	Pumped 15bbl Barolift pill and circulated out of well.
25 Jan 2010	P17	3rd party Tooling Activities	0.5	3158.0	Sperry attempted to reset downhole tools - no success.
25 Jan 2010	P17	Trip In / Out	5.5	3158.0	Flow checked well. POOH from 3158m to 2492m. Washed and reamed tight spots from 2980m to 2975m, 2885m to 2841m, 2803m to 2755m, 2720m to 2697m and 2645m to 2588m. Hole "ratty" with numerous tight spots. Continued to pump out of hole from 2588m to 2492m. Reamed tight spots as necessary. Max drag 30klbs.
26 Jan 2010	P17	Trip In / Out	5	3158.0	Pumped out of hole from 2492m to 1914m (550gpm, 2000psi). Hole "ratty" with numerous tight spots. Reamed tight spots as necessary. Max drag 30klbs.
26 Jan 2010	P17	Circulate / Condition Fluids	0.5	3158.0	Circulated bottoms up at shoe.
26 Jan 2010	P17	Service / Maintain Tools and Eqpt	0.5	3158.0	Flow checked well. Serviced TDS and pumped slug.
26 Jan 2010	P17	Trip In / Out	4	3158.0	POOH from shoe to 39m. Held trip drill - 45 secs to stab and close IBOP
26 Jan 2010	P17	3rd party BHA Activites	1	3158.0	Downloaded LWD tools and removed radioactive source.
26 Jan 2010	P17	3rd party BHA Activites	1.5	3158.0	Laid out LWD/MWD tools and Geopilot. Broke off bit.
26 Jan 2010	P17	3rd party BHA Activites	2.5	3158.0	Held PJSM. Picked up replacement MWD/LWD tools and Geopilot. Made up 8½" bit.
26 Jan 2010	P17	3rd party BHA Activites	1.5	3158.0	Programmed downhole tools and installed radio active source.
26 Jan 2010	P17	BHA Activities	1	3158.0	Continued to make up 8½" BHA and RIH to 239m.
26 Jan 2010	P17	3rd party Tooling Activities	0.5	3158.0	Shallow tested MWD/LWD tools (600gpm, 1400psi) - ok.
26 Jan 2010	P17	Trip In / Out	3	3158.0	RIH with 8½" Geopilot drilling assembly from 239m to 1918m. Held trip drill - 23secs to stab and close IBOP.
26 Jan 2010	P17	Service / Maintain Tools and Eqpt	1.5	3158.0	Slipped and cut drilling line.
26 Jan 2010	P17	3rd party Tooling Activities	0.5	3158.0	RIH from 1918m to 2000m. Went through procedure to break in Geopilot seals as per Directional Drillers instruction.
26 Jan 2010	P17	Trip In / Out	1	3158.0	RIH from 2000m to 2525m. No excess drag observed.
27 Jan 2010	P17	Trip In / Out	1.5	3158.0	RIH from 2525m to 3090m. Held up with 30klbs weight at 3090m.
27 Jan 2010	P17	Washing and Reaming	0.5	3158.0	Established circulation and reamed tight section from 3090m to 3094m. Continued to wash in hole to 3103m. RIH from 3103m to 3132m.
27 Jan 2010	P17	Washing and Reaming	2	3158.0	Established parameters with Geoservices and Sperry. Washed in hole from 3132m and tagged fill at 3152m. Washed and reamed fill from 3152m to tag bottom at 3158m tide corrected.
27 Jan 2010	P17	Open Hole Logging	1	3158.0	Relogged interval 3130m to 3139m to tie in logs with depth (bit depths 3141m to 3150m).
07 Feb 2010	P17	Wireline Trip	1.5	3482.0	Schlumberger computers crashed. Rebooted system.
07 Feb 2010	P17	Wireline Trip	0.5	3482.0	Winch engine failure. Oil change required.
08 Feb 2010	P17	Wireline Trip	1	3482.0	Troubleshot tools as having power/software issues with tool string. Moved tool string up and down slowly while troubleshooting. Appeared tool string could not log down but could log up.
09 Feb 2010	P17	Wireline Trip	0.5	3482.0	Software/hardware issue prevented data acquisition at check shot depth of 250m. Troubleshot problem.
09 Feb 2010	P17	Wireline Trip	2	3482.0	At core depth 3137m (#27 of #33) tool arm would not close. Recorded arm position and powered down tool. Powered tool back up and retracted arm. High tension at 3137 m. Attempted to work tool passed 3137m pulling to maximum tension (8000 Lbf) - unsuccessful. Continued to try and work tool past 3137m. Unknown if tool or wireline was stuck.

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DFE above MSL : 26.0m | Lat : 39 Deg 47 Min 34.1828 Sec | Spud Date : 30 Nov 2009 | Release Date :
Water Depth : 74.3m | Long : 145 Deg 26 Min 21.466 Sec | Spud Time : 23:30 | Release Time :

Trouble During Programmed Time for Rockhopper-1/ST1

Date	PHS	Operation	NPT	Depth	Description of Programmed Trouble Time
09 Feb 2010	P17	Wireline Trip	0.5	3482.0	Proceeded to work wire line and hold over pull of 8500 Lbf (80%).
10 Feb 2010	P17	Wireline Trip	2	3482.0	Continued to work wire line and held overpull of 8500lbs (80%).
10 Feb 2010	P17	Wireline Trip	2.5	3482.0	Attempted to break weak link on down hole wire line tools. Schlumberger unit could not pull sufficent weight to break weak link. Rigged down wire line sheave and connected T-bar to the wire line and installed in the elevators. Pulled wire line using the draw works. Weak link parted at 10klbs placing the top of fish at 3124m.
10 Feb 2010	P17	Rig Up / Down	1.5	3482.0	Pulled wire line to surface and noted that weak link parted in correct manner. Rigged down same.
10 Feb 2010	P17	Rig Up / Down	1	3482.0	Cleared rig floor. Picked up overshot assembly and made up to stand of 5" drill pipe.
10 Feb 2010	P17	Service / Maintain Tools and Eqpt	0.5	3482.0	Serviced TDS.
10 Feb 2010	P17	Service / Maintain Tools and Eqpt	0.5	3482.0	Performed dropped object survey on TDS, blocks and compensator.
10 Feb 2010	P17	Trip In / Out	4	3482.0	RIH with fishing assembly to 1965m.
10 Feb 2010	P17	Circulate / Condition Fluids	0.5	3482.0	Established circulating rates and increased to 700gpm / 1630psi.
10 Feb 2010	P17	Trip In / Out	2	3482.0	Continued to RIH from 1965m to 3110m.
10 Feb 2010	P17	Circulate / Condition Fluids	1.5	3482.0	Circulated and conditioned mud at 140spm/700gpm/1630psi. Took SCRs (15spm = 150psi, 20 spm = 200psi).
10 Feb 2010	P17	Work Stuck Tools and Equip	0.5	3482.0	Reduced strokes to 15spm. Lowered overshot and engaged fish @ 3124m. Observed pressure increase form 150psi to 350psi. Shut down pump and pulled up to 3117m. Pumped 15spm and observed pressure at 350psi (confirmed fish still engaged). Ruptured disk with 40spm/1220psi.
10 Feb 2010	P17	Trip In / Out	5	3482.0	Flow checked for 15min. Pumped slug and POOH from 3117m to 1965m.
10 Feb 2010	P17	Service / Maintain Tools and Eqpt	0.5	3482.0	Performed trip drill - 30 sec. Flow checked at the 9 5/8" shoe. Serviced topdrive. Filled trip tank.
10 Feb 2010	P17	Trip In / Out	2	3482.0	Continued to POOH in casing from 1965m to 954m at 3 mins per stand.
11 Feb 2010	P17	Trip In / Out	2.5	3482.0	Continued to POOH with fishing assembly from 954m to surface.
11 Feb 2010	P17	Rig Up / Down	2	3482.0	Laid out fish and fishing assembly. No damage to MSCT tools observed or reported by Schlumberger. A total of 19 acceptable cores recovered from the total of 27 cores cut.
16 Feb 2010	P21	Pump / Displace / Spot Fluids	1.5	3482.0	Rigged up cementing swedge assembly and lined up cement unit. Pumped 10bbl of drillwater ahead and pressure tested lines to 1000psi/5 mins - ok. Mixed and pumped cement plug #3 as per program from 2015m to 1915m to place the TOC 50 m above 9-5/8" casing shoe. Pumped 25bbl of 15.8ppg slurry followed by 2bbl of drill water.
16 Feb 2010	P21	Trip In / Out	0.5	3482.0	POOH from 2015m to 1730m.
16 Feb 2010	P21	Circulate / Condition Fluids	1	3482.0	Dropped wiper ball and made up TDS. Circulated 1.5 times bottoms up @ 580gpm/116spm/1170 psi. Diverted 21bbl of cement contaminated mud.
17 Feb 2010	P21	Pump / Displace / Spot Fluids	1.5	3482.0	Held PJSM. Lined up cememt unit to perform pressure test on cement plug#3 against pipe rams. Circulated 5bbl of water through cement line. Closed choke line failsafe valve on BOP stack and pressure tested lines to 2500psi / 5 min. Bled off pressure to 300psi and opened failsafe valve to confirm line up. Spaced out tool joint and closed the pipe rams. Performed pressure test on cement plug #3 pumping at 0.5bbl/min. At 1475psi pressure started to bleed off down to 1200 psi over 2 min. Checked triptank and confirmed rams integrity - no bleed back into triptank. Bled off pressure at cement unit. Opened up piperams.
17 Feb 2010	P21	Trip In / Out	2.5	3482.0	RIH from 960m to 1978m and tagged top of cement with 5klbs. Confirmed top of cement 13m below 9-5/8" casing shoe.
17 Feb 2010	P21	Circulate / Condition Fluids	3.5	3482.0	Circulated and conditioned mud while preparing to reset cement plug #3A to spot on top of cement plug #3.

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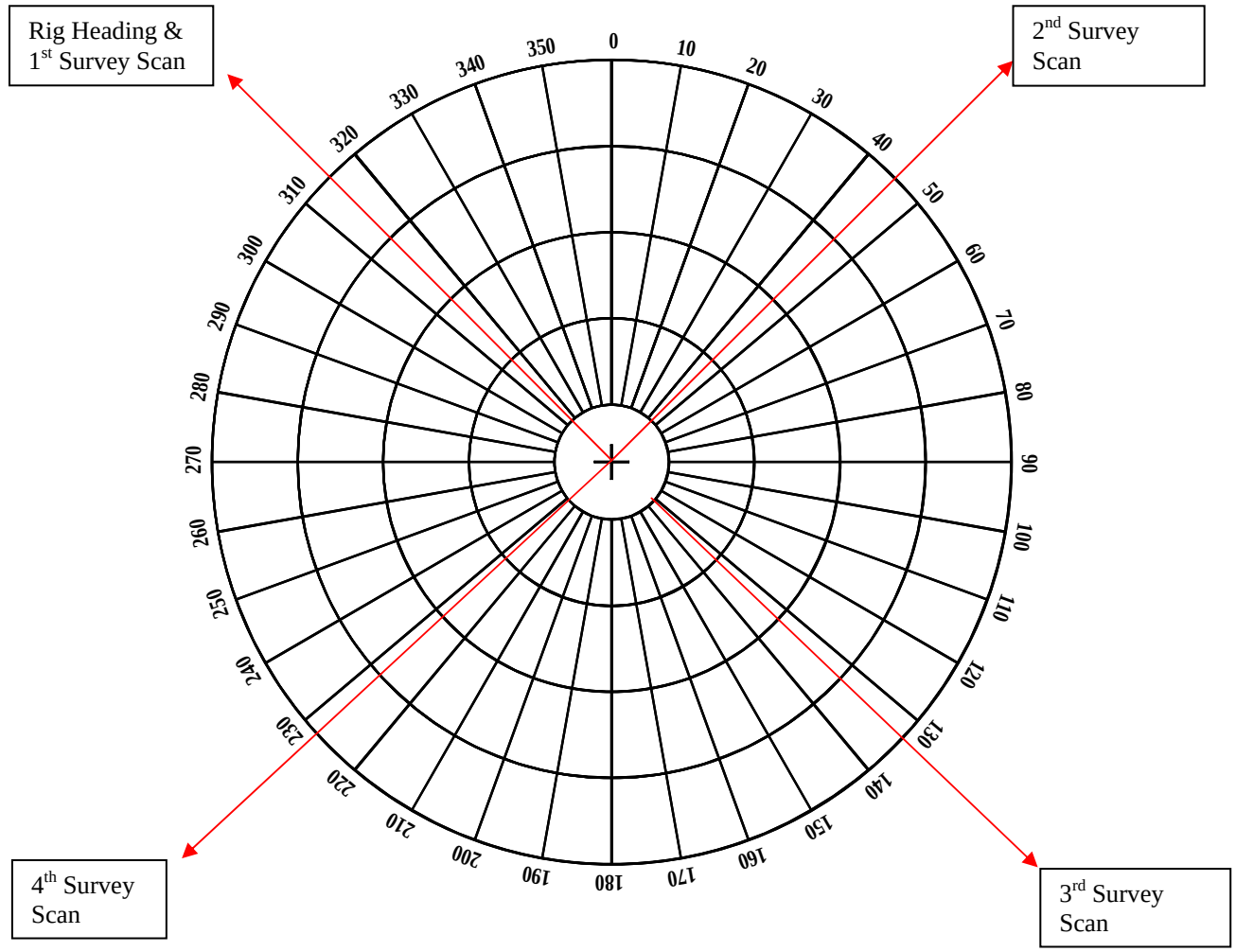
APPENDIX 16: RIG MOVE & POSITIONING REPORTS

FUGRO SUBSEA SERVICES (Australia) PTY LTD

Seabed Clearance Certificate

VESSEL/RIG:	**Kan Tan 4**	**PROJECT:**	**Rock Hopper 1**
LOCATION:	**Bass Basin**	**DATE:**	**20/02/10**
Co-ordinates: N/A			
Method of Survey: Visual and Sonar			
Type of Equipment Used: Imagenex Sonar		Contractor: ADA - Origin	
Range of Coverage: 25m visual + 50m Sonar		No. of scans: 4	
Rig Heading (Indicate on Diagram): 317°			
Positions of Rig Relative to Well During Scans: Same			
Height Above Seabed: ≤ 2mtrs		Height of Scanning Unit During Scan: ≤ 2m	
Nature of Seabed: Sand/ Silt		Type of Wellhead: N/A	
Type of Records Made: 1 video log, duplicated as needed			



All Scans 25m visual and sonar plus 50m sonar sweeps from 25m mark

LIST OF TARGETS					
	Position (Range & Bearing)	Approx. Dimensions (M)	Description	Means of Identification	Recovered
1	Nil				
2					
3					
4					
5					
6					
7					
8					
9					
10					

Means of Identification	Reasons for not removing remaining debris:
A - Sonar Scan	
B - Diving Inspection	
C - R.O.V.	
D - Rig Records	

Signatories:

Name Mike Lanzer ROV Supervisor Stu Maclean

Position ADA Rep Signature

Signature Date

Guidance Notes

1 Survey should extend to at least 70 metres from the well head.
2 The first signatory should be the person responsible for the rig, either the OIM or Client representative.

REPORT FOR THE
KAN TAN IV RIG MOVE TO
ROCKHOPPER-1

FUGRO BTW JOB NO. 09011

Client : AUSTRALIAN DRILLING ASSOCIATES LTD

Date of Survey : 25 November – 02 December 2009

0	Final	S. Armstrong	04 December 09
Rev	Description	Checked and Approved	Date

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ABSTRACT

Between 25 November and 02 December 2009, Fugro provided equipment and personnel for the semi-submersible Mobile Offshore Drilling Unit Kan Tan IV rig move from Trefoil-2 to Rockhopper-1 in Permit T/18P, Bass Basin, Australia.

Surface positioning was provided by Fugro's Starfix Total Position System (Starfix TOPS) and Starfix.Seis Navigation Software.

The final position for the drill stem derived from HP GPS observations at Rockhopper-1 is:

Location Name:	**Rockhopper-1**
MGA94	
Easting (m):	366374.031
Northing (m):	5594071.423
GDA94	
Latitude:	39° 47' 34.1828" S
Longitude:	145° 26' 21.4660" E
Rig Heading:	316.62° (True)

This position is 4.08m at a bearing of 209.83° (True) from the proposed Rockhopper-1 location.

All coordinates in this report are referenced to the Geocentric Datum of Australia 1994 (GDA94) and projected onto the Map Grid of Australia 1994 (MGA94) Zone 55 (CM 147°E), unless otherwise stated.

All times in this report are quoted in Australian Eastern Standard Time (AEST) unless otherwise stated.

1.0 INTRODUCTION

Fugro-BTW Ltd (Fugro) was contracted by ADA Ltd to provide navigation and positioning survey services onboard the semi-submersible Mobile Offshore Drilling Unit (MODU) *Kan Tan IV*, during the rig move from Trefoil-2 to Rockhopper-1 in Permit T/18P, Bass Basin, Australia.

A general location diagram is shown in Figure 1-1.

This report details the equipment used, survey parameters adopted, procedures employed and the results achieved. A section on safety is included in Section 3.0 of this report.

1.1 Scope of Work

Personnel and equipment were provided on a 24 hour per day basis for:

- Calibration and function testing of the survey equipment onboard the rig and the two Anchor Handling Vessels (AHVs).
- Surface navigation for the *Kan Tan IV* using Fugro's Starfix HP (High Performance) DGPS services.
- Surface navigation for AHVs during anchoring operations, using Starfix HP DGPS.
- Final rig surface positioning for Rockhopper-1 using DGPS observations.
- Final reporting of the positioning results.

1.2 Sequence of Events

On 25 November 2009 S. Armstrong and C. Tidey departed New Zealand for Melbourne, Australia.

On 26 November Fugro personnel departed Melbourne for the *Kan Tan IV*.

On 29 November 2009 the *Kan Tan IV* began the tow to Rockhopper-1.

At 0726 on 30 November 2009 the Final Fix for the *Kan Tan IV* position at Rockhopper-1 was completed.

Fugro personnel departed the Kan Tan IV at 0915 on 01 December 2009.

Further details of Fugro's involvement in the rig move are presented in the Daily Operations Reports included in Appendix A.

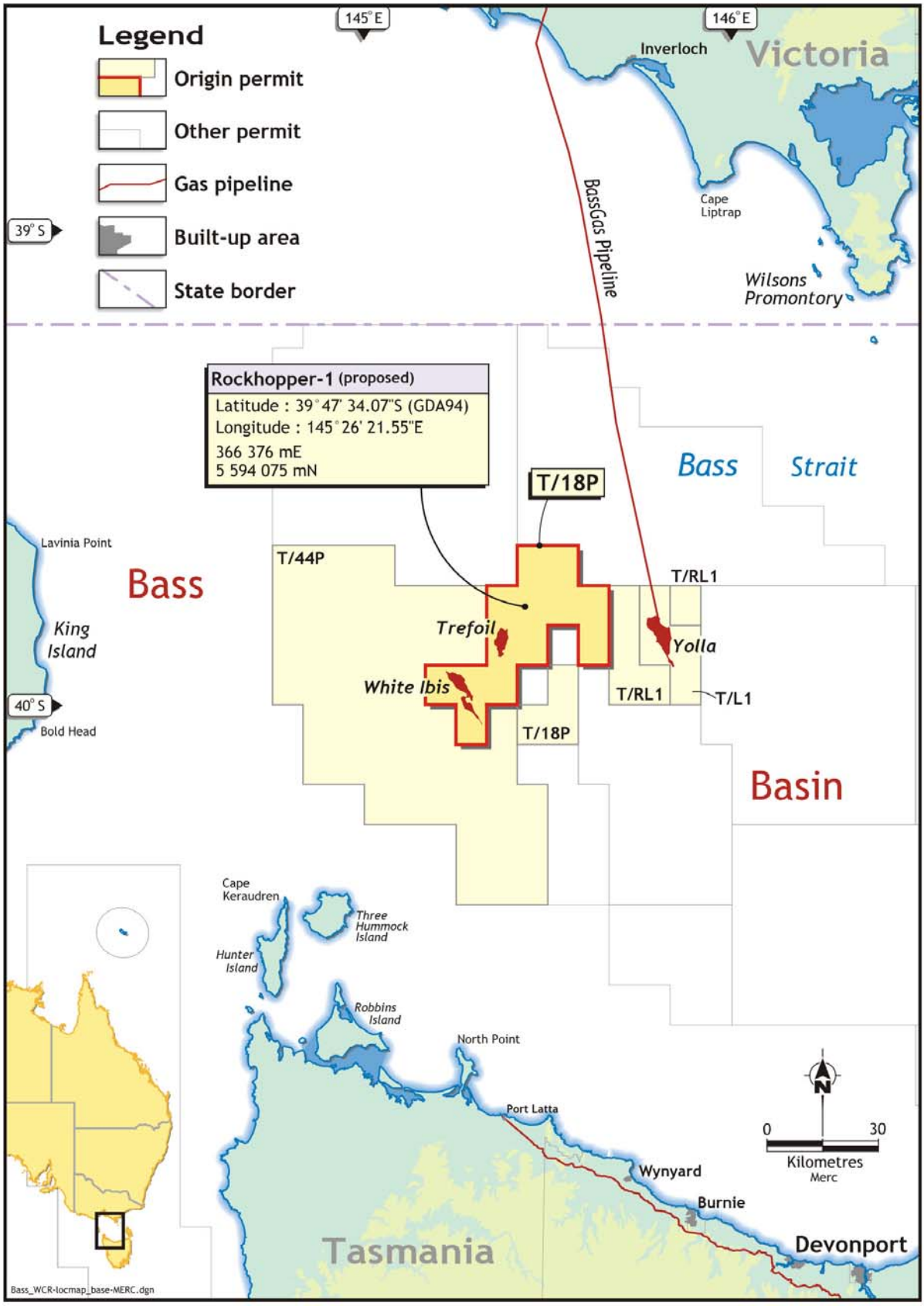


FIGURE 1-1 : GENERAL LOCATION DIAGRAM

2.0 RESULTS

2.1 Final Position

The final position of the *Kan Tan IV* drill stem was established upon arrival at Rockhopper-1 location. A mean position was calculated from five hours of HP data logged between 0127 and 0627 on 01 December 2009. During this period, calculated drill stem coordinates from the primary and secondary positioning systems were logged at five second intervals in Starfix.Seis. Data from the primary positioning system were used for the final position calculation.

GDA94 geographical positions for Rockhopper-1 are shown in Table 2-1.

GDA94			
Position	**Method**	**Latitude**	**Longitude**
Drill Stem at Surface	Starfix HP	39° 47' 34.1828" S	145° 26' 21.4660" E
Proposed Location	-	39° 47' 34.0680" S	145° 26' 21.5514" E

TABLE 2-1 : GEOGRAPHICAL POSITIONS FOR ROCKHOPPER-1

GDA94 grid coordinates (CM 147°E) for Rockhopper-1 are shown in Table 2-2.

GDA94, MGA, Zone 55, CM 147°E			
Position	**Method**	**Easting (m)**	**Northing (m)**
Drill Stem at Surface	HP	366374.031	5594071.423
Proposed Location	-	366376.000	5594075.000

TABLE 2-2 : GRID COORDINATES FOR ROCKHOPPER-1

This position is 4.08m at a bearing of 208.83° (Grid) from the design location.

A copy of the original rig position field report is contained in Appendix B.

2.2 Rig Heading

The heading of the *Kan Tan IV* was established by calculating the average heading during five hours of gyro data logged between 0127 and 0627 on 01 December 2009. During this period, gyro readings were logged at five second intervals in Starfix.Seis.

The *Kan Tan IV*'s heading is shown in Table 2-3.

Description	**Method**	**True**	**Grid**
Rig Heading	Starfix.TOPS	316.62°	315.62°
Proposed Heading	-	-	-

TABLE 2-3 : RIG HEADING FOR ROCKHOPPER-1

2.3 Anchor Positions

The approximate locations of the *Kan Tan IV*'s anchors are shown in Table 2-4.

GDA94, MGA, Zone 55, CM 147°E			
Anchor	**Easting (m)**	**Northing (m)**	**Deployed By**
1	365583	5593765	*Far Fosna*
2	365583	5594375	*Far Scimitar*
3	366028	5594873	*Far Scimitar*
4	366664	5594897	*Far Scimitar*
5	367139	5594391	*Far Scimitar*
6	367277	5593754	*Kan Tan IV*
7	366710	5593271	*Far Scimitar*
8	366048	5593215	*Far Fosna*

TABLE 2-4 : ANCHOR POSITIONS FOR ROCKHOPPER-1

Because the on board chain and tension counters were not all accurate the approximate coordinates of the *Kan Tan IV*'s anchors were unable to be recalculated for a more correct position.
The anchor locations shown in Table 2-4 are therefore simply the stern position of the AHV when the anchor 'On The Bottom' was called.

3.0 SAFETY

All work undertaken by Fugro personnel during the project was performed within the guidelines of Fugro's Health Safety & Environmental Management System Manual (HSEMS).

Fugro personnel worked within all project safety guidelines and plans adopted by ADA Ltd and Maersk.

No safety incidents involving Fugro personnel were reported during the project.

Fugro personnel attended all relevant safety meetings onboard the rig as required.

4.0 SURVEY OPERATIONS

4.1 Mobilisation

The survey equipment onboard the *Kan Tan IV, Far Scimitar and Far Fosna* was mobilised between 24 July and 12 August 2009. Rig offsets were checked and a total station traverse was conducted to determine C-O values for the Gyro compass and Starfix.TOPS.
The equipment was confirmed as operational after arrival at 1200 on 26 November 2009.

4.2 General Survey Procedures

The *Kan Tan IV* was taken under tow from Trefoil-2 by the *Far Fosna* at 0125 29 November 20098.

Anchor deployment operations commenced at 0520 on 29 November 2009, when Anchor #6 was deployed by the *Kan Tan IV*. All other anchors were deployed by the two AHVs. During the deployment of these anchors, the AHVs were provided with a waypoint and corresponding runline via the Wombat telemetry system. The AHVs ran out the anchors along this line to the desired drop point.

The *Kan Tan IV* was positioned at Rockhopper-1 with all anchoring, cross-tensioning and ballasting complete at 0030 on 30 November 2009. Final position data was logged between 0127 and 0627 on 01 December 2009. A rig positioning field report was issued to the ADA Ltd Company Representative (see Appendix B).

4.3 Demobilisation

The survey equipment onboard the *Kan Tan IV* was left onboard in preparation for the rig moves in the rest of the Drilling Program.

S. Armstrong and C. Tidey departed the *Kan Tan IV* at 0915 on 01 December 2009.

5.0 EQUIPMENT CALIBRATION

5.1 DGPS Navigation Integrity Check

In order to prove the correct operation of the navigation systems installed on board the *Kan Tan IV*, DGPS data was logged for 10 minutes on 26 November 2009, whilst the rig was located at Trefoil-2.

A comparison of the independent primary and secondary DGPS was also conducted. The results from both of these checks are provided in Table 5-1.

GDA94, MGA, Zone 55, CM 147°E		
	Easting (m)	**Northing (m)**
Established Well Coordinates	360690.390	5583676.591
Observed Coordinates	360691.011	5583676.460
Difference	0.621	-0.131
Primary Navigation	360691.011	5583676.460
Secondary Navigation	360690.957	5583676.472
Difference	**-0.054**	**0.012**

TABLE 5-1 : DGPS NAVIGATION INTEGRITY CHECK

Details of all positioning checks are provided in Appendix C.

5.2 Gyro Compass Calibration

The primary heading system Starfix.TOPS calculates a highly accurate real-time True heading using two GPS antennas set up at a known baseline and offset.

The calibration of the Starfix.TOPS heading system and survey gyro compasses comprised a total station traverse to determine the correction in heading from the GPS antenna baseline and the rig centreline.

These observations were carried out while the rig was alongside Lascelles Wharf in Geelong and stationary on 11 August 2009.

As the GPS baseline is a constant offset from the rig centreline and GPS is not affected by a slow ‘drift’ effect like conventional gyro compasses, therefore regular sun observations for a gyro compass correction are not required.

A C-O (Corrected-Observed) value of 99.98° was determined for the Starfix.TOPS baseline correction to align it to the rig centreline. This correction was applied in the navigation suite.

6.0 SURVEY PARAMETERS

6.1 Geodetic Parameters

All coordinates are referenced to the Geocentric Datum of Australia 1994 (GDA94) unless otherwise noted. The Global Positioning System (GPS) operates on the World Geodetic System 1984 (WGS84) datum. Fugro's Differential GPS Reference Stations are currently defined in the International Terrestrial Reference Frame 2000 (ITRF2000 Epoch 2009.5) datum. Due to the continual refinement of the WGS84 reference frame, for all cases, the transformation parameters indicate that the WGS84 and ITRF2000 reference frames are essentially identical.

Datum	**:**	**World Geodetic System 1984 (WGS84)**
Reference Spheroid	:	World Geodetic System 1984
Semi Major Axis	:	6378137.000m
Inverse flattening	:	298.257223563

Datum	**:**	**Geocentric Datum of Australia 1994 (GDA94)**
Reference Spheroid	:	Geodetic Reference System 1980 (GRS80)
Semi Major Axis	:	6378137.000m
Inverse flattening	:	298.257222101

The following seven parameter datum transformation (Table 6-1) was used in Fugro's software to transform WGS84 (ITRF2000 Epoch 2009.5) coordinates to GDA94 coordinates. These parameters are calculated from the 14 parameter transformation defined by Geoscience Australia. Fugro follows the Coordinate Frame Rotation convention (as defined by UKOOA) for datum transformations.

Transformation Parameters from WGS84 (ITRF2000 Epoch 2009.5) to GDA94			
dX	+0.0284m	rX	+0.018588"
dY	-0.0529m	rY	+0.015736"
dZ	-0.1209m	rZ	+0.019196"
dS	+0.002824ppm		

TABLE 6-1 : TRANSFORMATION PARAMETERS

The proposed drilling location and all project coordinates are grid coordinates on the Map Grid of Australia.

Grid	**:**	**Map Grid of Australia (MGA94)**
Projection	:	Universal Transverse Mercator
Latitude of Origin	:	0°
Central Meridian	:	147° E (UTM Zone 55)
Central Scale Factor	:	0.9996
False Easting	:	500000m
False Northing	:	10000000m
Units	:	Metres

6.2 Differential GPS Reference Stations

Fugro's Differential GPS Reference Stations are currently defined in the ITRF2000 (Epoch 2009.75) datum and are shown in Table 6-2.

ITRF2000, Epoch 2009.75					
Station	**Id**	**Latitude**	**Longitude**	**Height (m)**	**Uplink**
Melbourne	385	37° 47' 59.26129" S	144° 57' 39.31262" E	67.34	OCSat
Bathurst	336	33° 25' 46.87488" S	149° 34' 01.97127" E	756.675	OCSat
Cobar	316	31° 29' 57.42689" S	145° 50' 20.34725" E	270.182	OCSat
Brisbane	275	27° 28' 38.48330" S	153° 01' 37.35417" E	93.164	OCSat

TABLE 6-2 : DGPS REFERENCE STATIONS

6.3 Project Coordinates and Tolerances

Project target coordinates and surface tolerance for Rockhopper-1 were supplied by ADA Ltd and are shown in Table 6-3. Client supplied project information is provided in Appendix D.

GDA94, MGA, Zone 55, CM 147°E			
Location	**Easting (m)**	**Northing (m)**	**Tolerance**
Rockhopper-1	366376.00	5594075.00	10m radius

TABLE 6-3 : PROJECT DESIGN COORDINATES

7.0 SURVEY EQUIPMENT, VESSEL AND PERSONNEL

7.1 Equipment

Survey equipment used for positioning the *Kan Tan IV* is shown in Table 7-1.

Equipment Listing	
Ocean Patriot	
3 x	Starfix 8200HP (1 APSat link, 1 spare)
2 x	Starfix.TOPS Total Positioning System (1 OCSat link, 1 spare)
2 x	Pentium 4 computers, running Fugro's Starfix.Seis navigation software suite (1 spare)
5 x	20" monitors (2 spare)
1 x	SG Brown gyro compass
2 x	Uninterruptible power supply units (UPS)
2 x	Teledesign radio/modem (1 spare)
2 x	Esteem Wireless WiFi radios
1 x	Theodolite, tripod and dark glass
1 x	Printer
AHVs (complete system per vessel, plus one complete set of spares)	
1 x	Pentium 4 computer, running Starfix Display/Wombat
1 x	Monitor
1 x	Starfix 8200HP unit
1 x	Fluxgate compass
1 x	Teledesign radio/modem

TABLE 7-1 : EQUIPMENT LIST

All systems were provided complete with all necessary cabling, connectors, power supplies, antennae, accessories, manuals and consumables.

Refer to Figure 7-1 for an equipment flow diagram for the *Kan Tan IV* and Figure 7-2 for the equipment flow diagram for the AHVs.

7.2 Vessels

The vessels used for anchor handling and towing the *Kan Tan IV* were the *Far Fosna* and the *Far Scimitar*.

Refer to Figure 7-3 for the rig offsets.

7.3 Personnel

Fugro personnel involved in the rig move and positioning operations were as follows:

Steve Armstrong	Surveyor in Charge	25 November – 02 November 2009
Craig Tidey	Surveyor	25 November – 02 November 2009

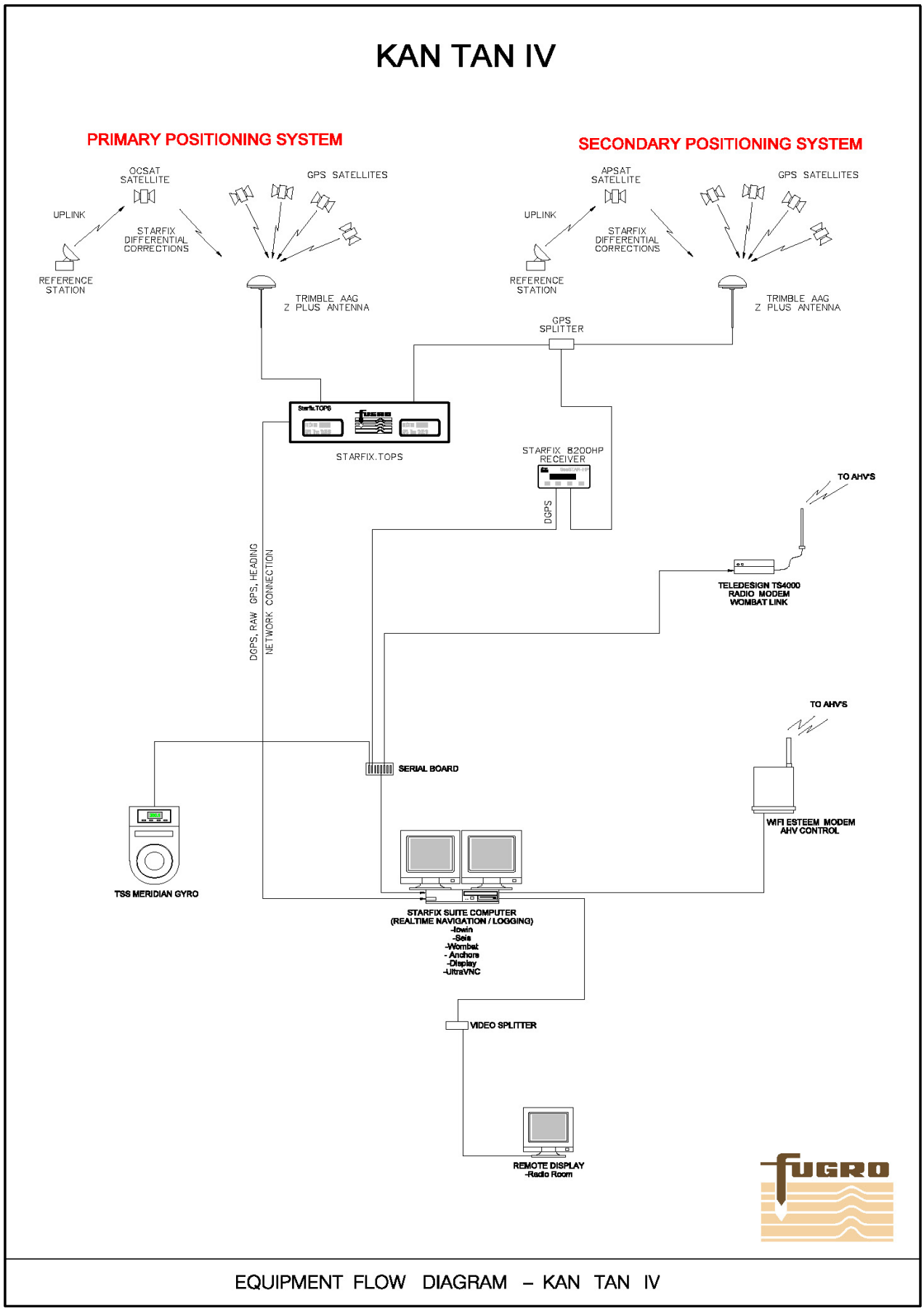


FIGURE 7-1 : EQUIPMENT FLOW DIAGRAM – MODU *KAN TAN IV*

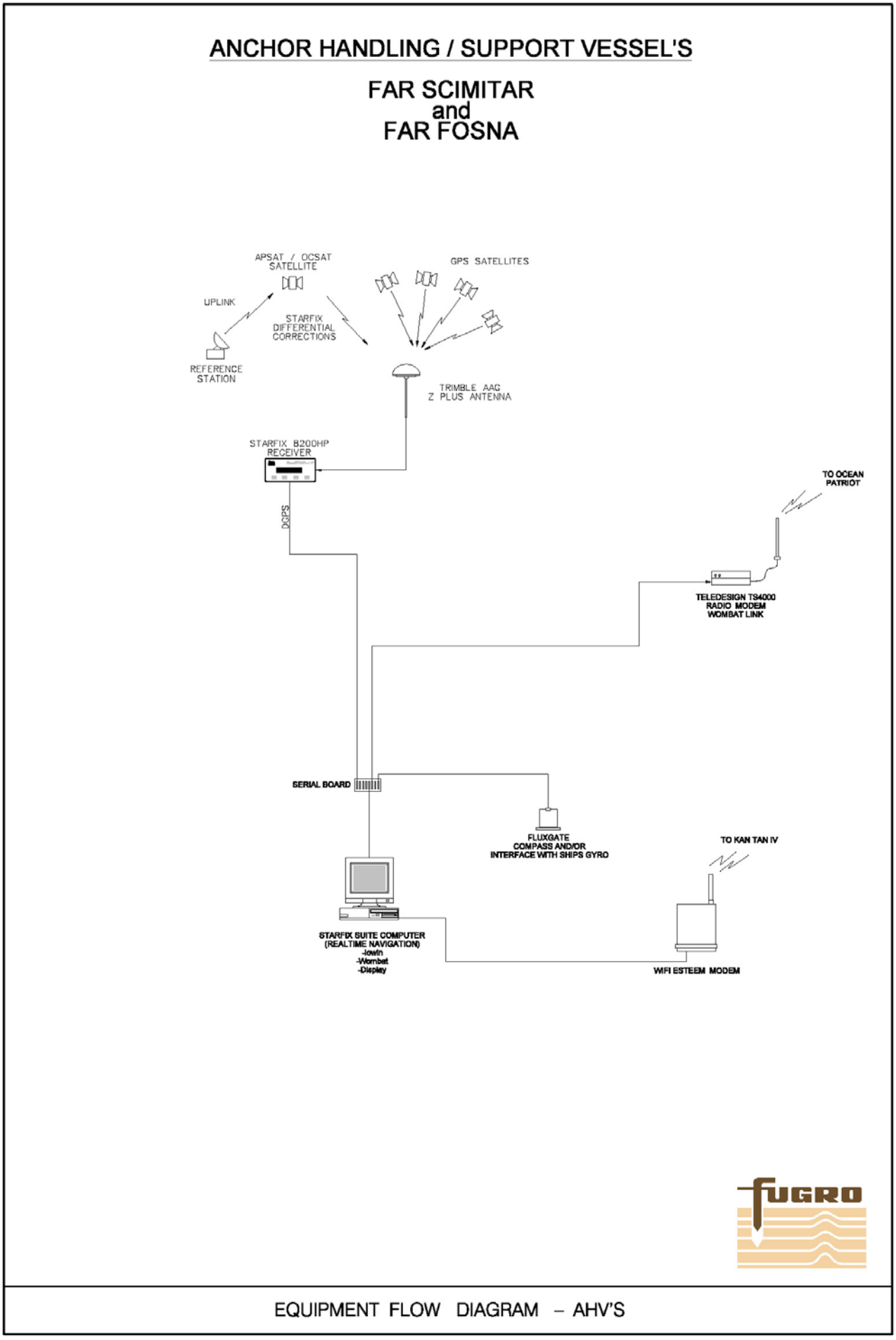


FIGURE 7-2 : EQUIPMENT FLOW DIAGRAM – AHVS

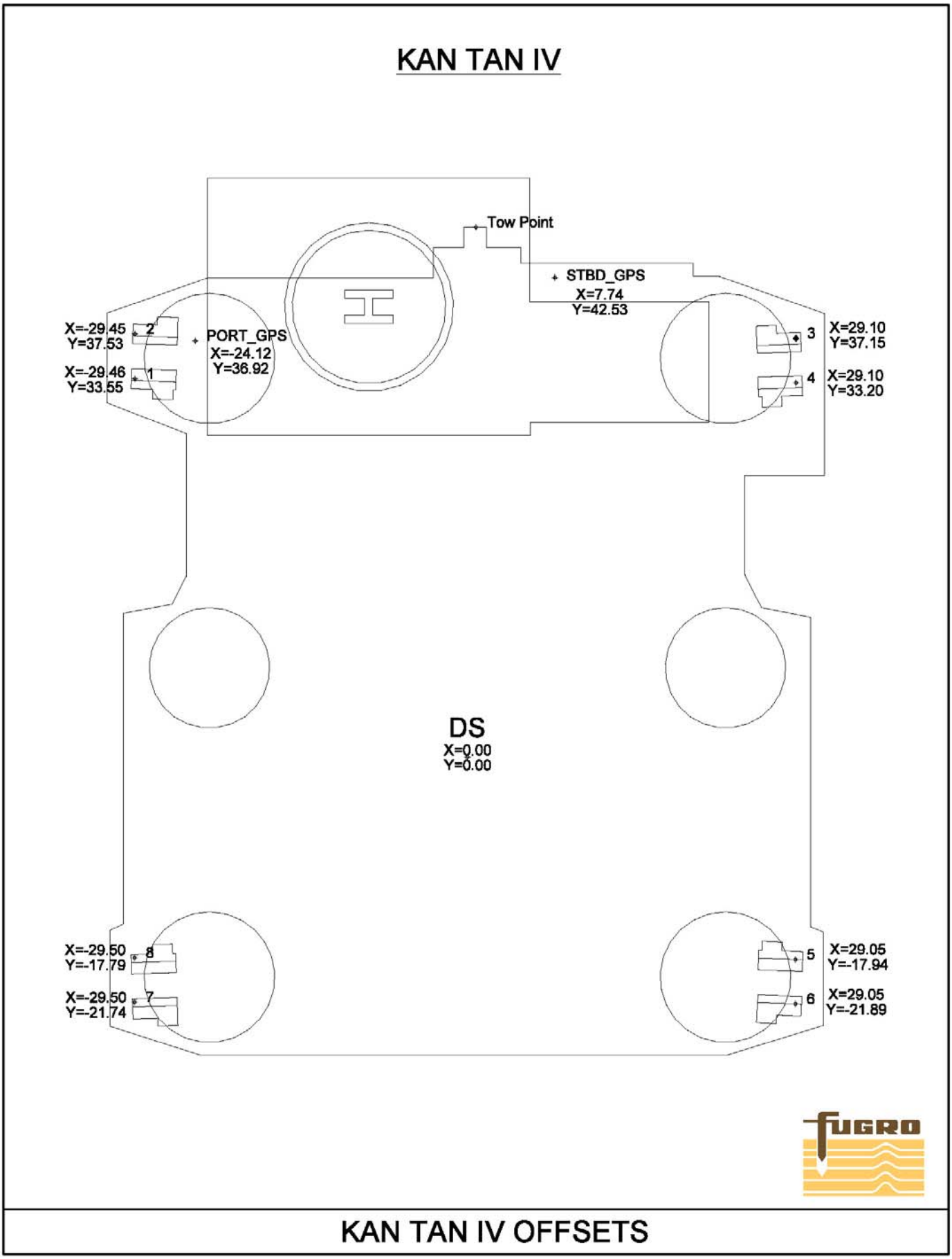


FIGURE 7-3 : RIG OFFSET DIAGRAM – MODU *KAN TAN IV*

8.0 CONCLUSIONS AND RECOMMENDATIONS

- The *Kan Tan IV* was successfully positioned during the recovery of anchors and the tow to Rockhopper-1.
- The *Far Fosna* and *Far Scimitar* were successfully positioned during the towing and anchoring operations.
- The surface position of the Rockhopper-1 well was determined.
- Fugro personnel worked well together with the Tow-masters, Marine and AHV crews resulting in a safe, efficient and positive working environment.

9.0 DISTRIBUTION

Copies of this report have been distributed as follows:

ADA Ltd	: 2 hard copies
Attn: Mr Mark Nasarczyk	: 1 electronic copy

APPENDIX A
DAILY OPERATIONS REPORTS

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 25/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
1300	1800	S. Armstrong and C. Tidey depart New Plymouth bound for Melbourne.
1800	2359	S. Armstrong and C. Tidey arrive at Melbourne and check into airport Hilton for overnight stay

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0
Comments:					

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	0	Starfix Wombat (remote)	0	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	0	Fluxgate Compass	0	C. Tidey	Surveyor
Radio Modem	0	Radio Modem	0		
UPS	0	Starfix HP DGPS	0		
Theodolite	0				
SG Brown Gyro	0				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION: 2 x Melbourne Airport Hilton					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	HOUSTON	09011-01

Fugro-BTW
PM-F50

DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 26/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

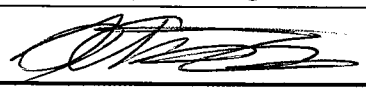
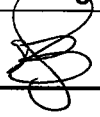
FROM	TO	SUMMARY OF OPERATIONS
0000	0700	S. Armstrong and C. Tidey overnight at Melbourne airport Hilton.
0700	0800	S. Armstrong and C. Tidey check into heliport for flight to Kan Tan iv
0800	0845	S. Armstrong and C. Tidey fly to Kan Tan iv
0845	0945	S. Armstrong and C. Tidey arrive at Kan Tan iv, C. Tidey completes rig induction
0945	1135	Setting up nav system
1135	1150	S. Armstrong basket transfer to Far Fosna to fix mouse
1150	1532	Nav system operational
1532	1542	Logging for pre rig move check
1542	1550	S G Brown C-O correction changed to 177 to align with tops heading
1550	2359	Stand by

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	1	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	1

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	Houston 	09011-02

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 27/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
0000	2130	Continue stand by
2130	2140	Pre anchor retrieval tool box meeting
2140	2200	Preparing to pass PCC #8 to Far Scimitar
2200		Far Scimitar receives PCC #8
2201		Preparing to pass PCC #5 to Far Fosna
2226		Far Fosna Receives PCC #5
2230		Far Scimitar stripping out on Anchor #8, Far Fosna stripping out on Anchor #5
2243		Far Fosna at Anchor #5, preparing to break out
2246		Far Scimitar at Anchor #8, preparing to break out
2258		Anchor #8 at roller of Far Scimitar, checking shackles etc
2259		Heaving in on Anchor #8
2350		Anchor #5 at roller of Far Fosna, checking shackles etc
2352		Heaving in on Anchor #5

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	1	JHA's	0
Incidents	0	Hazard Cards Submitted	1	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	HOUSTON	09011-03

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD		LOCATION: MELBOURNE, AUSTRALIA	DATE: 28/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1		VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
0044		Anchor #8 recovered but not racked
0045		PCC #8 recovered back to rig.
0115		Anchor #5 recovered but not racked
0118		PCC #5 recovered back to rig
0119	1435	Suspending anchor recovery operations due to adverse weather.
1435		Deballasting completed ready to continue retrieving anchors. Weather now acceptable.
1616	1555	Far Scimitar chasing out Anchor #1
1555		Far Scimitar at Anchor #1
1617		No. 4 PCC passed to Far Fosna
1631	1641	Far Fosna chasing out Anchor #4
1641		Far Fosna at Anchor #4
1652		Anchor #1 on roller of Far Scimitar
1654		Anchor #4 off bottom
1654		Heaving in on Anchor #1
1701		Heaving in on Anchor #4
1720		Re-commence hauling in on Anchor #1
1801		Anchor #4 Racked
1818		PCC #4 recovered back to rig
1830		PCC #3 passed to Far Fosna
1835		Far Fosna chasing out on Anchor #3
1845		Anchor #1 racked
1846		Far Fosna at Anchor #3
1849		PCC #1 recovered back to Kan Tan IV
1855		Anchor #3 off bottom
1902		Anchor #3 on roller of Far Fosna
1903		Heaving in on Anchor #3
1910		PCC #7 passed to Far Scimitar
1922	1930	Far Scimitar chasing out on Anchor #7
1930		Far Scimitar at Anchor #7
1940		Anchor #7 on roller of Far Scimitar
1942		Heaving in on anchor #7
1956		Anchor #3 Racked
2000		Abandon Rig Drill
2012		PCC #3 recovered back to Kan Tan IV
2050		Far Fosna attached to Kan Tan IV tow bridal
2140		Anchor #7 recovered back to Kan Tan IV but not racked due to winch problems
2150		PCC #7 recovered back to the Kan Tan IV
2215		PCC #2 passed to Far Scimitar
2229	2237	Far Scimitar chasing out on Anchor #2
2237		Far Scimitar at Anchor #2
2244		Anchor #2 off bottom
2254		Anchor #2 on roller of Far Scimitar
2255	2359	Heaving in on Anchor #2

DAILY OPERATIONS REPORT

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0
Comments:					

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	HOUSTON	09011-04

Fugro-BTW
PM-F50

DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD		LOCATION: MELBOURNE, AUSTRALIA	DATE: 29/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1		VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
0000	0001	
0001		Anchor #2 Racked
0010		PCC #2 recovered back to back Kan Tan IV
0028		Heaving in on Anchor #6
0100		STATEMENT OF FACTS
0124		Anchor #6 off bottom
0125	0520	Commence tow to Rockhopper-1
0129		Anchor #6 recovered but not racked
0520		Anchor #6 on the bottom, deployed by Kan Tan IV, 367277mE 5593754mN
0545		Brake set on #6 winch, Kan Tan IV dragged to location by Far Fosna
0558		No. 2 PCP passed to Far Scimitar
0612	0700	Far Scimitar running Anchor #2
0700		Anchor #2 on bottom, 365583mE 5594375mN
0708	0732	Far Scimitar stripping back Anchor #2
0732		No. 2 PCP passed back to rig
0750		No. 7 PCP passed to Far Scimitar
0807	0848	Far Scimitar running Anchor #7
0848		Anchor #7 on bottom, 366710mE 5593271mN
0849	0910	Far Scimitar stripping back No. 7
0910		No. 7 PCP passed back to rig
0931		No. 3 PCP passed to Far Scimitar
0946	1017	Far Scimitar running Anchor #3
0955		Problem with winch #3, all stop
1005		Recommence paying out on winch 3
1017		Anchor #3 on bottom, 366028mE 5594873mN
1020	1053	Far Scimitar stripping back no. 3
1021		Far Fosna released from Tow Bridle
1038		No. 8 PCP passed to Far Fosna
1053		No. 3 PCP passed back to rig
1100	1115	Far Fosna running Anchor #8
1106		No.4 PCP passed to Far Scimitar
1115		Anchor #8 on bottom, 366048mE, 5593215mN
1119	1143	Far Fosna stripping back No. 8
1121	1143	Far Scimitar running Anchor #4
1143		No.8 PCP passed back to rig
1143		Anchor #4 on bottom, 366664mE, 5594897mN
1144	1219	Far Scimitar stripping back No. 4
1155		No.1 PCP passed to Far Fosna
1210	1238	Far Fosna running Anchor #1
1219		No. 4 PCP passed back to rig
1224		No. 5 PCP passed to Far Scimitar
1238		Anchor No.1 on bottom, 365583mE 5593765mN
1252	1317	Far Scimitar running Anchor #5
1254		Far Fosna stripping back No. 1
1317		Anchor #5 on bottom, 367139mE 5594391mN
1320		Far Scimitar stripping back No. 5
1321		No. 1 PCP passed back to rig
1345		No. 5 PCP passed back to rig
1355	1828	Commence ballasting operations

DAILY OPERATIONS REPORT

1828	1839	Start tensioning Anchors 4 and 8 for cross tension test
1839		Anchors 4 and 8 at full tension starting 15min test
1851		Start tensioning Anchors 4 and 8 for cross tension test
1904		Anchors 4 and 8 passed tension test
2021		Anchor #7 not holding
2023		Start tensioning Anchors 6 and 2 for cross tension test
2052		Anchors 6 and 2 at full tension starting 15min test
2106		Anchors 6 and 2 passed tension test
2123		PCC #7 passed to Far Scimitar
2139	2146	Far Scimitar chasing on Anchor #7
2146		Far Scimitar at Anchor #7
2155	2210	Anchor #7 on roller of Far Scimitar – upside down attempting to right
2210		Anchor #7 righted
2213		Paying out on Anchor #7
2233		Anchor #7 on the bottom Far Scimitar striping back to rig 366731mE 5593162mN
2315		PCC #7 retrieved back to Kan Tan IV
2345		Anchors 3 and 7 passed tension test, start winching to location

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	HOUSTON	09011-05

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 30/11/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

FROM	TO	SUMMARY OF OPERATIONS
0001	0030	Winching onto location continues
0030	0035	On location, start logging preliminary fix
0035		Stop logging
0126	0726	Start logging final fix (pre spud)
0726		Stop logging final fix
1530		S. Armstrong basket transfer to Far Fosna to change radio modem
1542		Radio changed out on Far Fosna and operating correctly
1550		S. Armstrong transferred back to rig
1618		S. Armstrong basket transfer to Far Scimitar to change radio modem
1626		Radio changed out on Far Scimitar and operating correctly
1640		S. Armstrong transferred back to rig
2359		Overnight on Kan Tan IV

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	1	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION:					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
	BAHouston	09011-06

Fugro-BTW
PM-F50

DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 01/12/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

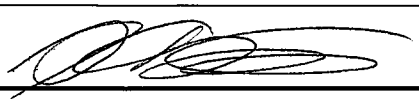
FROM	TO	SUMMARY OF OPERATIONS
0001	0730	Overnight on Kan Tan IV
0730	0800	Fugro personnel attend helicopter briefing
0915	1015	Fugro personnel depart Kan Tan IV by helicopter
1045	2359	S Armstrong check in to Hilton hotel, C Tidey stays with family.

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION: HILTON x1					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		09011-07

Fugro-BTW
PM-F50
DAILY OPERATIONS REPORT

CLIENT: ADA PTY LTD	LOCATION: MELBOURNE, AUSTRALIA	DATE: 02/12/09
PROJECT: KAN TAN IV RIG MOVE TO ROCKHOPPER-1	VESSEL: KAN TAN IV	JOB NO: 09011

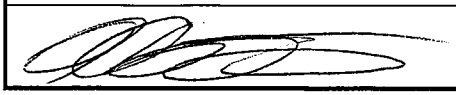
FROM	TO	SUMMARY OF OPERATIONS
0001	0900	Overnight at Hilton hotel
0900		Depart hotel for Melbourne Airport
1135	0500	Depart Melbourne for Auckland
0645		All flights to New Plymouth cancelled due to fog at airport.
0730		Check in to Auckland Airport Grand Chancellor Hotel

HSE DETAILS					
Emergency Muster	0	Toolbox Meetings	0	JHA's	0
Incidents	0	Hazard Cards Submitted	0	HSE / Project Meetings	0
Safety Drills Fire/Abandon	0	Safety Notices Received	0	Vessel inductions	0

Comments:

EQUIPMENT RIG	NO.	EQUIPMENT REMOTE	NO.	PERSONNEL	TITLE
Starfix Seis	2	Starfix Wombat (remote)	2	S. Armstrong	Surveyor in Charge
Starfix HP DGPS	1	Fluxgate Compass	1	C. Tidey	Surveyor
Radio Modem	2	Radio Modem	2		
UPS	2	Starfix HP DGPS	2		
Theodolite	1				
SG Brown Gyro	1				
Starfix.TOPS	2				
VEHICLES:					
CONSUMABLES:					
ACCOMMODATION: GRAND CHANCELLOR x1					

AUTHORISED CONTRACT CHANGES / COMMENTS:

Party Chief Signature:	Client Representative Signature:	D O R Number
		09011-08

APPENDIX B
FINAL POSITIONING DATA

Starfix Final Fix Report

Fugro Job Number	**09011**
Job Name	**Rig Move to Rockhopper-1**
Fugro Personnel	**S. Armstrong, C. Tidey**
Client Name	**Australian Drilling Associates Pty Ltd**
Client Representative	**B. Houston**
Sampling Started	**30 Nov 2009 1:26:58 a.m. (local)**
Sampling Ended	**30 Nov 2009 6:27:00 a.m. (local)**
Comment	**Final Fix**

Intended Offset / Well Location

Geodetic Datum	**GDA94**
Latitude	39°47'34.0680"S
Longitude	145°26'21.5514"E
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	366376.000 m
Northing	5594075.000 m
Intended Rig Heading	315.00 °T

Final DGPS Position Fix Summary for Kan Tan IV At Rockhopper-1

DS computed from TOPS_OCSAT.GGA (Primary)

DS Offset From CRP		
Starboard	0.000 m	
Forward	0.000 m	
Up	0.000 m	
Geodetic Datum	**GDA94**	**WGS84**
Latitude	39°47'34.1828"S	39°47'34.1552"S
Longitude	145°26'21.4660"E	145°26'21.4788"E
Projection	**Transverse Mercator (UTM) Zone: 55**	
Easting	366374.031 m	
Northing	5594071.423 m	
Height	20.933 m (ellipsoidal)	
Final Rig Heading	316.62 °T	
	315.62 °G (Convergence -1.00° Australia/New Zealand)	
Gyro C-O	99.98 °	

Position is 4.08 m @ 209.83 °T (208.83 °G) FROM intended location

DS computed from 8200HP_APSAT.GGA (Secondary)

Geodetic Datum	**GDA94**
Latitude	39°47'34.1833"S
Longitude	145°26'21.4671"E
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	366374.058 m
Northing	5594071.409 m
Height	21.959 m (ellipsoidal)

Position is 4.08 m @ 208.41 °T (207.41 °G) FROM intended location

Positioning System Comparison (System 2 minus System 1)

Delta Easting	0.027 m
Delta Northing	-0.014 m
Delta Height	1.026 m

Party Chief: _____ Client Representative: BAHouston

Geodetic Parameters

Geodetic Datum	**GDA94**		
Ellipsoid	**GRS80**		
Semi-Major Axis	6378137.000 m		
Inverse Flattening	298.2572221010		
Eccentricity^2	0.006694380022901		
DX	0.0284 m	RX	0.0186 arc seconds
DY	-0.0529 m	RY	0.0157 arc seconds
DZ	-0.1209 m	RZ	0.0192 arc seconds
D Scale	0.0028 ppm		
Rotation Convention	+RZ=-RLongitude		
Projection	**Transverse Mercator (UTM) Zone: 55**		
Latitude of Origin	0°00'00.0000"N		
Longitude of Origin	147°00'00.0000"E		
False Easting	500000.000 m		
False Northing	10000000.000 m		
Scale Factor	0.9996		

Final Primary Antenna Position (TOPS_OCSAT.GGA)
7202 observations used out of a total of 7202

Primary Antenna Offset from CRP

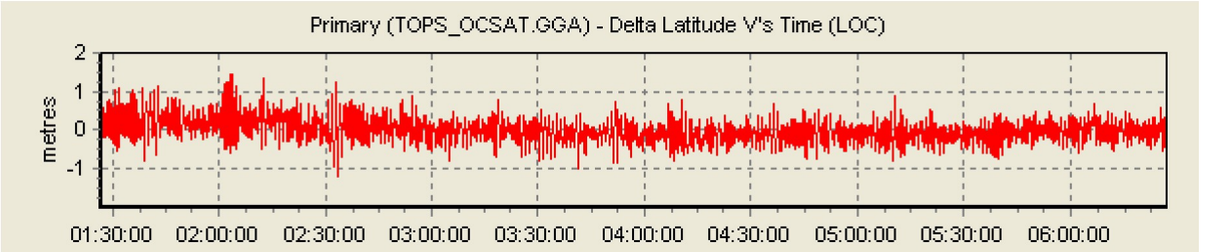
Starboard	-24.120 m
Forward	36.920 m
Up	0.000 m

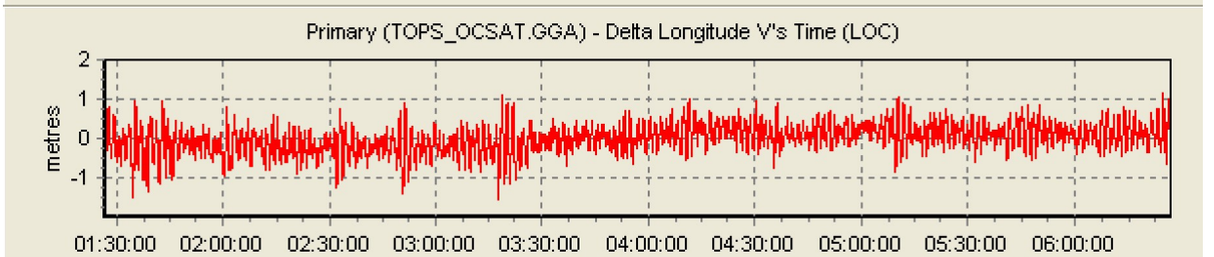
Mean

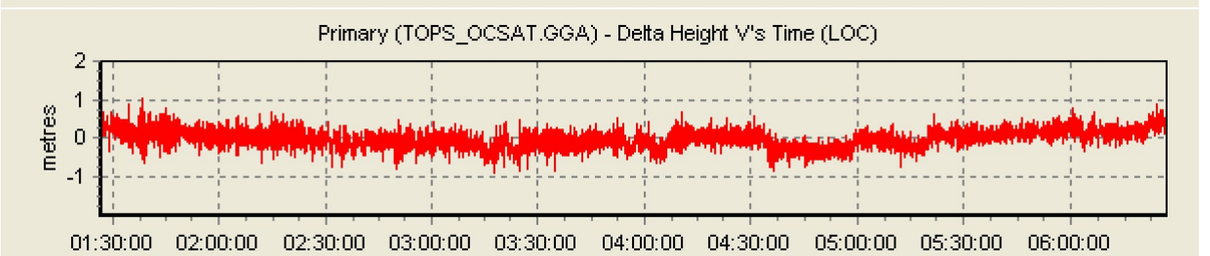
Geodetic Datum	**WGS84**
Latitude	39°47'33.8222"S
Longitude	145°26'19.6758"E
Ellipsoidal Ht	20.88 m
Geodetic Datum	**GDA94**
Latitude	39°47'33.8499"S
Longitude	145°26'19.6630"E
Ellipsoidal Ht	20.93 m
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	366330.969 m
Northing	5594080.940 m
HDOP	1.07
Heading	316.62 °T
Age Of Corrections	12.0 s
Satellites	8

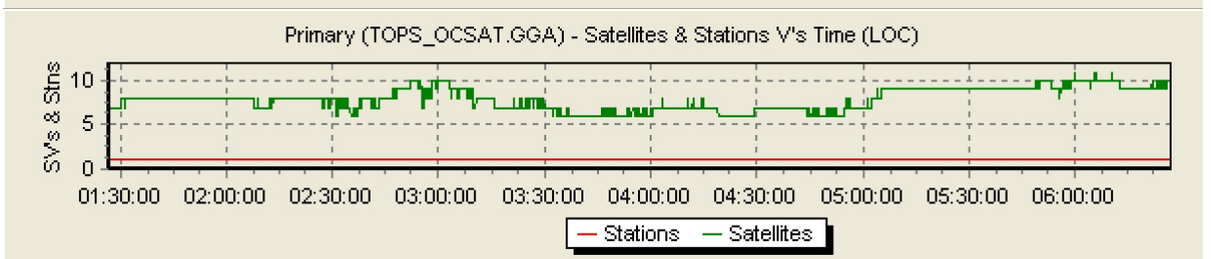
Standard Deviation

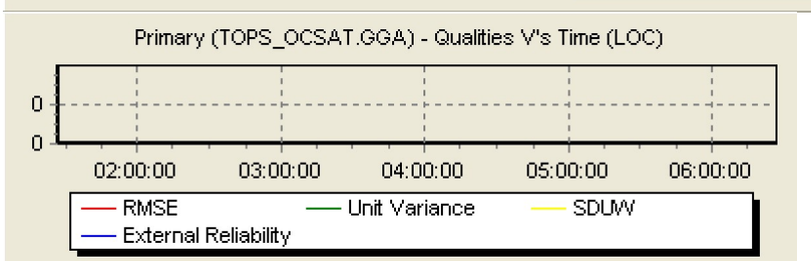
Latitude or Northing	0.31 m
Longitude or Easting	0.36 m
Ellipsoidal Height	0.24 m
HDOP	0.16
Heading	0.37 °T

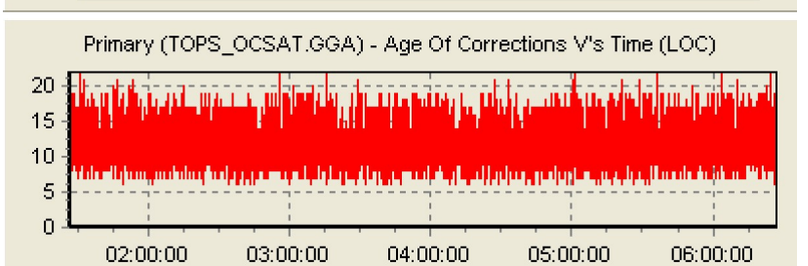

Primary (TOPS_OCSAT.GGA) - Delta Latitude V's Time (LOC)
metres
2
1
0
-1
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00

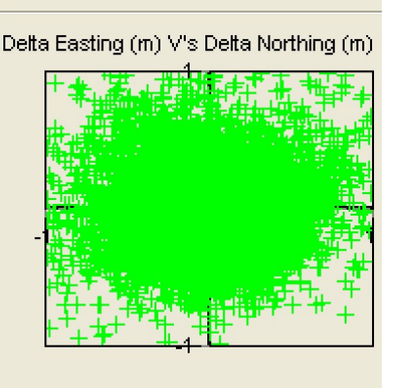

Primary (TOPS_OCSAT.GGA) - Delta Longitude V's Time (LOC)
metres
2
1
0
-1
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00


Primary (TOPS_OCSAT.GGA) - Delta Height V's Time (LOC)
metres
2
1
0
-1
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00


Primary (TOPS_OCSAT.GGA) - Satellites & Stations V's Time (LOC)
SV's & Stns
10
5
0
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00
Stations
Satellites


Primary (TOPS_OCSAT.GGA) - Qualities V's Time (LOC)
0
0
02:00:00
03:00:00
04:00:00
05:00:00
06:00:00
RMSE
Unit Variance
SDUW
External Reliability


Primary (TOPS_OCSAT.GGA) - Age Of Corrections V's Time (LOC)
20
15
10
5
0
02:00:00
03:00:00
04:00:00
05:00:00
06:00:00


Delta Easting (m) V's Delta Northing (m)
1
-1
1
-1

Final Secondary Antenna Position (8200HP_APSAT.GGA)
3601 observations used out of a total of 3601

Seconday Antenna Offset from CRP

Starboard	7.740 m
Forward	42.530 m
Up	0.000 m

Mean

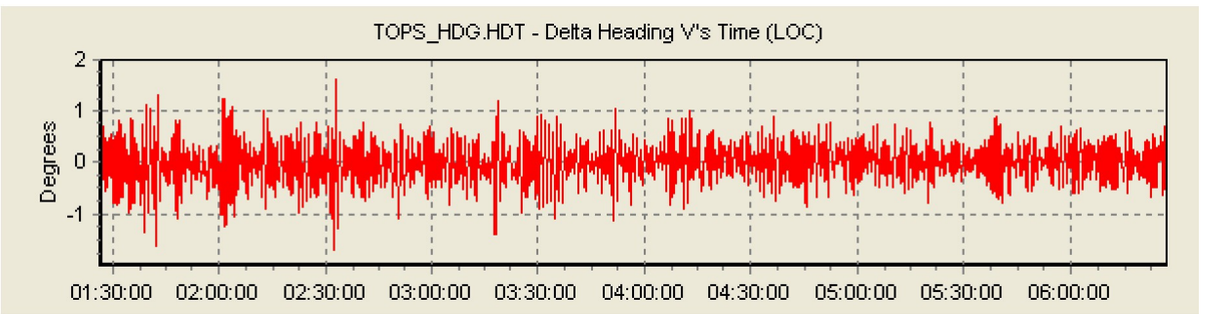
Geodetic Datum	**WGS84**
Latitude	39°47'32.9808"S
Longitude	145°26'20.4884"E
Ellipsoidal Ht	21.90 m
Geodetic Datum	**GDA94**
Latitude	39°47'33.0085"S
Longitude	145°26'20.4756"E
Ellipsoidal Ht	21.96 m
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	366349.843 m
Northing	5594107.219 m
HDOP	1.00
Age Of Corrections	10.9 s
Satellites	8

Standard Deviation

Latitude or Northing	0.26 m
Longitude or Easting	0.45 m
Ellipsoidal Height	0.32 m
HDOP	0.16

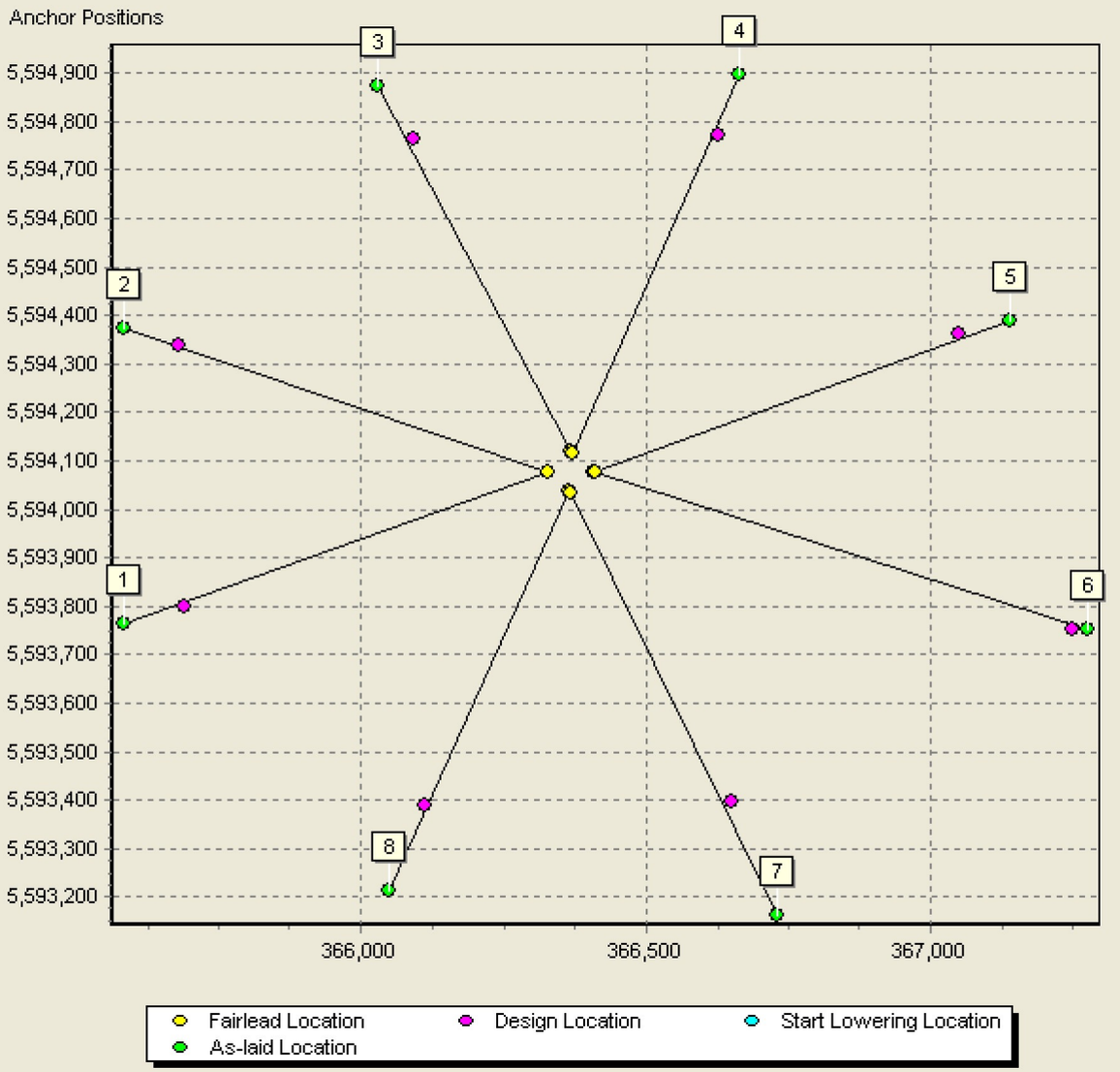
Heading Statistics (TOPS_HDG.HDT)
7202 observations used out of a total of 7202

Gyro C-O	99.98 °
Mean	316.62 °T
Standard Deviation	0.37 °T



Anchors of Kan Tan IV

Fairlead	Status	Transverse Mercator (UTM) Zone: 55	
1	Laid	39°47'42.6603"S	145°25'52.4882"E (Design)
		365689.400 m	5593798.001 m
		39°47'43.6765"S	145°25'47.9728"E (As-Laid)
		365582.559 m	5593764.787 m
		111.885 m @	72°43'51.7028" (TO design:Grid)
		808.729 m @	247°27'35.5742" (FL TO A-L:Grid)
2	Laid	39°47'25.1929"S	145°25'52.3722"E (Design)
		365677.200 m	5594336.500 m
		39°47'23.8801"S	145°25'48.4516"E (As-Laid)
		365583.240 m	5594375.342 m
		101.672 m @	112°27'34.2428" (TO design:Grid)
		800.877 m @	291°49'15.8602" (FL TO A-L:Grid)
3	Laid	39°47'11.5756"S	145°26'10.0486"E (Design)
		366090.300 m	5594763.701 m
		39°47'07.9897"S	145°26'07.5280"E (As-Laid)
		366028.412 m	5594873.213 m
		125.790 m @	150°31'40.8030" (TO design:Grid)
		828.098 m @	335°43'32.9951" (FL TO A-L:Grid)
4	Laid	39°47'11.6661"S	145°26'32.6899"E (Design)
		366628.900 m	5594770.301 m
		39°47'07.5756"S	145°26'34.2508"E (As-Laid)
		366663.836 m	5594897.061 m
		131.486 m @	195°24'30.1258" (TO design:Grid)
		834.402 m @	20°30'03.5300" (FL TO A-L:Grid)
5	Laid	39°47'25.1234"S	145°26'50.1370"E (Design)
		367051.100 m	5594362.601 m
		39°47'24.2652"S	145°26'53.8600"E (As-Laid)
		367139.194 m	5594390.595 m
		92.434 m @	252°22'16.1067" (TO design:Grid)
		795.456 m @	66°55'56.0188" (FL TO A-L:Grid)
6	Laid	39°47'45.0721"S	145°26'58.0220"E (Design)
		367249.300 m	5593750.801 m
		39°47'44.9885"S	145°26'59.1896"E (As-Laid)
		367277.025 m	5593753.859 m
		27.893 m @	263°42'16.7146" (TO design:Grid)
		924.873 m @	110°23'24.7926" (FL TO A-L:Grid)
7	Laid	39°47'56.2164"S	145°26'32.5846"E (Design)
		366650.300 m	5593396.701 m
		39°48'03.8688"S	145°26'35.8132"E (As-Laid)
		366731.188 m	5593162.098 m
		248.156 m @	340°58'34.9420" (TO design:Grid)
		945.618 m @	157°25'25.1195" (FL TO A-L:Grid)
8	Laid	39°47'56.1258"S	145°26'09.9393"E (Design)
		366111.700 m	5593390.101 m
		39°48'01.7772"S	145°26'07.1248"E (As-Laid)
		366047.813 m	5593214.687 m
		186.686 m @	20°00'42.8886" (TO design:Grid)
		882.510 m @	201°05'28.7635" (FL TO A-L:Grid)


Anchor Positions
5,594,900
5,594,800
5,594,700
5,594,600
5,594,500
5,594,400
5,594,300
5,594,200
5,594,100
5,594,000
5,593,900
5,593,800
5,593,700
5,593,600
5,593,500
5,593,400
5,593,300
5,593,200
366,000
366,500
367,000
1
2
3
4
5
6
7
8
Fairlead Location
Design Location
Start Lowering Location
As-laid Location

APPENDIX C
RIG MOVE POSITIONING SYSTEM SETUP, CHECKS AND CALIBRATIONS

Starfix Pre Rig Move Fix Report

Fugro Job Number	**09011**
Job Name	**Rig Move to Rockhopper-1**
Fugro Personnel	**S. Armstrong,C. Tidey**
Client Name	**Australian Drilling Associates Pty Ltd**
Client Representative	**B. Houston**
Sampling Started	**26 Nov 2009 3:32:50 p.m. (local)**
Sampling Ended	**26 Nov 2009 3:42:50 p.m. (local)**
Comment	**Kan Tan IV Pre Rig Move Check**

Intended Offset / Well Location

Geodetic Datum	**GDA94**
Latitude	39°53'07.9333"S
Longitude	145°22'14.6153"E
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	360690.390 m
Northing	5583676.591 m
Intended Rig Heading	0.00 °T

Final DGPS Position Fix Summary for Kan Tan IV At Bass Strait, Australia

CRP computed from TOPS_OCSAT.GGA (Primary)

CRP Offset From CRP		
Starboard	0.000 m	
Forward	0.000 m	
Up	0.000 m	
Geodetic Datum	**GDA94**	**WGS84**
Latitude	39°53'07.9379"S	39°53'07.9103"S
Longitude	145°22'14.6413"E	145°22'14.6541"E
Projection	**Transverse Mercator (UTM) Zone: 55**	
Easting	360691.011 m	
Northing	5583676.460 m	
Height	21.490 m (ellipsoidal)	
Final Rig Heading	317.76 °T	
	316.71 °G (Convergence -1.04° Australia/New Zealand)	
Gyro C-O	99.98 °	

Position is 0.63 m @ 102.94 °T (101.90 °G) FROM intended location

CRP computed from 8200HP_APSAT.GGA (Secondary)

Geodetic Datum	**GDA94**
Latitude	39°53'07.9375"S
Longitude	145°22'14.6391"E
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	360690.957 m
Northing	5583676.472 m
Height	22.519 m (ellipsoidal)

Position is 0.58 m @ 101.87 °T (100.82 °G) FROM intended location

Positioning System Comparison (System 2 minus System 1)

Delta Easting	-0.054 m
Delta Northing	0.012 m
Delta Height	1.029 m

Party Chief: _____ Client Representative: BAHouston

Geodetic Parameters

Geodetic Datum	**GDA94**		
Ellipsoid	**GRS80**		
Semi-Major Axis	6378137.000 m		
Inverse Flattening	298.2572221010		
Eccentricity^2	0.006694380022901		
DX	0.0284 m	RX	0.0186 arc seconds
DY	-0.0529 m	RY	0.0157 arc seconds
DZ	-0.1209 m	RZ	0.0192 arc seconds
D Scale	0.0028 ppm		
Rotation Convention	+RZ=-RLongitude		
Projection	**Transverse Mercator (UTM) Zone: 55**		
Latitude of Origin	0°00'00.0000"N		
Longitude of Origin	147°00'00.0000"E		
False Easting	500000.000 m		
False Northing	10000000.000 m		
Scale Factor	0.9996		

Final Primary Antenna Position (TOPS_OCSAT.GGA)
1201 observations used out of a total of 1201

Primary Antenna Offset from CRP

Starboard	-24.120 m
Forward	36.920 m
Up	0.000 m

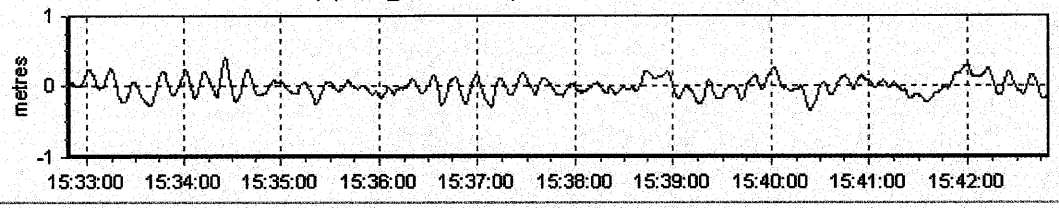
Mean

Geodetic Datum	**WGS84**
Latitude	39°53'07.5498"S
Longitude	145°22'12.8576"E
Ellipsoidal Ht	21.43 m
Geodetic Datum	**GDA94**
Latitude	39°53'07.5775"S
Longitude	145°22'12.8449"E
Ellipsoidal Ht	21.49 m
Projection	**Transverse Mercator (UTM) Zone: 55**
Easting	360648.138 m
Northing	5583686.795 m
HDOP	0.97
Heading	317.76 °T
Age Of Corrections	12.3 s
Satellites	10

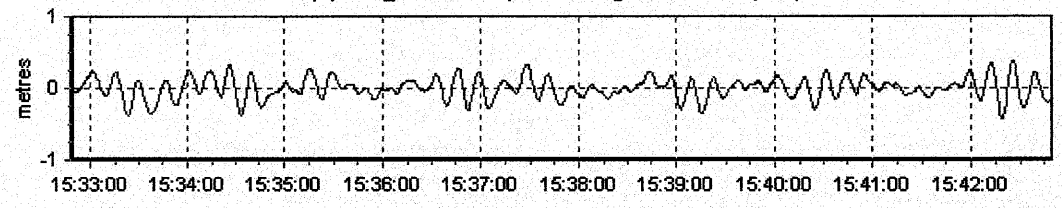
Standard Deviation

Latitude or Northing	0.12 m
Longitude or Easting	0.14 m
Ellipsoidal Height	0.20 m
HDOP	0.05
Heading	0.10 °T

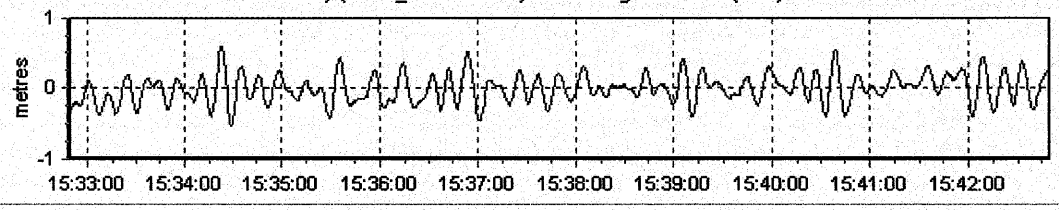
Primary (TOPS_OCSAT.GGA) - Delta Latitude V's Time (LOC)



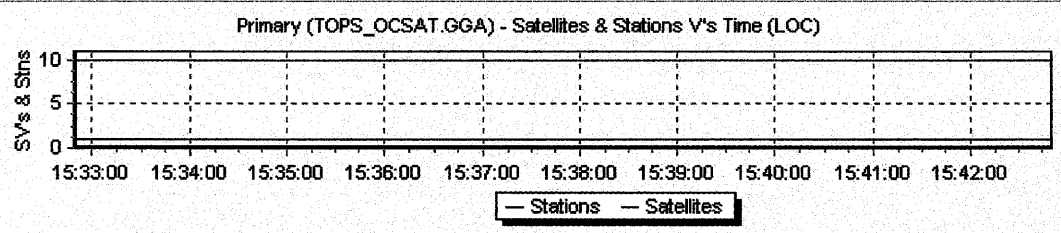
Primary (TOPS_OCSAT.GGA) - Delta Longitude V's Time (LOC)



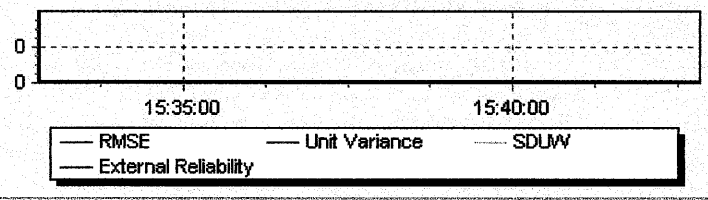
Primary (TOPS_OCSAT.GGA) - Delta Height V's Time (LOC)



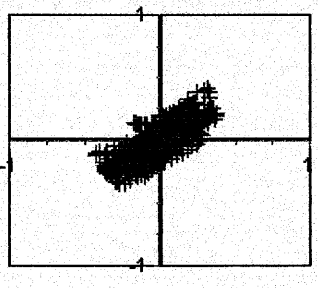
Primary (TOPS_OCSAT.GGA) - Satellites & Stations V's Time (LOC)



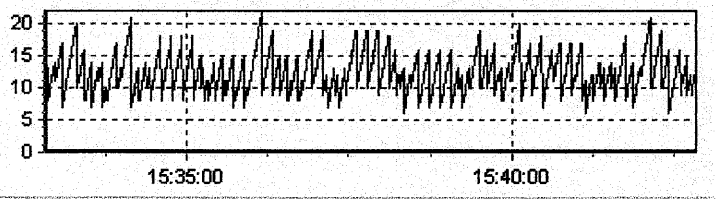
Primary (TOPS_OCSAT.GGA) - Qualities V's Time (LOC)



Delta Easting (m) V's Delta Northing (m)

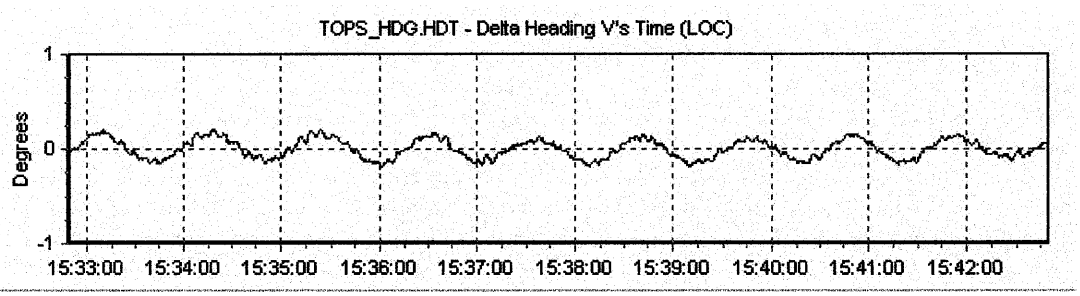


Primary (TOPS_OCSAT.GGA) - Age Of Corrections V's Time (LOC)



Heading Statistics (TOPS_HDG.HDT)
1201 observations used out of a total of 1201

Gyro C-O	99.98 °
Mean	317.76 °T
Standard Deviation	0.10 °T



RIG POSITIONING
GEODESY AND COORDINATE CHECK LIST

Client :	**ADA**	**Job Number :**	**09011**
Rig :	**Kan Tan IV**	**Date:**	**November 30, 2009**
Project :	**Rig Move from Trefoil-2 to Rockhopper-1**		

1. CONFIRMATION OF PROPOSED RIG COORDINATES and HEADING.

Well Name	**Rockhopper-1**		Ensure agreement with Client onsite prior to any positioning
Well Location – Latitude(ϕ)	-039° 47' 34.07"	S	Operations. OK (?) (Y) N.
Well Location – Longitude(λ)	145° 26' 21.55"	E	
Rig Heading (True)	315° T		

2. GEODETIC PARAMETERS (WGS84 to LOCAL DATUM)

DATUM:	Dx	0.02840 m	Ensure agreement with Client onsite prior to positioning operations.
GRS80	Dy	-0.05290 m	OK (?) (Y) / N.
	Dz	-0.12090 m	
	Rx	0.01859 "	
Projection:	Ry	0.01574 "	
	Rz	0.01920 "	
Transverse Mercator (UTM)	Ds	0.00282 ppm	
UTM Zone		55	
Central Meridian		147° East	

3. CHECK TRANSFORMATION OF SITE COORDINATES.

Well Location – Easting	366376.0	Ensure agreement with Starfix.Seis. OK (?) (Y) / N
Well Location – Northing	5594075.0	If not, CHECK and RECALC.
Convergence at Location	-1.00 °	
Rig Heading (° Grid)	314.00°	

4. MEAS. ANT. OFFSETS from ANT. TO D/STEM (Rel. to Datum) (Measure two (2) separate directions, verifying closure.)	**NAV #1 SYSTEM**	**NAV #2 SYSTEM**
Delta X(m)	-24.12 m	7.74 m
Delta Y(m)	36.92 m	42.53 m
Angle between Rig Centreline and Antenna(s) (Grid)	326.84°	10.3°
Distance between Drill Stem and Antenna (m)	44.10 m	43.23 m

5. MANUAL COORDINATE VERIFICATION FOR ANTENNAS		**NAV #1 SYSTEM**	**NAV #2 SYSTEM**
Proposed Drill Stem Position	Easting	366376.0	366376.0
	Northing	5594075.0	5594075.0
Drill Stem to Antenna	Proposed Hdg (G)	314.001°	314.001°
Brg (G) = Prop. Hdg. + Angle btwn centreline and antenna		280.844°	324.315°
	Distance (m)	44.10 m	43.23 m
Calculated Antenna	Easting	366332.69	366350.78
Coordinates (Local Datum)	Northing	5594083.30	5594110.11
	Latitude (ϕ)	-039° 47' 33.77" S	-039° 47' 32.92" S
	Longitude (λ)	145° 26' 19.74" E	145° 26' 20.52" E
Calculated Proposed Antenna Coords (WGS 84)	Latitude (ϕ)	-039° 47' 33.75" S	-039° 47' 32.89" S
	Longitude (λ)	145° 26' 19.75" E	145° 26' 20.53" E

6. POST RIG MOVE - OBSERVED ANTENNA COORD

Observed GPS Receiver Antenna Position in WGS84.	Latitude (ϕ)	-39 ° 47' 33.82 " S	-39 ° 47' 32.96 " S
	Longitude (λ)	145 ° 26' 19.68 " E	145 ° 26' 20.48 " E

Ensure agreement between calculated and observed coordinates. If **NO**, check calcs., antenna offsets. OK(?) (Y) / N

Surveyor : S. Armstrong Client Rep : B. Houston Date : 30-11-09

DOC: FSHY48-1
REV: 2

DATE: 8/1/01©

APPENDIX D
CLIENT SUPPLIED INFORMATION

4.0 Well Data

4.1 General License and Field Data

Well Name	Rockhopper-1
Well Type	Exploration
Field Name	Rockhopper
License/Permit	T/18P
Well Operator	Origin Energy Resources Ltd
Permit Operator	Origin Energy Resources Ltd
Partners	AWE Petroleum Ltd Cal Energy Gas (Australia) Ltd Arc (Bass Gas) Pty Ltd Innamincka Petroleum Ltd
Earliest Spud Date	September 2009
Latest Spud Date	November 2009
Total Depth	3140.4mTVDSS / 3166.4mTVDRT / 3486.6mMDRT
Well Type	Deviated
Water Depth	76m MSL

4.2 Surface Location

Spheroid and Datum	GDA94
Latitude	39° 47’ 34.07” S
Longitude	145° 26’ 21.55” E
Projection	UTM 55
Easting	366 376m
Northing	5 594 075m
Surface Tolerance	10m radius, centred on proposed well location

4.3 Target Location

Top Primary Reservoir Northing	5 594 724.50m
Top Primary Reservoir Easting	366 351.97m
Total Depth Northing	5 594 970.50m
Total Depth Easting	366 342.84m
Projection	UTM 55
Target Radius – Reservoir / TD	50m North / 100m South
Primary Target	Intra EVCM sands (*Lower L. balmei*)
Secondary Target	E1 horizon sands (*Lower M. diversus*)

APPENDIX 17: CASING & CEMENTING REPORTS

HALLIBURTON CEMENTING
END OF WELL REPORT

Prepared For: Australian Drilling Associates Pty Ltd

Well Name: Rockhopper 1 / ST1

Permit: P/L 0153

Location: Bass Straight

Rig: Kan Tan IV

Date: 6th March 2010

Revision: 0

Submitted by: Dave Webb
Technical Professional
Cementing

HALLIBURTON

Halliburton Australia Pty Ltd

END OF WELL REPORT

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1.0 WELL REVIEW

1.1 Cementing Event Summary

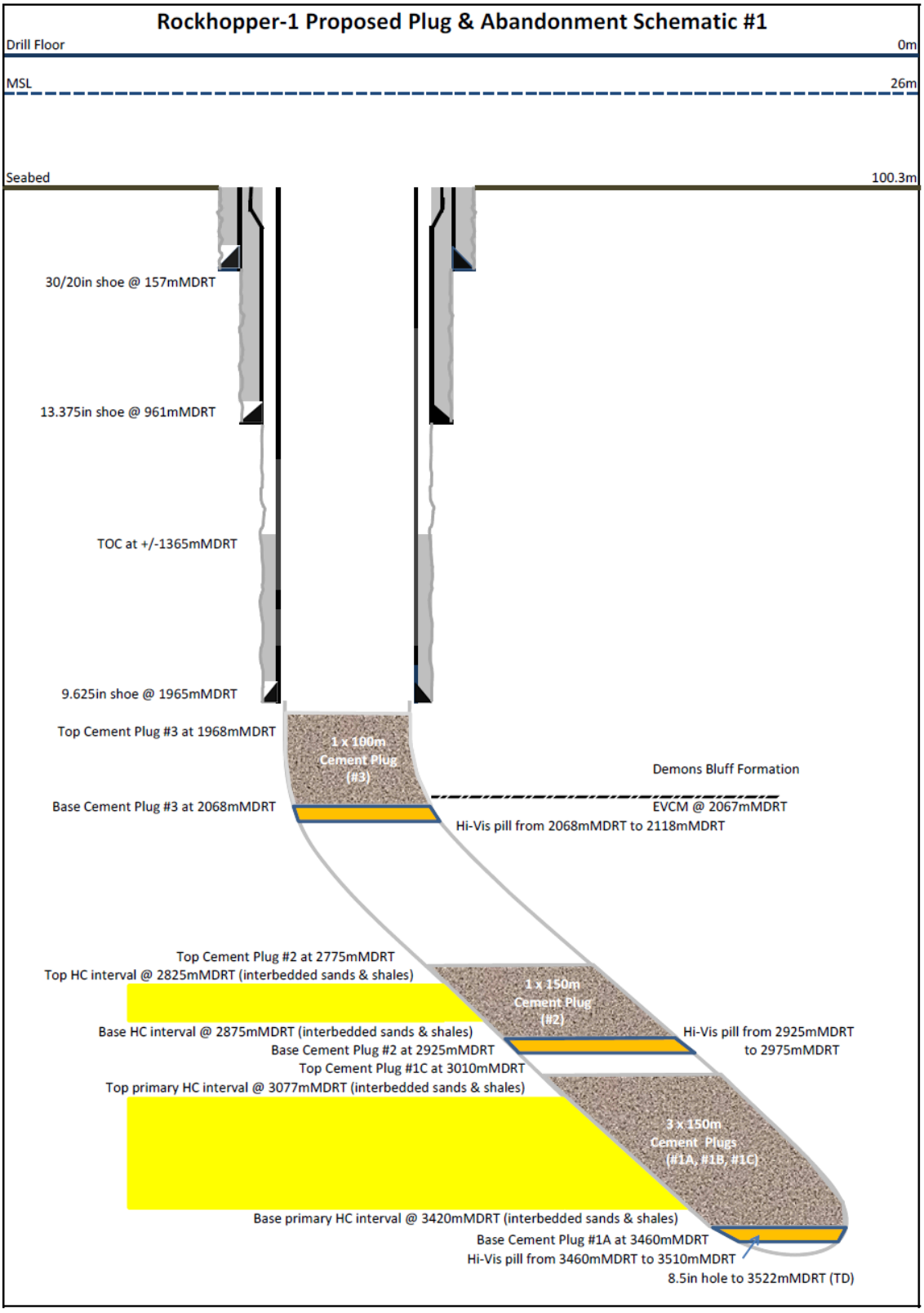
Event Date	Event Description
1/12/2009	**Cement 30" Conductor Casing**: 50 bbl seawater with MICA followed by 265 bbls 15.9ppg Class G slurry with 1%bwoc $CaCl_2$ slurry mixed with sea water
5/12/2009	**Cement 13 $^3/_8$" Surface Casing**: 50 bbl seawater with MICA followed by 470 bbls of 11.5ppg Class G slurry with 23gal/10bbl Econolite Lead Slurry 65 bbls of 15.8 ppg Class G slurry with 10gal/10bbl Halad 413L Tail Slurry
13/12/2009	**9 $^5/_8$" Intermediate Casing**:81bbl of 12.5ppg lead slurry. 47bbl 15.8ppgTail Slurry
6/1/2010	**Plug 1** A/B/C– TOC 2990 mMD 3 X 38 bbl of 15.8ppg Class G slurry with 10 gal/10bblMF SCR-100L
7/1/2010	**Plug 2** – TOC 2775 mMD 38 bbl of 15.8ppg Class G slurry 10 gal/10bblMF SCR-100L
7/1/2010- 10/1/2010	**Plug 3a/b/c** –TOC 1918 mMD 25 bbl of 16.5ppg Class G slurry with 5gal/10bbl CFR-3L and 5gal/10bbl SCR 100L. 40 bbl of 15.8ppg Class G slurry with 5gal/10bbl SCR 100L. 28bbl of 15.8ppg Class G slurry with 5gal/10bbl SCR 100L
15/2/2010	**Plug 1A/B/C** TOC 3002m 3 X 40 bbl of 15.8ppg Class G slurry with 10 gal/10bblMF SCR-100L
16/2/2010	**Plug 2** – TOC 2765 mMD 38 bbl of 15.8ppg Class G slurry 10 gal/10bblMF SCR-100L
16/2/2010 - 17/2/2010	**Plug 3a/b** – TOC 1965 mMD 28.85 bbl of 15.8ppg Class G slurry 4 gal/10bblMF SCR-100L 18.0 bbl of 15.8ppg Class G slurry 4 gal/10bblMF SCR-100L
20/2/2010	**Plug 4** – TOC 100.3 mMD 122 bbl of 15.9ppg Class G slurry 1%BWOC CaCl2 mixed with seawater.

1.2 Lessons Learnt

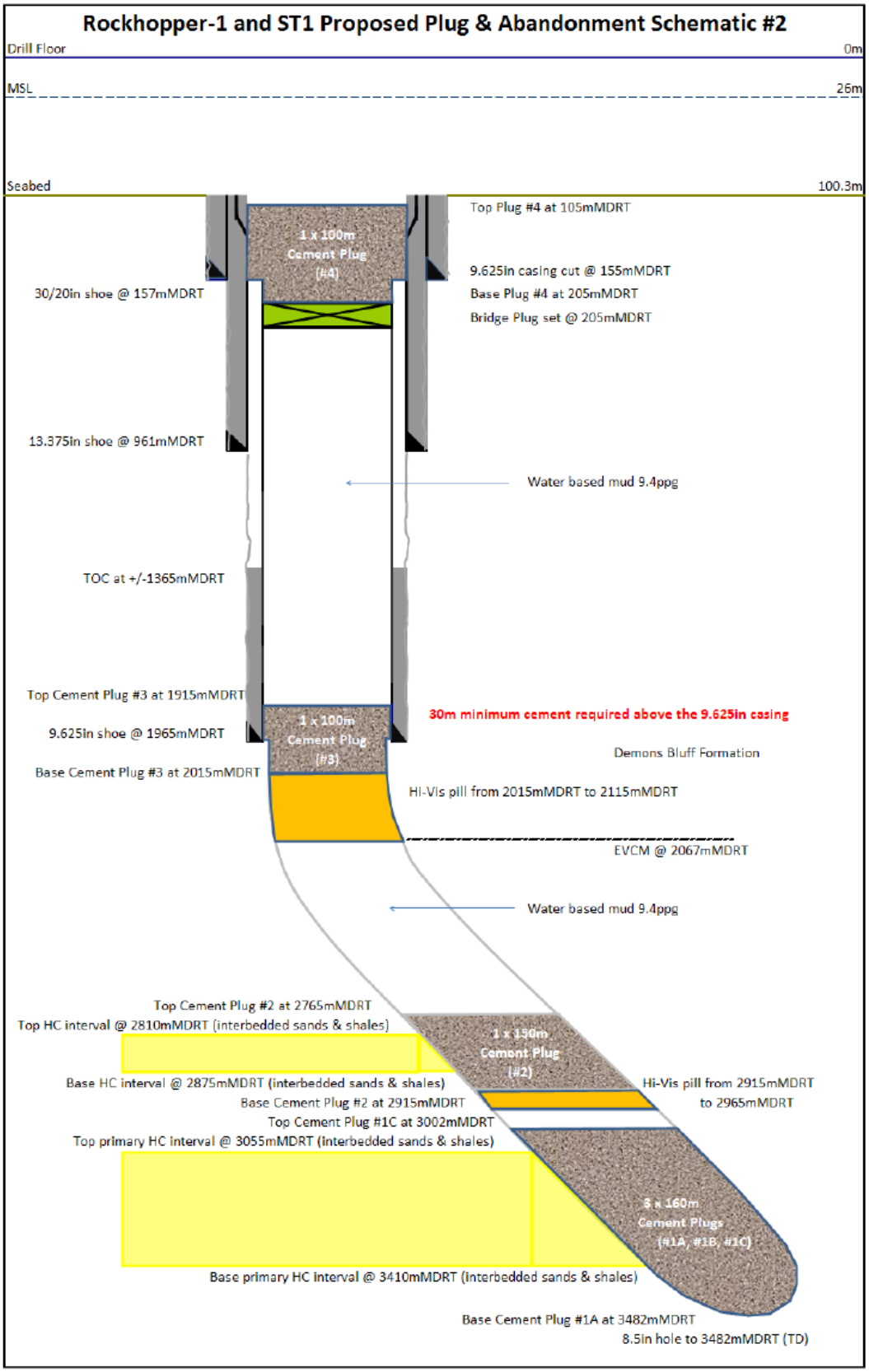
- Cement Heads requires a swivel to be attached to speed up rig up
- 11.5ppg lead slurry on the 13 3/8" casing worked well with returns seen at sea floor
- Increase Hivis pill at 9 5/8 shoe for plugs, Increase cement volume excess for 9 5/8 shoe plug.See KOP review for more details

1.3 Well Schematic

1.3.1 Rockhopper 1



1.3.2 Rockhopper 1 ST1



2.0 CEMENT 30" CONDUCTOR CASING

2.1 Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was planned to be performed using ABC Class G cement with 1% Calcium chloride pre-hydrated in the mixwater in the pits. Cement TOC – 100.3mMD

- Casing setting depth – 157 mMD
- Total Slurry volume pumped – 265 bbl
- Displacement volume – 110 bbl
- Cement returns were seen @ seafloor.

2.2 Job Logs

PERSONELL							
PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE hrs	PERSONNEL / EXPOSURE hrs
00408437	David Fernandez	24	00386793	Robert Bridgeman	24		

EQUIPMENT					
SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT	5			

CEMENT DESIGN

Single			
DENSITY	15.9ppg	WATER	5.16gal/sk
YIELD	1.17cuft/ft	MIX FLUID	5.20gal/sk
WATER SOURCE	Seawater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk		
Total Cement Used	1271sks		
Estimated TOC	102m		

Additive	Concentration	Total Used
Calcium Chloride	1 %BWOC	25sks
NF-6	0.125 gal/10bbl	5gals

JOB LOGS

DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
1.12.2009	18:55					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	19:15					Make PA Announcement
	19:18	5			1	Pump 5 bbls Sea Water Spacer
	19:22		1000			Test Surface Lines to 1000 psi
	19:28	25			1.5	Pump 25 bbls Sea Water Spacer
	19:38	20			2	Pump 20bbls with Mica
	19:57	265			4.5	Mix & Pump 265bbls CMT slurry @ 15.9ppg, with 160bbls Mix Water, 1.17 cuft, 5.20gps
	20:57	110			6	Displace CMT with 110bbls Sea Water
	20:22					Bleed off Floats Holding
	20:50					End job, Sign off permits
END OF JOB LOGS						

2.3 CSS

CUSTOMER SATISFACTION SURVEY

Sales 0	**Line Item:** 0	
Customer: ADA		**Job Type (BOM):** Pumping/Pr
Customer Rep./Phone: Bryan Houston		**API / UWI: (leave blank if unknown)** 0
Well Name: Rockhopper-1		**Well Number:** 0
Well Type: Gas & Oil	**Well Country:** Australia	
H2S 0	**Well State:** 0	**Well County:** 0

Dear Customer,

We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	**The date the survey was conducted**	
Survey Interviewer	**The survey interviewer is the person who initiated the survey.**	
Customer Participation	**Did the customer partipcipate in this survey? (Y/N)**	
Customer Representative	**Enter the Customer representative name**	
HSE	**Was our HSE performance satisfactory? Circle Y or N**	
Equipment	**Were you satisfied with our Equipment? Circle Y or N**	
Personnel	**Were you satisfied with our people? Circle Y or N**	
Customer Comment		
Job DVA	**Did we provide job DVA above our normal service today? Circle Y or N**	
Time	**Please enter hours in decimal format to nearest quarter hour.**	
Other	**Enter short text for other efficiencies gained.**	
Customer Initials	**Customer's Initials**	
Please provide details		

CUSTOMER SIGNATURE

3.0 CEMENT 13 3/8" SURFACE CASING

3.1 Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was planned to be performed using ABC Class G Lead cement with 23gal/10bbl Econolite and ABC Class G Tail cement with 10 gal/10bbl of Halad 413L. The. The job was completed without any issues.

- Cement TOC 100.3mMD.
- Casing Setting Depth – 961mMD
- Total Slurry volume pumped – 526 bbl
- Displacement volume – 410 bbl
- Cement returns were seen @ seafloor.

3.2 Job Logs

PERSONELL							
PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE hrs	PERSONNEL / EXPOSURE hrs
00408437	David Fernandez	24	00386793	Robert Bridgeman	24		

EQUIPMENT					
SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT	5			

WELL PROFILE		
NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
13.375in 68ppf N-80 BTC : 0m to 965m MD, m TVD	17.5in, 25 percent excess, 155m to 965m	30in, 309.7ppf, 0 to 155m

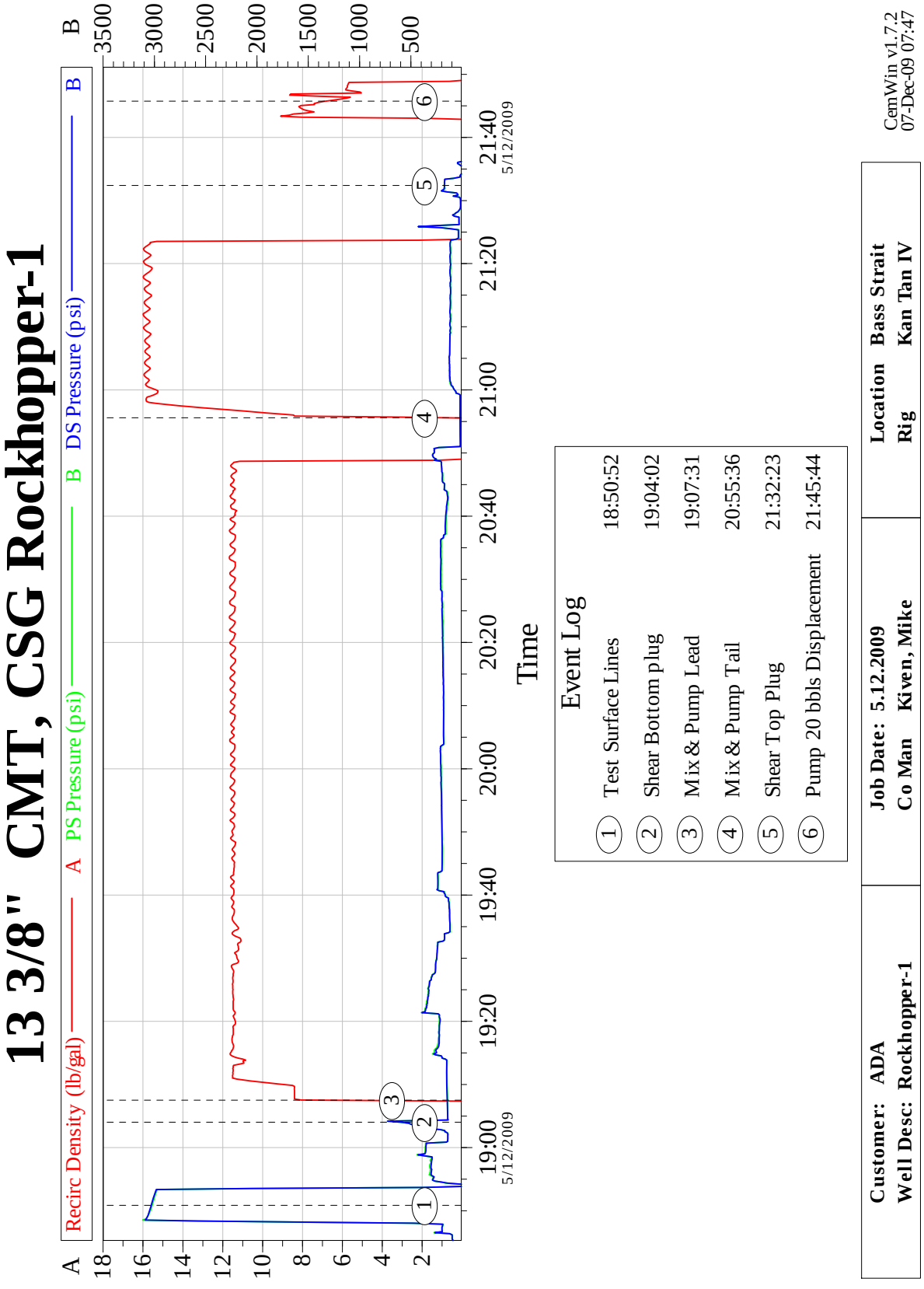
CEMENT DESIGN							
Lead				Tail			
DENSITY	11.5ppg	WATER	17.91gal/sk	DENSITY	15.8ppg	WATER	5.00gal/sk
YIELD	3.01cuft/ft	MIX FLUID	18.97gal/sk	YIELD	1.16cuft/ft	MIX FLUID	5.12gal/sk
WATER SOURCE	Seawater			WATER SOURCE	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			CEMENT TYPE	ABC Class 'G' at 94lb/sk		
Total Cement Used	858sks			Total Cement Used	323sks		
Estimated TOC	102m			Estimated TOC	845m		

Additive	Concentration	Total Used	Additive	Concentration	Total Used
Econolite Liquid	23 gal/10bbl	942sks	Halad-413L	10 gal/10bbl	40gals
NF-6	0.125 gal/10bbl	10gals	NF-6	0.125 gal/10bbl	1gals

JOB LOGS

DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
5.12.2009						Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
						Make PA Announcement
	18:40	10			2	Pump 10 bbls Sea Water Spacer
	18:45		3000			Test Surface Lines to 3000 psi
	18:50	30			2	Pump 30 bbls Sea Water Spacer
	18:52					Release Ball
	18:55		1100			Shear out Bottom Plug
	19:10	470			4	Mix & Pump 470bbls CMT slurry @ 11.5ppg, with 387bbls Mix Water, 3.01 cuft,
		66			4	Mix & Pump 66bbls CMT slurry @ 15.8ppg, with 39.5bbls Mix Water, 1.17 cuft,
						Drop Dart
			400			Shear out Top plug
		20			6	Displace with 20bbls of Sea Water
						Hand over to Rig to Finish Displacement
			2500			Test CSG, to 2500psi hold for 10 min
END OF JOB LOGS						

3.3 Job plots


13 3/8" CMT, CSG Rockhopper-1
Recirc Density (lb/gal)
A
PS Pressure (psi)
B
DS Pressure (psi)
B
A
Time
19:00
5/12/2009
19:20
19:40
20:00
20:20
20:40
21:00
21:20
21:40
5/12/2009
Event Log
1 Test Surface Lines 18:50:52
2 Shear Bottom plug 19:04:02
3 Mix & Pump Lead 19:07:31
4 Mix & Pump Tail 20:55:36
5 Shear Top Plug 21:32:23
6 Pump 20 bbls Displacement 21:45:44
Customer: ADA
Well Desc: Rockhopper-1
Job Date: 5.12.2009
Co Man Kiven, Mike
Location Bass Strait
Rig Kan Tan IV
CemWin v1.7.2
07-Dec-09 07:47

3.4 CSS

HALLIBURTON

CUSTOMER	SALES ORDER No.	DATE
ADA	0	5.12.2009

CEMENT/PUMPING JOB SUMMARY

LL	LOCATION/FIELD NAME	COUNTRY	HES REP	CUSTOMER REP	WELL TYPE
kkhopper-1	Bass Strait	Australia	David Fernandez	Mike Lanzar	Gas & Oil Dev
B TYPE		JOB PURPOSE CODE		BDA	RIG
mping/Pressure testing		INTERMEDIATE CASING 7522		Perth	Kan Tan IV

USTOMER SATISFACTION SURVEY

Sales
0
Customer:
ADA
Customer Rep./Phone:
Mike Lanzar
Well Name:
Rockhopper-1
Well Type:
Gas & Oil
H2S
0

Line Item:
0

Well Country:
Australia
Well State:
0

Job Type (BOM):
Pumping/Pr
API / UWI: (leave blank if unknown)
0
Well Number:
0

Well County:
0

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CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	The date the survey was conducted	8.12.09
Survey Interviewer	The survey interviewer is the person who initiated the survey.	
Customer Participation	Did the customer partipcipate in this survey? (Y/N)	Yes
Customer Representative	Enter the Customer representative name	M. Lanzer
HSE	Was our HSE performance satisfactory? Circle Y or N	Y
Equipment	Were you satisfied with our Equipment? Circle Y or N	Y
Personnel	Were you satisfied with our people? Circle Y or N	Y
Customer Comment	Job performed well Thank you	
Job DVA	Did we provide job DVA above our normal service today? Circle Y or N	
Time	Please enter hours in decimal format to nearest quarter hour.	
Other	Enter short text for other efficiencies gained.	
Customer Initials	Customer's Initials	
Please provide details		

CUSTOMER SIGNATURE Michael Lanzer M. Lanzer

4.0 CEMENT 9 5/8" SURFACE CASING

4.1 Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was planned to be performed using ABC Class G Lead cement with 35gal/10bbl Gascon 469, 15 gal/10bbl Halad 413L and 3gal/10bbl SCR 100L and ABC Class G Tail cement with 30 gal/10bbl of Halad 413L, 10gal/10bbl Gascon 469, 3gal/10bbl CFR 3L and 2gal/10bbl SCR 100L. The. The job was completed without any issues.

- Cement TOC 1365mMD.
- Casing Setting Depth – 1965mMD
- Total Slurry volume pumped – 128 bbl
- Displacement volume – 434 bbl

4.2 Job Logs

PERSONELL							
PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE hrs	PERSONNEL / EXPOSURE hrs
#N/A	Daniel West	24	00386793	Robert Bridgeman	24		

EQUIPMENT					
SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT	5			

WELL PROFILE		
NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
Non Tapered Casing , Conventional, 24.658m shoe track		
9.625in 68ppf L80 VAM Top : 0m to 965m MD, m TVD	12.25in, 10 percent excess, 961m to 1972m	13.375in, 68ppf, 0 to 961m
FOR PLUG AND LINER JOBS PLEASE INDICATE WORKSTRING	5in ppf Drill Pipe with in of in ppf Stinger	

CEMENT DESIGN							
	Lead				Tail		
DENSITY	12.5ppg	WATER	10.72gal/sk	DENSITY	15.8ppg	WATER	4.62gal/sk
YIELD	2.11cuft/ft	MIX FLUID	12.28gal/sk	YIELD	1.16cuft/ft	MIX FLUID	5.18gal/sk
WATER SOURCE	Drillwater			WATER SOURCE	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			CEMENT TYPE	ABC Class 'G' at 94lb/sk		
Total Cement Used	214sks			Total Cement Used	224sks		
Estimated TOC	1364.75m			Estimated TOC	1764.75m		

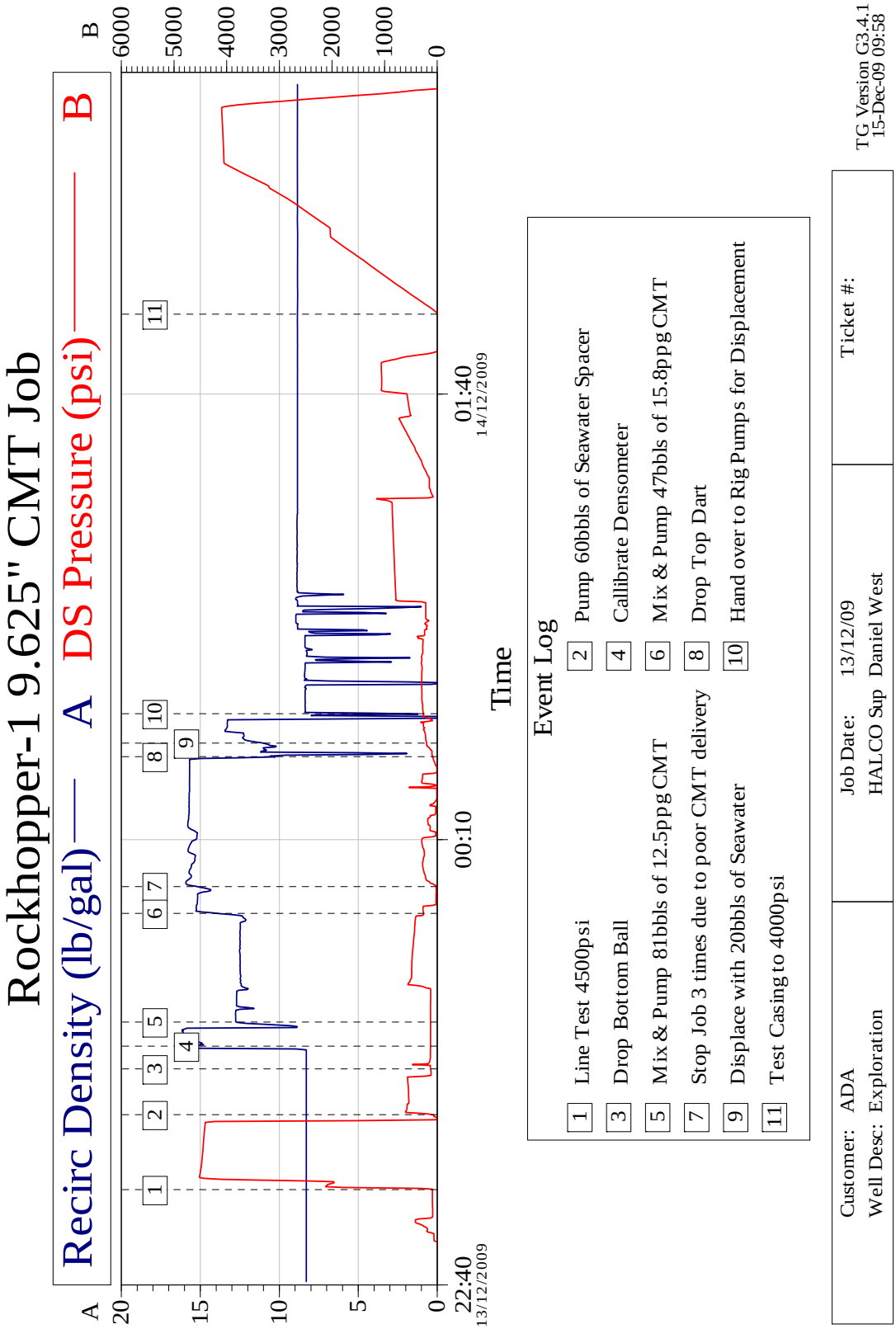
Additive	Concentration	Total Used	Additive	Concentration	Total Used
Gascon	35 gal/10bbl	217gals	Halad-413L	30 gal/10bbl	81gals
Halad 413L	15 gal/10bbl	93gals	Gascon	10 gal/10bbl	27gals
SCR-100L	3 gal/10bbl	19gals	CFR-3L	3 gal/10bbl	8.1gals
			SCR-100L	2 gal/10bbl	5.4gals

JOB LOGS

DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
13/12/2009						Hold JSA on the floor
						Hydraulic powerpak tripped out. Electrician had to reset it.
	22:59					Line Test to 4500psi
	23:14	60bbls	430psi		6bpm	Pump 60bbls of Seawater Spacer
	23:23					Drop Bottom Ball
	23:28					Callibrate Desometer
	23:33	81bbls	545psi		6bpm	Mix & Pump 81bbls of 12.5ppg lead CMT
	23:55	47bbls	387psi		4bpm	Mix & Pump 47bbls of 15.8ppg Tail CMT
	0:03					Stop job 3 times due to poor cement delivery
	0:26					Drop Top Dart
	0:29	20bbls	340psi		8bpm	Displace with 20bbls of Seawater
	0:35	434bbls				Rig pumps to displace with 434bbls of Mud
	1:56		4000psi		0.251	Casing Test

END OF JOB LOGS

4.3 Job plots


Rockhopper-1 9.625" CMT Job
Recirc Density (lb/gal) —— A
DS Pressure (psi) —— B
A
B
20
15
10
5
0
6000
5000
4000
3000
2000
1000
0
22:40
13/12/2009
00:10
01:40
14/12/2009
Time
1 2 3 4 5 6 7 8 9 10 11
Event Log
1 Line Test 4500psi
2 Pump 60bbls of Seawater Spacer
3 Drop Bottom Ball
4 Calibrate Densometer
5 Mix & Pump 81bbls of 12.5ppg CMT
6 Mix & Pump 47bbls of 15.8ppg CMT
7 Stop Job 3 times due to poor CMT delivery
8 Drop Top Dart
9 Displace with 20bbls of Seawater
10 Hand over to Rig Pumps for Displacement
11 Test Casing to 4000psi
Customer: ADA
Well Desc: Exploration
Job Date: 13/12/09
HALCO Sup Daniel West
Ticket #:
TG Version G3.4.1
15-Dec-09 09:58

4.4 CSS

CUSTOMER SATISFACTION SURVEY

Sales	**Line Item:**	
0	0	
Customer:		**Job Type (BOM):**
ADA		Pumping/Pr
Customer Rep./Phone:		**API / UWI: (leave blank if unknown)**
Mike Lanzar		0
Well Name:		**Well Number:**
Rockhopper-1		0
Well Type:	**Well Country:**	
Gas & Oil	Australia	
H2S	**Well State:**	**Well County:**
0	0	0

Dear Customer,

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CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	**The date the survey was conducted**	
Survey Interviewer	**The survey interviewer is the person who initiated the survey.**	
Customer Participation	**Did the customer partipcipate in this survey? (Y/N)**	
Customer Representative	**Enter the Customer representative name**	
HSE	**Was our HSE performance satisfactory? Circle Y or N**	
Equipment	**Were you satisfied with our Equipment? Circle Y or N**	
Personnel	**Were you satisfied with our people? Circle Y or N**	
Customer Comment		
Job DVA	**Did we provide job DVA above our normal service today? Circle Y or N**	
Time	**Please enter hours in decimal format to nearest quarter hour.**	
Other	**Enter short text for other efficiencies gained.**	
Customer Initials	**Customer's Initials**	
Please provide details		

CUSTOMER SIGNATURE

5.0 PLUG BACK TO PREPARE FOR ST1

5.1 Plug-1 A @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 bbl drill water + 183 bbl mud = 186.5 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

5.2 Plug-1 B @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 bbl drill water + 173 bbl mud = 176.5 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

5.3 Plug-1 C @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 bbl drill water + 164 bbl mud = 167.5 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

5.4 Plug-2 @ 2925m Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 bbl drill water + 151 bbl mud = 154.5 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

5.5 Plug-3 KOP @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues. Due to large washout at shoe no cement was tagged which resulted in a second attempt at setting the plug. For more detail see KOP review report.

- Plug displaced with 3.5 drill water + 106bbl mud = 109.5bbl
- Total Slurry volume pumped –25bbl of 16.5ppg slurry.

5.6 Plug-3b KOP @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues. Due to large washout at shoe cement was tagged short which resulted in a thrid attempt at setting the plug. For more detail see KOP review report.

- Plug displaced with 3.5 drill water + 102bbl mud = 105.5bbl
- Total Slurry volume pumped –40bbl of 15.8ppg slurry.

5.7 Plug-3c KOP @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues. Due to large washout at shoe no cement was tagged which resulted in a second attempt at setting the plug. For more detail see KOP review report.

- Plug displaced with 106bbl mud
- Total Slurry volume pumped –28bbl of 15.8ppg slurry.
-

5.8 Job Logs

PERSONELL

PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE	hrs	PERSONNEL / EXPOSURE	hrs
00408437	David Fernandez	24	#N/A	Gavin Hick	24				

EQUIPMENT

SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT	10			

WELL PROFILE

NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
Non Tapered Casing , SSR, m shoe track		
13.375in 68ppf N-80 BTC : 0m to 965m MD, m TVD	17.5in, 25 percent excess, 155m to 965m	30in, 309.7ppf, 0 to 155m
9.625in 47ppf : 0m to 1965m MD, m TVD		

CEMENT DESIGN

Single				Single				Single			
DENSITY	15.8ppg	**WATER**	5.01gal/sk	**DENSITY**	15.8ppg	**WATER**	5.01gal/sk	**DENSITY**	15.8ppg	**WATER**	5.01gal/sk
YIELD	1.16cuft/ft	**MIX FLUID**	5.12gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.12gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	15.80gal/sk
WATER SOURCE	Drillwater			**WATER SOURCE**	Drillwater			**WATER SOURCE**	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk		
Total Cement Used	184sks			**Total Cement Used**	184sks			**Total Cement Used**	184sks		
Estimated TOC	3310m			**Estimated TOC**	3150m			**Estimated TOC**	2990m		
Additive	**Concentration**	**Total Used**		**Additive**	**Concentration**	**Total Used**		**Additive**	**Concentration**	**Total Used**	
SCR-100L	8.5 gal/10bbl	25gals		SCR-100L	8.5 gal/10bbl	25gals		SCR-100L	8.5 gal/10bbl	25gals	
NF-6	0.125 gal/10bbl	1gals		NF-6	0.125 gal/10bbl	1gals		NF-6	0.125 gal/10bbl	1gals	

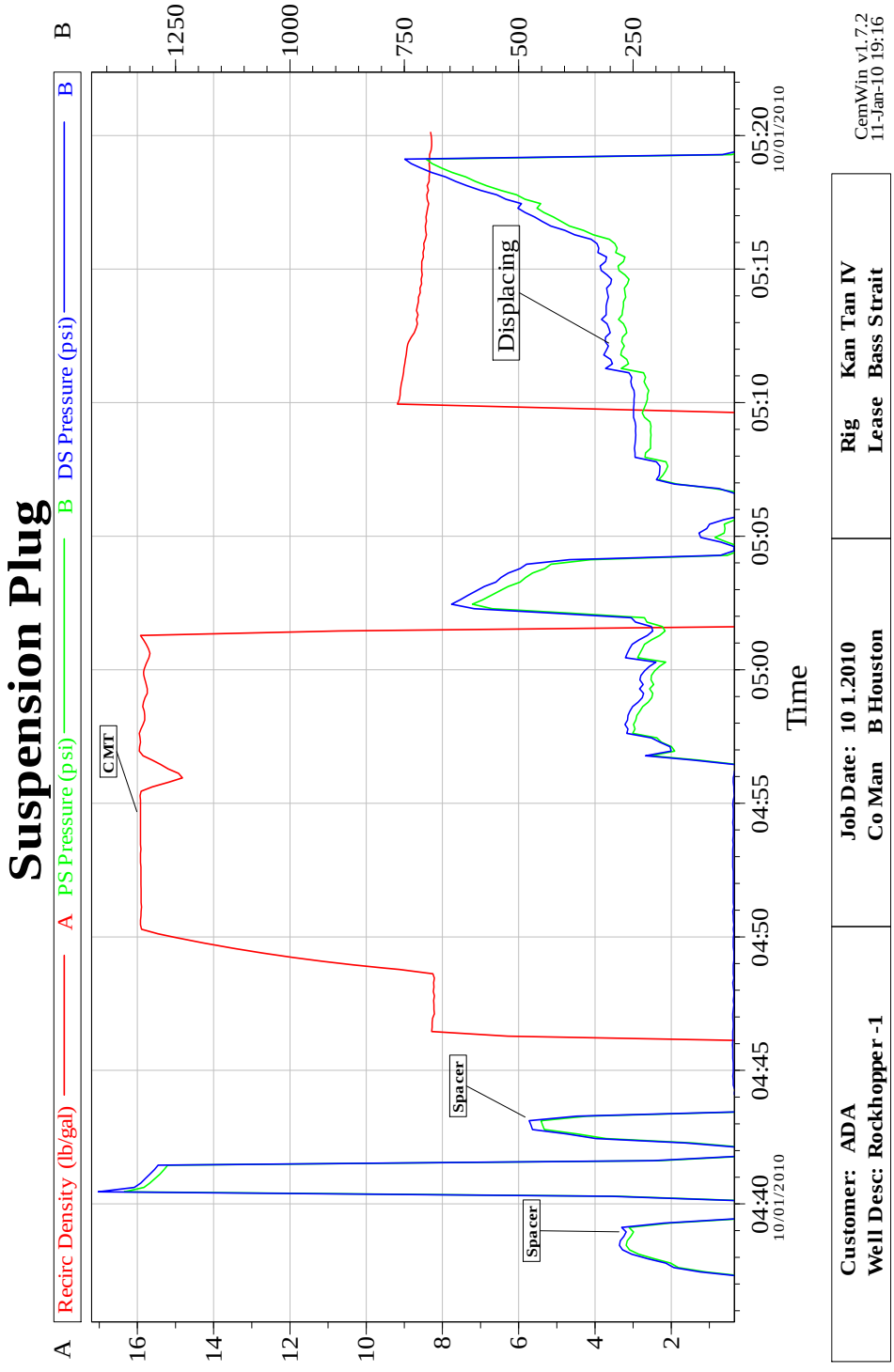
Single				Single				Single			
DENSITY	15.8ppg	**WATER**	5.06gal/sk	**DENSITY**	16.5ppg	**WATER**	4.27gal/sk	**DENSITY**	15.8ppg	**WATER**	5.06gal/sk
YIELD	1.16cuft/ft	**MIX FLUID**	5.11gal/sk	**YIELD**	1.06cuft/ft	**MIX FLUID**	4.38gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.11gal/sk
WATER SOURCE	Drillwater			**WATER SOURCE**	Drillwater			**WATER SOURCE**	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk		
Total Cement Used	184sks			**Total Cement Used**	134sks			**Total Cement Used**	211sks		
Estimated TOC	2775m			**Estimated TOC**	1975m			**Estimated TOC**	1918m		
Additive	**Concentration**	**Total Used**		**Additive**	**Concentration**	**Total Used**		**Additive**	**Concentration**	**Total Used**	
SCR-100L	4 gal/10bbl	12gals		SCR-100L	5gal gal/10bbl	10gals		SCR-100L	4 gal/10bbl	10gals	
NF-6	0.125 gal/10bbl	1gals		NF-6	0.125 gal/10bbl	1gals		NF-6	0.125 gal/10bbl	1gals	
				CFR-3L	5 gal/10bbl	10gals					

JOB LOGS

DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
6.1.2010	19:00					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	19:30					Make PA Announcement
	19:35	10			2	Pump 10 bbls Fresh Water Spacer
	19:57		1000			Test Surface Lines to 1000 psi
	20:10	38			4	Mix & Pump 38bbls CMT @ 15.8ppg, 184 sks, with 22.6bbls mix water
	20:25	3.5			2	Pump 3.5 bbls Drill Water behind
	20:28	183	750		7	Displace with 183bbls
	20:55					Bleed off Check Returnes
	20:45					Make PA Announcement
	21:25	10			2	Pump 10 bbls Fresh Water Spacer
	21:50		1000			Test Surface Lines to 1000 psi
	22:05	38			4	Mix & Pump 38bbls CMT @ 15.8ppg, 184 sks, with 22.6bbls mix water
	22:20	3.5			2	Pump 3.5 bbls Drill Water behind
	22:22	183	750		7	Displace with 173bbls
	22:40					Bleed off Check Returnes

7.1.2010	0:02					Make PA Announcement
	0:04	10			2	Pump 10 bbls Fresh Water Spacer
	0:08		1000			Test Surface Lines to 1000 psi
	0:16	38			4	Mix & Pump 38bbls CMT @ 15.8ppg, 184 sks, with 22.6bbls mix water
	0:30	3.5			2	Pump 3.5 bbls Drill Water behind
	0:32	183	750		7	Displace with 164bbls
	0:48					Bleed off Check Returnes
	2:15					Make PA Announcement
	2:17	10			2	Pump 10 bbls Fresh Water Spacer
	2:19		1000			Test Surface Lines to 1000 psi
	2:30	38			4	Mix & Pump 38bbls CMT @ 15.8ppg, 184 sks, with 22.6bbls mix water
	2:43	3.5			2	Pump 3.5 bbls Drill Water behind
	2:44	183	750		7	Displace with 151bbls
	2:58					Bleed off Check Returnes
7.1.2010	13:50					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	14:00					Make PA Announcement
	14:02	10			2	Pump 10 bbls Fresh Water Spacer
	14:03		1000			Test Surface Lines to 1000 psi
	14:13	38			4	Mix & Pump 25bbls CMT @ 16.5ppg, 134 sks, with 15bbls mix water
	14:22	3.5			2	Pump 3.5 bbls Drill Water behind
	14:22	106	750		7	Displace with 106bbls
	14:41					Bleed off Check Returnes
8.1.2010	19:20					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	19:45					Make PA Announcement
	19:50	10			2	Pump 10 bbls Fresh Water Spacer
	19:53		1000			Test Surface Lines to 1000 psi
	20:08	40			4	Mix & Pump 40bbls CMT @ 15.8ppg, 211 sks, with 22.6bbls mix water
	20:24	2.8			2	Pump 2.8 bbls Drill Water behind
	20:24	102	500		7	Displace with 102bbls
	20:38					Bleed off Check Returnes
10.1.2010	4:15					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	4:32					Make PA Announcement
	4:33	5			2	Pump 5 BBLs Spacer
	4:35		1000			Test Surface Lines to 1000psi
	4:37	5			2	Pump 5 BBLs Spacer
	4:50	28	400		4	Mix & Pump 28bbls CMT @ 15.8ppg, 135 sks, with 16.5bbls mix water
	5:02	106	750		7	Displace with 106 bbls Mud
	5:12					Bleed Off
END OF JOB LOGS						

5.9 Job Plot


Suspension Plug
Recirc Density (lb/gal)
A
PS Pressure (psi)
B
DS Pressure (psi)
B
A
16
14
12
10
8
6
4
2
1250
1000
750
500
250
CMT
Spacer
Spacer
Displacing
04:40
10/01/2010
04:45
04:50
04:55
05:00
05:05
05:10
05:15
05:20
10/01/2010
Time
CemWin v1.7.2
11-Jan-10 19:16
Customer: ADA
Well Desc: Rockhopper -1
Job Date: 10 1.2010
Co Man B Houston
Rig Kan Tan IV
Lease Bass Strait

5.10 CSS

CUSTOMER SATISFACTION SURVEY

Sales	**Line Item:**	
0	0	
Customer:		**Job Type (BOM):**
ADA		Pumping/Pr
Customer Rep./Phone:		**API / UWI: (leave blank if unknown)**
Bryan Houston		0
Well Name:		**Well Number:**
Rockhopper-1		0
Well Type:	**Well Country:**	
Gas & Oil	Australia	
H2S	**Well State:**	**Well County:**
0	0	0

Dear Customer,

We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	**The date the survey was conducted**	
Survey Interviewer	**The survey interviewer is the person who initiated the survey.**	
Customer Participation	**Did the customer partipcipate in this survey? (Y/N)**	
Customer Representative	**Enter the Customer representative name**	
HSE	**Was our HSE performance satisfactory? Circle Y or N**	
Equipment	**Were you satisfied with our Equipment? Circle Y or N**	
Personnel	**Were you satisfied with our people? Circle Y or N**	
Customer Comment		
Job DVA	**Did we provide job DVA above our normal service today? Circle Y or N**	
Time	**Please enter hours in decimal format to nearest quarter hour.**	
Other	**Enter short text for other efficiencies gained.**	
Customer Initials	**Customer's Initials**	
Please provide details		

CUSTOMER SIGNATURE

6.0 PLUG AND ABANDON

6.1 Plug-1 A @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 5 bbl drill water + 187 bbl mud = 193 bbl
- Total Slurry volume pumped –40bbl of 15.8ppg slurry.

6.2 Plug-1 B @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 5 bbl drill water + 177 bbl mud = 183 bbl
- Total Slurry volume pumped –40bbl of 15.8ppg slurry.

6.3 Plug-1 C @ TD Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 4 bbl drill water + 168 bbl mud = 172 bbl
- Total Slurry volume pumped –40bbl of 15.8ppg slurry.

6.4 Plug-2 @ 2915m Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3bbl drill water + 156 bbl mud = 159 bbl
- Total Slurry volume pumped –38bbl of 15.8ppg slurry.

6.5 Plug-3 @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues. Plug was tagged at 1980m requiring a second plug to be pumped.

- Plug displaced with 3.5 drill water + 105bbl mud = 108.5bbl
- Total Slurry volume pumped –28.8bbl of 15.8ppg slurry.

6.6 Plug-3a @ 9 5/8" Shoe Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues.

- Plug displaced with 3.5 drill water + 105bbl mud = 108.5bbl
- Total Slurry volume pumped –18bbl of 15.8ppg slurry.

6.7 Surface Plug- Job Summary

HSE – no accidents or incidents occurred during this job.

Operations – the job was mixed and pumped as programmed without any issues..

- Plug displaced with 4 seawater
- Total Slurry volume pumped –122bbl of 15.9ppg slurry.

6.8 Job Logs

PERSONELL

PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE		hrs	PERSONNEL / EXPOSURE	hrs
#N/A	Jim Flockhart		#N/A	Gavin Hick		#N/A	Joel Scott			

EQUIPMENT

SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	MIXING EQUIPMENT		#N/A	Rigs BULK EQUIPMENT,Howco SFB	

WELL PROFILE

NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
Non Tapered Casing , , m shoe track		
13.375in 68ppf N-80 BTC : 0m to 965m MD, m TVD	8.5in, 0 percent excess, 1965m to 3482m, Caliper = 8.9 "	30in, 309.7ppf, 0 to 155m
9.625in 47ppf : 0m to 1965m MD, m TVD		

FOR PLUG AND LINER JOBS PLEASE INDICATE WORKSTRING 5in 19.5ppf Drill Pipe with 2.875in of 169in ppf Stinger

CEMENT DESIGN

Single				Single				Single			
DENSITY	15.8ppg	**WATER**	5.03gal/sk	**DENSITY**	15.8ppg	**WATER**	5.03gal/sk	**DENSITY**	15.8ppg	**WATER**	5.03gal/sk
YIELD	1.16cuft/ft	**MIX FLUID**	5.13gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.13gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.13gal/sk
WATER SOURCE	Drillwater			**WATER SOURCE**	Drillwater			**WATER SOURCE**	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk		
Total Cement Used	195sks			**Total Cement Used**	195sks			**Total Cement Used**	195sks		
Estimated TOC	3322m			**Estimated TOC**	3162m			**Estimated TOC**	3002m		

Additive	Concentration	Total Used	Additive	Concentration	Total Used	Additive	Concentration	Total Used
SCR-100L	8.5 gal/10bbl	25gals	SCR-100L	8.5 gal/10bbl	25gals	SCR-100L	8.5 gal/10bbl	25gals
NF-6	0.125 gal/10bbl	1gals	NF-6	0.125 gal/10bbl	1gals	NF-6	0.125 gal/10bbl	1gals

Single				Single @ shoe				Single @ shoe			
DENSITY	15.8ppg	**WATER**	5.03gal/sk	**DENSITY**	15.8ppg	**WATER**	5.07gal/sk	**DENSITY**	15.8ppg	**WATER**	5.07gal/sk
YIELD	1.16cuft/ft	**MIX FLUID**	5.13gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.12gal/sk	**YIELD**	1.16cuft/ft	**MIX FLUID**	5.12gal/sk
WATER SOURCE	Drillwater			**WATER SOURCE**	Drillwater			**WATER SOURCE**	Drillwater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk			**CEMENT TYPE**	ABC Class 'G' at 94lb/sk		
Total Cement Used	195sks			**Total Cement Used**	119sks			**Total Cement Used**	87sks		
Estimated TOC	2765m			**Estimated TOC**	1915m			**Estimated TOC**	1915m		

Additive	Concentration	Total Used	Additive	Concentration	Total Used	Additive	Concentration	Total Used
SCR-100L	8.5 gal/10bbl	25gals	SCR-100L	4gal gal/10bbl	10gals	SCR-100L	4gal gal/10bbl	5gals
NF-6	0.125 gal/10bbl	1gals	NF-6	0.125 gal/10bbl	1gals	NF-6	0.125 gal/10bbl	1gals

Single			
DENSITY	15.9ppg	**WATER**	5.15gal/sk
YIELD	1.17cuft/ft	**MIX FLUID**	5.16gal/sk
WATER SOURCE	Seawater		
CEMENT TYPE	ABC Class 'G' at 94lb/sk		

20/05/2009	7:00		
	8:20	3.3	210

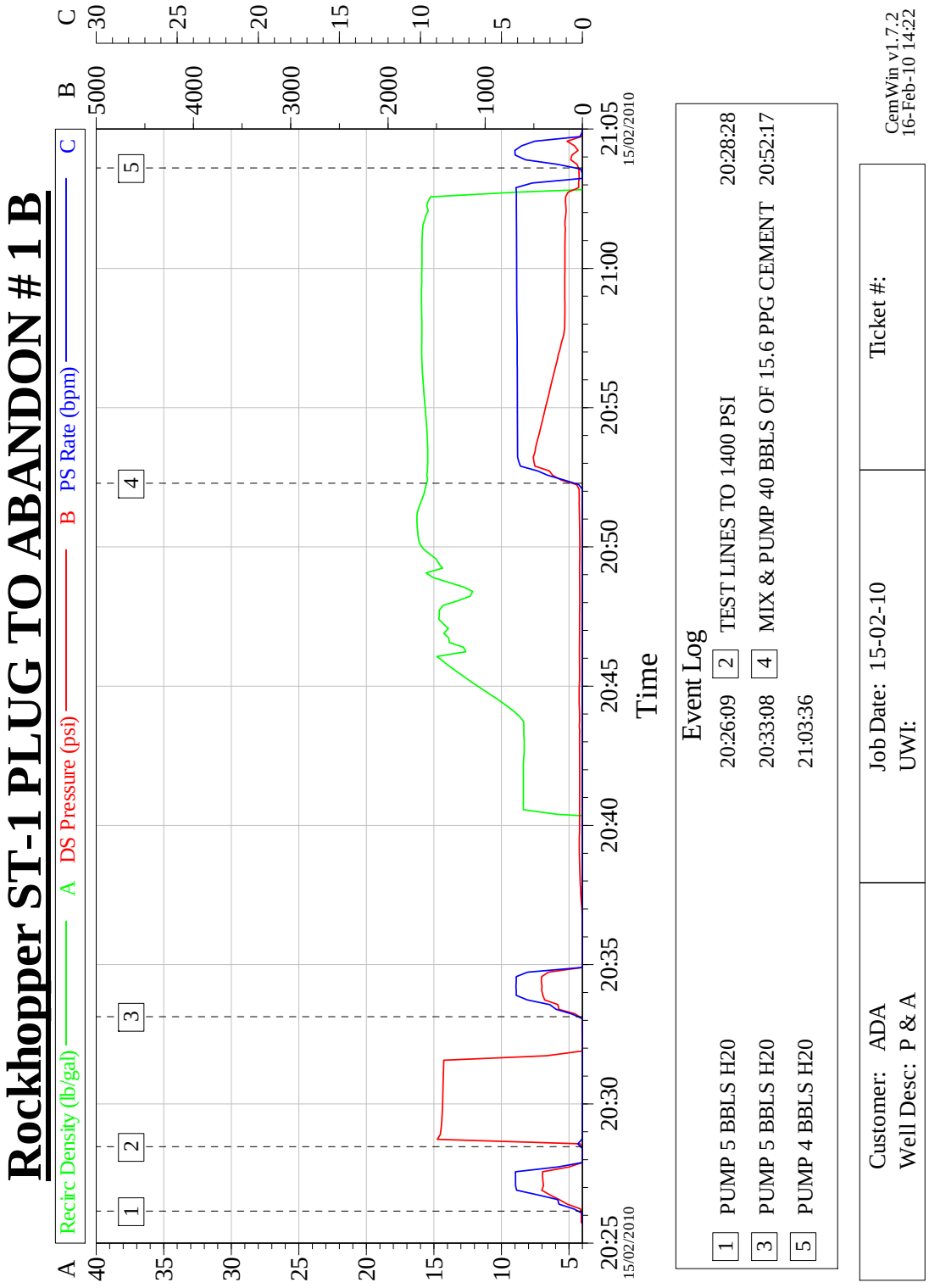
JOB LOGS

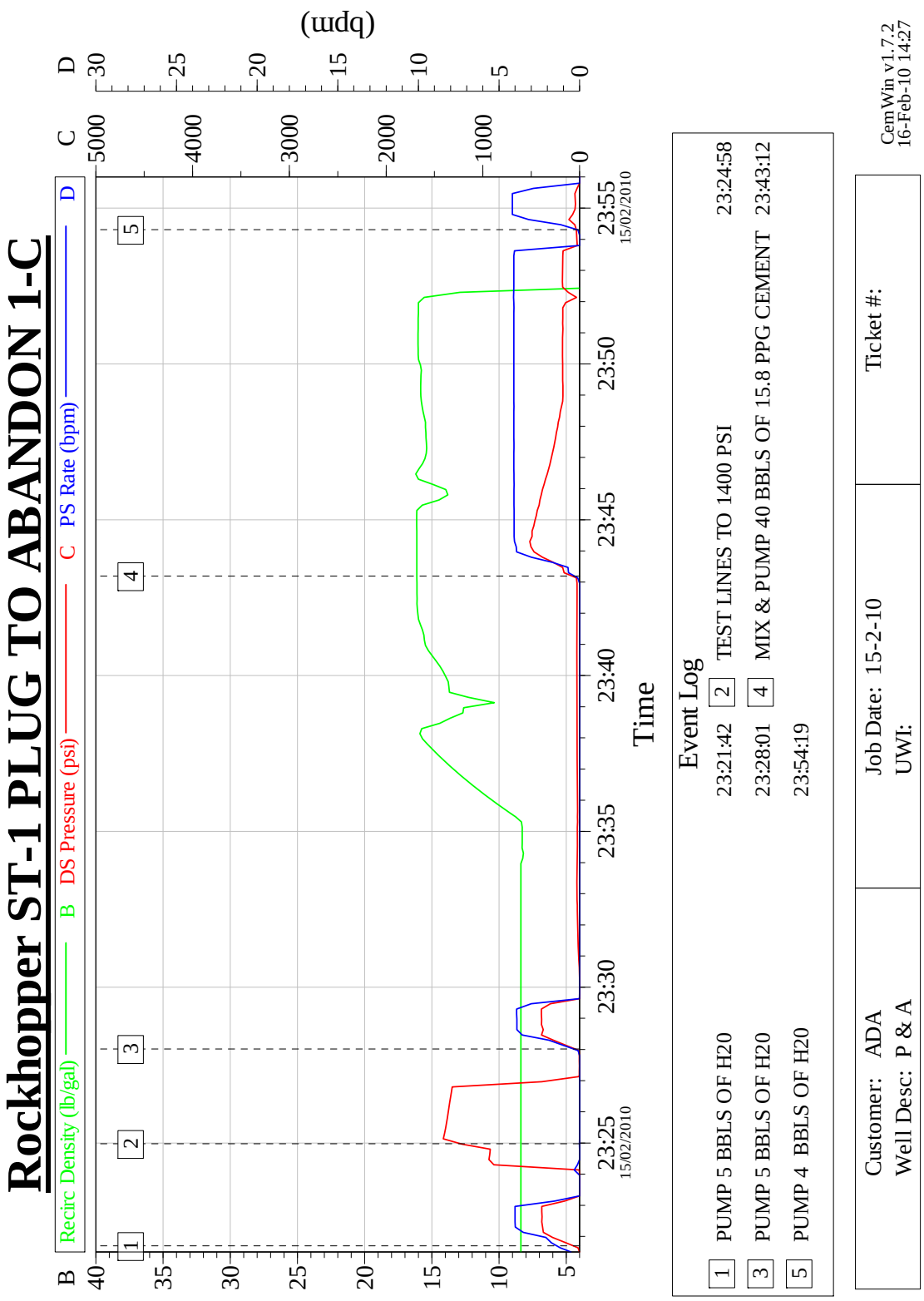
DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	BBLS	HIGH	LOW	BPM	REMARKS/DETAILS
15/02/2010						**PLUG # 1 A (3482m - 3322m) 8.5 inch open hole**
	16:30					Hold JSA on the floor with ALL Crews, Permits,Tool Box Meeting,
	16:40	5	295		4	Pump 5 bbls Fresh Water Spacer
	17:06	5	1450	290	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	17:31	40	550	290	4	Mix & Pump 40bbls CMT @ 15.8ppg, 195 sks, with 24 bbls mix water
	17:41	5	200		4	Pump 5 bbls Drill Water behind
	17:46	187			8	Hand over to rig to Displace with 187bbls of 9.3 ppg Mud
						PLUG # 1 B (3322m - 3162m) 8.5 inch open hole
	20:00					Hold JSA on the floor with all personell involved with cementing operations,
	20:26	5	425		4	Pump 5 bbls Fresh Water Spacer
	20:28	5	1450	400	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	20:52	40	450	180	4	Mix & Pump 40bbls CMT @ 15.8ppg, 195 sks, with 24 bbls mix water
	21:03	4	200		4	Pump 4 bbls Drill Water behind
	21:10	177			8	Hand over to rig to Displace with 177bbls of 9.3 ppg Mud
						PLUG # 1 C (3162m - 3002m) 8.5 inch open hole
	23:10					Safety Huddle
	23:21	5	375		4	Pump 5 bbls Fresh Water Spacer
	23:24	5	1450	365	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	23:28	40	500		4	Mix & Pump 40bbls CMT @ 15.8ppg, 195 sks, with 24 bbls mix water
	23:54	4			4	Pump 4 bbls Drill Water behind
	23:58	168			7	Hand over to rig to Displace with 168bbls of 9.3 ppg Mud

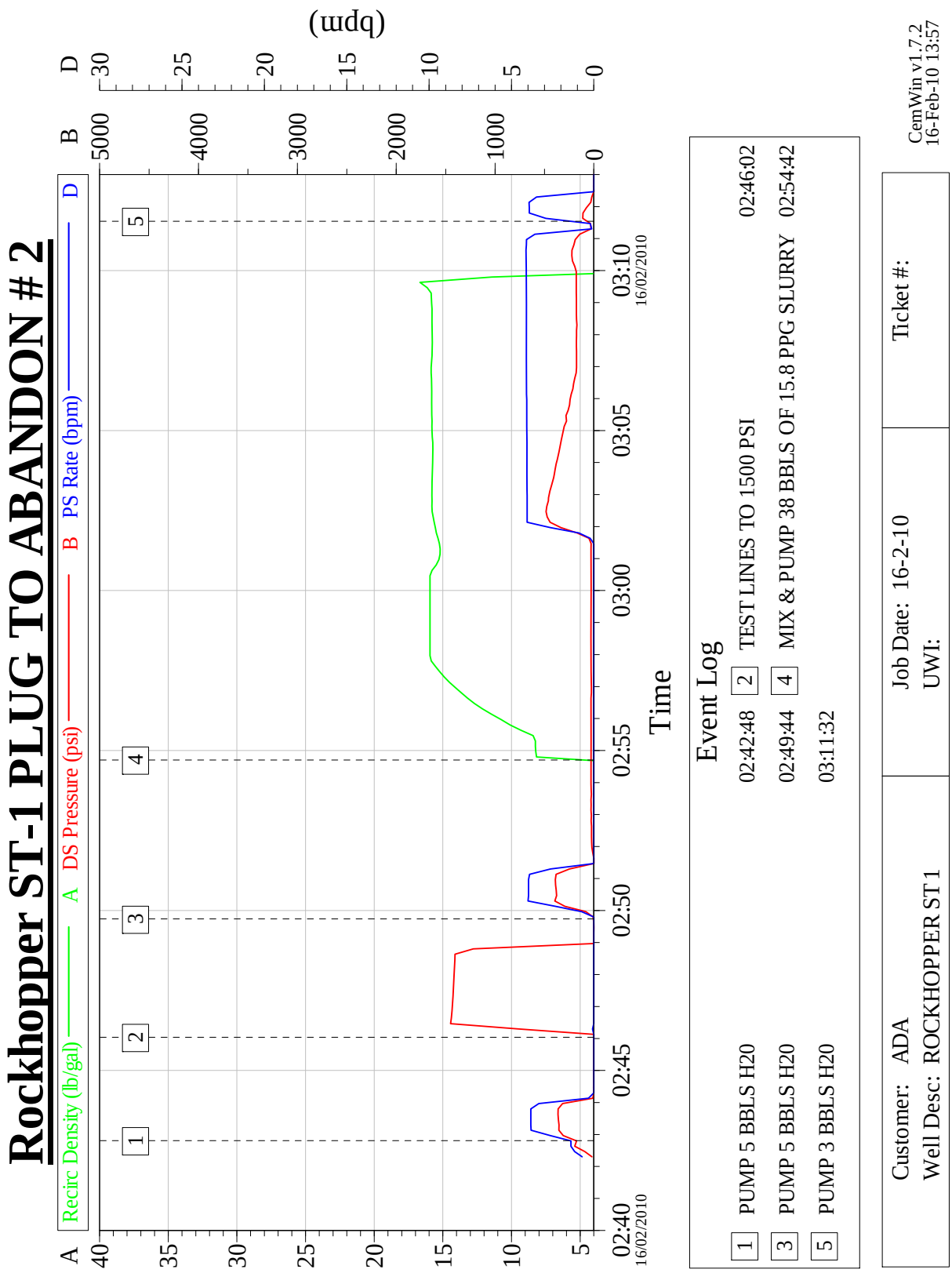
						PLUG # 2 (2915m - 2765m) 8.5 inch open hole
16/02/2010	2:30					Safety Huddle
	2:42	5	380		4	Pump 5 bbls Fresh Water Spacer
	2:46	5	1450	330	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	3:01	38	500		4	Mix & Pump 38bbls CMT @ 15.8ppg, 183 sks, with 22 bbls mix water
	3:11	3	180		4	Pump 3 bbls Drill Water behind
	3:16	156			7	Hand over to rig to Displace with 156bbls of 9.3 ppg Mud
						PLUG # 3 (2015m - 1915m) 9.625 inch shoe @ 1965 mtrs
	16:25					Hold JSA on the floor with all personell involved with cementing operations,
	16:48	5	350		4	Pump 5 bbls Fresh Water Spacer
	16:51	5	1450	340		Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	16:57	25	280		4	Mix & Pump 28.85bbls CMT @ 15.8ppg, 120 sks, with 17 bbls mix water
	17:17	3.5	320		4	Pump 3.5 bbls Drill Water behind
	17:20	105			7	Displace with 105bbls of 9.3 ppg Mud
17/02/2010						**PLUG # 3 A (1980m - 1915m) 9.625 inch shoe @ 1965 mtrs**
	8:45					Hold JSA on the floor with all personell involved with cementing operations,
	9:03	5	300		4	Pump 5 bbls Fresh Water Spacer
	9:25	5	1450	340		Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	9:50	25	350	100	4	Mix & Pump 18 bbls CMT @ 15.8ppg, 87 sks, with 17 bbls mix water
	9:57	3.5	320		4	Pump 3.5 bbls Drill Water behind
	10:02	105			7	Displace with 105bbls of 9.3 ppg Mud
	15:00					JSA WITH ALL CREW INVOLVED WITH PRESSURE TESTING
	15:20	5	150		3	BREAK CIRCULATION WITH HOWCO UNIT BACK TO TRIP TANK
	15:38	4.2	2000		0.5	TEST CEMENT PLUG INSIDE 9.625" CSG TO 2000 PSI FOR 10 MINS
						GOOD TEST 4.2 BBLS PUMPED 3.25 BBLS RETURNS
						PLUG # 4 (205m - 105m) SEABED @ 100.3 mtrs
20/02/2010	15:00					Hold JSA on the floor with all personell involved with cementing operations,
	15:23	5	50		4	Pump 5 bbls Fresh Water Spacer
	15:27	5	1450	50	4	Test Surface Lines to 1500 psi & pump 5 bbls of fresh h20 spacer
	15:40	122	200	100	5	Mix & Pump 122 bbls CMT @ 15.9ppg, 586 sks, with 70 BBLS SEA H20
	16:07	4			4	Displace with 4 bbls of SEA H20
						CHEMICALS / CEMENT / CONSUMABLES USED
						CLASS G CEMENT = 1561 SKS , 66.56 METRIC TONNE
						SCR - 100 L = 115 GALLONS
						NF 6 = 10 GALS
						1 X 9 5/8 INCH EZSV PACKER SET @ 250 MTRS
						CA CL2 = 150 LBS
END OF JOB LOGS						

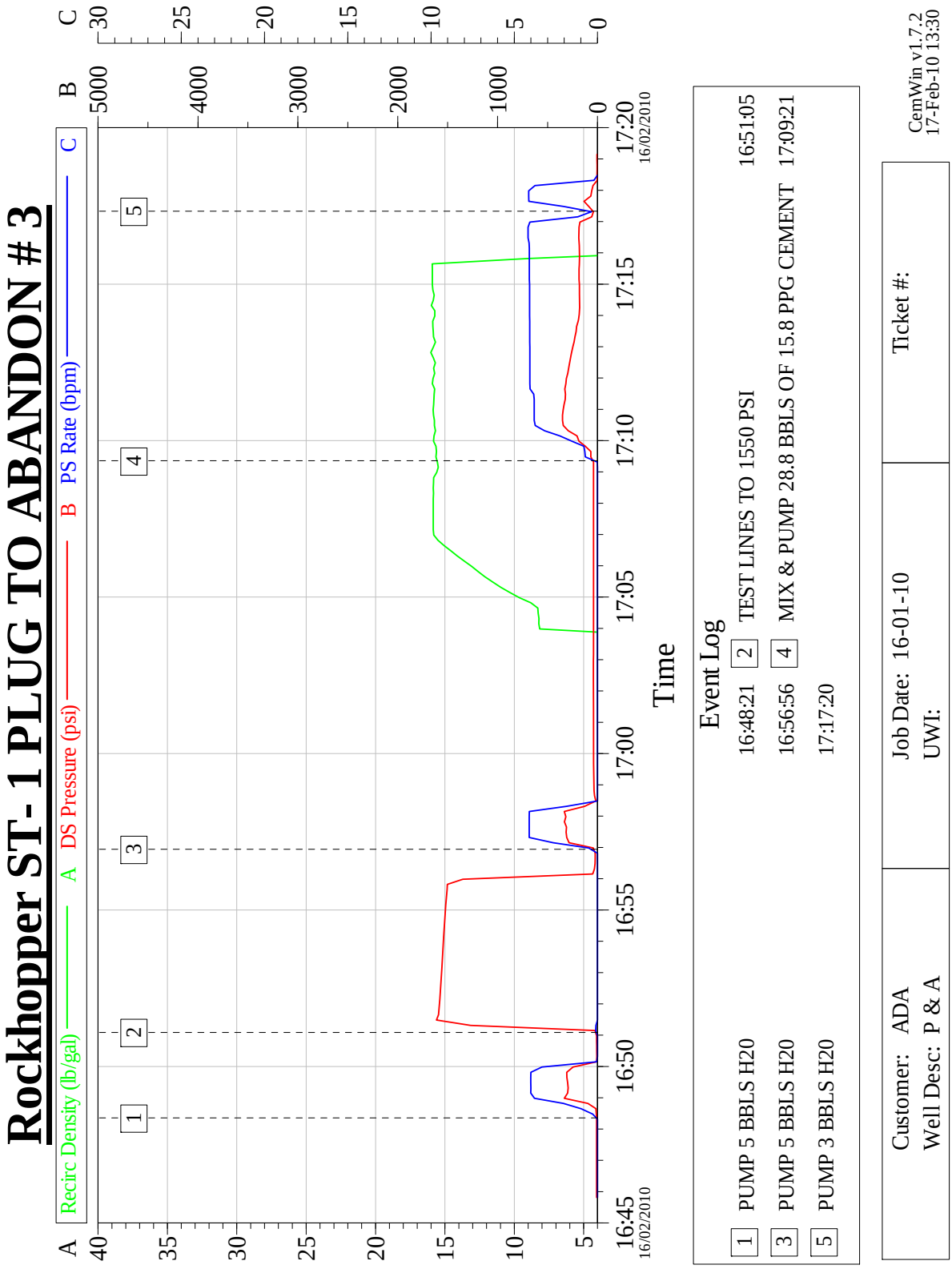
6.9 Job Plot

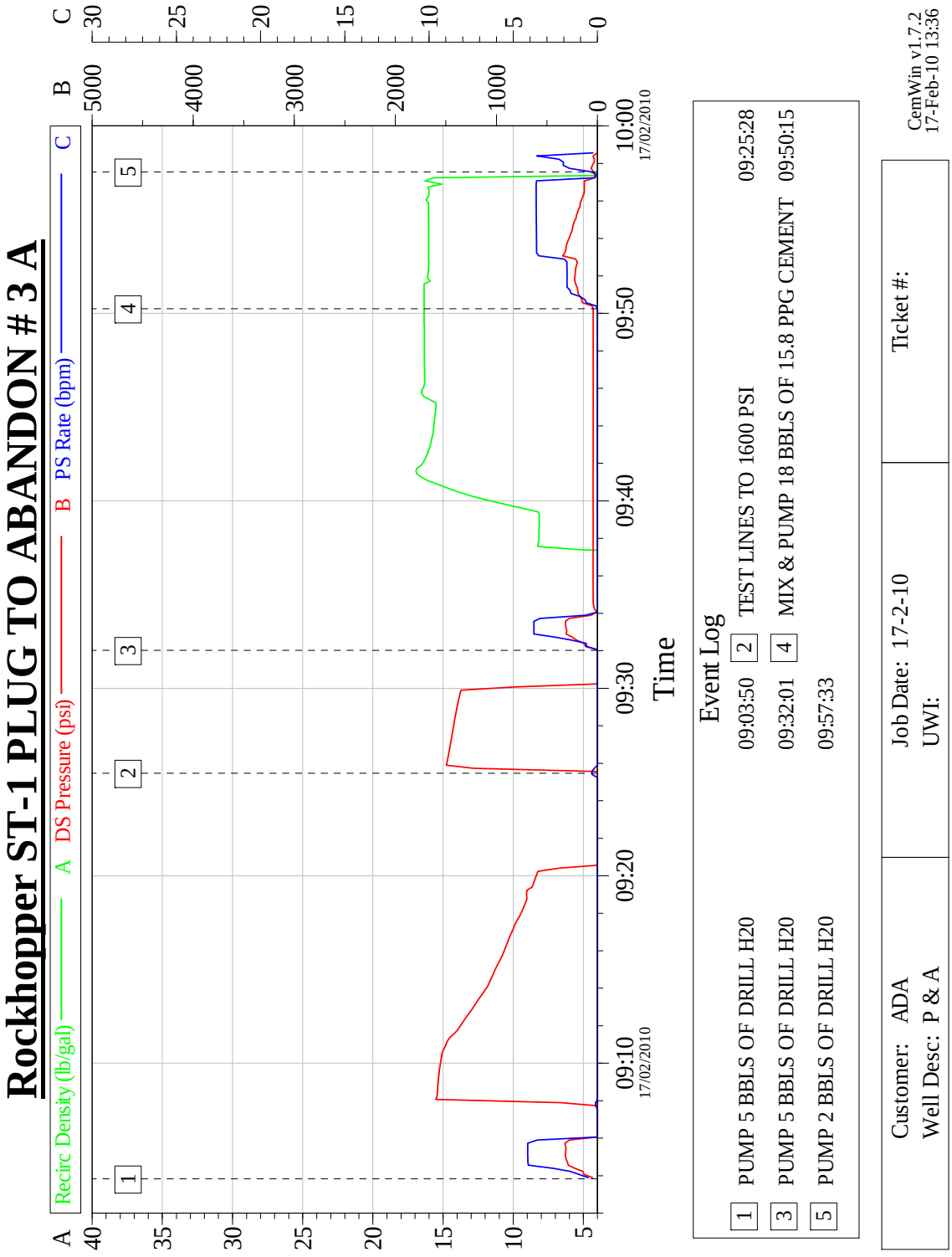
Rockhopper ST-1 PLUG TO ABANDON 1 A
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
PS Rate (bpm)
C
A
B
C
Time
17:05
15/02/2010
17:10
17:15
17:20
17:25
17:30
17:35
17:40
15/02/2010
Event Log
1 PUMP 5 BBLS H20
17:04:25
2 TEST LINES TO 1400 PSI
17:06:29
3 PUMP 5 BBLS H20
17:12:15
4 MIX & PUMP 40 BBLS OF 15.8 PPG CEMENT
17:31:10
5 PUMP 5 BBLS H20
17:41:56
Customer: ADA
Well Desc: P & A
Job Date: 15-02-10
UWI:
Ticket #:
CemWin v1.7.2
16-Feb-10 13:49

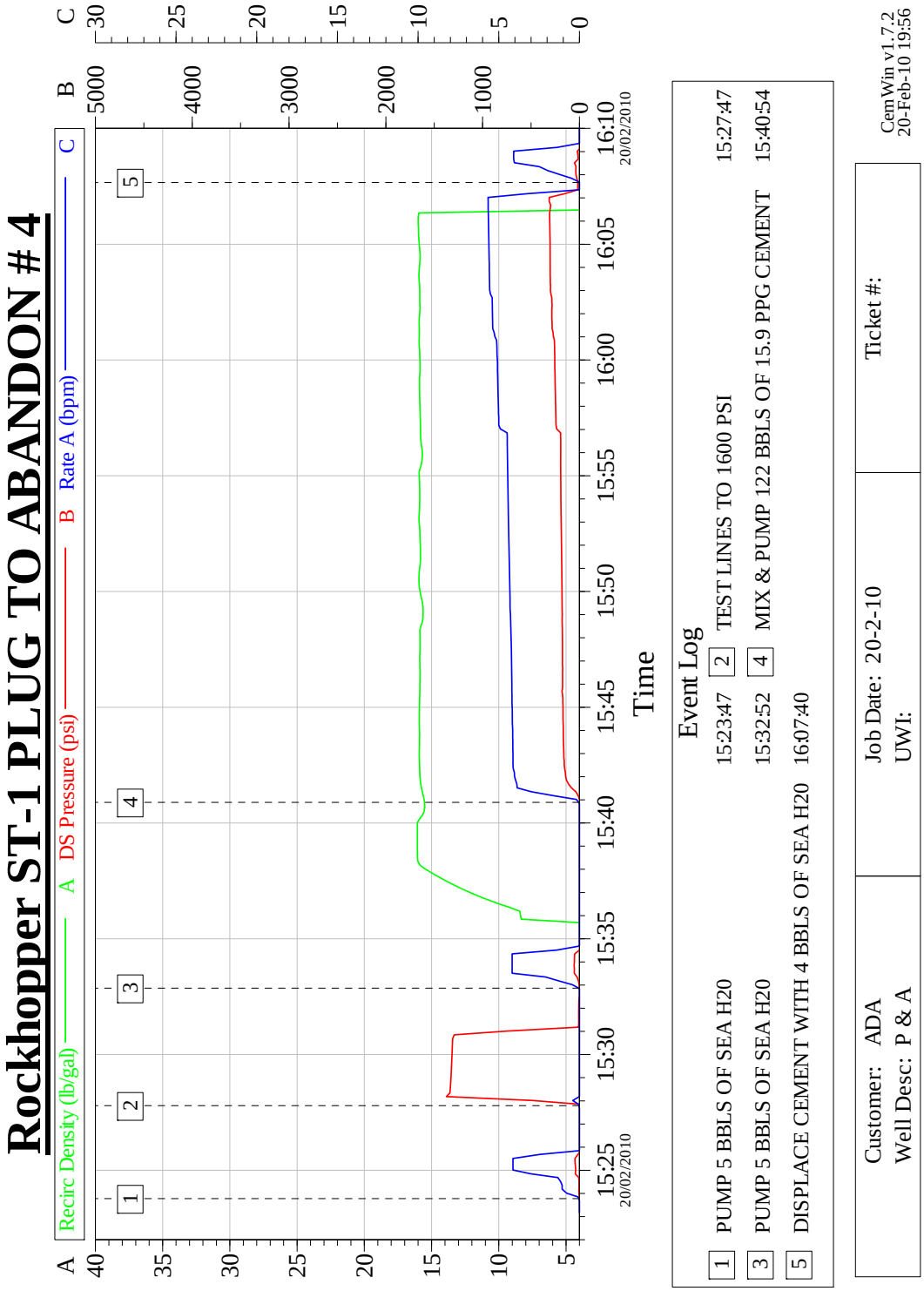

Rockhopper ST-1 PLUG TO ABANDON # 1 B
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
PS Rate (bpm)
C
Time
Event Log
1 PUMP 5 BBLS H20 20:26:09
2 TEST LINES TO 1400 PSI 20:28:28
3 PUMP 5 BBLS H20 20:33:08
4 MIX & PUMP 40 BBLS OF 15.6 PPG CEMENT 20:52:17
5 PUMP 4 BBLS H20 21:03:36
Customer: ADA
Well Desc: P & A
Job Date: 15-02-10
UWI:
Ticket #:
CemWin v1.7.2
16-Feb-10 14:22


Rockhopper ST-1 PLUG TO ABANDON 1-C
Recirc Density (lb/gal)
B
DS Pressure (psi)
C
PS Rate (bpm)
D
(psi)
(bpm)
Time
23:25
15/02/2010
23:30
23:35
23:40
23:45
23:50
23:55
15/02/2010
Event Log
1 PUMP 5 BBLS OF H20 23:21:42
2 TEST LINES TO 1400 PSI 23:24:58
3 PUMP 5 BBLS OF H20 23:28:01
4 MIX & PUMP 40 BBLS OF 15.8 PPG CEMENT 23:43:12
5 PUMP 4 BBLS OF H20 23:54:19
Customer: ADA
Well Desc: P & A
Job Date: 15-2-10
UWI:
Ticket #:
CemWin v1.7.2
16-Feb-10 14:27


Rockhopper ST-1 PLUG TO ABANDON # 2
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
PS Rate (bpm)
D
Time
02:40
16/02/2010
02:45
02:50
02:55
03:00
03:05
03:10
16/02/2010
Event Log
1 PUMP 5 BBLS H20 02:42:48
2 TEST LINES TO 1500 PSI 02:46:02
3 PUMP 5 BBLS H20 02:49:44
4 MIX & PUMP 38 BBLS OF 15.8 PPG SLURRY 02:54:42
5 PUMP 3 BBLS H20 03:11:32
Customer: ADA
Well Desc: ROCKHOPPER ST 1
Job Date: 16-2-10
UWI:
Ticket #:
CemWin v1.7.2
16-Feb-10 13:57


Rockhopper ST- 1 PLUG TO ABANDON # 3
Recirc Density (lb/gal) A
DS Pressure (psi) B
PS Rate (bpm) C
A
B
C
Time
16:45
16/02/2010
16:50
16:55
17:00
17:05
17:10
17:15
17:20
16/02/2010
Event Log
1 PUMP 5 BBLS H20
16:48:21
2 TEST LINES TO 1550 PSI
16:51:05
3 PUMP 5 BBLS H20
16:56:56
4 MIX & PUMP 28.8 BBLS OF 15.8 PPG CEMENT
17:09:21
5 PUMP 3 BBLS H20
17:17:20
Customer: ADA
Well Desc: P & A
Job Date: 16-01-10
UWI:
Ticket #:
CemWin v1.7.2
17-Feb-10 13:30


Rockhopper ST-1 PLUG TO ABANDON # 3 A
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
PS Rate (bpm)
C
A
B
C
40
35
30
25
20
15
10
5
5000
4000
3000
2000
1000
0
30
25
20
15
10
5
0
1
2
3
4
5
09:10
17/02/2010
09:20
09:30
09:40
09:50
10:00
17/02/2010
Time
Event Log
1 PUMP 5 BBLS OF DRILL H20 09:03:50
2 TEST LINES TO 1600 PSI 09:25:28
3 PUMP 5 BBLS OF DRILL H20 09:32:01
4 MIX & PUMP 18 BBLS OF 15.8 PPG CEMENT 09:50:15
5 PUMP 2 BBLS OF DRILL H20 09:57:33
Customer: ADA
Well Desc: P & A
Job Date: 17-2-10
UWI:
Ticket #:
CemWin v1.7.2
17-Feb-10 13:36


Rockhopper ST-1 PLUG TO ABANDON # 4
Recirc Density (lb/gal)
A
DS Pressure (psi)
B
Rate A (bpm)
C
A
B
C
40
35
30
25
20
15
10
5
5000
4000
3000
2000
1000
0
30
25
20
15
10
5
0
1
2
3
4
5
15:25
20/02/2010
15:30
15:35
15:40
15:45
15:50
15:55
16:00
16:05
16:10
20/02/2010
Time
Event Log
1 PUMP 5 BBLS OF SEA H20 15:23:47
2 TEST LINES TO 1600 PSI 15:27:47
3 PUMP 5 BBLS OF SEA H20 15:32:52
4 MIX & PUMP 122 BBLS OF 15.9 PPG CEMENT 15:40:54
5 DISPLACE CEMENT WITH 4 BBLS OF SEA H20 16:07:40
Customer: ADA
Well Desc: P & A
Job Date: 20-2-10
UWI:
Ticket #:
CemWin v1.7.2
20-Feb-10 19:56

6.10 CSS

CUSTOMER SATISFACTION SURVEY

Sales	**Line Item:**	
0	0	
Customer:		**Job Type (BOM):**
ADA		P&A Plugs
Customer Rep./Phone:		**API / UWI: (leave blank if unknown)**
Mike Lanzer		0
Well Name:		**Well Number:**
Rockhopper-ST 1		ST-1
Well Type:	**Well Country:**	
Gas & Oil	Australia	
H2S	**Well State:**	**Well County:**
No	Open hole cemented	Australia /

Dear Customer,

We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)	
Survey Conducted Date	**The date the survey was conducted**	
Survey Interviewer	**The survey interviewer is the person who initiated the survey.**	
Customer Participation	**Did the customer partipcipate in this survey? (Y/N)**	
Customer Representative	**Enter the Customer representative name**	
HSE	**Was our HSE performance satisfactory? Circle Y or N**	
Equipment	**Were you satisfied with our Equipment? Circle Y or N**	
Personnel	**Were you satisfied with our people? Circle Y or N**	
Customer Comment		
Job DVA	**Did we provide job DVA above our normal service today? Circle Y or N**	
Time	**Please enter hours in decimal format to nearest quarter hour.**	
Other	**Enter short text for other efficiencies gained.**	
Customer Initials	**Customer's Initials**	
Please provide details		

CUSTOMER SIGNATURE

7.0 APPENDICES

7.1 Lab Reports

7.1.1 30" Conductor Casing

Cement Laboratory Report		HALLIBURTON MANAGEMENT SYSTEM Australasia		
DOCUMENT NO:	PREPARED BY: Megan Beale	APPROVED BY	REVISION NO: 12	DATE: 25-Jun-07

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	:	ADA	Date	:	25-Nov-09
Rig Name	:	Bass Straight	Lab Reference	:	C-09-096A
Well Name	:	ROCKHOPPER 1	API Schedule	:	9.20
Pipe Size / Casing Size	:	30" Conductor Casing			

Well Information

BHST	:	14	**°C**
BHCT	:	13	**°C**
Measured Depth	:	150	**m**
Total Vertical depth	:	150	**m**

HalCem™ cement Single Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			3/11/09	From Rig
Calcium Chloride	1.000	BWOC	1.00	BWOC		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Seawater	5.15	gal/sk				
Total Mixing Fluid :	5.16	gal/sk				
Slurry Density :	15.9	lb/gal				
Slurry Yield :	1.17	ft^3/sk				

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
13	3:42	4:23	4:41

Pumping time at 20 °C & 469 psi is 4:41 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces Vertical at 27 °C

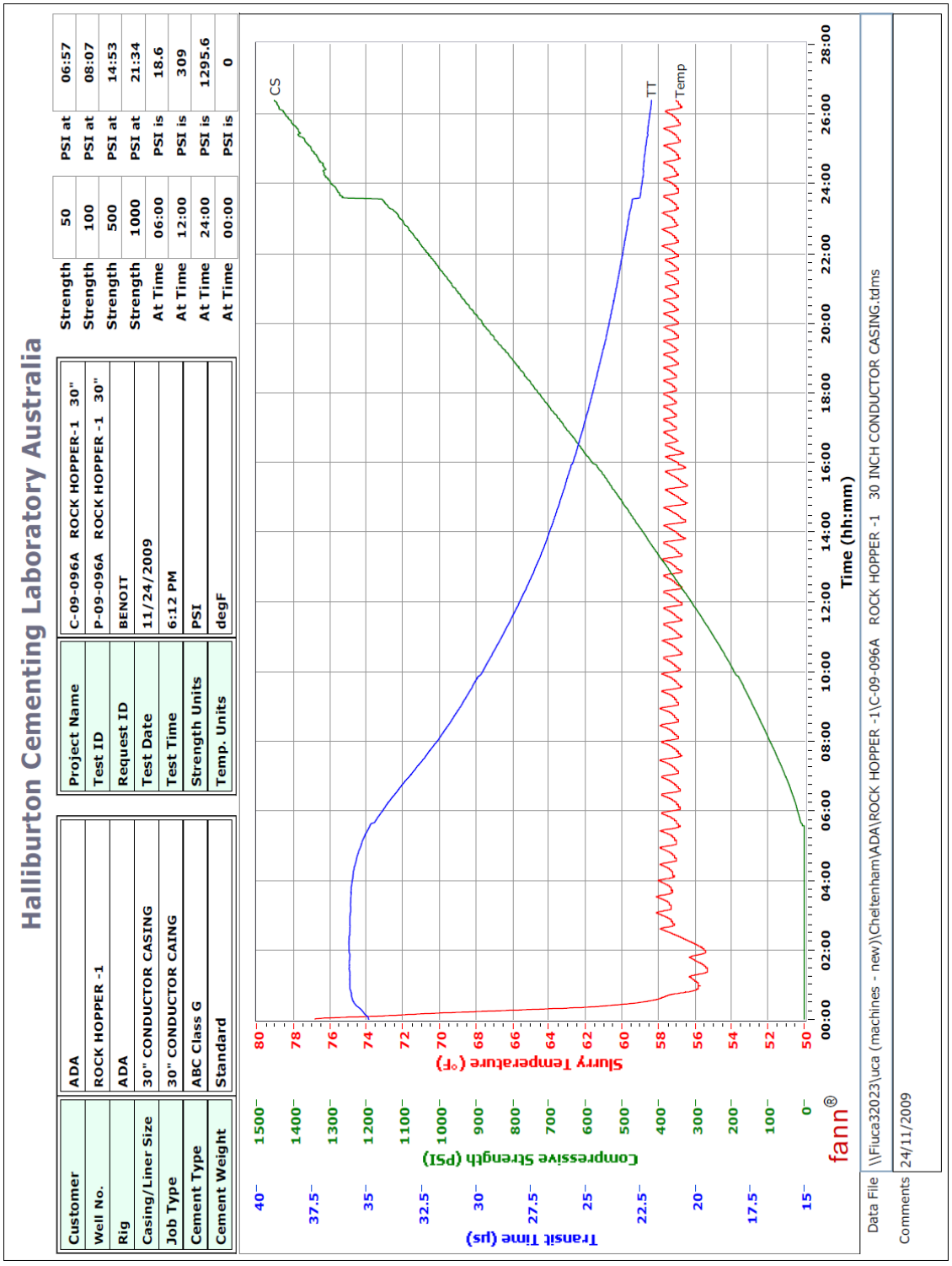
Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	14 °C	3000 psi	6:57	1296 psi

Notes: HPHT and UCA ran with chiller unit, but HPHT didn't achieve the BHCT as requested. Test temperature noted in results section.

Lab Technician: Gary Reid
Approved: Dave Webb

The above pilot report is based on sound engineering practices, but because of variable well conditions and other information which must be relied upon, Halliburton makes no warranty, express or implied, as to the accuracy of the data or any of the calculations or opinions expressed herein. You agree that Halliburton shall not be liable for any loss or damage whether due to negligence or otherwise arising out of or in connection with such data, calculations or opinions.


Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCK HOPPER -1
Rig ADA
Casing/Liner Size 30" CONDUCTOR CASING
Job Type 30" CONDUCTOR CAING
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-096A ROCK HOPPER-1 30"
Test ID P-09-096A ROCK HOPPER -1 30"
Request ID BENOIT
Test Date 11/24/2009
Test Time 6:12 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 06:57
Strength 100 PSI at 08:07
Strength 500 PSI at 14:53
Strength 1000 PSI at 21:34
At Time 06:00 PSI is 18.6
At Time 12:00 PSI is 309
At Time 24:00 PSI is 1295.6
At Time 00:00 PSI is 0
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
CS
TT
Temp
fann®
Data File \\Fiuca32023\uca (machines - new)\Cheltenham\ADA\ROCK HOPPER -1\C-09-096A ROCK HOPPER -1 30 INCH CONDUCTOR CASING.tdms
Comments 24/11/2009

7.1.2 13 3/8" Lead Surface Casing

Cement Laboratory Report		HALLIBURTON MANAGEMENT SYSTEM Australasia		
DOCUMENT NO:	PREPARED BY: Megan Beale	APPROVED BY	REVISION NO: 12	DATE: 25-Jun-07

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	:	ADA	Date	:	27-Nov-09
Rig Name	:	Bass Straight	Lab Reference	:	C-09-101A
Well Name	:	ROCKHOPPER 1	API Schedule	:	9.30
Pipe Size / Casing Size	:	13 3/8" Surface Casing			

Well Information

BHST	:	41	**°C**
BHCT	:	32	**°C**
Measured Depth	:	900	**m**
Total Vertical depth	:	900	**m**

HalCem™ cement Lead Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			3/11/09	From Rig
Econolite Liquid	1.054	gal/sk	23.00	gal/10bbl		
NF-6	0.011	gal/sk	0.25	gal/10bbl		
Seawater	18.18	gal/sk				
Total Mixing Fluid :	19.24	gal/sk				
Slurry Density :	11.5	lb/gal				
Slurry Yield :	3.04	ft^3/sk				

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
19	4:03	5:19	6:28

Pumping time at 32 °C & 1612 psi is 6:28 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces Vertical at 27 °C

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	32 °C	3000 psi	8:42	201 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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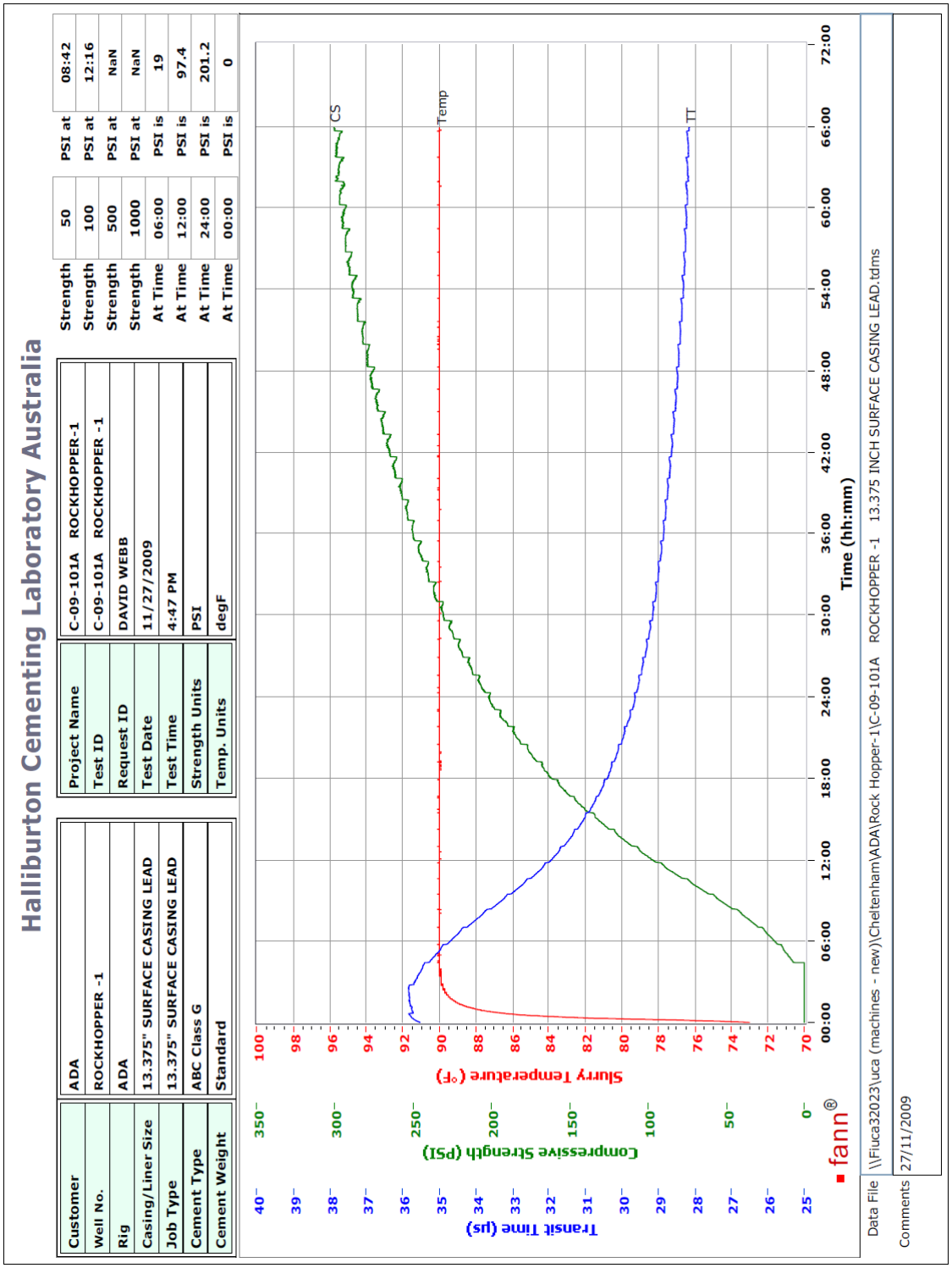

Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER -1
Rig ADA
Casing/Liner Size 13.375" SURFACE CASING LEAD
Job Type 13.375" SURFACE CASING LEAD
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-101A ROCKHOPPER-1
Test ID C-09-101A ROCKHOPPER -1
Request ID DAVID WEBB
Test Date 11/27/2009
Test Time 4:47 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 08:42
Strength 100 PSI at 12:16
Strength 500 PSI at NaN
Strength 1000 PSI at NaN
At Time 06:00 PSI is 19
At Time 12:00 PSI is 97.4
At Time 24:00 PSI is 201.2
At Time 00:00 PSI is 0
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
fann®
Data File \\Fiuca32023\uca (machines - new)\CheltenhamVADA\Rock Hopper-1\C-09-101A ROCKHOPPER -1 13.375 INCH SURFACE CASING LEAD.tdms
Comments 27/11/2009

7.1.3 13 3/8" Tail Surface Casing

Cement Laboratory Report		HALLIBURTON MANAGEMENT SYSTEM Australasia		
DOCUMENT NO:	PREPARED BY: Megan Beale	APPROVED BY	REVISION NO: 12	DATE: 25-Jun-07

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	:	ADA	Date	:	27-Nov-09
Rig Name	:	Bass Straight	Lab Reference	:	C-09-102A
Well Name	:	ROCKHOPPER 1	API Schedule	:	
Pipe Size / Casing Size	:	13 3/8" Surface Casing			

Well Information

BHST	:	41	°C
BHCT	:	32	°C
Measured Depth	:	900	m
Total Vertical depth	:	900	m

HalCem™ cement Tail Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			3/11/09	From Rig
Halad-413L	0.122	gal/sk	10.00	gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Drill Water	5.00	gal/sk	Cl- Content	200	mg/L	

Total Mixing Fluid	:	5.13	gal/sk
Slurry Density	:	15.8	lb/gal
Slurry Yield	:	1.16	ft^3/sk

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
11	4:10	4:43	4:54

Pumping time at 32 °C & 1612 psi is 4:54 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid 0.8 % Vertical at 27 °C

Calculated API Fluid Loss 774.5 cc/30 mins. at 32 °C and 1,000 psi

Slurry Rheology

	Fann Readings (RPM)						
	300	200	100	6	3	PV (cP)	YP (lb_f/100ft^2)
Mix Temp	109	92.5	72	32.5	25	55.5	54
Raised Temp 32 °C	77	65	55	24	16	33	44

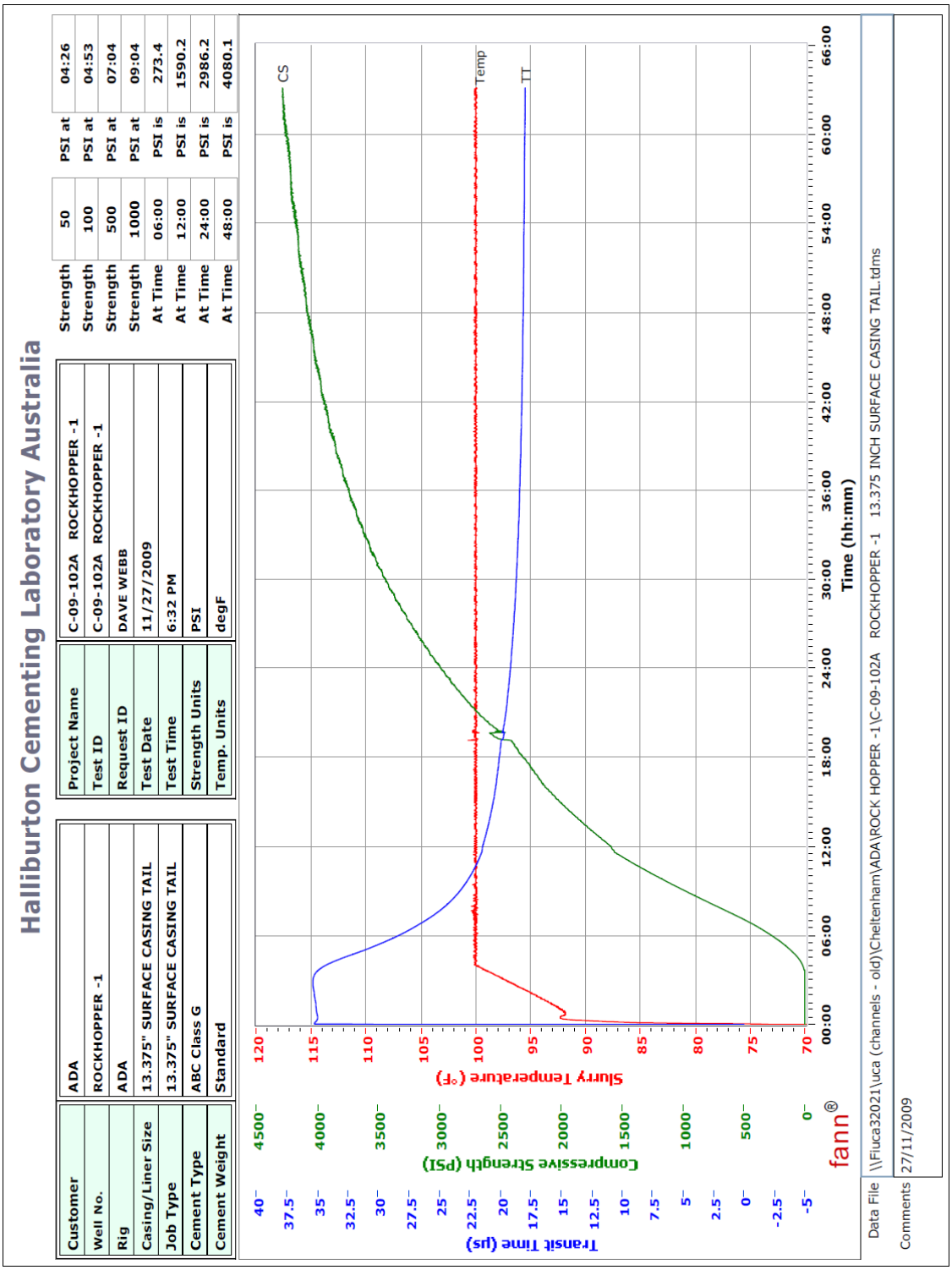
Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	38 °C	3000 psi	4:26	2986 psi

Notes:

Lab Technician: Gary Reid
Approved: Dave Webb

The above pilot report is based on sound engineering practices, but because of variable well conditions and other information which must be relied upon, Halliburton makes no warranty, express or implied, as to the accuracy of the data or any of the calculations or opinions expressed herein. You agree that Halliburton shall not be liable for any loss or damage whether due to negligence or otherwise arising out of or in connection with such data, calculations or opinions.


Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER -1
Rig ADA
Casing/Liner Size 13.375" SURFACE CASING TAIL
Job Type 13.375" SURFACE CASING TAIL
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-102A ROCKHOPPER -1
Test ID C-09-102A ROCKHOPPER -1
Request ID DAVE WEBB
Test Date 11/27/2009
Test Time 6:32 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 04:26
Strength 100 PSI at 04:53
Strength 500 PSI at 07:04
Strength 1000 PSI at 09:04
At Time 06:00 PSI is 273.4
At Time 12:00 PSI is 1590.2
At Time 24:00 PSI is 2986.2
At Time 48:00 PSI is 4080.1
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
00:00 06:00 12:00 18:00 24:00 30:00 36:00 42:00 48:00 54:00 60:00 66:00
fann®
Data File \\Fiuca32021\uca (channels - old)\Cheltenham\ADA\ROCK HOPPER -1\C-09-102A ROCKHOPPER -1 13.375 INCH SURFACE CASING TAIL.tdms
Comments 27/11/2009

7.1.4 9 5/8 casing Lead

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 09-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-104AA
Well Name	: Rockhopper 1	API Schedule	:
Pipe Size / Casing Size	: 9 5/8" Intermediate Casing		

Well Information

BHST	:	82	°C
BHCT	:	51	°C
Measured Depth	:	1956	m
Total Vertical depth	:	1956	m

EconoCem™ cement Lead Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			12/10/09	From Rig
Gascon 469	1.023	gal/sk	35.00	gal/10bbl		
Halad-413L	0.439	gal/sk	15.00	gal/10bbl		
SCR-100L	0.088	gal/sk	3.00	gal/10bbl		
NF-6	0.007	gal/sk	0.25	gal/10bbl		
Drill Water	10.72	gal/sk	**Cl- Content**		mg/L	
Total Mixing Fluid	: 12.28	gal/sk				
Slurry Density	: 12.5	lb/gal				
Slurry Yield	: 2.11	ft^3/sk				

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
7	4:55	5:30	6:02

Pumping time at 51 °C & 3650 psi is 6:02 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces at 27 °C

API Fluid Loss 70 cc/30 mins. at 51 °C and 1,000 psi

Slurry Rheology

	Fann Readings (RPM)						
	300	**200**	**100**	**6**	**3**	**PV (cP)**	**YP (lb_f/100ft^2)**
Mix Temp	50	34	22.5	5.5	4	41.25	9
Raised Temp 37 °C	38	28.5	18	3	1.5	30	8

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	51 °C	3000 psi	5:46	565 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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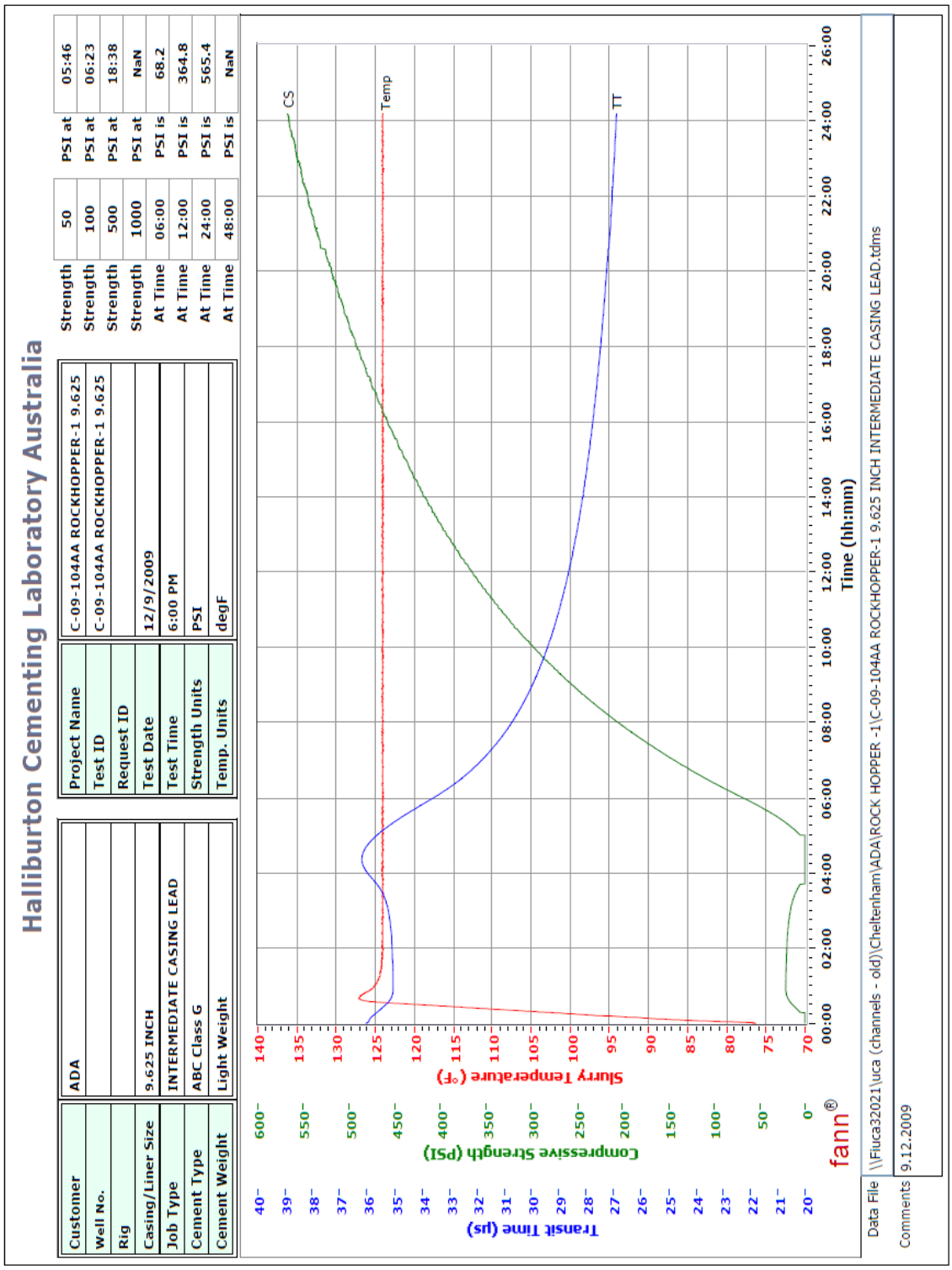
Halliburton Cementing Laboratory Australia
Customer ADA
Well No.
Rig
Casing/Liner Size 9.625 INCH
Job Type INTERMEDIATE CASING LEAD
Cement Type ABC Class G
Cement Weight Light Weight
Project Name C-09-104AA ROCKHOPPER-1 9.625
Test ID C-09-104AA ROCKHOPPER-1 9.625
Request ID
Test Date 12/9/2009
Test Time 6:00 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 05:46
Strength 100 PSI at 06:23
Strength 500 PSI at 18:38
Strength 1000 PSI at NaN
At Time 06:00 PSI is 68.2
At Time 12:00 PSI is 364.8
At Time 24:00 PSI is 565.4
At Time 48:00 PSI is NaN
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
fann®
Data File \\Fiuca32021\uca (channels - old)\Cheltenham\ADA\ROCK HOPPER -1\C-09-104AA ROCKHOPPER-1 9.625 INCH INTERMEDIATE CASING LEAD.tdms
Comments 9.12.2009

7.1.5 9 5/8" Casing Tail

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 02-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-105A
Well Name	: Rockhopper	API Schedule	: 9.50
Pipe Size / Casing Size	: 9 5/8" Intermediate Casing		

Well Information

BHST	:	82	°C
BHCT	:	51	°C
Measured Depth	:	1956	m
Total Vertical depth	:	1956	m

HalCem™ cement Tail Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			3/11/09	From Rig
Gascon 469	0.123	gal/sk	10.00	gal/10bbl		
CFR-3L	0.037	gal/sk	3.00	gal/10bbl		
Halad-413L	0.370	gal/sk	30.00	gal/10bbl		
SCR-100L	0.025	gal/sk	2.00	gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Drill Water	4.62	gal/sk	**Cl- Content**		mg/L	

Total Mixing Fluid	: 5.18	gal/sk	
Slurry Density	: 15.8	lb/gal	
Slurry Yield	: 1.16	ft^3/sk	

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
28	3:09	3:18	3:28

Pumping time at 51 °C & 3650 psi is 3:28 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces at 27 °C

API Fluid Loss 36 cc/30 mins. at 51 °C and 1,000 psi

Slurry Rheology

Fann Readings (RPM)

	300	200	100	6	3	PV (cP)	YP ($lb_f/100ft^2$)
Mix Temp	285	222	148	25.5	17	205.5	80
Raised Temp 46 °C	215	163	105	21.5	20	165	50

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	72 °C	3000 psi	2:38	3210 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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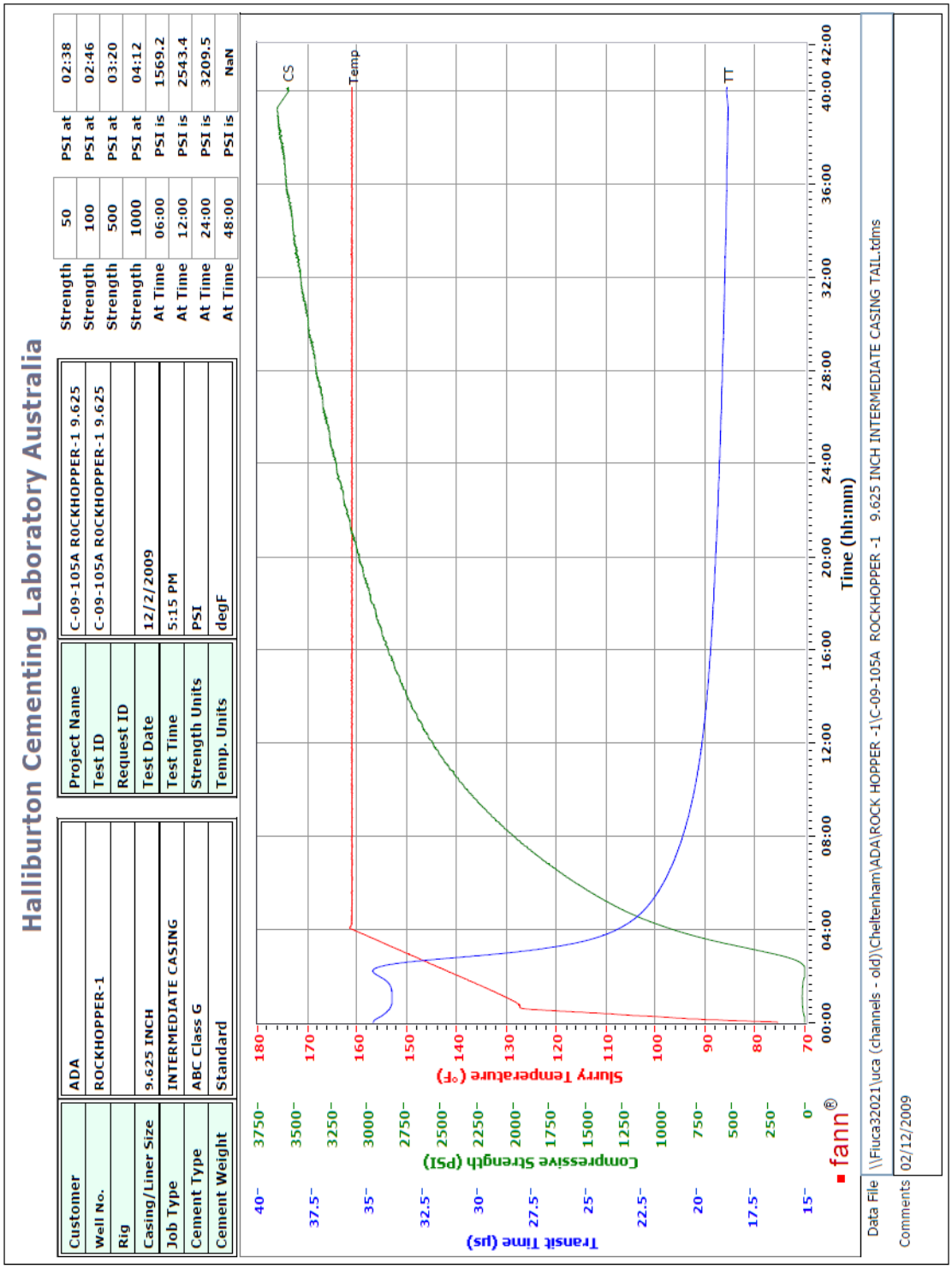
Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER-1
Rig
Casing/Liner Size 9.625 INCH
Job Type INTERMEDIATE CASING
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-105A ROCKHOPPER-1 9.625
Test ID C-09-105A ROCKHOPPER-1 9.625
Request ID
Test Date 12/2/2009
Test Time 5:15 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 02:38
Strength 100 PSI at 02:46
Strength 500 PSI at 03:20
Strength 1000 PSI at 04:12
At Time 06:00 PSI is 1569.2
At Time 12:00 PSI is 2543.4
At Time 24:00 PSI is 3209.5
At Time 48:00 PSI is NaN
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
CS
Temp
TT
Time (hh:mm)
fann®
Data File \\Fiuca32021\uca (channels - old)\Cheltenham\ADA\ROCK HOPPER -1\C-09-105A ROCKHOPPER -1 9.625 INCH INTERMEDIATE CASING TAIL.tdms
Comments 02/12/2009

7.1.6 Plugs

HALLIBURTON — **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 16-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-114C
Well Name	: Rock hopper 1	API Schedule	: 9.19
Pipe Size / Casing Size	: Plug-1		

Well Information

BHST	:	130	°C
BHCT	:	109	°C
Measured Depth	:	3221	m
Total Vertical depth	:	3200	m

HalCem™ cement Plug Job Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			12/10/09	From Rig
SCR-100L	0.104	gal/sk	8.50	gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
		gal/sk		gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Freshwater	5.03	gal/sk	Cl- Content	500	mg/L	

Total Mixing Fluid	: 5.13	gal/sk	
Slurry Density	: 15.8	lb/gal	
Slurry Yield	: 1.16	ft^3/sk	

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
2	4:53	4:56	4:58

Pumping time at 109 °C & 6036 psi is 4:58 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid — Traces at 82 °C

API Fluid Loss — cc/30 mins. at 82 °C and 1,000 psi

Slurry Rheology

	Fann Readings (RPM)						
	300	200	100	6	3	PV (cP)	YP ($lb_f/100ft^2$)
Mix Temp							
Raised Temp 82 °C							

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	109 °C	3000 psi	5:51	2152 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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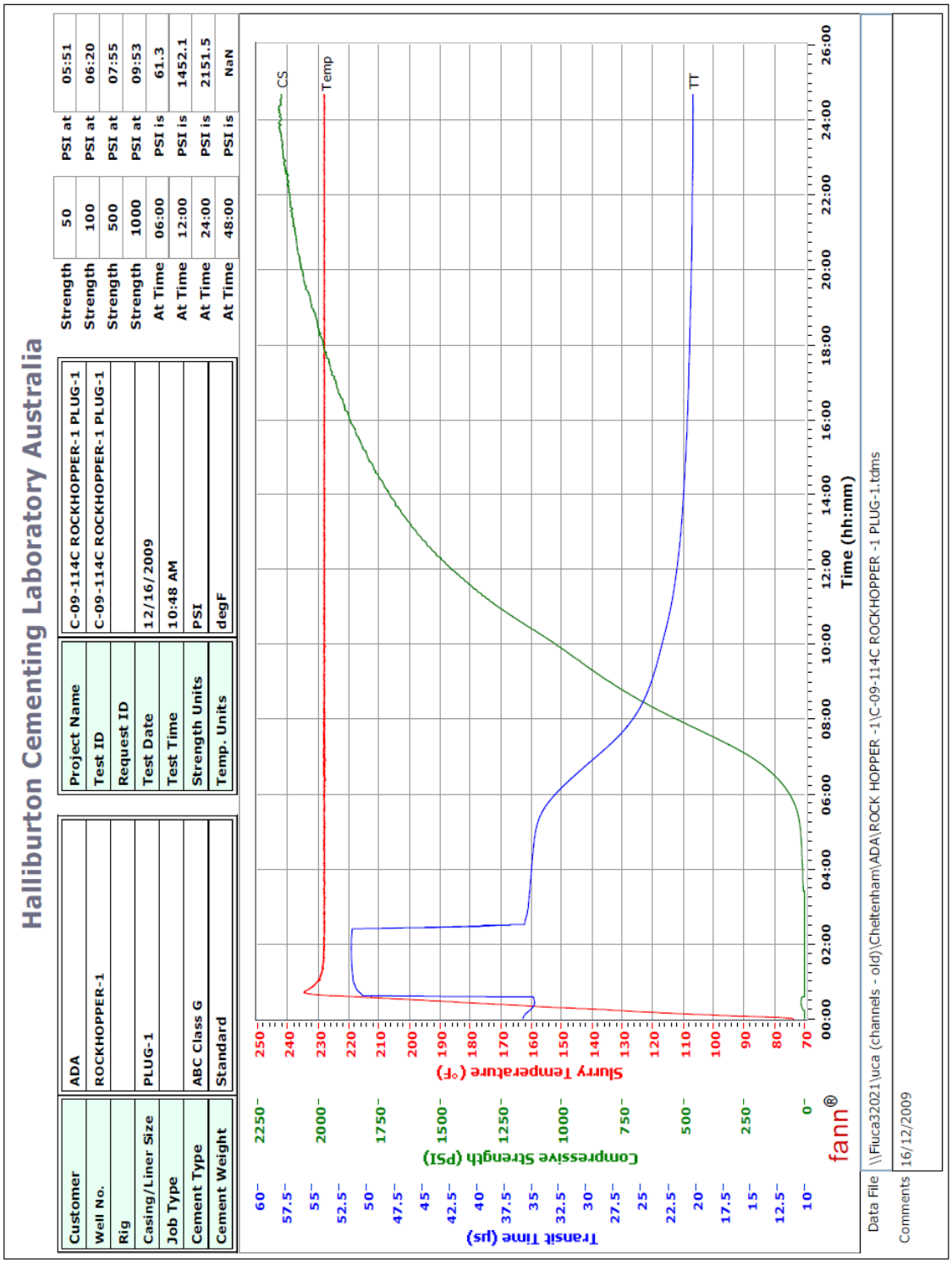
Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER-1
Rig
Casing/Liner Size PLUG-1
Job Type
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-114C ROCKHOPPER-1 PLUG-1
Test ID C-09-114C ROCKHOPPER-1 PLUG-1
Request ID
Test Date 12/16/2009
Test Time 10:48 AM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 05:51
Strength 100 PSI at 06:20
Strength 500 PSI at 07:55
Strength 1000 PSI at 09:53
At Time 06:00 PSI is 61.3
At Time 12:00 PSI is 1452.1
At Time 24:00 PSI is 2151.5
At Time 48:00 PSI is NaN
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
fann®
Data File \\Fluca32021\uca (channels - old)\Cheltenham\ADA\ROCK HOPPER -1\C-09-114C ROCKHOPPER -1 PLUG-1.tdms
Comments 16/12/2009

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 24-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-115B
Well Name	: Rockhopper	API Schedule	: 9.17
Pipe Size / Casing Size	: Plug-2		

Well Information

BHST	:	84	°C
BHCT	:	68	°C
Measured Depth	:	2000	m
Total Vertical depth	:	2000	m

HalCem™ cement Plug Job Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			5/11/09	BBMT
SCR-100L	0.049	gal/sk	4.00	gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
BBMT Fresh Water	5.07	gal/sk	Cl- Content		mg/L	

Total Mixing Fluid	: 5.12	gal/sk	
Slurry Density	: 15.8	lb/gal	
Slurry Yield	: 1.16	ft^3/sk	

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
27	3:04	3:10	3:18

Pumping time at 68 °C & 3823 psi is 3:18 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces at 27 °C

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	68 °C	3000 psi	4:43	2725 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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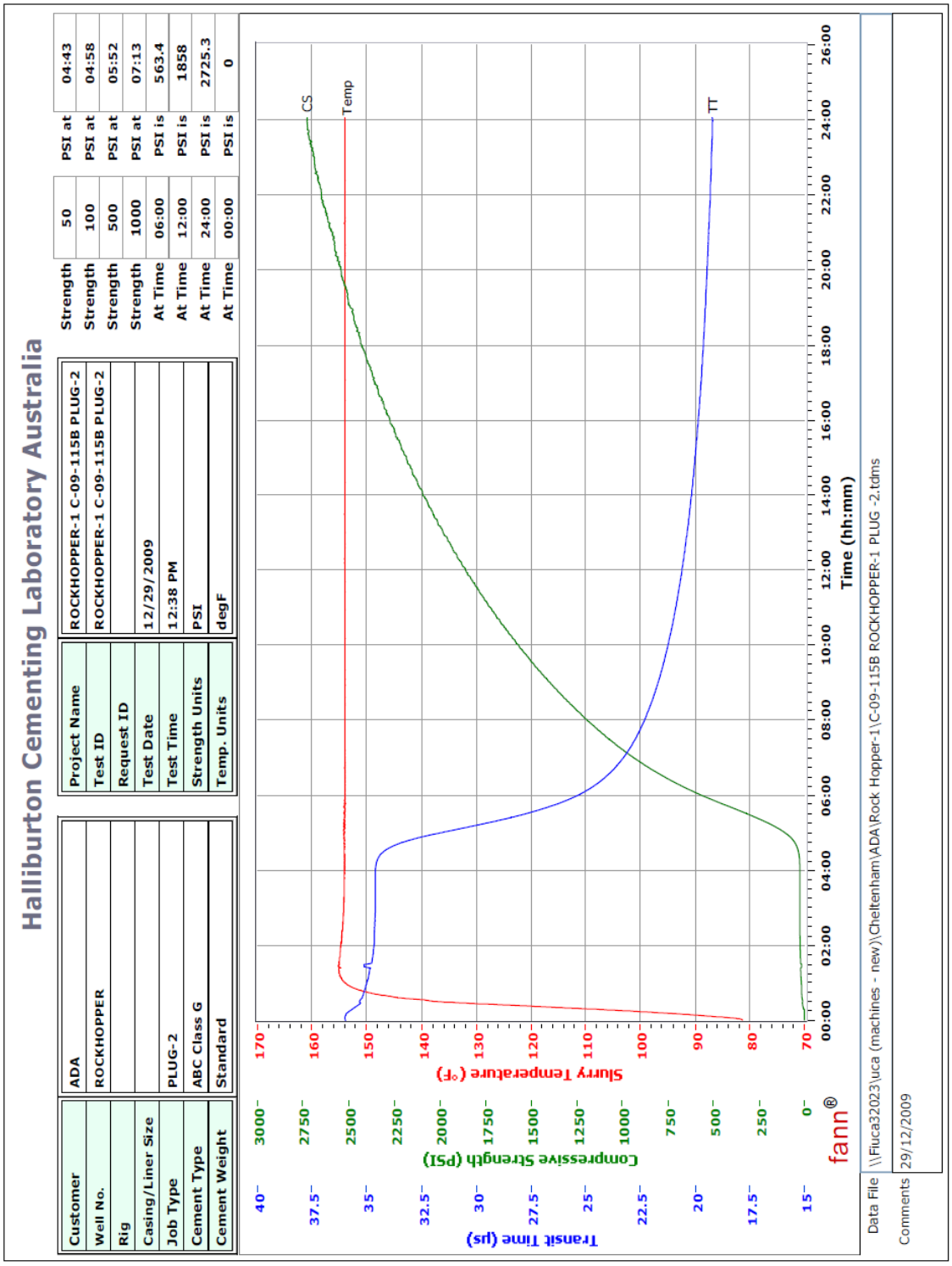
Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER
Rig
Casing/Liner Size
Job Type PLUG-2
Cement Type ABC Class G
Cement Weight Standard
Project Name ROCKHOPPER-1 C-09-115B PLUG-2
Test ID ROCKHOPPER-1 C-09-115B PLUG-2
Request ID
Test Date 12/29/2009
Test Time 12:38 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 04:43
Strength 100 PSI at 04:58
Strength 500 PSI at 05:52
Strength 1000 PSI at 07:13
At Time 06:00 PSI is 563.4
At Time 12:00 PSI is 1858
At Time 24:00 PSI is 2725.3
At Time 00:00 PSI is 0
CS
Temp
TT
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
fann®
Data File \\Fluca32023\uca (machines - new)\Cheltenham\ADA\Rock Hopper-1\C-09-115B ROCKHOPPER-1 PLUG -2.tdms
Comments 29/12/2009

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 22-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-116A
Well Name	: Rockhopper	API Schedule	: 9.14
Pipe Size / Casing Size	: Plug-3		

Well Information

BHST	:	15	°C
BHCT	:	15	°C
Measured Depth	:	145	m
Total Vertical depth	:	145	m

HalCem™ cement Plug Job Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			5/11/09	BBMT
Calcium Chloride	1.000	BWOC	1.00	BWOC		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Seawater	5.15	gal/sk				
Total Mixing Fluid :	5.16	gal/sk				
Slurry Density :	15.9	lb/gal				
Slurry Yield :	1.17	ft^3/sk				

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
8	2:55	3:22	3:35

Pumping time at 15 °C & 463 psi is 3:35 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces at 27 °C

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	15 °C	3000 psi	5:02	1609 psi

Lab Technician: Gary Reid
Approved: Dave Webb

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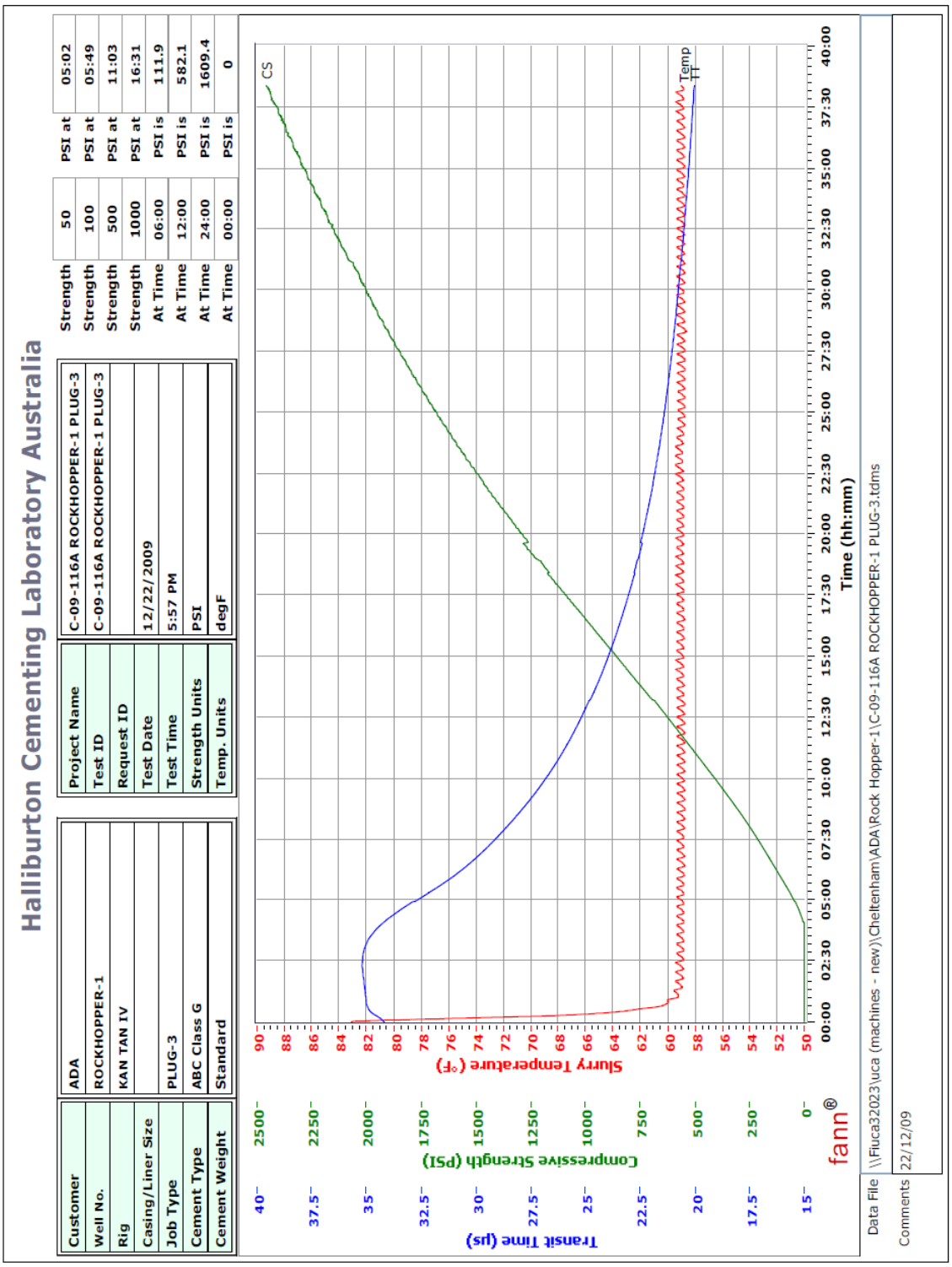
Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER-1
Rig KAN TAN IV
Casing/Liner Size
Job Type PLUG-3
Cement Type ABC Class G
Cement Weight Standard
Project Name C-09-116A ROCKHOPPER-1 PLUG-3
Test ID C-09-116A ROCKHOPPER-1 PLUG-3
Request ID
Test Date 12/22/2009
Test Time 5:57 PM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 05:02
Strength 100 PSI at 05:49
Strength 500 PSI at 11:03
Strength 1000 PSI at 16:31
At Time 06:00 PSI is 111.9
At Time 12:00 PSI is 582.1
At Time 24:00 PSI is 1609.4
At Time 00:00 PSI is 0
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
Time (hh:mm)
CS
Temp
TT
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Data File \\Fluca32023\uca (machines - new)\Cheltenham\ADA\Rock Hopper-1\C-09-116A ROCKHOPPER-1 PLUG-3.tdms
Comments 22/12/09

HALLIBURTON **CEMENT SLURRY LABORATORY REPORT**

Customer Information

Customer	: ADA	Date	: 18-Dec-09
Rig Name	: Kan Tan IV	Lab Reference	: C-09-117B
Well Name	: Rockhopper	API Schedule	: 9.17
Pipe Size / Casing Size	: Kick Off Plug		

Well Information

BHST	:	84	°C
BHCT	:	68	°C
Measured Depth	:	2000	m
Total Vertical depth	:	2000	m

HalCem™ cement Plug Job Slurry Design

MATERIAL	Conc.	Unit	Conc.	Unit	Date	Source
ABC Class G	94.00	lbs			8/11/09	Bulk Plant
SCR-100L	0.042	gal/sk	4.00	gal/10bbl		
CFR-3L	0.031	gal/sk	3.00	gal/10bbl		
NF-6	0.003	gal/sk	0.25	gal/10bbl		
Drill Water	4.31	gal/sk				

Total Mixing Fluid	:	4.39	gal/sk
Slurry Density	:	16.5	lb/gal
Slurry Yield	:	1.06	ft^3/sk

Laboratory Test Results

Thickening Time

Initial BC	30	50	70
6	4:10	4:12	4:14

Pumping time at 68 °C & 3823 psi is 4:14 hrs:mins

Slurry thickening time test is performed with slurry in motion, not in static condition

Free Fluid Traces Vertical at 27 °C

Compressive Strength

Non Destructive (UCA)	Temp	Pressure	50psi	24 hours
	68 °C	3000 psi	5:36	2825 psi

Lab Technician: Maggie Batko
Approved: Dave Webb

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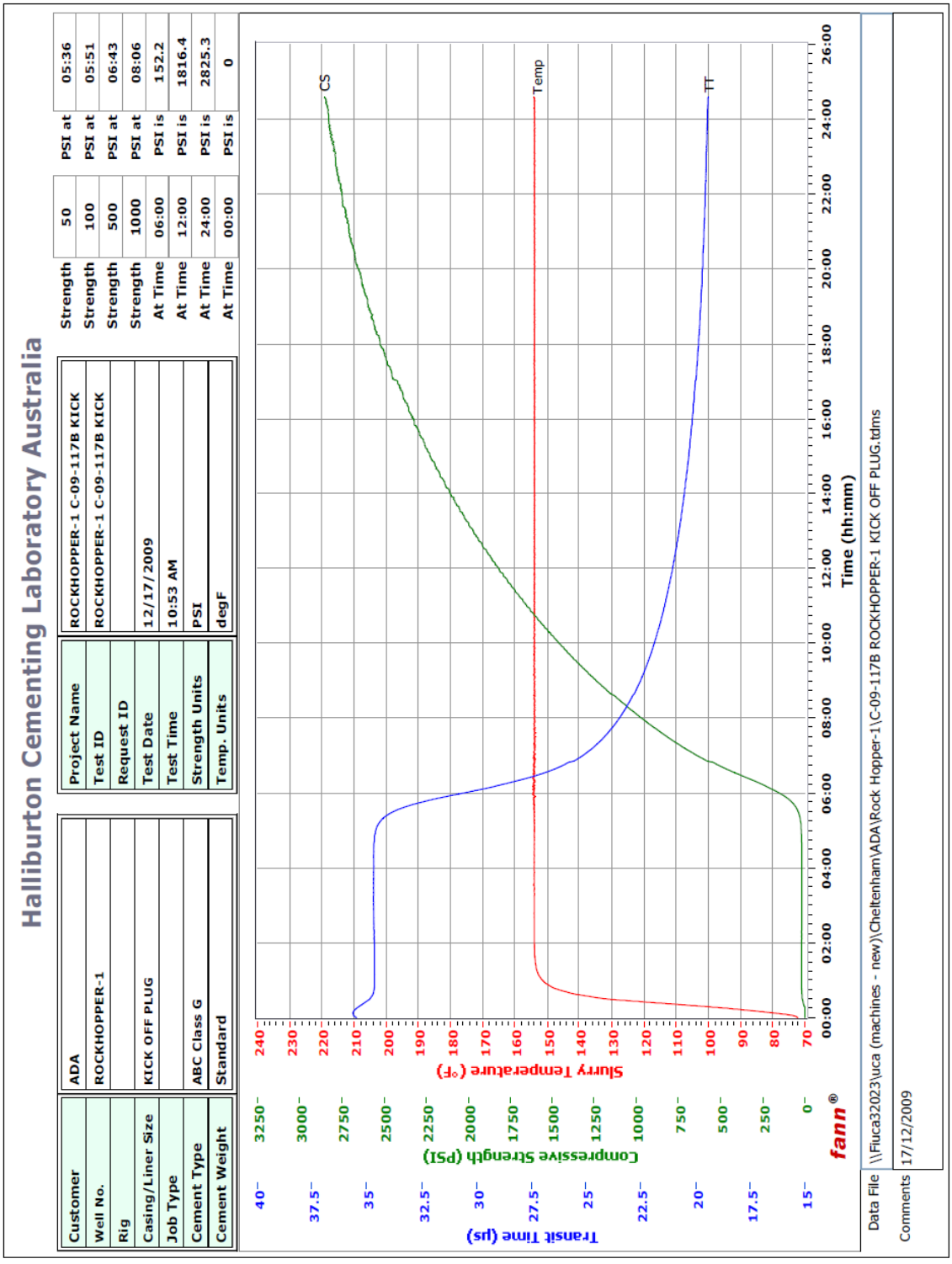
Halliburton Cementing Laboratory Australia
Customer ADA
Well No. ROCKHOPPER-1
Rig
Casing/Liner Size KICK OFF PLUG
Job Type
Cement Type ABC Class G
Cement Weight Standard
Project Name ROCKHOPPER-1 C-09-117B KICK
Test ID ROCKHOPPER-1 C-09-117B KICK
Request ID
Test Date 12/17/2009
Test Time 10:53 AM
Strength Units PSI
Temp. Units degF
Strength 50 PSI at 05:36
Strength 100 PSI at 05:51
Strength 500 PSI at 06:43
Strength 1000 PSI at 08:06
At Time 06:00 PSI is 152.2
At Time 12:00 PSI is 1816.4
At Time 24:00 PSI is 2825.3
At Time 00:00 PSI is 0
Transit Time (µs)
Compressive Strength (PSI)
Slurry Temperature (°F)
CS
Temp
TT
Time (hh:mm)
fann®
Data File \\Fiuca32023\uca (machines - new)\Cheltenham\ADA\Rock Hopper-1\C-09-117B ROCKHOPPER-1 KICK OFF PLUG.tdms
Comments 17/12/2009

Origin energy

Rockhopper-1
13 3/8" CASING TALLY

RUNNING TALLY

Updated: Saturday 10th October 2009

Casing Specifications			Date Casing Run		
Grade	K55		Casing Burst	3,450	psi (23.8 MPa)
Weight (ppf)	68	(101.4 kg/m)	Casing Collapse	1,940	psi (13.4 MPa)
Connection	Butress		Pipe Yield	1,069,000	lb (475 kdaN)
Ave Thread Loss (m)	0.12	(4.724 in)	Connection Yield	1,300,000	lb (578 kdaN)
Casing OD (in)	13.375	(339.725 mm)	Calc. Capacity	0.4898	bbl/m (0.0779 M3/m)
Calipered ID (in)	12.397	(314.88 mm)	Calc. Capacity	20.572	US Gallons/metre
Hole ID (in)	17.500	(444.5 mm)	Calc. CE Displaceme	0.5701	bbl/m (0.0906 M3/m)
Mud Weight	8.50	ppg (1.02 SG)	Est. Dry Wt (lb)	217,190	(98.72 MT)
Bouyancy Factor	0.8700		Est. Bouyant Wt (lb)	188,958	(85.89 MT)
			Make-Up Torque	10,000 - 12,000	KLbs

** Make up loss from W'ford Data book and confirmed with measurement*

Centraliser Program

Shoe Joint - 2 x Slider 11 - 2 spaced equally between length of pipe. Pre-installed onshore

Float collar joint - 1 x Slider 11 - mid joint. - Pre-installed onshore

Casing - 5 x slider 11 - 1 per joint above shoe track - Over casing coupling

Pup Joint lengths		
	#A	0.000 m
	#B	0.000 m
	#C	0.000 m

RT to top of 13-3/8" WH	94.00 m	*Max Coupling OD*	*14.375*
Hole Depth	966.00 m		
Rat Hole Required	5.00 m		
13.375 in Landing Depth	961.00 m		
13.375 in Run Tally Length	973.52 m		
17.5 in Rat Hole/Stickup	94.00 m		
Comment:			
Comment:			

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
1		Shoe Jt A	12.302	12.182	12.182	948.82	961.00	2 X Slider 11 Centraliser	2380	6.9
2		Float Jt A	12.158	12.038	24.220	936.78	948.82	1 x Slider 11 Centraliser	4730	13.8
3		96	11.038	10.918	35.138	925.86	936.78	1 x Slider 11 Centraliser	6870	20
4		95	10.999	10.879	46.017	914.98	925.86	1 x Slider 11 Centraliser	8990	26.2
5		94	11.679	11.559	57.576	903.42	914.98	1 x Slider 11 Centraliser	11250	32.8
6		93	11.239	11.119	68.695	892.31	903.42	1 x Slider 11 Centraliser	13420	39.2
7		92	11.442	11.322	80.017	880.98	892.31	1 x Slider 11 Centraliser	15630	45.6
8		91	11.594	11.474	91.491	869.51	880.98		17880	52.2
9		90	10.358	10.238	101.729	859.27	869.51	Enter 30" W/Head Housing	19880	58
10		89	10.775	10.655	112.384	848.62	859.27		21960	64.1
11		88	11.539	11.419	123.803	837.20	848.62		24190	70.6
12		87	11.313	11.193	134.996	826.00	837.20		26380	77
13		86	10.932	10.812	145.808	815.19	826.00		28490	83.1
14		85	11.305	11.185	156.993	804.01	815.19		30670	89.5
15		84	11.175	11.055	168.048	792.95	804.01		32830	95.8
16		83	11.549	11.429	179.477	781.52	792.95		35070	102.3
17		82	11.632	11.512	190.989	770.01	781.52		37320	108.9
18		81	10.846	10.726	201.715	759.29	770.01		39410	115
19		80	11.580	11.460	213.175	747.83	759.29		41650	121.5
20		79	11.424	11.304	224.479	736.52	747.83		43860	128
21		78	10.428	10.308	234.787	726.21	736.52		45870	133.9
22		77	10.814	10.694	245.481	715.52	726.21		47960	140
23		76	11.525	11.405	256.886	704.11	715.52		50190	146.5
24		75	11.470	11.350	268.236	692.76	704.11		52410	152.9

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
25		74	10.380	10.260	278.496	682.50	692.76		54410	158.8
26		73	11.305	11.185	289.681	671.32	682.50		56600	165.2
27		72	11.420	11.300	300.981	660.02	671.32		58810	171.6
28		71	10.530	10.410	311.391	649.61	660.02		60840	177.5
29		70	11.555	11.435	322.826	638.17	649.61		63070	184.1
30		69	11.290	11.170	333.996	627.00	638.17		65260	190.4
31		68	11.670	11.550	345.546	615.45	627.00		67510	197
32		67	11.450	11.330	356.876	604.12	615.45		69730	203.5
33		66	11.705	11.585	368.461	592.54	604.12		71990	210.1
34		65	10.440	10.320	378.781	582.22	592.54		74010	216
35		64	11.360	11.240	390.021	570.98	582.22		76200	222.4
36		63	10.680	10.560	400.581	560.42	570.98		78270	228.4
37		62	11.330	11.210	411.791	549.21	560.42		80460	234.8
38		61	11.365	11.245	423.036	537.96	549.21		82650	241.2
39		60	11.405	11.285	434.321	526.68	537.96		84860	247.6
40		59	10.900	10.780	445.101	515.90	526.68		86960	253.8
41		58	11.690	11.570	456.671	504.33	515.90		89220	260.4
42		57	10.970	10.850	467.521	493.48	504.33		91340	266.6
43		56	11.450	11.330	478.851	482.15	493.48		93560	273
44		55	10.990	10.870	489.721	471.28	482.15		95680	279.2
45		54	10.650	10.530	500.251	460.75	471.28		97740	285.2
46		53	10.535	10.415	510.666	450.33	460.75		99770	291.2
47		52	11.360	11.240	521.906	439.09	450.33		101970	297.6
48		51	10.410	10.290	532.196	428.80	439.09		103980	303.4
49		50	11.370	11.250	543.446	417.55	428.80		106180	309.8
50		49	11.275	11.155	554.601	406.40	417.55		108360	316.2
51		48	11.150	11.030	565.631	395.37	406.40		110510	322.5
52		47	11.140	11.020	576.651	384.35	395.37		112670	328.8
53		46	10.980	10.860	587.511	373.49	384.35		114790	335
54		45	10.320	10.200	597.711	363.29	373.49		116780	340.8
55		44	11.550	11.430	609.141	351.86	363.29		119010	347.3
56		43	11.140	11.020	620.161	340.84	351.86		121170	353.6
57		42	11.185	11.065	631.226	329.77	340.84		123330	359.9
58		41	11.415	11.295	642.521	318.48	329.77		125540	366.3
	out	40	11.505	0.000	642.521	318.48	318.48	No Drift / Leave Out	125540	366.3
59		39	11.440	11.320	653.841	307.16	318.48		127750	372.8
60		38	11.340	11.220	665.061	295.94	307.16		129940	379.2
61		37	10.850	10.730	675.791	285.21	295.94		132040	385.3
62		36	11.470	11.350	687.141	273.86	285.21		134250	391.8
63		35	10.985	10.865	698.006	262.99	273.86		136380	398
64		34	10.385	10.265	708.271	252.73	262.99		138380	403.8
65		33	11.600	11.480	719.751	241.25	252.73		140620	410.4
66		32	10.950	10.830	730.581	230.42	241.25		142740	416.5
67		31	11.795	11.675	742.256	218.74	230.42		145020	423.2
68		30	11.710	11.590	753.846	207.15	218.74		147290	429.8
69		29	11.470	11.350	765.196	195.80	207.15		149500	436.3
70		28	11.555	11.435	776.631	184.37	195.80		151740	442.8
71		27	11.100	10.980	787.611	173.39	184.37		153880	449.1
72		26	11.560	11.440	799.051	161.95	173.39		156120	455.6
73		25	10.600	10.480	809.531	151.47	161.95		158170	461.6

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
74		24	11.570	11.450	820.981	140.02	151.47		160400	468.1
75		23	10.440	10.320	831.301	129.70	140.02		162420	474
76		22	11.605	11.485	842.786	118.21	129.70		164660	480.5
	out	21	11.535	0.000	842.786	118.21	118.21		164660	480.5
	out	20	10.980	0.000	842.786	118.21	118.21		164660	480.5
	out	19	11.325	0.000	842.786	118.21	118.21		164660	480.5
	out	18	11.515	0.000	842.786	118.21	118.21		164660	480.5
	out	17	11.620	0.000	842.786	118.21	118.21		164660	480.5
	out	16	11.520	0.000	842.786	118.21	118.21		164660	480.5
	out	15	11.071	0.000	842.786	118.21	118.21		164660	480.5
	out	14	11.480	0.000	842.786	118.21	118.21		164660	480.5
	out	13	11.313	0.000	842.786	118.21	118.21		164660	480.5
	out	12	11.376	0.000	842.786	118.21	118.21		164660	480.5
	out	11	11.999	0.000	842.786	118.21	118.21		164660	480.5
	out	10	12.358	0.000	842.786	118.21	118.21		164660	480.5
	out	9	12.063	0.000	842.786	118.21	118.21		164660	480.5
	out	8	11.732	0.000	842.786	118.21	118.21		164660	480.5
	out	7	10.963	0.000	842.786	118.21	118.21		164660	480.5
	out	6	11.407	0.000	842.786	118.21	118.21		164660	480.5
	out	5	11.025	0.000	842.786	118.21	118.21		164660	480.5
	out	4	12.186	0.000	842.786	118.21	118.21		164660	480.5
	out	3	11.913	0.000	842.786	118.21	118.21		164660	480.5
	out	2	11.515	0.000	842.786	118.21	118.21		164660	480.5
	out	1	11.389	0.000	842.786	118.21	118.21		164660	480.5
77		NC Jt - A	11.813	11.693	854.479	106.52	118.21	No Cross Coupling Jt	166950	487.2
			9.775	9.655	864.134	96.87	106.52	Btm of 18.3/4' HPWH	168830	492.7
			0.000	0.000	864.134	96.87	106.52	30" W/Head Housing Top	168830	492.7
			0.900	0.780	864.914	96.09	106.52	18-3/4" WH - Datum	168990	493.1
			1.450	1.450	866.364	94.64	105.74	R/Tool + X/Over	169270	494
			3.090	3.090	869.454	91.55	104.29	Pup Joint	169870	495.7
			28.170	28.170	897.624	63.38	101.20	STD #1 HWDP	175380	511.8
			28.290	28.290	925.914	35.09	73.03	STD #2 HWDP	180900	527.9
			28.350	28.350	954.264	6.74	44.74	STD #3 HWDP	186440	544.1
			19.260	19.260	973.524	-12.52	16.39	In on Cement Stand	190210	555.1
			0.000	0.000	973.524	-12.52	16.39		190210	555.1
	22		Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
Summary			1236.794	973.524	973.524	-12.524	961.000		190,210	555.1

Rockhopper-1
9-5/8" CASING TALLY

RUNNING TALLY

Updated: Sunday 13th December 2009

Casing Specifications			Date Casing Run		
Grade	L80		Casing Burst	6,870	psi (47.4 MPa)
Weight (ppf)	47	(70.1 kg/m)	Casing Collapse	4,750	psi (32.8 MPa)
Connection	VAM Top		Pipe Yield	1,086,000	lb (483 kdaN)
Ave Thread Loss (m)	0.142	(5.59 in)	Connection Yield	1,300,000	lb (578 kdaN)
Casing OD (in)	9.625	(244.475 mm)	Calc. Capacity	0.2448	bbl/m (0.0389 M3/m)
Calipered ID (in)	8.764	(222.61 mm)	Calc. Capacity	10.282	US Gallons/metre
Hole ID (in)	12.500	(317.5 mm)	Calc. CE Displaceme	0.0505	bbl/m (0.008 M3/m)
Mud Weight	9.20	ppg (1.104 SG)	Est. Dry Wt (lb)	304,047	(138.2 MT)
Bouyancy Factor	0.8596		Est. Bouyant Wt (lb)	261,372	(118.81 MT)
			Make-Up Torque	14,000 - 17,400	KLbs-Ft

** Make up loss from W'ford Data book and confirmed with measurement*

Centraliser Program

Shoe Joint - 2 x Slider 11 - 2 spaced equally between length of pipe. Pre-installed onshore

Float Collar joint - 2 x Slider 11 - mid joint. - Pre-installed onshore

Casing - 8x Slider 11 - 1 per joint above Shoetrack - Over Stopcollar

Pup Joint lengths		
	#A	0.000 m
	#B	0.000 m
	#C	0.000 m

R/Table to top of 9-5/8" Hanger	96.60 m	*Max Coupling OD*	*10.396 in*
Hole Depth	1972.00 m		
Rat Hole Required	7.25 m		
9.625 in Landing Depth	1964.75 m		
9.625 in Run Tally Length	1971.78 m		
12.5 in Rat Hole/Stickup	94.00 m		
Comment:			
Comment:			

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
1		Shoe Jt A	12.620	12.620	12.620	1952.13	1964.75	2 X Slider 11 Centraliser	1680	0.6
2		Int	12.180	12.038	24.658	1940.09	1952.13	2 X Slider 11 Centraliser	3290	1.2
3		Float Jt A	12.610	12.468	37.126	1927.62	1940.09	1 x Slider 11 Centraliser	4950	1.9
4		176	12.185	12.043	49.169	1915.58	1927.62	1 x Slider 11 Centraliser	6560	2.5
5		175	12.180	12.038	61.207	1903.54	1915.58	1 x Slider 11 Centraliser	8170	3.1
6		174	12.180	12.038	73.245	1891.51	1903.54	1 x Slider 11 Centraliser	9770	3.7
7		173	12.185	12.043	85.288	1879.46	1891.51	1 x Slider 11 Centraliser	11380	4.3
8		172	12.160	12.018	97.306	1867.44	1879.46	1 x Slider 11 Centraliser	12980	4.9
9		171	12.060	11.918	109.224	1855.53	1867.44	1 x Slider 11 Centraliser	14570	5.5
10		170	12.180	12.038	121.262	1843.49	1855.53	1 x Slider 11 Centraliser	16180	6.1
11		169	11.960	11.818	133.080	1831.67	1843.49	1 x Slider 11 Centraliser	17760	6.7
12		168	11.955	11.813	144.893	1819.86	1831.67		19330	7.3
13		167	12.155	12.013	156.906	1807.84	1819.86		20940	7.9
14		166	12.185	12.043	168.949	1795.80	1807.84		22540	8.5
15		165	12.120	11.978	180.927	1783.82	1795.80		24140	9.1
16		164	12.185	12.043	192.970	1771.78	1783.82		25750	9.7
17		163	12.185	12.043	205.013	1759.74	1771.78		27360	10.3
18		162	12.180	12.038	217.051	1747.70	1759.74		28960	11
19		161	12.180	12.038	229.089	1735.66	1747.70		30570	11.6
20		160	12.120	11.978	241.067	1723.68	1735.66		32170	12.2
21		159	12.165	12.023	253.090	1711.66	1723.68		33770	12.8
22		158	12.180	12.038	265.128	1699.62	1711.66		35380	13.4
23		157	12.185	12.043	277.171	1687.58	1699.62		36980	14
24		156	12.185	12.043	289.214	1675.54	1687.58		38590	14.6

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
25		**155**	**12.180**	**12.038**	301.252	1663.50	1675.54		40200	15.2
26		**154**	**12.185**	**12.043**	313.295	1651.46	1663.50		41800	15.8
27		**153**	**12.185**	**12.043**	325.338	1639.41	1651.46		43410	16.4
28		**152**	**12.185**	**12.043**	337.381	1627.37	1639.41		45020	17
29		**151**	**12.180**	**12.038**	349.419	1615.33	1627.37		46620	17.6
30		**150**	**12.185**	**12.043**	361.462	1603.29	1615.33		48230	18.2
31		**149**	**12.180**	**12.038**	373.500	1591.25	1603.29		49840	18.8
32		**148**	**12.185**	**12.043**	385.543	1579.21	1591.25		51440	19.5
33		**147**	**12.185**	**12.043**	397.586	1567.16	1579.21		53050	20.1
34		**146**	**12.180**	**12.038**	409.624	1555.13	1567.16		54660	20.7
35		**145**	**12.185**	**12.043**	421.667	1543.08	1555.13		56260	21.3
36		**144**	**12.180**	**12.038**	433.705	1531.05	1543.08		57870	21.9
37		**143**	**12.180**	**12.038**	445.743	1519.01	1531.05		59480	22.5
38		**142**	**12.180**	**12.038**	457.781	1506.97	1519.01		61080	23.1
39		**141**	**12.180**	**12.038**	469.819	1494.93	1506.97		62690	23.7
40		**140**	**12.180**	**12.038**	481.857	1482.89	1494.93		64300	24.3
41		**139**	**12.180**	**12.038**	493.895	1470.86	1482.89		65900	24.9
42		**138**	**12.180**	**12.038**	505.933	1458.82	1470.86		67510	25.5
43		**137**	**12.170**	**12.028**	517.961	1446.79	1458.82		69110	26.1
44		**136**	**12.185**	**12.043**	530.004	1434.75	1446.79		70720	26.7
45		**135**	**12.180**	**12.038**	542.042	1422.71	1434.75		72330	27.4
46		**134**	**12.185**	**12.043**	554.085	1410.67	1422.71		73930	28
47		**133**	**12.180**	**12.038**	566.123	1398.63	1410.67		75540	28.6
48		**132**	**12.180**	**12.038**	578.161	1386.59	1398.63		77150	29.2
49		**131**	**12.185**	**12.043**	590.204	1374.55	1386.59		78750	29.8
50		**130**	**12.180**	**12.038**	602.242	1362.51	1374.55		80360	30.4
51		**129**	**12.180**	**12.038**	614.280	1350.47	1362.51		81960	31
52		**128**	**12.180**	**12.038**	626.318	1338.43	1350.47		83570	31.6
53		**127**	**12.185**	**12.043**	638.361	1326.39	1338.43		85180	32.2
54		**126**	**12.180**	**12.038**	650.399	1314.35	1326.39		86780	32.8
55		**125**	**12.180**	**12.038**	662.437	1302.31	1314.35		88390	33.4
56		**124**	**12.185**	**12.043**	674.480	1290.27	1302.31		90000	34
57		**123**	**12.130**	**11.988**	686.468	1278.28	1290.27		91600	34.6
58		**122**	**12.185**	**12.043**	698.511	1266.24	1278.28		93200	35.2
59		**121**	**12.035**	**11.893**	710.404	1254.35	1266.24		94790	35.8
60		**120**	**12.180**	**12.038**	722.442	1242.31	1254.35		96400	36.5
61		**119**	**12.090**	**11.948**	734.390	1230.36	1242.31		97990	37.1
62		**118**	**12.140**	**11.998**	746.388	1218.36	1230.36		99590	37.7
63		**117**	**12.185**	**12.043**	758.431	1206.32	1218.36		101200	38.3
64		**116**	**12.185**	**12.043**	770.474	1194.28	1206.32		102810	38.9
65		**115**	**12.185**	**12.043**	782.517	1182.23	1194.28		104410	39.5
66		**114**	**12.170**	**12.028**	794.545	1170.21	1182.23		106020	40.1
67		**113**	**12.180**	**12.038**	806.583	1158.17	1170.21		107620	40.7
68		**112**	**12.185**	**12.043**	818.626	1146.12	1158.17		109230	41.3
69		**111**	**12.185**	**12.043**	830.669	1134.08	1146.12		110840	41.9
70		**110**	**12.180**	**12.038**	842.707	1122.04	1134.08		112440	42.5
71		**109**	**12.185**	**12.043**	854.750	1110.00	1122.04		114050	43.1
72		**108**	**12.180**	**12.038**	866.788	1097.96	1110.00		115660	43.7
73		**107**	**12.180**	**12.038**	878.826	1085.92	1097.96		117260	44.3
74		**106**	**12.180**	**12.038**	890.864	1073.89	1085.92		118870	45

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
75		**105**	**12.180**	**12.038**	902.902	1061.85	1073.89		120480	45.6
76		**104**	**12.180**	**12.038**	914.940	1049.81	1061.85		122080	46.2
77		**103**	**11.955**	**11.813**	926.753	1038.00	1049.81		123660	46.8
78		**102**	**12.185**	**12.043**	938.796	1025.95	1038.00		125270	47.4
79		**101**	**12.180**	**12.038**	950.834	1013.92	1025.95		126870	48
80		**100**	**12.185**	**12.043**	962.877	1001.87	1013.92		128480	48.6
81		**99**	**12.185**	**12.043**	974.920	989.83	1001.87		130090	49.2
82		**98**	**11.930**	**11.788**	986.708	978.04	989.83		131660	49.8
83		**97**	**12.010**	**11.868**	998.576	966.17	978.04		133240	50.4
84		**96**	**12.180**	**12.038**	1010.614	954.14	966.17		134850	51
85		**95**	**12.180**	**12.038**	1022.652	942.10	954.14		136450	51.6
86		**94**	**12.170**	**12.028**	1034.680	930.07	942.10		138060	52.2
87		**93**	**12.180**	**12.038**	1046.718	918.03	930.07		139670	52.8
88		**92**	**12.180**	**12.038**	1058.756	905.99	918.03		141270	53.4
89		**91**	**12.185**	**12.043**	1070.799	893.95	905.99		142880	54
90		**90**	**12.180**	**12.038**	1082.837	881.91	893.95		144490	54.6
91		**89**	**12.090**	**11.948**	1094.785	869.97	881.91		146080	55.2
92		**88**	**12.180**	**12.038**	1106.823	857.93	869.97		147690	55.9
93		**87**	**12.180**	**12.038**	1118.861	845.89	857.93		149290	56.5
94		**86**	**12.190**	**12.048**	1130.909	833.84	845.89		150900	57.1
95		**85**	**12.180**	**12.038**	1142.947	821.80	833.84		152510	57.7
96		**84**	**12.170**	**12.028**	1154.975	809.78	821.80		154110	58.3
97		**83**	**12.190**	**12.048**	1167.023	797.73	809.78		155720	58.9
98		**82**	**12.180**	**12.038**	1179.061	785.69	797.73		157320	59.5
99		**81**	**12.190**	**12.048**	1191.109	773.64	785.69		158930	60.1
100		**80**	**12.190**	**12.048**	1203.157	761.59	773.64		160540	60.7
101		**79**	**12.190**	**12.048**	1215.205	749.55	761.59		162150	61.3
102		**78**	**12.180**	**12.038**	1227.243	737.51	749.55		163750	61.9
103		**77**	**12.180**	**12.038**	1239.281	725.47	737.51		165360	62.5
104		**76**	**12.180**	**12.038**	1251.319	713.43	725.47		166970	63.1
105		**75**	**12.190**	**12.048**	1263.367	701.38	713.43		168570	63.8
106		**74**	**12.090**	**11.948**	1275.315	689.44	701.38		170170	64.4
107		**73**	**12.185**	**12.043**	1287.358	677.39	689.44		171770	65
108		**72**	**12.180**	**12.038**	1299.396	665.35	677.39		173380	65.6
109		**71**	**12.190**	**12.048**	1311.444	653.31	665.35		174990	66.2
110		**70**	**12.180**	**12.038**	1323.482	641.27	653.31		176600	66.8
111		**69**	**12.180**	**12.038**	1335.520	629.23	641.27		178200	67.4
112		**68**	**12.185**	**12.043**	1347.563	617.19	629.23		179810	68
113		**67**	**12.180**	**12.038**	1359.601	605.15	617.19		181410	68.6
114		**66**	**12.180**	**12.038**	1371.639	593.11	605.15		183020	69.2
115		**65**	**12.190**	**12.048**	1383.687	581.06	593.11		184630	69.8
116		**64**	**12.180**	**12.038**	1395.725	569.03	581.06		186230	70.4
117		**63**	**12.185**	**12.043**	1407.768	556.98	569.03		187840	71
118		**62**	**12.190**	**12.048**	1419.816	544.93	556.98		189450	71.6
119		**61**	**12.180**	**12.038**	1431.854	532.90	544.93		191060	72.3
120		**60**	**12.185**	**12.043**	1443.897	520.85	532.90		192660	72.9
121		**59**	**12.180**	**12.038**	1455.935	508.82	520.85		194270	73.5
122		**58**	**12.180**	**12.038**	1467.973	496.78	508.82		195870	74.1
123		**57**	**12.080**	**11.938**	1479.911	484.84	496.78		197470	74.7
124		**56**	**12.180**	**12.038**	1491.949	472.80	484.84		199070	75.3

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
125		55	12.180	12.038	1503.987	460.76	472.80		200680	75.9
126		54	12.180	12.038	1516.025	448.73	460.76		202290	76.5
127		53	11.740	11.598	1527.623	437.13	448.73		203830	77.1
128		52	12.190	12.048	1539.671	425.08	437.13		205440	77.7
129		51	12.190	12.048	1551.719	413.03	425.08		207050	78.3
130		50	12.180	12.038	1563.757	400.99	413.03		208660	78.9
131		49	12.205	12.063	1575.820	388.93	400.99		210270	79.5
132		48	12.185	12.043	1587.863	376.89	388.93		211870	80.1
133		47	12.185	12.043	1599.906	364.84	376.89		213480	80.7
134		46	11.970	11.828	1611.734	353.02	364.84		215060	81.3
135		45	12.180	12.038	1623.772	340.98	353.02		216660	81.9
136		44	12.185	12.043	1635.815	328.94	340.98		218270	82.5
137		43	12.185	12.043	1647.858	316.89	328.94		219880	83.2
138		42	12.185	12.043	1659.901	304.85	316.89		221480	83.8
139		41	12.180	12.038	1671.939	292.81	304.85		223090	84.4
140		40	12.180	12.038	1683.977	280.77	292.81		224700	85
141		39	11.855	11.713	1695.690	269.06	280.77		226260	85.6
142		38	12.180	12.038	1707.728	257.02	269.06		227870	86.2
143		37	12.170	12.028	1719.756	244.99	257.02		229470	86.8
144		36	12.180	12.038	1731.794	232.96	244.99		231080	87.4
145		35	12.180	12.038	1743.832	220.92	232.96		232680	88
146		34	12.185	12.043	1755.875	208.88	220.92		234290	88.6
147		33	12.180	12.038	1767.913	196.84	208.88		235900	89.2
148		32	12.185	12.043	1779.956	184.79	196.84		237500	89.8
149		31	12.130	11.988	1791.944	172.81	184.79		239100	90.4
150		30	12.185	12.043	1803.987	160.76	172.81		240710	91
151		29	12.185	12.043	1816.030	148.72	160.76		242320	91.6
152		28	12.130	11.988	1828.018	136.73	148.72		243920	92.2
153		27	12.180	12.038	1840.056	124.69	136.73		245520	92.9
154		26	12.185	12.043	1852.099	112.65	124.69		247130	93.5
155		25	12.180	12.038	1864.137	100.61	112.65		248740	94.1
	out	24	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	23	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	22	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	21	12.190	0.000	1864.137	100.61	100.61		248740	94.1
	out	20	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	19	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	18	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	17	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	16	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	15	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	14	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	13	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	12	12.060	0.000	1864.137	100.61	100.61		248740	94.1
	out	11	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	10	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	9	12.185	0.000	1864.137	100.61	100.61		248740	94.1
	out	8	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	7	11.995	0.000	1864.137	100.61	100.61		248740	94.1
	out	6	12.155	0.000	1864.137	100.61	100.61		248740	94.1

Seq No	IN / OUT	Joint Name	Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
	out	5	12.170	0.000	1864.137	100.61	100.61		248740	94.1
	out	4	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	3	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	2	12.180	0.000	1864.137	100.61	100.61		248740	94.1
	out	1	12.180	0.000	1864.137	100.61	100.61		248740	94.1
			4.150	4.008	1868.145	96.61	100.61		249270	94.3
			0.000	0.000	1868.145	96.61	96.61	Top of 9-5/8" Csg Hanger	249270	94.3
			1.010	1.010	1869.155	95.60	96.61	18-3/4" WH - Datum	249410	94.3
			0.620	0.620	1869.775	94.98	95.60	R/Tool + X/Over	249490	94.4
			3.060	3.060	1872.835	91.92	94.98	Pup Joint	249900	94.5
			27.980	27.980	1900.815	63.94	91.92	STD #1 HWDP	253630	95.9
			28.400	28.400	1929.215	35.54	63.94	STD #2 HWDP	257420	97.4
			28.390	28.390	1957.605	7.15	35.54	STD #3 HWDP	261210	98.8
			14.170	14.170	1971.775	-7.02	7.15	In on Cement Stand	263100	99.5
			0.000	0.000	1971.775	-7.02	7.15		263100	99.5
	24		Joint Length	Effective Length	Cum. Length	Depth top Conn	Depth Bot Conn	Remarks	Cum Bouyed Wt (lb)	Cum PVT Displ (bbl)
Summary			2285.805	1971.775	1971.775	-7.025	1964.750		263,100	99.5

APPENDIX 18: DAILY DRILLING REPORTS

Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 1
Rockhopper-1/ST1

19 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

Rockhopper-1/ST1

Date:	19 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	1	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Cleve Mathews

Well Data

Country	Australia	MDBRT	0.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	0.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$482,088
Rig	Kan Tan IV	Days from spud	50.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$482,088
Wtr Dpth (LAT)	74.3m	Days on well	0.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	79
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Kick off cement plug from 1995m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Kick off ST1 and continue to build angle.		

Summary of Period 0000 to 2400 Hrs

Sidetrack commenced at 17:30hrs. Made up 8½" kick off BHA. Shallow tested downhole tools. RIH from 216m to 1964m. Filled pipe every 20 stands.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	76 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days	Fire in pit room	
Permit To Work	19	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	2 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	36	0 Days	Number of STOP cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 19 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G7	1730	1900	1.50	1985.0m	Rockhopper-1/ST1 commenced at 17:30 hrs. Made up 8½" bit to mud motor. Oriented bent housing to MWD tool. Installed HOC probe and programmed tool.
P17	P	G6	1900	2100	2.00	1985.0m	Continued to make up 8½" sidetrack kick off BHA to 216m. Surface tested MWD/LWD tools - ok.
P17	P	G8	2100	2400	3.00	1985.0m	RIH with 8½" kick off assembly from 216m to 1964m. Filled pipe every 20 stands. Held trip drill - 27sec to stab and close IBOP.

Operations For Period 0000 Hrs to 0600 Hrs on 20 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0100	1.00	1985.0m	Established circulation. Recorded parameters. Circulated bottoms up. Recorded SCRs.
P17	P	D1	0100	0300	2.00	1990.0m	Drilled out cement plug from 1970m to 1990m (550gpm, 2000psi, 5/10klbs WOB, 50rpm, 3k ftlbs torque).
P17	P	D3	0300	0600	3.00	1995.0m	Commenced kick off at 1990m. Time slide drill from 1990m to 1995m at 1 to 2m/hr (550gpm, 2000psi, 2/4klbs WOB, 9.3+ppg MW). 1990m - returns 100% cement 1992m - returns 75% cement, 25% formation 1994m - returns 65% cement, 35% formation.

Operations For Period Hrs to Hrs on

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Printed on 19 Jan 2010

Phase Data to 2400hrs, 19 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	6.5	19 Jan 2010	19 Jan 2010	6.50	0.271	1985.0m

General Comments

00:00 TO 24:00 Hrs ON 19 Jan 2010

WBM Data

Cost Today US$ 16036

Mud TypeKCL/Polymer/PHPA		API FL:	4.7cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	56sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	22cp
Time:	2200	HTHP-FL:	9.8cc/30min	Hard/Ca:	1240mg/l	Oil(%):		YP	30lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	7.5	Sand:	.25	Gels 10s	9
Temp:	25C°			PM:	6.3	pH:	11.5	Gels 10m	13
				PF:	1.3	PHPA:	2ppb	Fann 003	8
								Fann 006	9
								Fann 100	27
								Fann 200	41
								Fann 300	52
								Fann 600	74

Comment — Note: Costs are in AUD

Bit # 2

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	117	No.	Size	Progress		Cumul. Progress	0.0m
Mfr:	Baker Christensen	WOB(avg)		3	22/32nd"	On Bottom Hrs		Cumul. On Btm Hrs	0.0h
Type:	Rock	RPM(avg)				IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Serial No.:	6062641	F.Rate				Total Revs		Cumul. Total Revs	0
Bit Model	MXL-1X	SPP				ROP(avg)	N/A	ROP(avg)	0.00 m/hr
Depth In	1990.0m	HSI							
Depth Out		TFA	1.114						

Bit Comment

BHA # 2

Weight(Wet)	45.00klb	Length	216.7m	Torque(max)		D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	30.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	0fpm
		Slack-Off				D.P. Ann Velocity	0fpm

BHA Run Description — Rock bit with 1.15° bent housing on Sperry motor.

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.24m	8.50in		6062641	Rock Bit
Mud Motor	8.29m	6.75in		675400	Sperry Drill Lobe 6/7
String Stabiliser	3.03m	6.75in	2.88in	10988869	8 1/8" OD
MWD Tool	2.78m	6.75in		194443	PM Sub
HOC	3.03m	6.75in		203842	
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
String Stabiliser	1.70m	6.50in	2.88in	700802	8½" OD
Drill Collar	56.14m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
1968.42	0.69	57.75	1968.37	-6.30	6.4	6.3		

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	5	0	485.0
Drill Water	m3	20	12	0	494.0
Pot Water	m3	20	28	0	232.0
Brine	m3	0	10	0	65.0
Cement class \'G\'	MT	0	0	0	13.3
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.14	97			
2	Continental Emsco	6.50	1.14	97			
3	Continental Emsco	6.50	1.14	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1968.0	30	250	252	40	370	336	50	520	420
	30		252	40		336	50		420
1968.0	30	260	252	40	370	336	50	520	420

Personnel On Board

Company	Pax
ADA	4
Origin Energy	1
Maersk	36
GRN	3
OMS	25
Halliburton Cementers	1
Halliburton (Baroid)	2
Fugro ROV	3
Geoservices	5
Sperry Sun	2
Sperry Sun	1
Leighton	2
Other Contractor	1
Other Contractor	1
Other Contractor	1
Other Contractor	1
Total	89

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou/Mike Lawrance

Available	**1906.8bbl**
Active	433.5bbl
Mixing	
Hole	538.3bbl
Slug	20.0bbl
Reserve	915.0bbl
Kill	

Losses	**8.6bbl**
Downhole	
Surf+ Equip	8.6bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	

Equipment	Description	Mesh Size	Comments

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Marine

Weather on 19 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	22kn	270.0deg	1008.0mbar	13C°	1.3m	260.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.3deg	1.8deg	315.0deg	248.00klb	660.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	203.0
2	235.0
3	171.0
4	225.0
5	218.0
6	219.0
7	191.0
8	270.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:30 14th Jan		Stand By at Kan Tan IV

Item	Unit	Used	Quantity
	M3		766
	M3		424
	M3		482
	t		67
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:30 14th Jan		Stand By at Kan Tan IV

Item	Unit	Used	Quantity
	M3		788
	M3		430
	M3		482
	t		67
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	04:00 16th Jan	11:00 16th Jan	Alongside in Melbourne

Item	Unit	Used	Quantity
	M3		574
	M3		555
	M3		560
	t		37.2
	t		24
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Alongside in Melbourne

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	04:00 16th Jan	11:00 16th Jan	Enroute to Melbourne

Item	Unit	Used	Quantity
	M3		576
	M3		281
	M3		560
	t		37.2
	t		24
	t		0
	M3		0
	bbl		0

00:00 - 02:00 Enroute to Melbourne.
02:00 - 24:00 Alongside in Melbourne

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Australian Drilling Associates Pty Ltd

20 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 2
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	20 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	2	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Larissa Hansen

Well Data

Country	Australia	MDBRT	2065.0m	Cur. Hole Size	8.500in	AFE Cost	US$49,802,297
Field	Rockhopper	TVDBRT	2064.8m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	75.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$672,941
Rig	Kan Tan IV	Days from spud	51.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$36,809,128
Wtr Dpth (LAT)	74.3m	Days on well	1.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	80
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Drilling 8½" hole at 2106m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Drill ahead to build angle. Circulate well clean. POOH with kick off assembly. RIH with Geopilot assembly and drill 8½" hole.		

Summary of Period 0000 to 2400 Hrs

Circulated bottoms up. Recorded SCRs. Drilled out cement from 1970m to 1990m. Kicked off 8½" side track from 1990m to 2065m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	77 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	4 Days	Fire in pit room	
Permit To Work	13	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	3 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety Meetings	
STOP Card	41	0 Days	Number of STOP cards submitted	

Operations For Period 0000 Hrs to 2400 Hrs on 20 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0100	1.00	1985.0m	Established circulation. Recorded parameters. Circulated bottoms up. Recorded SCRs.
P17	P	D1	0100	0300	2.00	1990.0m	Drilled out cement plug from 1970m to 1990m (550gpm, 2000psi, 5/10klbs WOB, 50rpm, 3k ft-lbs torque).
P17	P	D3	0300	1030	7.50	2005.0m	Commenced kick off at 1990m. Time slide drilled from 1990m to 1996m at (550gpm, 2000psi, 2/4klbs WOB, 9.3+ppg MW). Slide oriented drilled from 1996m to 2005m (550gpm, 2000psi, 23klbs WOB). 1990m - returns 100% cement. 1992m - returns 75% cement, 25% formation. 1994m - returns 65% cement, 35% formation. 1996m - returns 60% cement, 40% formation. 1998m - returns 02% cement, 98% formation. 2000m - returns 0% cement, 100% formation.
P17	P	D2	1030	1530	5.00	2020.0m	Rotary drilled 8½" hole from 2005m to 2020m (550gpm, 2000psi, 50rpm, 20klbs WOB, 3k ft-lbs torque).
P17	P	D3	1530	1700	1.50	2033.0m	Slide oriented drilled 8½" hole from 2020m to 2033m (550gpm, 1950psi, 30klbs WOB).
P17	P	D2	1700	2400	7.00	2065.0m	Rotary drilled 8½" hole from 2033m to 2065m (550gpm, 1930psi, 65rpm, 25klbs WOB, 3k ft-lbs torque).

Operations For Period 0000 Hrs to 0600 Hrs on 21 Jan 2010

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Printed on 20 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D2	0000	0100	1.00	2070.0m	Rotary drilled 8½" hole from 2065m to 2070m (550gpm, 1930psi, 65rpm, 25klbs WOB, 3k ft-lbs torque).
P17	P	D3	0100	0130	0.50	2080.0m	Slide oriented drilled 8½" hole from 2070m to 2080m (550gpm, 1950psi, 25klbs WOB).
P17	P	D2	0130	0300	1.50	2098.0m	Rotary drilled from 2080m to 2098m (550gpm, 1950psi, 60rpm, 20klbs WOB, 3k ft-lbs torque).
P17	P	D3	0300	0330	0.50	2100.0m	Slide oriented drilled 8½" hole from 2098m to 2100m (550gpm, 1950psi, 25klbs WOB).
P17	P	D2	0330	0400	0.50	2102.0m	Rotary drilled from 2100m to 2102m (550gpm, 1950psi, 60rpm, 20klbs WOB, 3k ft-lbs torque).
P17	P	D3	0400	0600	2.00	2106.0m	Slide oriented drilled 8½" hole from 2102m to 2106m (600gpm, 2100psi, 20 klbs WOB).

Operations For Period Hrs to Hrs on

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 20 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	30.5	19 Jan 2010	20 Jan 2010	30.50	1.271	2065.0m

General Comments

00:00 TO 24:00 Hrs ON 20 Jan 2010

WBM Data — Cost Today US$ 18123

Mud TypeKCL/Polymer/PHPA		API FL:	4.3cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	66sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	21cp
Time:	2130	HTHP-FL:	8.8cc/30min	Hard/Ca:	280mg/l	Oil(%):		YP	36lb/100ft²
Weight:	9.25ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.25	Gels 10s	11
Temp:	43C°			PM:	2.6	pH:	9.5	Gels 10m	17
				PF:	0.4	PHPA:	3ppb	Fann 003	9
Comment		Note: Costs are in AUD						Fann 006	11
								Fann 100	35
								Fann 200	47
								Fann 300	57
								Fann 600	78

WBM Data — Cost Today

Mud TypeKCL/Polymer/PHPA		API FL:	4.3cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	63sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	21cp
Time:	1520	HTHP-FL:	8.5cc/30min	Hard/Ca:	360mg/l	Oil(%):		YP	36lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.25	Gels 10s	10
Temp:	48C°			PM:	1.6	pH:	9.5	Gels 10m	16
				PF:	0.6	PHPA:	3ppb	Fann 003	9
Comment		Note: Costs are in AUD						Fann 006	11
								Fann 100	35
								Fann 200	47
								Fann 300	57
								Fann 600	78

Bit # 2

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	117	No.	Size	Progress	75.0m	Cumul. Progress	75.0m
Mfr:	Baker Christensen	WOB(avg)	14.00klb	3	22/32nd"	On Bottom Hrs	13.9h	Cumul. On Btm Hrs	13.9h
Type:	Rock	RPM(avg)	55			IADC Drill Hrs	21.0h	Cumul. IADC Drill Hrs	21.0h
Serial No.:	6062641	F.Rate	540gpm			Total Revs	86000	Cumul. Total Revs	86000
Bit Model	MXL-1X	SPP	1972psi			ROP(avg)	5.40 m/hr	ROP(avg)	5.40 m/hr
Depth In	1990.0m	HSI							
Depth Out		TFA	1.114						

Bit Comment

BHA # 2

Weight(Wet)	45.00klb	Length	216.7m	Torque(max)	3000ft-lbs	D.C. (1) Ann Velocity	496fpm
Wt Below Jar(Wet)	30.00klb	String	325.00klb	Torque(Off.Btm)	200ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	315.00klb	Torque(On.Btm)	1400ft-lbs	H.W.D.P. Ann Velocity	280fpm

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	Slack-Off 325.00klb		D.P. Ann Velocity 280fpm

BHA Run Description	Rock bit with 1.15° bent housing on Sperry motor.
BHA Run Comment	

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.24m	8.50in		6062641	Rock Bit
Mud Motor	8.29m	6.75in		675400	Sperry Drill Lobe 6/7
String Stabiliser	3.03m	6.75in	2.88in	10988869	8 1/8" OD
MWD Tool	2.78m	6.75in		194443	PM Sub
HOC	3.03m	6.75in		203842	
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
String Stabiliser	1.70m	6.50in	2.88in	700802	8½" OD
Drill Collar	56.14m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	5	0	480.0
Drill Water	m3	0	8	0	486.0
Pot Water	m3	33	30	0	235.0
Brine	m3	0	0	0	65.0
Cement class \'G\'	MT	55.7	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs | **Slow Pump Data**

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)	Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1	Continental Emsco	6.50	1.12	97	55	2000	275	1965.0	30	250	252	40	340	336	50	520	420
2	Continental Emsco	6.50	1.12	97					30		252	40		336	50		420
3	Continental Emsco	6.50	1.12	97	55	2000	275	1965.0	30	250	252	40	340	336	50	520	420

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	34
GRN	3
OMS	24
Other Contractor	1
Halliburton Cementers	1
Halliburton (Baroid)	2
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2
Leighton	2
Other Contractor	1

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Personnel On Board

Other Contractor	1
Other Contractor	1
Total	90

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Mike Lawrance

Available	**1787.0bbl**	**Losses**	**0.0bbl**	Equipment	Description	Mesh Size
Active	259.0bbl	Downhole				
Mixing		Surf+ Equip	0.0bbl			
Hole	598.0bbl	Dumped				
Slug	30.0bbl	De-Gasser				
Reserve	900.0bbl	De-Sander				
Kill		De-Silter				
		Centrifuge				

Comments

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**1818.0bbl**	**Losses**	**182.1bbl**	Equipment	Description	Mesh Size
Active	253.0bbl	Downhole				
Mixing		Surf+ Equip	182.1bbl			
Hole	598.0bbl	Dumped				
Slug	30.0bbl	De-Gasser				
Reserve	937.0bbl	De-Sander				
Kill		De-Silter				
		Centrifuge				

Comments

Recovered from ditch magnet: 0gms

Marine

Weather on 20 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
8.0nm	20kn	252.0deg	1006.0mbar	13C°	2.0m	260.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	1.5deg	3.6deg	315.0deg	248.00klb	360.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.3m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	210.0
2	246.0
3	172.0
4	198.0
5	209.0
6	218.0
7	183.0
8	279.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:30 14th Jan		Stand By at Kan Tan IV

Item	Unit	Used	Quantity
	M3		753
	M3		421
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 24:00 Stand By at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan		Stand by at Kan Tan IV

Item	Unit	Used	Quantity
	M3		563
	M3		240
	M3		560
	t		37.2
	t		24
	t		0

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				Item	Unit	Used	Quantity
					M3		0
					bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	08:15 / 08:30	10 / 13	
KT02	Bristow Helicopters	12:14 / 12:23	3 / 3	

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Australian Drilling Associates Pty Ltd ADA

21 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 3
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	21 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	3	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Larissa Hansen

Well Data

Country	Australia	MDBRT	2112.0m	Cur. Hole Size	8.500in	AFE Cost	US$49,802,297
Field	Rockhopper	TVDBRT	2111.2m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	47.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$436,053
Rig	Kan Tan IV	Days from spud	52.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$37,245,181
Wtr Dpth (LAT)	74.3m	Days on well	2.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	81
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Logging new hole from 1990m to 2112m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Drill ahead with 8½" Geopilot drilling assembly.		

Summary of Period 0000 to 2400 Hrs

Drilled 8½" hole from 2065m to 2112m. Pumped Barolift pill and circulated out of well. Flow checked well and POOH to shoe. Serviced rig, flow checked well, pumped slug and POOH. Laid out kick off BHA and made up Geopilot BHA. RIH to 244m and shallow tested MWD/LWD tools. Failed to obtain survey. POOH and changed out NM flex joint.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	78 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	5 Days	Fire in pit room	
Permit To Work	22	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	4 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	46	0 Days	Number of STOP cards submitted	

FORMATION	
Name	Top
Eastern View Coal Measures	2069.00m

Operations For Period 0000 Hrs to 2400 Hrs on 21 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D2	0000	0100	1.00	2070.0m	Rotary drilled 8½" hole from 2065m to 2070m (550gpm, 1930psi, 65rpm, 25klbs WOB, 3k ft-lbs torque).
P17	P	D3	0100	0130	0.50	2080.0m	Slide oriented drilled 8½" hole from 2070m to 2080m (550gpm, 1950psi, 25klbs WOB).
P17	P	D2	0130	0300	1.50	2098.0m	Rotary drilled from 2080m to 2098m (550gpm, 1950psi, 60rpm, 20klbs WOB, 3k ft-lbs torque).
P17	P	D3	0300	0330	0.50	2100.0m	Slide oriented drilled 8½" hole from 2098m to 2100m (550gpm, 1950psi, 25klbs WOB).
P17	P	D2	0330	0400	0.50	2102.0m	Rotary drilled from 2100m to 2102m (550gpm, 1950psi, 60rpm, 20klbs WOB, 3k ft-lbs torque).
P17	P	D3	0400	0600	2.00	2106.0m	Slide oriented drilled 8½" hole from 2102m to 2106m (600gpm, 2100psi, 20klbs WOB).
P17	P	D2	0600	0700	1.00	2111.0m	Rotary drilled 8½" hole from 2106m to 2111m (550gpm, 1950psi, 60rpm, 20klbs WOB, 3k ft-lbs torque).
P17	P	D3	0700	0730	0.50	2112.0m	Slide oriented drilled 8½" hole from 2111m to 2112m (600gpm, 2100psi, 20klbs WOB).
P17	P	F4	0730	0830	1.00	2112.0m	Circulated 15mins, pumped 15bbl Barolift pill and circulated same out of hole.
P17	P	G8	0830	0930	1.00	2112.0m	Flow checked well. POOH to 1951m.
P17	P	G11	0930	1000	0.50	2112.0m	Serviced TDS. Flow checked well. Pumped slug.

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Printed on 21 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G8	1000	1300	3.00	2112.0m	POOH from 1951m to 216m. Flow checked prior to BHA entering BOP.
P17	P	G6	1300	1530	2.50	2112.0m	Racked back BHA. Laid out HOC, PM sub, 8 1/8" Stab, mud motor and bit.
P17	P	G7	1530	1700	1.50	2112.0m	Held PJSM. Picked up Geopilot, NM Flex joint, RLL, PWD, BAT Sonic and TM/HOC tools.
P17	P	G7	1700	1830	1.50	2112.0m	Programmed and tested MWD/LWD tool connectivity. Loaded radioactive sources.
P17	P	G6	1830	1930	1.00	2112.0m	Made up BHA and RIH to 244m with 8½" Geopilot assembly.
P17	TP (TP)	G7	1930	2100	1.50	2112.0m	Shallow tested Geopilot and MWD/LWD tools. Failed to obtain MWD survey.
P17	TP (TP)	G8	2100	2230	1.50	2112.0m	POOH. Removed radioactive sources. Downloaded tools.
P17	TP (TP)	G7	2230	2300	0.50	2112.0m	Changed out NM Flex joint and PCDC probe.
P17	TP (TP)	G7	2300	2400	1.00	2112.0m	Programmed MWD/LWD tools and loaded radioactive sources.

Operations For Period 0000 Hrs to 0600 Hrs on 22 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (TP)	G6	0000	0030	0.50	2112.0m	RIH with Geopilot BHA to 244m.
P17	P	G15	0030	0100	0.50	2112.0m	Shallow tested Geopilot assembly - OK.
P17	P	G8	0100	0430	3.50	2112.0m	RIH with 8½" Geopilot drilling assembly from 244m to 1945m. Filled pipe every 20 stands.
P17	P	G8	0430	0530	1.00	2112.0m	Washed down from 1945m to 1974m. Recorded SCRs. Went through Sperry procedure to break in Geopilot seals.
P17	P	F1	0530	0600	0.50	2112.0m	Reamed and logged hole from 1984m to 1990m (500gpm, 1500psi, 60rpm).

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 21 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	54.5	19 Jan 2010	21 Jan 2010	54.50	2.271	2112.0m

General Comments

00:00 TO 24:00 Hrs ON 21 Jan 2010

WBM Data — Cost Today US$ 5832

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	58sec/qt
Sample-From:	pit 3	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	22cp
Time:	2140	HTHP-FL:	9.1cc/30min	Hard/Ca:	340mg/l	Oil(%):		YP	27lb/100ft²
Weight:	9.35ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.25	Gels 10s	9
Temp:				PM:	1.5	pH:	9.5	Gels 10m	14
				PF:	0.7	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	30
								Fann 200	41
								Fann 300	49
								Fann 600	67

Comment — Note: Costs are in AUD

Bit # 2

Wear	I	O1	D	L	B	G	O2	R
	2	3	WT	A	E	I	ER	BHA

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	117	No.	Size	Progress	47.0m	Cumul. Progress	122.0m
Mfr:	Baker Christensen	WOB(avg)		3	22/32nd"	On Bottom Hrs	0.8h	Cumul. On Btm Hrs	14.7h
Type:	Rock	RPM(avg)				IADC Drill Hrs	1.5h	Cumul. IADC Drill Hrs	22.5h
Serial No.:	6062641	F.Rate				Total Revs	46000	Cumul. Total Revs	132000
Bit Model	MXL-1X	SPP				ROP(avg)	58.75 m/hr	ROP(avg)	8.30 m/hr
Depth In	1990.0m	HSI							
Depth Out	2112.0m	TFA	1.114						

Bit Comment

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Bit # 3

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

Size ("):	8.50in	IADC#	M422	**Nozzles**		**Drilled over last 24 hrs**	**Calculated over Bit Run**
Mfr:	Reed Hycalog	WOB(avg)		No.	Size	Progress	Cumul. Progress 0.0m
Type:	PDC	RPM(avg)		6	18/32nd"	On Bottom Hrs	Cumul. On Btm Hrs 0.0h
Serial No.:	220126	F.Rate				IADC Drill Hrs	Cumul. IADC Drill Hrs 0.0h
Bit Model	RSX616M	SPP				Total Revs	Cumul. Total Revs 0
Depth In	2112.0m	HSI				ROP(avg) N/A	ROP(avg) 0.00 m/hr
Depth Out		TFA	1.491				

Bit Comment

BHA # 2

Weight(Wet)	45.00klb	Length	216.7m	Torque(max)		D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	30.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	0fpm
		Slack-Off				D.P. Ann Velocity	0fpm

BHA Run Description: Rock bit with 1.15° bent housing on Sperry motor.

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.24m	8.50in		6062641	Rock Bit
Mud Motor	8.29m	6.75in		675400	Sperry Drill Lobe 6/7
String Stabiliser	3.03m	6.75in	2.88in	10988869	8 1/8" OD
MWD Tool	2.78m	6.75in		194443	PM Sub
HOC	3.03m	6.75in		203842	
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
String Stabiliser	1.70m	6.50in	2.88in	700802	8½" OD
Drill Collar	56.14m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

BHA # 3

Weight(Wet)	46.00klb	Length	210.5m	Torque(max)		D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	43.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	0fpm
		Slack-Off				D.P. Ann Velocity	0fpm

BHA Run Description

BHA Run Comment

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.44m	8.50in		220126	PDC bit
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL103	
NM Flex Monel	2.81m	6.69in	1.92in	CP1005711	
Stab	0.67m	6.75in	1.92in	1016171	8 3/8" Blades
LWD Tools	6.54m	6.75in	1.92in	90232556	DGR+EWR
LWD Tools	4.32m	6.75in	1.92in	90250055	ALD + 8 1/8" Stab
LWD Tools	4.22m	6.75in	1.92in	90250055	CTN + ACAL
LWD Tools	2.54m	6.75in	1.92in	9022556W6	PWD
LWD Tools	6.88m	6.69in	1.92in	90230519-06	BAT-Sonic
HOC	3.04m	6.75in	1.92in	203846	

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Equipment	Length	OD	ID	Serial #	Comment
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2097.43	9.89	180.78	2096.70	-10.84	-4.4	11.4	1.9	Sperry PM Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	19	0	461.0
Drill Water	m3	0	10	0	476.0
Pot Water	m3	34	35	0	234.0
Brine	m3	0	0	0	65.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

Slow Pump Data

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)	Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1	Continental Emsco	6.50	1.12	97					30		252	40		336	50		420
2	Continental Emsco	6.50	1.12	97					30		252	40		336	50		420
3	Continental Emsco	6.50	1.12	97					30		252	40		336	50		420

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	34
GRN	3
OMS	24
Other Contractor	1
Halliburton Cementers	1
Halliburton (Baroid)	2
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2
Other Contractor	1
Total	86

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	1925.0bbl
Active	672.0bbl
Mixing	
Hole	631.0bbl
Slug	
Reserve	622.0bbl
Kill	

Losses	28.4bbl
Downhole	
Surf+ Equip	28.4bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 21 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	9kn	85.0deg	1006.0mbar	14C°	0.6m	95.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.5deg	1.0deg	315.0deg	248.00klb	595.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	95.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	191.0
2	241.0
3	163.0
4	212.0
5	228.0
6	216.0
7	184.0
8	265.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	05:30 14th Jan	08:45 21st Jan	Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		733
	M3		418
	M3		482
	t		0
	t		0
	t		0
	M3		0
	bbl		0

00:00 - 08:30 Stand By at Kan Tan IV
08:30 - 08:45 Cargo operations
08:45 - 20:30 Transit from KT4 to Melbourne
20: - 24:00 Alongside 28 South Wharf, Melbourne

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan		Stand by at Kan Tan 1V

Bulks

Item	Unit	Used	Quantity
	M3		552
	M3		549
	M3		560
	t		37.2
	t		24
	t		0
	M3		0
	bbl		0

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Australian Drilling Associates Pty Ltd

22 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 4
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	22 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	4	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	2368.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	2347.2m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	256.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$767,065
Rig	Kan Tan IV	Days from spud	53.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$2,358,088
Wtr Dpth (LAT)	74.3m	Days on well	3.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	82
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Drilling 8½" hole at 2430m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Drill 8½" hole.		

Summary of Period 0000 to 2400 Hrs

RIH with 8½" Geopilot BHA to 244m. Shallow tested BHA tools. RIH from 244m to 1945m. Washed in hole from 1945m to 1970m. Logged in hole at 60m/hr from 1970m to 2112m. Drilled 8½" hole from 2112m to 2368m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	79 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	6 Days	Fire in pit room	
Permit To Work	12	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	5 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	46	0 Days	Number of STOP cards submitted	

FORMATION	
Name	Top
Eastern View Coal Measures	2067.00m

Operations For Period 0000 Hrs to 2400 Hrs on 22 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (TP)	G6	0000	0030	0.50	2112.0m	RIH with Geopilot BHA to 244m.
P17	P	G15	0030	0100	0.50	2112.0m	Shallow tested Geopilot assembly - OK.
P17	P	G8	0100	0430	3.50	2112.0m	RIH with 8½" Geopilot drilling assembly from 244m to 1945m. Filled pipe every 20 stands.
P17	P	F1	0430	0530	1.00	2112.0m	Washed down from 1945m to 1970m. Recorded SCRs and broke in Geopilot seals.
P17	P	F1	0530	0900	3.50	2112.0m	Reamed and logged hole from 1970m to 2112m at 60m/hr (500gpm, 1500psi, 60rpm).
P17	P	D4	0900	2400	15.00	2368.0m	Drilled 8½" hole with Geopilot drilling assembly from 2112m to 2368m (120/150rpm, 15/25klbs WOB, 525gpm, 1850psi, 4/20k ft-lbs torque.) High torque experienced with 30klbs drag up and down on connection at 2350m. Drag reduced to 5klbs up and down without rotation.

Operations For Period 0000 Hrs to 0600 Hrs on 23 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0600	6.00	2706.0m	(IN PROGRESS) Drilled 8½" hole with Geopilot drilling assembly from 2368m to 2706m (120/160rpm, 15/20klbs WOB, 600gpm, 2200psi, 4/20k ft-lbs torque). Pumped 15bbl

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							Barolift pill after connection at 2523m to assist with cuttings removal. Boosted pill in riser by pumping down kill line. 20% increase in cuttings at shakers with pill return - mostly fine solids. Choke and kill lines flushed with fresh 9.3+ppg mud. SCRs taken.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 22 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	78.5	19 Jan 2010	22 Jan 2010	78.50	3.271	2368.0m

General Comments

00:00 TO 24:00 Hrs ON 22 Jan 2010

WBM Data — Cost Today US$ 33530

Mud Type	KCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	66sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	18cp
Time:	2125	HTHP-FL:	8.8cc/30min	Hard/Ca:	280mg/l	Oil(%):		YP	30lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.25	Gels 10s	9
Temp:	53C°			PM:	1.8	pH:	9.5	Gels 10m	13
				PF:	0.65	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	30
								Fann 200	41
								Fann 300	48
								Fann 600	66

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 40gms

Bit # 2

Wear	I	O1	D	L	B	G	O2	R
	2	3	WT	A	E	I	ER	BHA

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	117	No.	Size	Progress		Cumul. Progress	122.0m
Mfr:	Baker Christensen	WOB(avg)		3	22/32nd"	On Bottom Hrs		Cumul. On Btm Hrs	14.7h
Type:	Rock	RPM(avg)				IADC Drill Hrs		Cumul. IADC Drill Hrs	22.5h
Serial No.:	6062641	F.Rate				Total Revs		Cumul. Total Revs	132000
Bit Model	MXL-1X	SPP				ROP(avg)	N/A	ROP(avg)	8.30 m/hr
Depth In	1990.0m	HSI							
Depth Out	2112.0m	TFA	1.114						

Bit Comment

Bit # 3

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M422	No.	Size	Progress	256.0m	Cumul. Progress	256.0m
Mfr:	Reed Hycalog	WOB(avg)	17.70klb	6	18/32nd"	On Bottom Hrs	10.1h	Cumul. On Btm Hrs	10.1h
Type:	PDC	RPM(avg)	120			IADC Drill Hrs	15.0h	Cumul. IADC Drill Hrs	15.0h
Serial No.:	220126	F.Rate	543gpm			Total Revs		Cumul. Total Revs	0
Bit Model	RSX616M	SPP	1851psi			ROP(avg)	25.35 m/hr	ROP(avg)	25.35 m/hr
Depth In	2112.0m	HSI							
Depth Out		TFA	1.491						

Bit Comment

BHA # 2

Weight(Wet)	45.00klb	Length	216.7m	Torque(max)		D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	30.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	0fpm
		Slack-Off				D.P. Ann Velocity	0fpm

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BHA Run Description	Rock bit with 1.15° bent housing on Sperry motor.
BHA Run Comment	

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.24m	8.50in		6062641	Rock Bit
Mud Motor	8.29m	6.75in		675400	Sperry Drill Lobe 6/7
String Stabiliser	3.03m	6.75in	2.88in	10988869	8 1/8" OD
MWD Tool	2.78m	6.75in		194443	PM Sub
HOC	3.03m	6.75in		203842	
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
String Stabiliser	1.70m	6.50in	2.88in	700802	8½" OD
Drill Collar	56.14m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

BHA # 3

Weight(Wet)	46.00klb	Length	210.5m	Torque(max)	18680ft-lbs	D.C. (1) Ann Velocity	499fpm
Wt Below Jar(Wet)	43.00klb	String	335.00klb	Torque(Off.Btm)	2000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	320.00klb	Torque(On.Btm)	6850ft-lbs	H.W.D.P. Ann Velocity	282fpm
		Slack-Off	340.00klb			D.P. Ann Velocity	282fpm

BHA Run Description	
BHA Run Comment	Hours on Jars:- 243

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.44m	8.50in		220126	PDC bit
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL103	
NM Flex Monel	2.81m	6.69in	1.92in	CP1005711	
Stab	0.67m	6.75in	1.92in	1016171	8 3/8" Blades
LWD Tools	6.54m	6.75in	1.92in	90232556	DGR+EWR
LWD Tools	4.32m	6.75in	1.92in	90250055	ALD + 8 1/8" Stab
LWD Tools	4.22m	6.75in	1.92in	90250055	CTN + ACAL
LWD Tools	2.54m	6.75in	1.92in	9022556W6	PWD
LWD Tools	6.88m	6.69in	1.92in	90230519-06	BAT-Sonic
HOC	3.04m	6.75in	1.92in	203846	
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2101.74	10.33	180.02	2100.94	-11.59	-5.2	11.4	3.2	Sperry TCDC Tool
2133.86	11.00	184.57	2132.51	-17.53	-11.1	11.1	1.0	Sperry TCDC Tool
2162.64	12.26	191.23	2160.70	-23.26	-16.9	10.3	1.9	Sperry TCDC Tool
2191.04	14.09	193.69	2188.35	-29.58	-23.2	8.9	2.0	Sperry TCDC Tool
2221.57	17.24	200.87	2217.75	-37.42	-31.0	6.4	3.6	Sperry TCDC Tool
2249.96	21.12	203.77	2244.56	-46.03	-39.6	2.9	4.2	Sperry TCDC Tool
2279.09	25.17	203.19	2271.34	-56.54	-50.1	-1.7	4.2	Sperry TCDC Tool
2305.36	27.89	201.28	2294.84	-67.40	-61.0	-6.1	3.3	Sperry TCDC Tool
2335.32	29.38	198.65	2321.13	-80.89	-74.5	-11.0	2.0	Sperry TCDC Tool
2364.04	31.58	195.91	2345.88	-94.80	-88.4	-15.3	2.7	Sperry TCDC Tool

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Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	23	0	438.0
Drill Water	m3	0	41	0	435.0
Pot Water	m3	34	20	0	248.0
Brine	m3	0	19	0	46.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	53	1850	263
2	Continental Emsco	6.50	1.12	97	53	1850	263
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2109.0	30	340	148	40	470	200	50	610	250
2109.0	30	340	148	40	450	200	50	580	250
2109.0	30	340	148	40	450	200	50	580	250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	36
GRN	3
OMS	23
Other Contractor	1
Halliburton Cementers	2
Halliburton (Baroid)	2
Fugro ROV	3
Geoservices	7
Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
ABB Vetco	1
Total	93

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2078.6bbl**	**Losses**	**197.0bbl**
Active	725.0bbl	Downhole	
Mixing		Surf+ Equip	132.0bbl
Hole	616.6bbl	Dumped	
Slug		De-Gasser	
Reserve	737.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	41.0bbl
		Evaporation	24.0bbl

Equipment	Description	Mesh Size	Comments

Marine

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Weather on 22 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
8.0nm	20kn	252.0deg	1006.0mbar	13C°	2.0m	260.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	1.5deg	3.6deg	315.0deg	248.00klb	360.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.3m	260.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	210.0
2	246.0
3	172.0
4	198.0
5	209.0
6	218.0
7	183.0
8	279.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		08:45 21st Jan	Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		730
	M3		490
	M3		482
	t		0
	t		0
	t		0
	M3		48
	bbl		0

00:00 - 24:00 Alongside 28 South Wharf, Melbourne.

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		546
	M3		546
	M3		560
	t		37.2
	t		24
	t		0
	M3		0
	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	08:55 / 09:10	9 / 3	
KT02	Bristow Helicopters	13:40 / 13:46	1 / 0	

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Printed on 24 Jan 2010

Australian Drilling Associates Pty Ltd

23 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 5
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	23 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	5	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	2706.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	2625.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	338.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$693,340
Rig	Kan Tan IV	Days from spud	54.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$3,051,428
Wtr Dpth (LAT)	74.3m	Days on well	4.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	83
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Drilling 8½" hole at 2795m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue to drill 8½" hole to core point #1 at approximately 3160m.		

Summary of Period 0000 to 2400 Hrs

Drilled 8½" hole with Geopilot drilling assembly from 2368m to 2706m (120/160rpm, 15/20klbs WOB, 600gpm, 2200psi, 4/20k ft-lbs torque).

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	1	0 Days	Held abandon drill	6 minutes to achieve full muster.
Emergency Drill	0	80 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	0 Days	Fire in heavy tool store	4 minutes to achieve full muster.
Permit To Work	13	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	6 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	40	0 Days	Number of STOP cards submitted	

FORMATION	
Name	Top
Eastern View Coal Measures	2067.00m

Operations For Period 0000 Hrs to 2400 Hrs on 23 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	2400	24.00	2706.0m	Drilled 8½" hole with Geopilot drilling assembly from 2368m to 2706m (120/160rpm, 15/20klbs WOB, 600gpm, 2200psi, 4/20k ft-lbs torque). Pumped 15bbl Barolift pill after connection at 2523m to assist with cuttings removal. Boosted pill in riser by pumping down kill line. 20% increase in cuttings at shakers with pill return - mostly fine solids. Choke and kill lines flushed with fresh 9.3+ppg mud. SCRs taken.

Operations For Period 0000 Hrs to 0600 Hrs on 24 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0600	6.00	2926.0m	(IN PROGRESS) Drilled 8½" hole with Geopilot drilling assembly from 2706m to 2926m (120/160rpm, 10/20klbs WOB, 600gpm, 2350psi, 4/20k ft-lbs torque). No excess torque or drag on connections. Pumped 20bbl Barolift pill after connection at 2784m to assist with cuttings removal. Boosted pill in riser by pumping down Kill line. 20% increase in cuttings at shakers with pill return - mostly fine solids.

Operations For Period Hrs to Hrs on

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Printed on 24 Jan 2010

Phase Data to 2400hrs, 23 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	102.5	19 Jan 2010	23 Jan 2010	102.50	4.271	2706.0m

General Comments

00:00 TO 24:00 Hrs ON 23 Jan 2010

WBM Data — Cost Today US$ 38804

Mud TypeKCL/Polymer/PHPA		API FL:	4.4cc/30min	Cl:	36500mg/l	Solids(%vol):	3%	Viscosity	66sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	19cp
Time:	2035	HTHP-FL:	9.1cc/30min	Hard/Ca:	280mg/l	Oil(%):		YP	34lb/100ft²
Weight:	9.35ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.25	Gels 10s	12
Temp:	68C°			PM:	1.9	pH:	9.5	Gels 10m	16
				PF:	0.6	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	32
								Fann 200	45
								Fann 300	53
								Fann 600	72

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 163gms

Bit # 3

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M422	No.	Size	Progress	338.0m	Cumul. Progress	594.0m
Mfr:	Reed Hycalog	WOB(avg)	11.30klb	6	18/32nd"	On Bottom Hrs	16.5h	Cumul. On Btm Hrs	26.5h
Type:	PDC	RPM(avg)	102			IADC Drill Hrs	24.0h	Cumul. IADC Drill Hrs	39.0h
Serial No.:	220126	F.Rate	582gpm			Total Revs	222000	Cumul. Total Revs	222000
Bit Model	RSX616M	SPP	2155psi			ROP(avg)	20.48 m/hr	ROP(avg)	22.42 m/hr
Depth In	2112.0m	HSI							
Depth Out		TFA	1.491						

Bit Comment

BHA # 3

Weight(Wet)	46.00klb	Length	210.5m	Torque(max)	18380ft-lbs	D.C. (1) Ann Velocity	535fpm
Wt Below Jar(Wet)	43.00klb	String	345.00klb	Torque(Off.Btm)	4000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	340.00klb	Torque(On.Btm)	8340ft-lbs	H.W.D.P. Ann Velocity	302fpm
		Slack-Off	345.00klb			D.P. Ann Velocity	302fpm

BHA Run Description

BHA Run Comment: Hours on Jars:- 243

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.44m	8.50in		220126	PDC bit
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL103	
NM Flex Monel	2.81m	6.69in	1.92in	CP1005711	
Stab	0.67m	6.75in	1.92in	1016171	8 3/8" Blades
LWD Tools	6.54m	6.75in	1.92in	90232556	DGR+EWR
LWD Tools	4.32m	6.75in	1.92in	90250055	ALD + 8 1/8" Stab
LWD Tools	4.22m	6.75in	1.92in	90250055	CTN + ACAL
LWD Tools	2.54m	6.75in	1.92in	9022556W6	PWD
LWD Tools	6.88m	6.69in	1.92in	90230519-06	BAT-Sonic
HOC	3.04m	6.75in	1.92in	203846	
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

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Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2393.22	33.12	193.25	2370.54	-109.91	-103.5	-19.3	2.2	Sperry TCDC Tool
2424.12	34.46	191.99	2396.22	-126.68	-120.3	-23.0	1.5	Sperry TCDC Tool
2453.55	35.45	189.16	2420.34	-143.25	-136.9	-26.1	1.9	Sperry TCDC Tool
2483.19	36.74	186.44	2444.29	-160.55	-154.1	-28.5	2.1	Sperry TCDC Tool
2512.34	35.42	185.57	2467.85	-177.62	-171.2	-30.3	1.5	Sperry TCDC Tool
2539.22	36.20	185.30	2489.65	-193.28	-186.9	-31.7	0.9	Sperry TCDC Tool
2567.35	35.96	183.83	2512.38	-209.79	-203.4	-33.1	1.0	Sperry TCDC Tool
2596.63	35.85	183.27	2536.10	-226.93	-220.5	-34.1	0.4	Sperry TCDC Tool
2623.25	35.76	182.90	2557.69	-242.48	-236.1	-35.0	0.3	Sperry TCDC Tool
2653.75	34.92	179.74	2582.57	-260.11	-253.7	-35.4	2.0	Sperry TCDC Tool
2684.95	36.05	178.78	2607.97	-278.22	-271.8	-35.1	1.2	Sperry TCDC Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	14	0	424.0
Drill Water	m3	0	45	0	390.0
Pot Water	m3	31	27	0	252.0
Brine	m3	0	0	0	46.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	60	2200	300
2	Continental Emsco	6.50	1.12	97	60	2200	300
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2576.0	30	420	148	40	540	200	50	720	250
2576.0	30	430	148	40	550	200	50	700	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	36
GRN	3
OMS	23
Other Contractor	1
Halliburton Cementers	2
Halliburton (Baroid)	2
Fugro ROV	3
Geoservices	7
Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
ABB Vetco	1
Total	93

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou.

Available	2179.4bbl	Losses	222.0bbl
Active	730.0bbl	Downhole	
Mixing		Surf+ Equip	150.0bbl
Hole	685.4bbl	Dumped	
Slug	30.0bbl	De-Gasser	
Reserve	734.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	36.0bbl
		Evaporation	36.0bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 23 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	8kn	209.0deg	1015.0mbar	12C°	0.6m	215.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.6deg	1.8deg	315.0deg	248.00klb	480.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	215.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	210.0
2	246.0
3	172.0
4	198.0
5	209.0
6	218.0
7	183.0
8	279.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		08:45 21st Jan	Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		729
	M3		487
	M3		482
	t		0
	t		0
	t		0
	M3		48
	bbl		0

00:00 - 24:00 Alongside 28 South Wharf, Melbourne.

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		536
	M3		543
	M3		560
	t		37.2
	t		24
	t		0
	M3		0
	bbl		0

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Australian Drilling Associates Pty Ltd

24 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 6
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	24 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	6	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	2973.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	2842.4m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	267.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$665,761
Rig	Kan Tan IV	Days from spud	55.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$3,717,189
Wtr Dpth (LAT)	74.3m	Days on well	5.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	84
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Drilling 8½" hole at 3038m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Drill ahead to core point #1		

Summary of Period 0000 to 2400 Hrs

Drilled 8½" hole with Geopilot drilling assembly from 2706m to 2926m. Saver sub broke out on connection at 2916m. Racked back one stand, replaced saver sub and pipe handler dies on TDS. Pumped 20bbl Barolift pill after connection at 2926m to assist with cuttings removal. Boosted pill in riser by pumping down kill line. 15% increase in cuttings at shakers with pill return - mostly fine solids. Drilled 8½" hole with Geopilot drilling assembly from 2926m to 2973m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	81 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	1 Day	Fire in heavy tool store	
Permit To Work	13	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	7 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	62	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m

Operations For Period 0000 Hrs to 2400 Hrs on 24 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	1930	19.50	2926.0m	Drilled 8½" hole with Geopilot drilling assembly from 2706m to 2926m (120/160rpm, 10/20klbs WOB, 600gpm, 2350psi, 4/20k ft-lbs torque). No excess torque or drag on connections. Pumped 20bbl Barolift pill after connection at 2784m to assist with cuttings removal. Boosted pill in riser by pumping down kill line. 20% increase in cuttings at shakers with pill return - mostly fine solids.
P17	TP (RE)	G11	1930	2100	1.50	2926.0m	Saver sub top connection broke out on connection at 2926m. Racked stand back. Installed new saver sub on TDS and replaced pipe handler dies. Continued circulating and moving pipe at regular intervals while undertaking repairs.
P17	P	D4	2100	2400	3.00	2973.0m	Drilled 8½" hole with Geopilot drilling assembly from 2926m to 2973m (115/140rpm, 10/20klbs WOB, 610gpm, 2520psi, 6/20k ft-lbs torque). No excess torque or drag on connections. Pumped 15bbl Barolift pill after connection at 2926m to assist with cuttings removal. Boosted pill in riser by pumping down kill line. 15% increase in cuttings at shakers with pill return - mostly fine solids. Max gas peak 13.9% from formation at 2943m.

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Operations For Period 0000 Hrs to 0600 Hrs on 25 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0600	6.00	3038.0m	Drilled 8½" hole with Geopilot drilling assembly from 2973m to 3038m (120/140rpm, 10/20klbs WOB, 590gpm, 2350psi, 4/18k ft-lbs torque). No excess torque or drag on connections.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 24 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	126.5	19 Jan 2010	24 Jan 2010	126.50	5.271	2973.0m

General Comments

00:00 TO 24:00 Hrs ON 24 Jan 2010

WBM Data — Cost Today US$ 14796

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	36000mg/l	Solids(%vol):	3%	Viscosity	65sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	21cp
Time:	2030	HTHP-FL:	9.1cc/30min	Hard/Ca:	320mg/l	Oil(%):		YP	39lb/100ft²
Weight:	9.35ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.25	Gels 10s	12
Temp:				PM:	0.55	pH:	9.5	Gels 10m	15
				PF:	0.35	PHPA:	3ppb	Fann 003	10
								Fann 006	12
								Fann 100	38
								Fann 200	50
								Fann 300	60
								Fann 600	81

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 140gms

Bit # 3

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M422	No.	Size	Progress	267.0m	Cumul. Progress	861.0m
Mfr:	Reed Hycalog	WOB(avg)	12.00klb	6	18/32nd"	On Bottom Hrs	16.8h	Cumul. On Btm Hrs	43.3h
Type:	PDC	RPM(avg)	108			IADC Drill Hrs	22.5h	Cumul. IADC Drill Hrs	61.5h
Serial No.:	220126	F.Rate	613gpm			Total Revs	216000	Cumul. Total Revs	438000
Bit Model	RSX616M	SPP	2438psi			ROP(avg)	15.89 m/hr	ROP(avg)	19.88 m/hr
Depth In	2112.0m	HSI							
Depth Out		TFA	1.491						

Bit Comment

BHA # 3

Weight(Wet)	46.00klb	Length	210.5m	Torque(max)	18400ft-lbs	D.C. (1) Ann Velocity	563fpm
Wt Below Jar(Wet)	43.00klb	String	370.00klb	Torque(Off.Btm)	2150ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	385.00klb	Torque(On.Btm)	5500ft-lbs	H.W.D.P. Ann Velocity	318fpm
		Slack-Off	365.00klb			D.P. Ann Velocity	318fpm

BHA Run Description

BHA Run Comment: Hours on Jars:- 243

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.44m	8.50in		220126	PDC bit
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL103	
NM Flex Monel	2.81m	6.69in	1.92in	CP1005711	
Stab	0.67m	6.75in	1.92in	1016171	8 3/8" Blades
LWD Tools	6.54m	6.75in	1.92in	90232556	DGR+EWR
LWD Tools	4.32m	6.75in	1.92in	90250055	ALD + 8 1/8" Stab
LWD Tools	4.22m	6.75in	1.92in	90250055	CTN + ACAL
LWD Tools	2.54m	6.75in	1.92in	9022556W6	PWD
LWD Tools	6.88m	6.69in	1.92in	90230519-06	BAT-Sonic

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Equipment	Length	OD	ID	Serial #	Comment
HOC	3.04m	6.75in	1.92in	203846	
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2711.61	35.74	177.14	2629.57	-293.84	-287.4	-34.6	1.1	Sperry TCDC Tool
2739.68	35.53	177.12	2652.39	-310.17	-303.8	-33.8	0.2	Sperry TCDC Tool
2771.60	35.60	176.05	2678.35	-328.70	-322.3	-32.7	0.6	Sperry TCDC Tool
2799.25	35.65	174.76	2700.83	-344.76	-338.4	-31.4	0.8	Sperry TCDC Tool
2830.33	35.66	174.48	2726.08	-362.79	-356.4	-29.7	0.2	Sperry TCDC Tool
2858.86	35.48	174.28	2749.29	-379.31	-372.9	-28.1	0.2	Sperry TCDC Tool
2886.55	35.51	174.82	2771.83	-395.32	-388.9	-26.5	0.3	Sperry TCDC Tool
2912.81	35.67	174.71	2793.19	-410.53	-404.1	-25.1	0.2	Sperry TCDC Tool
2944.72	35.81	174.86	2819.09	-429.10	-422.7	-23.4	0.2	Sperry TCDC Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	27	0	397.0
Drill Water	m3	0	35	0	355.0
Pot Water	m3	34	34	0	252.0
Brine	m3	0	23	0	23.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	60	2500	300
2	Continental Emsco	6.50	1.12	97	60	2500	300
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
2809.0	30	430	148	40	560	200	50	700	250
2809.0	30	450	148	40	570	200	50	720	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	36
GRN	3
OMS	23
Other Contractor	1
Halliburton Cementers	2
Halliburton (Baroid)	2
Fugro ROV	3
Geoservices	7

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Personnel On Board

Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
ABB Vetco	1
Total	93

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**1451.7bbl**	**Losses**	**152.0bbl**	Equipment	Description	Mesh Size
Active	677.0bbl	Downhole				
Mixing		Surf+ Equip	93.0bbl			
Hole	739.7bbl	Dumped				
Slug	35.0bbl	De-Gasser				
Reserve		De-Sander				
Kill		De-Silter				
		Centrifuge	35.0bbl			
		Evaporation	24.0bbl			

Comments

Marine

Weather on 24 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	14kn	219.0deg	1013.0mbar	14C°	1.0m	200.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.6deg	1.8deg	315.0deg	248.00klb	425.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	200.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	197.0
2	234.0
3	156.0
4	206.0
5	232.0
6	220.0
7	190.0
8	273.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		08:45 21st Jan	Melbourne

Bulks

Item	Unit	Used	Quantity
	M3		728
	M3		485
	M3		482
	t		0
	t		0
	t		0
	M3		48
	bbl		0

00:00 - 24:00 Alongside 28 South Wharf, Melbourne.

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
	M3		527
	M3		540
	M3		560
	t		37.2
	t		24
	t		0
	M3		0
	bbl		0

00:00 - 08:30 Standby at Kan Tan IV
08:30 - 10:00 Load cargo
10:00 - 24:00 Standby at Kan Tan IV

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Printed on 24 Jan 2010

Australian Drilling Associates Pty Ltd

25 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 7
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	25 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	7	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3158.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	2995.1m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	185.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$699,368
Rig	Kan Tan IV	Days from spud	56.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$4,416,557
Wtr Dpth (LAT)	74.3m	Days on well	6.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	85
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Servicing top drive at shoe.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	POOH and replace Sperry downhole tools. RIH with Geopilot assembly and drill 8½" hole to core point #1.		

Summary of Period 0000 to 2400 Hrs

Drilled 8½" hole from 3098m to 3158m. Sperry downhole tool failed. Circulated 15bbl Barolift pill out of hole. Sperry attempted to reset tools - unsuccessful. POOH wet. Hole "ratty" pumped out and reamed numerous tight spot from 3158m to 2492m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	82 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	2 Days	Fire in pit room	
Permit To Work	16	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	8 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety meetings	
STOP Card	51	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m
P3	3055.00m

Operations For Period 0000 Hrs to 2400 Hrs on 25 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	1700	17.00	3158.0m	Drilled 8½" hole with Geopilot drilling assembly from 2973m to 3158m. Sperry downhole tool failed (120/140rpm, 10/20klbs WOB, 610gpm, 2520psi, 3/20k ft-lbs torque). No excess torque or drag on connections.
P17	TP (DH)	F4	1700	1800	1.00	3158.0m	Pumped 15bbl Barolift pill and circulated out of well.
P17	TP (DH)	G15	1800	1830	0.50	3158.0m	Sperry attempted to reset downhole tools - no success.
P17	TP (DH)	G8	1830	2400	5.50	3158.0m	Flow checked well. POOH from 3158m to 2492m. Washed and reamed tight spots from 2980m to 2975m, 2885m to 2841m, 2803m to 2755m, 2720m to 2697m and 2645m to 2588m. Hole "ratty" with numerous tight spots. Continued to pump out of hole from 2588m to 2492m. Reamed tight spots as necessary. Max drag 30klbs.

Operations For Period 0000 Hrs to 0600 Hrs on 26 Jan 2010

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Printed on 26 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (DH)	G8	0000	0500	5.00	3158.0m	Pumped out of hole from 2492m to 1914m. 550gpm, 2000psi. Hole "ratty" with numerous tight spots. Reamed tight spots as necessary. Max drag 30klbs.
P17	TP (DH)	F4	0500	0530	0.50	3158.0m	Circulated bottoms up at shoe.
P17	TP (DH)	G11	0530	0600	0.50	3158.0m	Flow checked well. Serviced TDS and pumped slug.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 25 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	150.5	19 Jan 2010	25 Jan 2010	150.50	6.271	3158.0m

General Comments

00:00 TO 24:00 Hrs ON 25 Jan 2010

WBM Data

Cost Today US$ 32526

Mud Type	KCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:	36500mg/l	Solids(%vol):	3%	Viscosity	56sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	19cp
Time:	2005	HTHP-FL:	8.8cc/30min	Hard/Ca:	320mg/l	Oil(%):		YP	40lb/100ft²
Weight:	9.35ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.2	Gels 10s	10
Temp:				PM:	1.5	pH:	9	Gels 10m	13
				PF:	0.35	PHPA:	3ppb	Fann 003	9
								Fann 006	10
								Fann 100	34
								Fann 200	47
								Fann 300	59
								Fann 600	78

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 90gms

Bit # 3

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M422	No.	Size	Progress	185.0m	Cumul. Progress	1046.0m
Mfr:	Reed Hycalog	WOB(avg)	12.00klb	6	18/32nd"	On Bottom Hrs	12.8h	Cumul. On Btm Hrs	56.1h
Type:	PDC	RPM(avg)	95			IADC Drill Hrs	17.0h	Cumul. IADC Drill Hrs	78.5h
Serial No.:	220126	F.Rate	593gpm			Total Revs	829000	Cumul. Total Revs	1267000
Bit Model	RSX616M	SPP	2390psi			ROP(avg)	14.45 m/hr	ROP(avg)	18.65 m/hr
Depth In	2112.0m	HSI							
Depth Out		TFA	1.491						

Bit Comment

BHA # 3

Weight(Wet)	46.00klb	Length	210.5m	Torque(max)	8380ft-lbs	D.C. (1) Ann Velocity	545fpm
Wt Below Jar(Wet)	43.00klb	String	370.00klb	Torque(Off.Btm)	4870ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	385.00klb	Torque(On.Btm)	7750ft-lbs	H.W.D.P. Ann Velocity	308fpm
		Slack-Off	365.00klb			D.P. Ann Velocity	308fpm

BHA Run Description

BHA Run Comment: Hours on Jars:- 260

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.44m	8.50in		220126	PDC bit
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL103	
NM Flex Monel	2.81m	6.69in	1.92in	CP1005711	
Stab	0.67m	6.75in	1.92in	1016171	8 3/8" Blades
LWD Tools	6.54m	6.75in	1.92in	90232556	DGR+EWR
LWD Tools	4.32m	6.75in	1.92in	90250055	ALD + 8 1/8" Stab
LWD Tools	4.22m	6.75in	1.92in	90250055	CTN + ACAL

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Equipment	Length	OD	ID	Serial #	Comment
LWD Tools	2.54m	6.75in	1.92in	9022556W6	PWD
LWD Tools	6.88m	6.69in	1.92in	90230519-06	BAT-Sonic
HOC	3.04m	6.75in	1.92in	203846	
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
2790.10	33.67	176.07	2693.57	-339.19	-332.8	-31.9	3.1	Sperry TCDC Tool
3001.24	33.20	177.20	2865.93	-460.65	-454.2	-21.3	1.6	Sperry TCDC Tool
3026.70	33.66	177.54	2887.18	-474.66	-468.3	-20.7	0.6	Sperry TCDC Tool
3059.36	34.73	177.11	2914.19	-493.00	-486.6	-19.8	1.0	Sperry TCDC Tool
3089.54	35.58	176.65	2938.87	-510.35	-503.9	-18.9	0.9	Sperry TCDC Tool
3118.07	35.65	177.66	2962.06	-526.94	-520.5	-18.1	0.6	Sperry TCDC Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	26	0	371.0
Drill Water	m3	34	0	0	389.0
Pot Water	m3	0	20	0	232.0
Brine	m3	0	16	0	7.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	60	2500	300
2	Continental Emsco	6.50	1.12	97	60	2500	300
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3066.0	30	420	148	40	590	200	50	700	250
3066.0	30	430	148	40	560	200	50	700	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	3
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2

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Personnel On Board

Swaco	1
CORPRO	3
Total	91

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2284.2bbl**	**Losses**	**438.0bbl**	Equipment	Description	Mesh Size
Active	650.0bbl	Downhole				
Mixing		Surf+ Equip	280.0bbl			
Hole	795.2bbl	Dumped				
Slug	42.0bbl	De-Gasser				
Reserve	797.0bbl	De-Sander				
Kill		De-Silter				
		Centrifuge	110.0bbl			
		Evaporation	48.0bbl			

Comments

Marine

Weather on 25 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	5kn	280.0deg	1010.0mbar	14C°	0.6m	280.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.4deg	0.9deg	315.0deg	248.00klb	570.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
0.6m	280.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	192.0
2	235.0
3	163.0
4	215.0
5	229.0
6	218.0
7	189.0
8	286.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		08:45 21st Jan	Enroute to Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		719
Potable Water	M3		482
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		48
Mud	bbl		0

00:00 - 13:00 Alongside 28 South Wharf, Melbourne.
13:00 - 24:00 Enroute to Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		521
Pot Water	M3		537
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		24
	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:30 Standby at Kan Tan IV

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	08:57 / 09:13	12 / 14	

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Australian Drilling Associates Pty Ltd

26 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 8
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	26 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	8	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3158.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	2995.1m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$677,312
Rig	Kan Tan IV	Days from spud	57.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$5,093,869
Wtr Dpth (LAT)	74.3m	Days on well	7.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	86
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Drilling 8½" hole at 3161m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Drill ahead 8½" hole to core point #1. Circulate well clean. POOH and rack back Geopilot BHA. Make up core barrel and BHA. RIH and commence core #1.		

Summary of Period 0000 to 2400 Hrs

Pumped out of hole from 2492m to 1914m. Reamed tight hole as neccessary. Circulated bottoms up at shoe. Serviced TDS, flow checked well, pumped slug and POOH. Downloaded data from Sperry tools. Laid out MWD/LWD BHA tools. Made up replacement tools and 8½" bit. RIH to 239m and shallow tested Sperry down hole tools. RIH to 1918m. Slipped and cut drill line. RIH from 1918m to 2525m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	83 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days	Fire in heavy tool store	
Permit To Work	13	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	9 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	56	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m
P3	3055.00m

Operations For Period 0000 Hrs to 2400 Hrs on 26 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (DH)	G8	0000	0500	5.00	3158.0m	Pumped out of hole from 2492m to 1914m (550gpm, 2000psi). Hole "ratty" with numerous tight spots. Reamed tight spots as necessary. Max drag 30klbs.
P17	TP (DH)	F4	0500	0530	0.50	3158.0m	Circulated bottoms up at shoe.
P17	TP (DH)	G11	0530	0600	0.50	3158.0m	Flow checked well. Serviced TDS and pumped slug.
P17	TP (DH)	G8	0600	1000	4.00	3158.0m	POOH from shoe to 39m. Held trip drill - 45 secs to stab and close IBOP
P17	TP (DH)	G7	1000	1100	1.00	3158.0m	Downloaded LWD tools and removed radioactive source.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (DH)	G7	1100	1230	1.50	3158.0m	Laid out LWD/MWD tools and Geopilot. Broke off bit.
P17	TP (DH)	G7	1230	1500	2.50	3158.0m	Held PJSM. Picked up replacement MWD/LWD tools and Geopilot. Made up 8½" bit.
P17	TP (DH)	G7	1500	1630	1.50	3158.0m	Programmed downhole tools and installed radio active source.
P17	TP (DH)	G6	1630	1730	1.00	3158.0m	Continued to make up 8½" BHA and RIH to 239m.
P17	TP (DH)	G15	1730	1800	0.50	3158.0m	Shallow tested MWD/LWD tools (600gpm, 1400psi) - ok.
P17	TP (DH)	G8	1800	2100	3.00	3158.0m	RIH with 8½" Geopilot drilling assembly from 239m to 1918m. Held trip drill - 23secs to stab and close IBOP.
P17	TP (DH)	G11	2100	2230	1.50	3158.0m	Slipped and cut drilling line.
P17	TP (DH)	G15	2230	2300	0.50	3158.0m	RIH from 1918m to 2000m. Went through procedure to break in Geopilot seals as per Directional Drillers instruction.
P17	TP (DH)	G8	2300	2400	1.00	3158.0m	RIH from 2000m to 2525m. No excess drag observed.

Operations For Period 0000 Hrs to 0600 Hrs on 27 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (DH)	G8	0000	0130	1.50	3158.0m	RIH from 2525m to 3090m. Held up with 30klbs weight at 3090m
P17	TP (DH)	F1	0130	0200	0.50	3158.0m	Established circulation and reamed tight hole from 3090m to 3094m. Continued to wash in hole to 3103m. RIH from 3103m to 3132m.
P17	TP (DH)	F1	0200	0400	2.00	3158.0m	Established parameters with Geoservices and Sperry. Washed in hole from 3132m and tagged fill at 3150m. Washed and reamed fill from 3150m to tag bottom at 3156m tide corrected. Checked pipe figures and BHA to account for 2m depth discrepancy. No discrepancy found.
P17	TP (DH)	G8	0400	0500	1.00	3158.0m	Relogged interval 3130m to 3139m to tie in logs with depth (bit depths 3141m to 3150m).
P17	P	D4	0500	0600	1.00	3161.0m	Drilled 8½" hole from 3158m to 3161m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 26 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	174.5	19 Jan 2010	26 Jan 2010	174.50	7.271	3158.0m

General Comments

00:00 TO 24:00 Hrs ON 26 Jan 2010

WBM Data — Cost Today US$ 5263

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	37000mg/l	Solids(%vol):	3%	Viscosity	57sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	19cp
Time:	2240	HTHP-FL:	9.1cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	34lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.2	Gels 10s	9
Temp:				PM:	1	pH:	9	Gels 10m	13
				PF:	0.29	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	31
								Fann 200	43
								Fann 300	53
								Fann 600	72

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 0gms

Bit # 3

Wear	I	O1	D	L	B	G	O2	R
	2	1	CT	C	X	I	NO	DTF

Bitwear Comments:

Size ("):	8.50in	IADC#	M422	Nozzles	Drilled over last 24 hrs	Calculated over Bit Run

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Mfr:	Reed Hycalog	WOB(avg)		No.	Size	Progress 0.0m	Cumul. Progress 1046.0m
Type:	PDC	RPM(avg)		6	18/32nd"	On Bottom Hrs 0.0h	Cumul. On Btm Hrs 56.1h
Serial No.:	220126	F.Rate				IADC Drill Hrs 0.0h	Cumul. IADC Drill Hrs 78.5h
Bit Model	RSX616M	SPP				Total Revs 829000	Cumul. Total Revs 2096000
Depth In	2112.0m	HSI				ROP(avg) N/A	ROP(avg) 18.65 m/hr
Depth Out	3158.0m	TFA	1.491				

Bit Comment

Bit # 4

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

Size ("):	8.50in	IADC#	M423	**Nozzles**		**Drilled over last 24 hrs**	**Calculated over Bit Run**
Mfr:	Security DBS	WOB(avg)		No.	Size	Progress	Cumul. Progress 0.0m
Type:	PDC	RPM(avg)		3	15/32nd"	On Bottom Hrs	Cumul. On Btm Hrs 0.0h
Serial No.:	11374625	F.Rate		3	12/32nd"	IADC Drill Hrs	Cumul. IADC Drill Hrs 0.0h
Bit Model	FMF3653Z	SPP				Total Revs	Cumul. Total Revs 0
Depth In	3158.0m	HSI				ROP(avg) N/A	ROP(avg) 0.00 m/hr
Depth Out		TFA	0.849				

Bit Comment

BHA # 3

Weight(Wet)	46.00klb	Length	210.5m	Torque(max)	18400ft-lbs	D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	43.00klb	String	370.00klb	Torque(Off.Btm)	2150ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	385.00klb	Torque(On.Btm)	5500ft-lbs	H.W.D.P. Ann Velocity	0fpm
		Slack-Off	365.00klb			D.P. Ann Velocity	0fpm

BHA Run Description

BHA Run Comment Hours on Jars:- 260

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.44m	8.50in		220126	PDC bit
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL103	
NM Flex Monel	2.81m	6.69in	1.92in	CP1005711	
Stab	0.67m	6.75in	1.92in	1016171	8 3/8" Blades
LWD Tools	6.54m	6.75in	1.92in	90232556	DGR+EWR
LWD Tools	4.32m	6.75in	1.92in	90250055	ALD + 8 1/8" Stab
LWD Tools	4.22m	6.75in	1.92in	90250055	CTN + ACAL
LWD Tools	2.54m	6.75in	1.92in	9022556W6	PWD
LWD Tools	6.88m	6.69in	1.92in	90230519-06	BAT-Sonic
HOC	3.04m	6.75in	1.92in	203846	
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

BHA # 4

Weight(Wet)	46.00klb	Length	212.7m	Torque(max)		D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	43.00klb	String	370.00klb	Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up	385.00klb	Torque(On.Btm)		H.W.D.P. Ann Velocity	0fpm
		Slack-Off	365.00klb			D.P. Ann Velocity	0fpm

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BHA Run Description

BHA Run Comment Hours on Jars:- 260

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.39m	8.50in		11374625	PDC bit
Geo_Pilot	7.52m	6.75in	1.92in	GP850TL134	
NM Flex Monel	2.76m	6.69in	1.92in	CP919968	
Stab	0.62m	6.75in	1.92in	CP747628	8 3/8" Blades
LWD Tools	6.53m	6.75in	1.92in	90224657	DGR+EWR
LWD Tools	4.99m	6.75in	1.92in	PA90232813	ALD + 8 1/8" Stab
LWD Tools	4.15m	6.75in	1.92in	N2L-6	CTN
LWD Tools	2.53m	6.75in	1.92in	90215164W6	PWD
LWD Tools	6.72m	6.69in	1.92in	90235228-O6	BAT-Sonic
HOC	3.03m	6.75in	1.92in	202842	
LWD Tools	1.81m	7.25in	1.92in	PA90235611 B6	ACAL
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	12	0	359.0
Drill Water	m3	0	28	0	361.0
Pot Water	m3	31	23	0	240.0
Brine	m3	43	0	0	50.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97			
2	Continental Emsco	6.50	1.12	97			
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		148	40		200	50		250
	30		148	40		200	50		250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	3
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2

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Personnel On Board

Swaco	1
CORPRO	3
Total	91

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2183.2bbl**	**Losses**	**80.6bbl**
Active	724.0bbl	Downhole	
Mixing		Surf+ Equip	60.6bbl
Hole	795.2bbl	Dumped	
Slug	17.0bbl	De-Gasser	
Reserve	647.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	16.0bbl
		Evaporation	4.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 26 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	14kn	210.0deg	1015.0mbar	12C°	0.6m	200.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	1.0deg	1.8deg	315.0deg	248.00klb	530.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.3m	200.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	198.0
2	234.0
3	159.0
4	212.0
5	226.0
6	218.0
7	195.0
8	276.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	00:35 26th Jan	08:45 21st Jan	Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		709
Potable Water	M3		479
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 00:35 Standby at Kan Tan IV
00:35 - 02:50 Load cargo
02:50 - 24:00 Standby at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan	08:12 26th Jan	Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		505
Pot Water	M3		533
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		24
	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 08:00 Standby at Kan Tan IV
08:00 - 08:12 Load cargo
08:12 - 21:30 Enroute to Melbourne
21:30 - 24:00 Alongside 28 South Wharf, Melbourne.

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Australian Drilling Associates Pty Ltd

27 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 9
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	27 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	9	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3196.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3026.0m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	38.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$780,381
Rig	Kan Tan IV	Days from spud	58.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$5,874,250
Wtr Dpth (LAT)	74.3m	Days on well	8.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	87
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	RIH with core barrel BHA at 518m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	RIH, space out and cut 30m core #1. POOH.		

Summary of Period 0000 to 2400 Hrs

RIH, held up at 3090m. Reamed tight spot from 3090m to 3094m. Washed in and tagged fill at 3150m. Reamed out fill to bottom. Relogged from 3130m to 3156m. Drilled 8½" hole from 3158m to 3182m. Circulated up sample for Geologist. Drilled 8½" hole from 3182m to 3191m. Circulated up sample for Geologist. Drilled 8½" hole from 3191m to 3196m. Circulated riser volume. Flow checked well. POOH to shoe. Flow checked, pumped slug and POOH. Racked back BHA, removed radioactive source and down loaded MWD/LWD tools.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	84 Days	Full Emergency drill performed	
Fire Drill	0	4 Days	Fire in pit room.	
Permit To Work	16	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	10 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety Meetings.	
STOP Card	51	0 Days	Number of STOP Cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m
P3	3055.00m

Operations For Period 0000 Hrs to 2400 Hrs on 27 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (DH)	G8	0000	0130	1.50	3158.0m	RIH from 2525m to 3090m. Held up with 30klbs weight at 3090m.
P17	TP (DH)	F1	0130	0200	0.50	3158.0m	Established circulation and reamed tight section from 3090m to 3094m. Continued to wash in hole to 3103m. RIH from 3103m to 3132m.
P17	TP (DH)	F1	0200	0400	2.00	3158.0m	Established parameters with Geoservices and Sperry. Washed in hole from 3132m and tagged fill at 3152m. Washed and reamed fill from 3152m to tag bottom at 3158m tide corrected.
P17	TP (DH)	E3	0400	0500	1.00	3158.0m	Relogged interval 3130m to 3139m to tie in logs with depth (bit depths 3141m to 3150m).
P17	P	D4	0500	0800	3.00	3182.0m	Drilled 8½" hole from 3158m to 3182m (600gpm, 2500psi, 10klbs WOB, 120rpm, 7k ft-lbs torque).
P17	P	F4	0800	1000	2.00	3182.0m	Circulated while LWD information was being sent to town for evaluation.
P17	P	D4	1000	1100	1.00	3191.0m	Drilled 8½" hole from 3182m to 3191m (600gpm, 2500psi, 10k WOB, 120rpm, 7k ft-lbs

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							torque).
P17	P	F4	1100	1300	2.00	3191.0m	Circulated while LWD information was being sent to town for evaluation.
P17	P	D4	1300	1400	1.00	3196.0m	Drilled 8½" hole from 3191m to 3196m (600gpm, 2500psi, 10k WOB, 120rpm, 7k ft-lbs torque).
P17	P	F4	1400	1430	0.50	3196.0m	Circulated with 3rd pump boosting riser (1000 strokes). Took survey, racked back stand. Flow checked well.
P17	P	G8	1430	1900	4.50	3196.0m	POOH to shoe at 1965m. Maximum overpull 10klbs.
P17	P	G8	1900	2100	2.00	3196.0m	Flow checked well. Pumped slug and POOH from 1965m to 213m.
P17	P	G6	2100	2200	1.00	3196.0m	Racked back BHA to 43m.
P17	P	G7	2200	2230	0.50	3196.0m	Laid out ACAL tool, float sub, and 8½" stabiliser.
P17	P	G7	2230	2400	1.50	3196.0m	Held PJSM. Sperry removed radioaction source from tool. Down loaded data from MWD/LWD tools.

Operations For Period 0000 Hrs to 0600 Hrs on 28 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G7	0000	0100	1.00	3196.0m	Laid out HOC and BAT Sonic tools. Broke off bit and racked back stand in mast.
P17	P	G7	0100	0330	2.50	3196.0m	Held PJSM. Made up 30m of outer and inner core barrels with core head as per Corpro instructions.
P17	P	G6	0330	0530	2.00	3196.0m	Made up core barrel BHA to 258m.
P17	P	G8	0530	0600	0.50	3196.0m	RIH with core barrel assembly from 258m to 518m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 27 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	198.5	19 Jan 2010	27 Jan 2010	198.50	8.271	3196.0m

General Comments

00:00 TO 24:00 Hrs ON 27 Jan 2010

WBM Data — Cost Today US$ 25825

Mud Type	KCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:	37000mg/l	Solids(%vol):	3%	Viscosity	56sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	19cp
Time:	2140	HTHP-FL:	8.8cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	36lb/100ft²
Weight:	9.35ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.2	Gels 10s	9
Temp:				PM:	0.7	pH:	9.5	Gels 10m	13
				PF:	1.2	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	34
								Fann 200	46
								Fann 300	55
								Fann 600	72

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 160gms

Bit # 4

Wear	I	O1	D	L	B	G	O2	R
	0	0	NO	A	X	I	NO	CP

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M423	No.	Size	Progress	38.0m	Cumul. Progress	38.0m
Mfr:	Security DBS	WOB(avg)	12.10klb	3	12/32nd"	On Bottom Hrs	3.9h	Cumul. On Btm Hrs	3.9h
Type:	PDC	RPM(avg)	72	3	15/32nd"	IADC Drill Hrs	5.0h	Cumul. IADC Drill Hrs	5.0h
Serial No.:	11374625	F.Rate	599gpm			Total Revs	38000	Cumul. Total Revs	38000
Bit Model	FMF3653Z	SPP	2454psi			ROP(avg)	9.74 m/hr	ROP(avg)	9.74 m/hr
Depth In	3158.0m	HSI							
Depth Out	3196.0m	TFA	0.849						

Bit Comment

BHA # 4

Weight(Wet)	46.00klb	Length	212.7m	Torque(max)	7740ft-lbs	D.C. (1) Ann Velocity	550fpm
Wt Below Jar(Wet)	43.00klb	String	380.00klb	Torque(Off.Btm)	7270ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	390.00klb	Torque(On.Btm)	6750ft-lbs	H.W.D.P. Ann Velocity	311fpm

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	Slack-Off	370.00klb		D.P. Ann Velocity	311fpm

BHA Run Description

BHA Run Comment Hours on Jars:- 270.5

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.39m	8.50in		11374625	PDC bit
Geo_Pilot	7.52m	6.75in	1.92in	GP850TL134	
NM Flex Monel	2.76m	6.69in	1.92in	CP919968	
Stab	0.62m	6.75in	1.92in	CP747628	8 3/8" Blades
LWD Tools	6.53m	6.75in	1.92in	90224657	DGR+EWR
LWD Tools	4.99m	6.75in	1.92in	PA90232813	ALD + 8 1/8" Stab
LWD Tools	4.15m	6.75in	1.92in	N2L-6	CTN
LWD Tools	2.53m	6.75in	1.92in	90215164W6	PWD
LWD Tools	6.72m	6.69in	1.92in	90235228-O6	BAT-Sonic
HOC	3.03m	6.75in	1.92in	202842	
LWD Tools	1.81m	7.25in	1.92in	PA90235611 B6	ACAL
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
3145.40	35.32	177.16	2984.32	-542.79	-536.4	-17.4	0.5	Sperry TCDC Tool
3167.94	35.69	178.03	3002.67	-555.87	-549.5	-16.8	0.8	Sperry TCDC Tool
3185.27	35.70	178.52	3016.74	-565.97	-559.6	-16.5	0.5	Sperry TCDC Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	6	0	353.0
Drill Water	m3	0	40	0	321.0
Pot Water	m3	11	25	0	226.0
Brine	m3	0	0	0	50.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	60	2500	300
2	Continental Emsco	6.50	1.12	97	60	2500	300
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		148	40		200	50		250
3066.0	30		148	40		200	50		250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4

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Personnel On Board

Origin Energy	2
Maersk	42
GRN	3
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
Total	93

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2158.6bbl**	**Losses**	**189.4bbl**	Equipment	Description	Mesh Size
Active	710.0bbl	Downhole				
Mixing		Surf+ Equip	122.4bbl			
Hole	880.6bbl	Dumped				
Slug	15.0bbl	De-Gasser				
Reserve	553.0bbl	De-Sander				
Kill		De-Silter				
		Centrifuge	47.0bbl			
		Evaporation	20.0bbl			

Comments

Marine

Weather on 27 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	8kn	46.0deg	1013.0mbar	15C°	0.6m	46.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.6deg	1.4deg	315.0deg	248.00klb	600.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	46.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	196.0
2	237.0
3	166.0
4	227.0
5	236.0
6	223.0
7	189.0
8	268.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	00:35 26th Jan	08:45 21st Jan	Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		704
Potable Water	M3		476
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:00 Standby at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan	08:12 26th Jan	Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		505
Pot Water	M3		533
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		24
	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:00 Alongside 28 South Wharf, Melbourne.

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Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:05 / 09:16	5 / 3	

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Australian Drilling Associates Pty Ltd

28 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 10
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	28 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	10	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3212.5m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3039.6m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	16.5m	Shoe TVDBRT	1965.0m	Daily Cost	US$633,057
Rig	Kan Tan IV	Days from spud	59.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$6,507,307
Wtr Dpth (LAT)	74.3m	Days on well	9.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	88
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Laying out inner core barrels with core.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Rack back core barrel. Make up 8½" Geopilot BHA and RIH. Drill ahead to core point #2.		

Summary of Period 0000 to 2400 Hrs

Laid out HOC and BAT Sonic tools. Broke off bit and racked back Geopilot stand. Made up 30m core barrel and BHA. RIH to 3182m. Washed to 3196m. Dropped ball, spaced out and cut core from 3196m to 3212.5m (16.5m of core cut). Core head jammed. Flow checked well, pumped slug at POOH at controlled rate to shoe at 1965m. Serviced top drive. Flow checked well. POOH at controlled rate to 1097m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	5 Days	Held abandon drill	
Dropped Object	1	0 Days	Bolt end with nut fell from crane block.	Bolt end and nut weighing 220gms fell from the main travelling block of the starboard crane while a load was being transferred to the pipe deck. Job stopped and incident investigated. Synergi report No 417303. Flash report No 057.
Emergency Drill	0	85 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	5 Days	Fire in pit room	
Permit To Work	11	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	11 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	50	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m
P3	3055.00m
RL30	3163.50m

Operations For Period 0000 Hrs to 2400 Hrs on 28 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G7	0000	0100	1.00	3196.0m	Laid out HOC and BAT Sonic tools. Broke off bit and racked back stand in mast.
P17	P	G7	0100	0330	2.50	3196.0m	Held PJSM. Made up 30m of outer and inner core barrels with core head as per Corpro instructions.
P17	P	G6	0330	0530	2.00	3196.0m	Made up core barrel BHA to 258m.
P17	P	G8	0530	1100	5.50	3196.0m	RIH with core barrel assembly from 258m to 3182m. Held trip drill - 30secs to stab and close IBOP.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F1	1100	1230	1.50	3196.0m	Washed in hole from 3182m to 3196m. Recorded SCRs and parameters as instructed by Corpro Engineer.
P17	P	E7	1230	1330	1.00	3196.0m	Dropped ball and spaced out string for coring. Ball landed with 120psi differential. Re-established parameters.
P17	P	E7	1330	1730	4.00	3212.5m	Cut core #1 from 3196m to 3212.5m. Core head jammed at 3212.5m (16.5m of core cut).
P17	P	G8	1730	2130	4.00	3212.5m	Flow checked well. Racked back stand and laid out space out pup jointt. Pumped slug and POOH at controlled rate of 3min per stand to 1935m.
P17	P	P3	2130	2200	0.50	3212.5m	Flow checked at shoe and serviced top drive. Held trip drill - 22secs to stab and close IBOP.
P17	P	G8	2200	2400	2.00	3212.5m	POOH at controlled rate of 3min per stand from 1935m to 1097m.

Operations For Period 0000 Hrs to 0600 Hrs on 29 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G8	0000	0500	5.00	3212.5m	POOH with core barrel at controlled rate from 1079m to core barrel tophead at 32m. 1079m to 600m 5mins/stand. 600m to 150m 6mins/stand. 150m to core barrel tophead 11mins/stand.
P17	P	G6	0500	0600	1.00	3212.5m	Held PJSM. Removed core barrel top head and laid out inner barrel with core to pipe deck.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 28 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	222.5	19 Jan 2010	28 Jan 2010	222.50	9.271	3212.5m

General Comments

00:00 TO 24:00 Hrs ON 28 Jan 2010

WBM Data

Cost Today US$ 1157

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	38000mg/l	Solids(%vol):	3%	Viscosity	58sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	17cp
Time:	2110	HTHP-FL:	8.9cc/30min	Hard/Ca:	320mg/l	Oil(%):		YP	31lb/100ft²
Weight:	9.35ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.25	Gels 10s	10
Temp:				PM:	0.7	pH:	9	Gels 10m	14
				PF:	0.2	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	30
								Fann 200	40
								Fann 300	48
								Fann 600	65

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 75gms

Bit # 4

Wear	I	O1	D	L	B	G	O2	R
	0	0	NO	A	X	I	NO	CP

Bitwear Comments:

Size ("):	8.50in	IADC#	M423
Mfr:	Security DBS	WOB(avg)	12.10klb
Type:	PDC	RPM(avg)	72
Serial No.:	11374625	F.Rate	599gpm
Bit Model	FMF3653Z	SPP	2454psi
Depth In	3158.0m	HSI	
Depth Out	3196.0m	TFA	0.849

Nozzles

No.	Size
3	12/32nd"
3	15/32nd"

Drilled over last 24 hrs

Progress	0.0m
On Bottom Hrs	0.0h
IADC Drill Hrs	0.0h
Total Revs	38000
ROP(avg)	N/A

Calculated over Bit Run

Cumul. Progress	38.0m
Cumul. On Btm Hrs	3.9h
Cumul. IADC Drill Hrs	5.0h
Cumul. Total Revs	76000
ROP(avg)	9.74 m/hr

Bit Comment

Bit # 5

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

Size ("):	8.50in	IADC#	M233

Nozzles | **Drilled over last 24 hrs** | **Calculated over Bit Run**

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				No.	Size				
Mfr:	CORPRO	WOB(avg)	16.90klb			Progress	16.5m	Cumul. Progress	16.5m
Type:	ch	RPM(avg)	67			On Bottom Hrs	3.6h	Cumul. On Btm Hrs	3.6h
Serial No.:	83691	F.Rate	216gpm			IADC Drill Hrs	4.0h	Cumul. IADC Drill Hrs	4.0h
Bit Model	MCP 572	SPP	625psi			Total Revs	29000	Cumul. Total Revs	29000
Depth In	3196.0m	HSI				ROP(avg)	4.58 m/hr	ROP(avg)	4.58 m/hr
Depth Out	3212.5m	TFA	0.000						

Bit Comment

BHA # 5

Weight(Wet)	58.00klb	Length	258.3m	Torque(max)	9580ft-lbs	D.C. (1) Ann Velocity	247fpm
Wt Below Jar(Wet)	26.00klb	String		Torque(Off.Btm)	7590ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	400.00klb	Torque(On.Btm)	4630ft-lbs	H.W.D.P. Ann Velocity	112fpm
		Slack-Off				D.P. Ann Velocity	112fpm

BHA Run Description

BHA Run Comment Hours on jars:- 5

Equipment	Length	OD	ID	Serial #	Comment
Core Bit	0.37m	8.50in	4.00in	83691	
Core Barrel	31.81m	7.13in	4.00in		
Drill Collar	56.16m	6.75in	2.88in		
Drilling Jars	9.94m	6.44in	3.00in	1760-2019	
Drill Collar	18.78m	6.75in	2.88in		
HWDP	141.19m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	16	0	337.0
Drill Water	m3	0	28	0	293.0
Pot Water	m3	37	27	0	236.0
Brine	m3	0	16	0	34.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	44	650	220
2	Continental Emsco	6.50	1.12	97			
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3198.0	30	210	148	40	300	200	50	580	250
3198.0	30	260	148	40	340	200	50	560	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	42
GRN	3

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Personnel On Board

OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
Total	93

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	2264.6bbl	Losses	244.0bbl
Active	675.0bbl	Downhole	
Mixing		Surf+ Equip	181.0bbl
Hole	880.6bbl	Dumped	
Slug	20.0bbl	De-Gasser	
Reserve	689.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	47.0bbl
		Evaporation	16.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 28 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	8kn	217.0deg	1009.0mbar	15C°	0.6m	210.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
0.6m	0.9deg	1.8deg	315.0deg	248.00klb	450.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	210.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	191.0
2	231.0
3	165.0
4	227.0
5	237.0
6	222.0
7	191.0
8	269.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	00:35 26th Jan		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		698
Potable Water	M3		473
Drill Water	M3		482
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:00 Standby at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan	08:12 26th Jan	Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		502
Pot Water	M3		527
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		24
	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:00 Alongside Appleton F, Melbourne.

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment

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Helicopter Movement				
KT01	Bristow Helicopters	/	/	No flights today

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Australian Drilling Associates Pty Ltd

29 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 11
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	29 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	11	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3234.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3056.4m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	21.5m	Shoe TVDBRT	1965.0m	Daily Cost	US$754,396
Rig	Kan Tan IV	Days from spud	60.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$7,261,703
Wtr Dpth (LAT)	74.3m	Days on well	10.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	89
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Drilling 8½" hole at 3275m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Drill 8½" hole to core point #2. Circulate clean. POOH and make up core barrel BHA for core run #2. RIH and cut core. POOH.		

Summary of Period 0000 to 2400 Hrs

POOH with core run #1. Laid out inner barrels with core. 13.38m (81%) of core recovered. Serviced rig. Made up 8½" Geopilot BHA and shallow tested same. RIH to 3132m. Washed in from 3132m to 3175m. Relogged well from 3175m to 3212.5m. Drilled 8½" hole from 3212.5m to 3234m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	86 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	6 Days	Fire in pit room	
Permit To Work	18	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	12 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety meetings	
STOP Card	48	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m
P3	3055.00m
RL30	3163.50m

Operations For Period 0000 Hrs to 2400 Hrs on 29 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G8	0000	0500	5.00	3212.5m	POOH with core barrel at controlled rate from 1079m to core barrel tophead at 32m. 1079m to 600m 5mins/stand. 600m to 150m 6mins/stand. 150m to core barrel tophead 11mins/stand.
P17	P	G6	0500	0830	3.50	3212.5m	Held PJSM. Removed core barrel top head and laid out inner barrel with core to pipe deck. Racked outer barrel back in mast. 13.38m of core recovered (81%).
P17	P	G6	0830	0900	0.50	3212.5m	Cleaned and cleared the drill floor of excess equipment.
P17	P	G11	0900	1000	1.00	3212.5m	Serviced TDS, travelling block and inspected mast.
P17	P	G7	1000	1200	2.00	3212.5m	Held PJSM. Made up 8½" Geopilot BHA. Made up bit, picked up ACAL, Bat Sonic and HOC from pipe deck. Uploaded MWD/LWD tools. Installed radio active source.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G6	1200	1330	1.50	3212.5m	RIH with BHA to 215m.
P17	P	G15	1330	1400	0.50	3212.5m	Shallow tested MWD/LWD downhole tools.
P17	P	G8	1400	1930	5.50	3212.5m	RIH from 215m to 3132m. Filled pipe every 20 stands. No excess drag encountered. Trip drill held - 29 secs to stab and close IBOP.
P17	P	F1	1930	2000	0.50	3212.5m	Established circulation. Recorded SCRs. Washed from 3132m to 3161m.
P17	P	F1	2000	2130	1.50	3212.5m	Reamed from 3161m to 3175m. Logged well from 3175m to 3212.5m at 60m/hr (500gpm, 1750psi, 60rpm).
P17	P	D4	2130	2400	2.50	3234.0m	Drilled 8½" hole from 3212.5m to 3234m (580gpm, 2340psi, 5/20klbs WOB, 120/160rpm, 13/20k ft-lbs torque).

Operations For Period 0000 Hrs to 0600 Hrs on 30 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0600	6.00	3283.0m	(IN PROGRESS) Drilled 8½" hole from 3234m to 3283m (580gpm, 2340psi, 5/20klbs WOB, 120/160rpm, 13/20k ft-lbs torque).

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 29 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	246.5	19 Jan 2010	29 Jan 2010	246.50	10.271	3234.0m

General Comments

00:00 TO 24:00 Hrs ON 29 Jan 2010

WBM Data — Cost Today US$ 27149

Mud Type	KCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:	38000mg/l	Solids(%vol):	3%	Viscosity	62sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	15cp
Time:	2100	HTHP-FL:	8.9cc/30min	Hard/Ca:	280mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.15	Gels 10s	10
Temp:				PM:	0.8	pH:	9.5	Gels 10m	15
				PF:	0.28	PHPA:	3ppb	Fann 003	9
								Fann 006	11
								Fann 100	26
								Fann 200	35
								Fann 300	40
								Fann 600	55

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 35gms

Bit # 5

Wear	I	O1	D	L	B	G	O2	R
	0	0	NO	A	X	I	NO	BHA

Bitwear Comments:

				Nozzles	Drilled over last 24 hrs		Calculated over Bit Run	
Size (")	8.50in	IADC#	M233					
Mfr:	CORPRO	WOB(avg)		No. Size	Progress		Cumul. Progress	16.5m
Type:	ch	RPM(avg)			On Bottom Hrs		Cumul. On Btm Hrs	3.6h
Serial No.:	83691	F.Rate			IADC Drill Hrs		Cumul. IADC Drill Hrs	4.0h
Bit Model	MCP 572	SPP			Total Revs		Cumul. Total Revs	29000
Depth In	3196.0m	HSI			ROP(avg)	N/A	ROP(avg)	4.58 m/hr
Depth Out	3212.5m	TFA	0.000					

Bit Comment

Bit # 4RR

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments: Errosion signs between cutters

				Nozzles	Drilled over last 24 hrs	Calculated over Bit Run
Size (")	8.50in	IADC#	M423			

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Mfr:	Security DBS	WOB(avg)	7.30klb	No.	Size	Progress	21.5m	Cumul. Progress	21.5m
Type:	PDC	RPM(avg)	152	3	12/32nd"	On Bottom Hrs	2.0h	Cumul. On Btm Hrs	2.0h
Serial No.:	11374625	F.Rate	572gpm	3	15/32nd"	IADC Drill Hrs	2.5h	Cumul. IADC Drill Hrs	2.5h
Bit Model	FMF3653Z	SPP	2190psi			Total Revs	40000	Cumul. Total Revs	40000
Depth In	3212.5m	HSI				ROP(avg)	10.75 m/hr	ROP(avg)	10.75 m/hr
Depth Out		TFA	0.849						

Bit Comment

BHA # 6

Weight(Wet)	43.00klb	Length	212.7m	Torque(max)	8580ft-lbs	D.C. (1) Ann Velocity	525fpm
Wt Below Jar(Wet)	32.00klb	String	380.00klb	Torque(Off.Btm)	6680ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	390.00klb	Torque(On.Btm)	5100ft-lbs	H.W.D.P. Ann Velocity	297fpm
		Slack-Off	370.00klb			D.P. Ann Velocity	297fpm

BHA Run Description

BHA Run Comment Hours on Jars:- 280

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.39m	8.50in		11374625	PDC bit
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL134	
NM Flex Monel	2.76m	6.69in	1.92in	CP919968	
Stab	0.62m	6.75in	1.92in	CP747628	8 3/8" Blades
LWD Tools	6.53m	6.75in	1.92in	90224657	DGR+EWR
LWD Tools	4.99m	6.75in	1.92in	PA90232813	ALD + 8 1/8" Stab
LWD Tools	4.15m	6.75in	1.92in	N2L-6	CTN
LWD Tools	2.53m	6.75in	1.92in	90215164W6	PWD
LWD Tools	6.68m	6.69in	1.92in	90230519-O6	BAT-Sonic
HOC	3.03m	6.75in	1.92in	202842	
LWD Tools	1.81m	7.25in	1.92in	PA90235611 B6	ACAL
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
3203.43	35.56	178.76	3031.50	-576.55	-570.2	-16.3	0.3	Sperry TCDC Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	12	0	325.0
Drill Water	m3	0	0	0	293.0
Pot Water	m3	35	34	0	237.0
Brine	m3	0	0	0	34.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

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Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3158.0	30	450	148	40	590	200	50	710	250
3158.0	30	450	148	40	580	200	50	725	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	40
GRN	2
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
Total	90

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2150.3bbl**	**Losses**	**94.0bbl**
Active	650.0bbl	Downhole	
Mixing		Surf+ Equip	75.0bbl
Hole	793.3bbl	Dumped	
Slug	15.0bbl	De-Gasser	
Reserve	692.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	13.0bbl
		Evaporation	6.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 29 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	9kn	206.0deg	1017.0mbar	13C°	1.0m	220.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.7deg	1.7deg	315.0deg	248.00klb	580.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	220.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	201.0
2	231.0
3	168.0
4	216.0
5	229.0
6	228.0
7	197.0
8	281.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	00:35 26th Jan		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		692
Potable Water	M3		470
Drill Water	M3		482

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				Item	Unit	Used	Quantity
					t		0
				Barite	t		0
				Bentonite	t		0
				Brine	M3		0
				Mud	bbl		0

00:00 - 24:00 Standby at Kan Tan IV

				Item	Unit	Used	Quantity
Far Fosna	23:55 20th Jan	08:12 26th Jan	Melbourne	Rig Fuel	M3		501
				Pot Water	M3		524
				Drill Water	M3		560
				Bentonite	t		37.2
				Barite	t		24
					t		0
				Brine	M3		0
				Mud	bbl		0

00:00 - 24:00 Alongside Appleton F, Melbourne.

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:05 / 09:22	11 / 14	

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Australian Drilling Associates Pty Ltd

30 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 12
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	30 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	12	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3283.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3096.7m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	49.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$688,209
Rig	Kan Tan IV	Days from spud	61.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$7,949,912
Wtr Dpth (LAT)	74.3m	Days on well	11.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	90
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Cutting core #2.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Complete coring. Pump slug and POOH at controlled rate. Lay out core. Lay out core barrel. Make up 8½" Geopilot BHA.		

Summary of Period 0000 to 2400 Hrs

Drilled 8½" hole from 3234m to 3283m. Circulated bottoms up. Flow checked, pumped slug and POOH. Removed radioactive source from MWD/LWD tool. Down loaded data from MWD/LWD tools and racked stand in mast. Made up 30m core barrel with core head and RIH to 1125m

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	1	0 Days	Held abandon drill	
Emergency Drill	0	87 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	0 Days	Mustered to fire stations	
Permit To Work	14	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	13 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	49	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m
P3	3055.00m
RL30	3163.50m

Operations For Period 0000 Hrs to 2400 Hrs on 30 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0700	7.00	3283.0m	Drilled 8½" hole from 3234m to 3283m (580gpm, 2340psi, 5/20klbs WOB, 120/160rpm, 13/20k ft-lbs torque).
P17	P	F4	0700	0730	0.50	3283.0m	Circulated bottoms up while boosting riser with third mud pump.
P17	P	P3	0730	0830	1.00	3283.0m	Flow checked well. Racked back one stand and pumped slug.
P17	P	G8	0830	1230	4.00	3283.0m	POOH to shoe. Max excess drag encountered in open hole 15klbs. Trip drill held - 29secs to stab and close IBOP.
P17	P	G11	1230	1300	0.50	3283.0m	Serviced top drive.
P17	P	G8	1300	1800	5.00	3283.0m	POOH from shoe.
P17	P	G7	1800	1930	1.50	3283.0m	Sperry removed radioactive source from tool and down loaded MWD/LWD data. Laid out HOC, ACAL, and BAT Sonic tools. Racked back Geopilot stand.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G7	1930	2100	1.50	3283.0m	Held PJSM. Ran outer core barrel from mast. Made up core head and inner barrel assembly.
P17	P	G11	2100	2130	0.50	3283.0m	Secured loose PCS hoses in mast to prevent being blown against travelling block. High easterly winds.
P17	P	G6	2130	2230	1.00	3283.0m	RIH core barrel BHA to 258m.
P17	P	G8	2230	2400	1.50	3283.0m	RIH with core run assembly #2 from 258m to 1125m.

Operations For Period 0000 Hrs to 0600 Hrs on 31 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G8	0000	0430	4.50	3283.0m	RIH with core run assembly #2 from 1125m to 3236m. Broke circulation and recorded SCRs at shoe. Flushed Kill and Choke lines Trip drill held:- 26 secs to stab and close IBOP
P17	P	F1	0430	0500	0.50	3283.0m	Washed in hole from 3236m to 3283m. Tagged bottom with 15klbs.
P17	P	E7	0500	0545	0.75	3283.0m	Spaced out for coring. Dropped ball at 05:23 circulated ball down with 350gpm, 880psi. Ball landed at 05:36, pressure increased to 1140psi. Recorded parameters prior to commencing coring.
P17	P	E7	0545	0600	0.25	3298.5m	(IN PROGRESS) Cored from 3283m to 3298.5m as per Corpro Enginners instructions. Corehead jammed at 3298.5m (15.5m of formation cored)

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 30 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	270.5	19 Jan 2010	30 Jan 2010	270.50	11.271	3283.0m

General Comments

00:00 TO 24:00 Hrs ON 30 Jan 2010

WBM Data — Cost Today US$ 8739

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	38500mg/l	Solids(%vol):	3%	Viscosity	58sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	18cp
Time:	1940	HTHP-FL:	8.9cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	33lb/100ft²
Weight:	9.35ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.2	Gels 10s	10
Temp:				PM:	0.85	pH:	9.5	Gels 10m	14
				PF:	0.24	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	31
								Fann 200	43
								Fann 300	51
								Fann 600	69

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 22gms

Bit # 4RR

Wear	I	O1	D	L	B	G	O2	R
	0	0	ER	A	X	I	NO	CP

Bitwear Comments: Errosion signs between cutters

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M423	No.	Size	Progress	49.0m	Cumul. Progress	70.5m
Mfr:	Security DBS	WOB(avg)	12.80klb	3	12/32nd"	On Bottom Hrs	3.9h	Cumul. On Btm Hrs	5.9h
Type:	PDC	RPM(avg)	172	3	15/32nd"	IADC Drill Hrs	7.0h	Cumul. IADC Drill Hrs	9.5h
Serial No.:	11374625	F.Rate	582gpm			Total Revs	139000	Cumul. Total Revs	179000
Bit Model	FMF3653Z	SPP	2312psi			ROP(avg)	12.56 m/hr	ROP(avg)	11.95 m/hr
Depth In	3212.5m	HSI							
Depth Out	3283.0m	TFA	0.849						

Bit Comment

Bit # 5RR

Wear	I	O1	D	L	B	G	O2	R

Bitwear Comments:

				Nozzles	Drilled over last 24 hrs	Calculated over Bit Run
Size ("):	8.50in	IADC#	M233			

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Mfr:	CORPRO	WOB(avg)		No. Size		Progress	Cumul. Progress 0.0m
Type:	ch	RPM(avg)				On Bottom Hrs	Cumul. On Btm Hrs 0.0h
Serial No.:	83691	F.Rate				IADC Drill Hrs	Cumul. IADC Drill Hrs 0.0h
Bit Model	MCP 572	SPP				Total Revs	Cumul. Total Revs 0
Depth In	3283.0m	HSI				ROP(avg) N/A	ROP(avg) 0.00 m/hr
Depth Out		TFA	0.000				

Bit Comment

BHA # 7

Weight(Wet)	58.00klb	Length	258.3m	Torque(max)	9580ft-lbs	D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	26.00klb	String		Torque(Off.Btm)	7590ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	400.00klb	Torque(On.Btm)	4630ft-lbs	H.W.D.P. Ann Velocity	0fpm
		Slack-Off				D.P. Ann Velocity	0fpm

BHA Run Description

BHA Run Comment Hours on jars:- 8

Equipment	Length	OD	ID	Serial #	Comment
Core Bit	0.37m	8.50in	4.00in	83691	Re run
Core Barrel	31.81m	7.13in	4.00in		
Drill Collar	56.16m	6.75in	2.88in		
Drilling Jars	9.94m	6.44in	3.00in	1760-2019	
Drill Collar	18.78m	6.75in	2.88in		
HWDP	141.19m	5.00in	3.00in		

BHA # 6

Weight(Wet)	43.00klb	Length	212.7m	Torque(max)	21850ft-lbs	D.C. (1) Ann Velocity	535fpm
Wt Below Jar(Wet)	32.00klb	String	380.00klb	Torque(Off.Btm)	4000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	390.00klb	Torque(On.Btm)	7910ft-lbs	H.W.D.P. Ann Velocity	302fpm
		Slack-Off	370.00klb			D.P. Ann Velocity	302fpm

BHA Run Description

BHA Run Comment Hours on Jars:- 280

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.39m	8.50in		11374625	PDC bit
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL134	
NM Flex Monel	2.76m	6.69in	1.92in	CP919968	
Stab	0.62m	6.75in	1.92in	CP747628	8 3/8" Blades
LWD Tools	6.53m	6.75in	1.92in	90224657	DGR+EWR
LWD Tools	4.99m	6.75in	1.92in	PA90232813	ALD + 8 1/8" Stab
LWD Tools	4.15m	6.75in	1.92in	N2L-6	CTN
LWD Tools	2.53m	6.75in	1.92in	90215164W6	PWD
LWD Tools	6.68m	6.69in	1.92in	90230519-O6	BAT-Sonic
HOC	3.03m	6.75in	1.92in	202842	
LWD Tools	1.81m	7.25in	1.92in	PA90235611 B6	ACAL
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.84m	6.50in	2.75in	17602177	
HWDP	47.18m	5.00in	3.00in		

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Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
3234.73	35.91	179.25	3056.91	-594.83	-588.4	-15.9	0.4	Sperry TCDC Tool
3264.81	35.73	178.72	3081.30	-612.43	-606.0	-15.6	0.4	Sperry TCDC Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	149	12	0	462.0
Drill Water	m3	142	0	0	435.0
Pot Water	m3	38	26	0	249.0
Brine	m3	0	0	0	34.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3158.0	30	450	148	40	590	200	50	710	250
3158.0	30	450	148	40	580	200	50	725	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	40
GRN	2
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
Total	90

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	2103.3bbl	Losses	59.0bbl
Active	676.0bbl	Downhole	
Mixing		Surf+ Equip	23.0bbl
Hole	860.3bbl	Dumped	
Slug	11.0bbl	De-Gasser	
Reserve	556.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	30.0bbl
		Evaporation	6.0bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 30 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	31kn	54.0deg	1010.0mbar	15C°	2.0m	70.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	1.1deg	2.1deg	315.0deg	248.00klb	600.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.1m	70.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	171.0
2	210.0
3	179.0
4	270.0
5	284.0
6	262.0
7	192.0
8	263.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	00:35 26th Jan		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		532
Potable Water	M3		327
Drill Water	M3		410
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 05:00 Standby at Kan Tan IV
05:00 - 11:30 Cargo Ops. Transferred 150m3 FO and 140m3 PW to Rig
11:30 - 24:00 Standby at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan	08:12 26th Jan	Melbourne

Item	Unit	Used	Quantity
Rig Fuel	M3		500
Pot Water	M3		523
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		24
	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:00 Alongside Appleton F, Melbourne.

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	/	/	No flights today

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Australian Drilling Associates Pty Ltd ADA

31 Jan 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 13
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	31 Jan 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	13	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3298.5m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3109.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	15.5m	Shoe TVDBRT	1965.0m	Daily Cost	US$669,605
Rig	Kan Tan IV	Days from spud	62.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$8,619,517
Wtr Dpth (LAT)	74.3m	Days on well	12.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	91
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	RIH with core run #3 to 1126m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	RIH with core run #3. Cut core. POOH and lay out recovered core. Lay down core barrel.		

Summary of Period 0000 to 2400 Hrs

RIH to shoe. Established circulation. Recorded SCRs. RIH to 3236m. Washed from 3236m to 3283m. Spaced out, dropped ball and circulated to land out ball. Cored from 3283m to 3298.5m. Core head jammed. POOH and laid out inner barrels and core.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	88 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	1 Day	Mustered to fire stations	
Permit To Work	14	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	5	0 Days	Safety meetings	
Safety Meeting	2	0 Days	General safety meetings	Rig safety meetings with all personnel on board.
STOP Card	40	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m
P3	3055.00m
RL30	3163.50m

Operations For Period 0000 Hrs to 2400 Hrs on 31 Jan 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G8	0000	0430	4.50	3283.0m	RIH with core run assembly #2 from 1125m to 3236m. Broke circulation and recorded SCRs at shoe. Flushed kill and choke lines. Trip drill held - 26 secs to stab and close IBOP.
P17	P	F1	0430	0500	0.50	3283.0m	Washed in hole from 3236m to 3283m. Tagged bottom with 15klbs.
P17	P	E7	0500	0545	0.75	3283.0m	Spaced out for coring. Dropped ball at 05:23 and circulated ball down with 350gpm, 880psi. Ball landed at 05:36 and pressure increased to 1140psi. Recorded parameters prior to commencing coring.
P17	P	E7	0545	0830	2.75	3298.5m	Cored from 3283m to 3298.5m as per coring engineers instructions. Corehead jammed at 3298.5m (15.5m of formation cored).
P17	P	E7	0830	0900	0.50	3298.5m	Break core. Pulled back one stand. Flow checked well and pumped slug.
P17	P	G8	0900	1330	4.50	3298.5m	POOH at controlled rate of 3mins/std to shoe. Held trip drill - 27secs to stab and close

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							IBOP.
P17	P	G11	1330	1400	0.50	3298.5m	Flow checked at shoe. Serviced top drive
P17	P	G8	1400	2300	9.00	3298.5m	POOH from shoe to core barrel top sub at controlled rate. Flow checked with BHA below BOPs. Shoe - 600m 3min/std. 600m - 150m 6min/std. 150m to surface 11min/std.
P17	P	G7	2300	2400	1.00	3298.5m	Held PJSM. Laid out inner barrels and core. A total 14.08m of core recovered (90.8% recovery).

Operations For Period 0000 Hrs to 0600 Hrs on 01 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G7	0000	0030	0.50	3298.5m	Picked up outer core barrel. Inspected core head and bearings.
P17	P	G7	0030	0130	1.00	3298.5m	Made up inner barrels to outer core barrel as per coring engineers instructions.
P17	P	G6	0130	0230	1.00	3298.5m	RIH with core run #3 BHA to 258m.
P17	P	G8	0230	0300	0.50	3298.5m	RIH with core run #3 from 258m to 547m.
P17	P	G11	0300	0500	2.00	3298.5m	Slipped and cut drilling line.
P17	P	G8	0500	0600	1.00	3298.5m	RIH with core run #3 from 547m to 1126m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 31 Jan 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	294.5	19 Jan 2010	31 Jan 2010	294.50	12.271	3298.5m

General Comments

00:00 TO 24:00 Hrs ON 31 Jan 2010

WBM Data — Cost Today US$ 15349

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	38500mg/l	Solids(%vol):	3%	Viscosity	58sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	18cp
Time:	1920	HTHP-FL:	8.9cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	34lb/100ft²
Weight:	9.35ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.2	Gels 10s	9
Temp:				PM:	0.45	pH:	9	Gels 10m	13
				PF:	0.25	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	33
								Fann 200	42
								Fann 300	52
								Fann 600	70

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 140gms

Bit # 5RR

Wear	I	O1	D	L	B	G	O2	R
	0	0	NO	A	X	I	NO	PR

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M233	No.	Size	Progress	15.5m	Cumul. Progress	15.5m
Mfr:	CORPRO	WOB(avg)	6.50klb			On Bottom Hrs	2.1h	Cumul. On Btm Hrs	2.1h
Type:	ch	RPM(avg)	79			IADC Drill Hrs	3.0h	Cumul. IADC Drill Hrs	3.0h
Serial No.:	83691	F.Rate	215gpm			Total Revs	21000	Cumul. Total Revs	21000
Bit Model	MCP 572	SPP	635psi			ROP(avg)	7.38 m/hr	ROP(avg)	7.38 m/hr
Depth In	3283.0m	HSI							
Depth Out	3298.5m	TFA	0.000						

Bit Comment

BHA # 7

Weight(Wet)	58.00klb	Length	258.3m	Torque(max)	8590ft-lbs	D.C. (1) Ann Velocity	246fpm
Wt Below Jar(Wet)	26.00klb	String	395.00klb	Torque(Off.Btm)	4000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	415.00klb	Torque(On.Btm)	7570ft-lbs	H.W.D.P. Ann Velocity	112fpm
		Slack-Off	380.00klb			D.P. Ann Velocity	112fpm

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BHA Run Description

BHA Run Comment Hours on jars:- 8

Equipment	Length	OD	ID	Serial #	Comment
Core Bit	0.37m	8.50in	4.00in	83691	Re run
Core Barrel	31.81m	7.13in	4.00in		
Drill Collar	56.16m	6.75in	2.88in		
Drilling Jars	9.94m	6.44in	3.00in	1760-2019	
Drill Collar	18.78m	6.75in	2.88in		
HWDP	141.19m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	6	0	456.0
Drill Water	m3	0	0	0	435.0
Pot Water	m3	45	20	0	274.0
Brine	m3	0	0	0	34.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	43	635	215
2	Continental Emsco	6.50	1.12	97			
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		148	40		200	50		250
	30		148	40		200	50		250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	40
GRN	2
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
Total	90

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	2116.3bbl	Losses	31.7bbl
Active	641.0bbl	Downhole	
Mixing		Surf+ Equip	24.0bbl
Hole	904.3bbl	Dumped	
Slug	21.0bbl	De-Gasser	
Reserve	550.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	5.0bbl
		Evaporation	2.7bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 31 Jan 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	22kn	235.0deg	1014.0mbar	13C°	2.0m	250.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	0.6deg	2.8deg	315.0deg	248.00klb	720.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
4.0m	250.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	206.0
2	218.0
3	163.0
4	195.0
5	203.0
6	213.0
7	196.0
8	294.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	00:35 26th Jan		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		522
Potable Water	M3		323
Drill Water	M3		410
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:00 Standby at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	23:55 20th Jan	08:12 26th Jan	Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		499
Pot Water	M3		518
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		24
	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:00 Alongside Appleton F, Melbourne.

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	10:18 / 13:30	8 / 8	Management visit

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Australian Drilling Associates Pty Ltd

01 Feb 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 14
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	01 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	14	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3309.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3117.8m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	10.5m	Shoe TVDBRT	1965.0m	Daily Cost	US$659,895
Rig	Kan Tan IV	Days from spud	63.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$9,279,412
Wtr Dpth (LAT)	74.3m	Days on well	13.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	92
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	RIH with 8½" Geopilot drilling assembly.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Drill 8½" hole to TD.		

Summary of Period 0000 to 2400 Hrs

Made up core barrel assembly for core run #3. RIH to 547m. Slipped and cut drilling line. RIH from 547m to 3236m. Washed from 3236m to 3298.5m. Spaced out, dropped ball and cored from 3298.5m to 3309m. Circulated. POOH to 3256m. Flow checked well, pumped slug and POOH to shoe at controlled rate. Flow checked and serviced rig at shoe. POOH from shoe to 374m at controlled rate.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	89 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	2 Days	Mustered to fire stations	
Permit To Work	14	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	1 Day	General safety meetings	
Safety Meeting	6	0 Days	Safety meetings	
STOP Card	32	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m
P3	3055.00m
RL30	3163.50m
RL90	3287.60m

Operations For Period 0000 Hrs to 2400 Hrs on 01 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G7	0000	0030	0.50	3298.5m	Picked up outer core barrel. Inspected core head and bearings.
P17	P	G7	0030	0130	1.00	3298.5m	Made up inner barrels to outer core barrel as per coring engineers instructions.
P17	P	G6	0130	0230	1.00	3298.5m	RIH with core BHA #3 to 258m.
P17	P	G8	0230	0300	0.50	3298.5m	RIH with core run #3 from 258m to 547m.
P17	P	G11	0300	0500	2.00	3298.5m	Slipped and cut 40m of drilling line.
P17	P	G8	0500	1000	5.00	3298.5m	RIH with core BHA #3 from 547m to 3236m. Circulated at shoe for 5mins on RIH. Trip drill held - 26secs to stab and close IBOP.
P17	P	F1	1000	1100	1.00	3298.5m	Washed in hole from 3236m to 3298.5m. Spaced out for coring and dropped ball.
P17	P	E7	1100	1230	1.50	3309.0m	Cut core from 3298.5m to 3309m. Core jammed.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	1230	1300	0.50	3309.0m	Circulated well while boosting riser.
P17	P	P3	1300	1330	0.50	3309.0m	POOH from 3309m to 3256m. Flow checked well and pumped slug.
P17	P	G8	1330	1730	4.00	3309.0m	POOH at controlled rate of 3min/std to 1935m.
P17	P	G11	1730	1800	0.50	3309.0m	Flow checked well at shoe and serviced top drive.
P17	P	G8	1800	2400	6.00	3309.0m	POOH from 1935m to 374m at controlled rate. Flow checked well at 274m. 1935m to 600m at 3min/std. 600m to 150m at 6min/std.

Operations For Period 0000 Hrs to 0600 Hrs on 02 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G8	0000	0230	2.50	3309.0m	POOH from 374m to core barrel at surface at controlled rate. 374m to 150m at 6min/std. 150m to 50m at 8min/std. 50m to core barrel at 11min/std.
P17	P	G7	0230	0330	1.00	3309.0m	Laid out inner barrels and core. A total of 9.5m of core recovered (90% recovery).
P17	P	G7	0330	0430	1.00	3309.0m	Laid out core barrel outer sections and removed corehead. Cleared drill floor of Corpro equipment.
P17	P	G7	0430	0600	1.50	3309.0m	Make up 8½" bit to Geopilot stand. Picked up and made up float sub, ACAL, HOC and BAT Sonic tools. Installed radio active source and uploaded to MWD/LWD downhole tools.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 01 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	318.5	19 Jan 2010	01 Feb 2010	318.50	13.271	3309.0m

General Comments

00:00 TO 24:00 Hrs ON 01 Feb 2010

WBM Data

Cost Today US$ 1575

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	38000mg/l	Solids(%vol):	3%	Viscosity	68sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	19cp
Time:	2000	HTHP-FL:	9.0cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	35lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.2	Gels 10s	10
Temp:				PM:	0.85	pH:	9	Gels 10m	14
				PF:	0.2	PHPA:	3ppb	Fann 003	9
								Fann 006	11
								Fann 100	34
								Fann 200	45
								Fann 300	54
								Fann 600	73

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 10gms

Bit # 5RR1

Wear	I	O1	D	L	B	G	O2	R
							NO	

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M233	No.	Size	Progress	10.5m	Cumul. Progress	10.5m
Mfr:	CORPRO	WOB(avg)	9.70klb			On Bottom Hrs	1.4h	Cumul. On Btm Hrs	1.4h
Type:	ch	RPM(avg)	78			IADC Drill Hrs	1.5h	Cumul. IADC Drill Hrs	1.5h
Serial No.:	83691	F.Rate	237gpm			Total Revs	14000	Cumul. Total Revs	14000
Bit Model	MCP 572	SPP	797psi			ROP(avg)	7.50 m/hr	ROP(avg)	7.50 m/hr
Depth In	3298.5m	HSI							
Depth Out	3309.0m	TFA	0.000						

Bit Comment

BHA # 8

Weight(Wet)	58.00klb	Length	258.3m	Torque(max)	9580ft-lbs	D.C. (1) Ann Velocity	271fpm
Wt Below Jar(Wet)	26.00klb	String	395.00klb	Torque(Off.Btm)	7590ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	415.00klb	Torque(On.Btm)	4630ft-lbs	H.W.D.P. Ann Velocity	123fpm

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	Slack-Off	380.00klb		D.P. Ann Velocity	123fpm

BHA Run Description

BHA Run Comment Hours on jars:- 10.5

Equipment	Length	OD	ID	Serial #	Comment
Core Bit	0.37m	8.50in	4.00in	83691	
Core Barrel	31.81m	7.13in	4.00in		
Drill Collar	56.16m	6.75in	2.88in		
Drilling Jars	9.94m	6.44in	3.00in	1760-2019	
Drill Collar	18.78m	6.75in	2.88in		
HWDP	141.19m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	9	6	0	459.0
Drill Water	m3	0	18	0	417.0
Pot Water	m3	28	38	0	264.0
Brine	m3	0	0	0	34.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3158.0	30	450	148	40	590	200	50	710	250
3158.0	30	450	148	40	580	200	50	725	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	40
GRN	2
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
Total	90

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	2074.9bbl	Losses	48.5bbl
Active	649.0bbl	Downhole	
Mixing		Surf+ Equip	28.5bbl
Hole	906.9bbl	Dumped	
Slug	27.0bbl	De-Gasser	
Reserve	492.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	17.0bbl
		Evaporation	3.0bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 01 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	21kn	79.0deg	1017.0mbar	15C°	1.3m	100.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.3m	1.5deg	1.5deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
3.0m	100.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	178.0
2	205.0
3	164.0
4	221.0
5	252.0
6	194.0
7	267.0
8	294.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	00:35 26th Jan		Standby at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		512
Potable Water	M3		321
Drill Water	M3		410
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 24:00 Standby at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	00:50 2nd Feb	08:12 26th Jan	Enroute to Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		499
Pot Water	M3		518
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		24
	t		0
Brine	M3		0
Mud	bbl		0

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	10:18 / 13:30	7 / 7	

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Australian Drilling Associates Pty Ltd ADA

02 Feb 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 15
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	02 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Brian Meechan
Report Number:	15	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3357.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3156.8m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	48.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$690,110
Rig	Kan Tan IV	Days from spud	64.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$9,969,522
Wtr Dpth (LAT)	74.3m	Days on well	14.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	93
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Drilling 8½" hole at 3397m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Drill ahead 8½" hole.		

Summary of Period 0000 to 2400 Hrs

POOH with core barrel run #3. Laid out inner core barrels with core. Laid out outer core barrel. Made up 8½" bit to Geopilot stand. Loaded radio active source and programmed MWD/LWD tools. Made up BHA and shallow tested downhole tools. RIH to shoe. Function tested BOPs. RIH to 3260m. Logged well from 3260m to 3309m. Drilled 8½" hole from 3309m to 3357m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	90 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days	Mustered to fire stations	
Permit To Work	11	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	2 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	32	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
Eastern View Coal Measures	2067.00m
E1 Seismic Marker	2811.00m
P3	3055.00m
RL30	3163.50m
RL90	3287.60m

Operations For Period 0000 Hrs to 2400 Hrs on 02 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G8	0000	0230	2.50	3309.0m	POOH from 374m to core barrel at surface at controlled rate. 374m to 150m at 6min/std. 150m to 50m at 8min/std. 50m to core barrel at 11min/std.
P17	P	G7	0230	0330	1.00	3309.0m	Laid out inner barrels and core. A total of 9.5m of core recovered (90% recovery).
P17	P	G7	0330	0430	1.00	3309.0m	Laid out core barrel outer sections and removed corehead. Cleared drill floor of Corpro equipment.
P17	P	G7	0430	0700	2.50	3309.0m	Made up 8½" bit to Geopilot stand. Picked up and made up float sub, ACAL, HOC and BAT Sonic tools. Installed radio active source and uploaded to MWD/LWD downhole tools.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G6	0700	0900	2.00	3309.0m	RIH with BHA to 221m. Replaced drilling jars.
P17	P	G15	0900	0930	0.50	3309.0m	Shallow tested MWD/LWD tools - ok.
P17	P	G8	0930	1230	3.00	3309.0m	RIH with 8½" Geopilot BHA from 221m to 1965m. Held trip drill - 27secs to stab and close IBOP.
P17	P	G13	1230	1330	1.00	3309.0m	Established circulation. Function tested BOPs.
P17	P	G8	1330	1530	2.00	3309.0m	RIH with 8½" Geopilot BHA from 1965m to 3260m.
P17	P	F1	1530	1900	3.50	3309.0m	Reamed and logged well from 3260m to 3309m. 5.8% CO2 gas and 0.926% hydrocarbon gas with bottoms up.
P17	P	D4	1900	2400	5.00	3357.0m	Drilled 8½" hole from 3309m to 3357m (600gpm, 2360psi, 160rpm, 7/15kft-lbs torque, 5/15klbs WOB).

Operations For Period 0000 Hrs to 0600 Hrs on 03 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	0600	6.00	3397.0m	Drilled 8½" hole from 3357m to 3397m (600gpm, 2450psi, 140/160rpm, 7/15kft-lbs torque, 5/15klbs WOB).

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 02 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	342.5	19 Jan 2010	02 Feb 2010	342.50	14.271	3357.0m

WBM Data

Cost Today US$ 28607

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	38000mg/l	Solids(%vol):	4%	Viscosity	68sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	15cp
Time:	1940	HTHP-FL:	7.0cc/30min	Hard/Ca:	280mg/l	Oil(%):		YP	30lb/100ft²
Weight:	9.45ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.2	Gels 10s	11
Temp:				PM:	0.7	pH:	9	Gels 10m	13
				PF:	0.23	PHPA:	3ppb	Fann 003	9
								Fann 006	11
								Fann 100	29
								Fann 200	38
								Fann 300	45
								Fann 600	60

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 100gms

Bit # 4RR1

Wear	I	O1	D	L	B	G	O2	R
							NO	

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M423	No.	Size	Progress	48.0m	Cumul. Progress	48.0m
Mfr:	Security DBS	WOB(avg)	9.90klb	3	15/32nd"	On Bottom Hrs	3.4h	Cumul. On Btm Hrs	3.4h
Type:	PDC	RPM(avg)	165	3	12/32nd"	IADC Drill Hrs	5.0h	Cumul. IADC Drill Hrs	5.0h
Serial No.:	11374625	F.Rate	591gpm			Total Revs	79000	Cumul. Total Revs	79000
Bit Model	FMF3653Z	SPP	2293psi			ROP(avg)	14.12 m/hr	ROP(avg)	14.12 m/hr
Depth In	3309.0m	HSI							
Depth Out		TFA	0.849						

Bit Comment

BHA # 9

Weight(Wet)	43.00klb	Length	212.8m	Torque(max)	8680ft-lbs	D.C. (1) Ann Velocity	543fpm
Wt Below Jar(Wet)	34.00klb	String	390.00klb	Torque(Off.Btm)	4000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	390.00klb	Torque(On.Btm)	7300ft-lbs	H.W.D.P. Ann Velocity	307fpm
		Slack-Off	370.00klb			D.P. Ann Velocity	307fpm

BHA Run Description

BHA Run Comment: Hours on Jars:- 15

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.39m	8.50in		11374625	PDC bit

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Equipment	Length	OD	ID	Serial #	Comment
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL134	
NM Flex Monel	2.76m	6.69in	1.92in	CP919968	
Stab	0.62m	6.75in	1.92in	CP747628	8 3/8" Blades
LWD Tools	6.53m	6.75in	1.92in	90224657	DGR+EWR
LWD Tools	4.99m	6.75in	1.92in	PA90232813	ALD + 8 1/8" Stab
LWD Tools	4.15m	6.75in	1.92in	N2L-6	CTN
LWD Tools	2.53m	6.75in	1.92in	90215164W6	PWD
LWD Tools	6.68m	6.69in	1.92in	90230519-O6	BAT-Sonic
HOC	3.03m	6.75in	1.92in	202842	
LWD Tools	1.81m	7.25in	1.92in	PA90235611 B6	ACAL
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.94m	6.50in	2.75in	17602029	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
3293.65	35.03	178.07	3104.81	-629.12	-622.7	-15.2	0.8	Sperry TCDC Tool
3324.89	36.06	178.66	3130.23	-647.27	-640.9	-14.6	1.0	Sperry TCDC Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	12	0	447.0
Drill Water	m3	20	10	0	427.0
Pot Water	m3	30	30	0	264.0
Brine	m3	0	0	0	34.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	149.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	8.0
Techmesh 110	Screens	0	0	0	24.0
Techmesh 140	Screens	0	0	0	16.0
Techmesh 175	Screens	0	0	0	7.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	60	2450	300
2	Continental Emsco	6.50	1.12	97	60	2450	300
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	40
GRN	2
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1

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Personnel On Board

Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	2
Swaco	1
CORPRO	3
Total	90

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2461.8bbl**	**Losses**	**8.0bbl**
Active	639.0bbl	Downhole	
Mixing	250.0bbl	Surf+ Equip	4.0bbl
Hole	817.8bbl	Dumped	
Slug	35.0bbl	De-Gasser	
Reserve	720.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	3.0bbl
		Evaporation	1.0bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 02 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	33kn	81.0deg	1015.0mbar	16C°	2.0m	100.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	1.2deg	1.4deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	100.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	163.0
2	203.0
3	165.0
4	233.0
5	259.0
6	246.0
7	189.0
8	263.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	00:35 26th Jan	21:30 2nd Feb	Enroute to Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		500
Potable Water	M3		318
Drill Water	M3		410
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 19:00 Standby at Kan Tan IV
19:00 - 21:30 Cargo ops
21:30 - 24:00 Enroute to Melbourne

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	00:50 2nd Feb		Stand by at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		468
Pot Water	M3		512
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		24
	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 00:50 Enroute to Kan Tan IV
00:50 - 07:00 Stand by at Kan Tan IV
07:00 - 09:47 Cargo Ops
09:47 - 23:00 Stand by at Kan Tan IV
23:00 - 24:00 Cargo Ops

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment

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Helicopter Movement				
KT01	Bristow Helicopters	/	/	No flights today

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 16
Rockhopper-1/ST1

03 Feb 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

Rockhopper-1/ST1

Date:	03 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Stig Sundgaard
Report Number:	16	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	125.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$712,482
Rig	Kan Tan IV	Days from spud	0.00	Shoe MDBRT	1965.0m	Cumul. Cost	US$10,682,004
Wtr Dpth (LAT)	74.3m	Days on well	15.29	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	94
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Laying down MWD/LWD BHA.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Lay out Sperry BHA. Rig up Schlumberger. Run Schlumberger SP-HRLA-PEX-HNGS-CMR-LEHQT toolstring and log well.		

Summary of Period 0000 to 2400 Hrs

Drilled 8½" hole from 3357m to 3482m. Circulated Barolift pill to clean well. Performed wiper trip to 3309m. Circulated well clean at 3482m. Flow checked and POOH wet from 3482m to 3300m. Pumped slug and POOH from 3300m to shoe.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	4 Days	Held abandon drill	
Dropped Object	1	0 Days	Bolt fell from TDS Link Tilt	A bolt that secured the link tilt chain to the bail arm clamp came free and fell from the monkey board to the drill floor. No injury or equipment damage sustained. Covered under Flash Report 059.
Emergency Drill	0	91 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	4 Days	Mustered to fire stations	
Permit To Work	11	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	3 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	43	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 03 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	D4	0000	1430	14.50	3482.0m	Drilled 8½" hole from 3357m to 3482m (600gpm, 2450psi, 140/160rpm, 7/15kft-lbs torque, 5/15klbs WOB).
P17	P	F4	1430	1630	2.00	3482.0m	Circulated 15mins and flow checked well. Pumped 200bbl Barolift pill and circulated out of well. Boosted riser once pill above BOP.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G8	1630	1830	2.00	3482.0m	Performed wiper trip from 3482m to 3309m. Max excess drag on trip 30klbs. No fill tagged on return to bottom.
P17	P	F4	1830	1930	1.00	3482.0m	Circulated hole clean.
P17	P	G8	1930	2030	1.00	3482.0m	Flow checked well 15mins - well static. POOH wet from 3482m to 3300m. Hole displacement correct.
P17	P	G8	2030	2430	4.00	3482.0m	Pumped slug and POOH from 3300m to shoe at 1965m. Max excess drag in open hole 15klbs. Held trip drill - 30secs to stab and close IBOP.

Operations For Period 0000 Hrs to 0600 Hrs on 04 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G11	0000	0030	0.50	3482.0m	Flow checked well. Serviced top drive at shoe.
P17	P	G8	0030	0330	3.00	3482.0m	POOH from 1965m to 212m.
P17	P	G6	0330	0430	1.00	3482.0m	Racked back BHA.
P17	P	G7	0430	0600	1.50	3482.0m	Laid out Sperry stab and float sub. Removed radio active source. Downloaded and powered down downhole tools. Laid out MWD/LWD tools, Geopilot and bit.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 03 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	367	19 Jan 2010	03 Feb 2010	367.00	15.292	3482.0m

WBM Data

Cost Today US$ 27786

Mud Type	KCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:	38000mg/l	Solids(%vol):	4%	Viscosity	59sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	93%	PV	20cp
Time:	1930	HTHP-FL:	7.5cc/30min	Hard/Ca:	200mg/l	Oil(%):		YP	35lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	10	Sand:	.25	Gels 10s	10
Temp:				PM:	0.6	pH:	9	Gels 10m	14
				PF:	0.21	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	43
								Fann 200	46
								Fann 300	55
								Fann 600	6075

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bit # 4RR1

Wear	I	O1	D	L	B	G	O2	R
							NO	

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M423	No.	Size	Progress	125.0m	Cumul. Progress	173.0m
Mfr:	Security DBS	WOB(avg)	8.40klb	3	12/32nd"	On Bottom Hrs	10.8h	Cumul. On Btm Hrs	14.1h
Type:	PDC	RPM(avg)	149	3	15/32nd"	IADC Drill Hrs	14.5h	Cumul. IADC Drill Hrs	19.5h
Serial No.:	11374625	F.Rate	594gpm			Total Revs	172000	Cumul. Total Revs	251000
Bit Model	FMF3653Z	SPP	2455psi			ROP(avg)	11.57 m/hr	ROP(avg)	12.27 m/hr
Depth In	3309.0m	HSI							
Depth Out	3482.0m	TFA	0.849						

Bit Comment

BHA # 9

Weight(Wet)	43.00klb	Length	212.8m	Torque(max)	8680ft-lbs	D.C. (1) Ann Velocity	546fpm
Wt Below Jar(Wet)	34.00klb	String	390.00klb	Torque(Off.Btm)	4000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	380.00klb	Torque(On.Btm)	7300ft-lbs	H.W.D.P. Ann Velocity	308fpm
		Slack-Off	375.00klb			D.P. Ann Velocity	308fpm

BHA Run Description

BHA Run Comment: Hours on Jars:- 29.5

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.39m	8.50in		11374625	PDC bit

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Equipment	Length	OD	ID	Serial #	Comment
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL134	
NM Flex Monel	2.76m	6.69in	1.92in	CP919968	
Stab	0.62m	6.75in	1.92in	CP747628	8 3/8" Blades
LWD Tools	6.53m	6.75in	1.92in	90224657	DGR+EWR
LWD Tools	4.99m	6.75in	1.92in	PA90232813	ALD + 8 1/8" Stab
LWD Tools	4.15m	6.75in	1.92in	N2L-6	CTN
LWD Tools	2.53m	6.75in	1.92in	90215164W6	PWD
LWD Tools	6.68m	6.69in	1.92in	90230519-O6	BAT-Sonic
HOC	3.03m	6.75in	1.92in	202842	
LWD Tools	1.81m	7.25in	1.92in	PA90235611 B6	ACAL
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.94m	6.50in	2.75in	17602029	
HWDP	47.18m	5.00in	3.00in		

Survey

MD (m)	Incl (deg)	Azim (deg)	TVD (m)	Vsec (deg)	N/-S (m)	E/-W (m)	DLS (deg/30m)	Tool Type
3350.05	35.41	178.82	3150.65	-661.96	-655.6	-14.3	0.8	Sperry TCDC Tool
3379.25	35.71	179.95	3174.41	-678.94	-672.5	-14.1	0.7	Sperry TCDC Tool
3408.14	35.85	180.50	3197.85	-695.84	-689.4	-14.2	0.4	Sperry TCDC Tool
3439.04	36.10	180.75	3222.85	-713.99	-707.6	-14.4	0.3	Sperry TCDC Tool
3467.05	35.47	179.36	3245.58	-730.36	-724.0	-14.4	1.1	Sperry TCDC Tool

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	10	0	437.0
Drill Water	m3	50	34	0	443.0
Pot Water	m3	0	54	0	210.0
Brine	m3	0	20	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	5	-6	138.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	5	0	3.0
Techmesh 110	Screens	0	9	0	15.0
Techmesh 140	Screens	0	10	0	6.0
Techmesh 175	Screens	0	7	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	39
GRN	3
OMS	20

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Personnel On Board

Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	1
Swaco	1
Schlumberger (Wireline)	9
Total	96

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2299.7bbl**	**Losses**	**72.8bbl**
Active	597.0bbl	Downhole	
Mixing		Surf+ Equip	35.0bbl
Hole	883.7bbl	Dumped	
Slug	31.0bbl	De-Gasser	
Reserve	788.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	28.0bbl
		Evaporation	9.8bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 03 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	30kn	58.0deg	1010.0mbar	17C°	5.0m	58.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	0.1deg	2.0deg	315.0deg	248.00klb	810.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.6m	100.0deg	6s	

Rig Support

Anchors	Tension (klb)
1	156.0
2	197.0
3	174.0
4	245.0
5	264.0
6	246.0
7	179.0
8	251.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	00:35 26th Jan	21:30 2nd Feb	Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		782
Potable Water	M3		490
Drill Water	M3		410
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

24:00 - 07:50 Enroute to Melbourne
07:05 - 24:00 Alongside #28 Sth Wharf.
Bunkered 300m3 Diesel and 174m3 of Potable Water

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	00:50 2nd Feb		Stand by at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		456
Pot Water	M3		509
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		24
	t		0
Brine	M3		0
Mud	bbl		0

00:00 - 01:15 Cargo Ops
01:15 - 24:00 Stand by at Kan Tan IV

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Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	09:06 / 09:18	12 / 11	Schlumberger man up
KT02	Bristow Helicopters	13:02 / 13:15	11 / 5	Maersk crew change

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Australian Drilling Associates Pty Ltd

04 Feb 2010

From: Bryan Houston / Kevin Monkhouse
To: Texas Richards

DRILLING MORNING REPORT # 17
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	04 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Stig Sundgaard
Report Number:	17	**Night Representative:**	Kevin Monkhouse	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$827,197
Rig	Kan Tan IV	Days from spud	66.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$11,509,201
Wtr Dpth (LAT)	74.3m	Days on well	16.29	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	95
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Running wireline run #2.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue to run wireline logs.		

Summary of Period 0000 to 2400 Hrs

Serviced TDS at shoe and POOH to 43m. Removed radioactive source, downloaded data and powered down MWD/LWD tools. Laid out all MWD/LWD tools, Geopilot and bit. Rigged up wireline equipment. RIH with run#1, SP-HRLA-PEX-HNGS-CMR toolstring and logged well.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	92 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	5 Days	Mustered to fire stations	
Permit To Work	15	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	4 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	68	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 04 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G11	0000	0030	0.50	3482.0m	Flow checked well. Serviced top drive at shoe.
P17	P	G8	0030	0330	3.00	3482.0m	POOH from 1965m to 212m. Trip drill held - 30 secs to stab and close IBOP.
P17	P	G6	0330	0430	1.00	3482.0m	Racked back BHA.
P17	P	G7	0430	0800	3.50	3482.0m	Laid out Sperry stab and float sub. Removed radio active source. Downloaded and powered down downhole tools. Laid out MWD/LWD tools, Geopilot and bit.
P17	P	G1	0800	1030	2.50	3482.0m	Held PJSM. Rigged up wireline equipment. Made up SP-HRLA-HNGS-CMR toolstring.
P17	P	C2	1030	2400	13.50	3482.0m	Schlumberger performed log run#1 with SP-HRLA-HNGS-CMR toolstring: 10:35 - 12:15 Logged down from 150m to 3480.5m. 12:15 - 12:45 Relogged 3330m - 3285m. 12:45 - 16:30 Logged up from 2480.5 to 1965m. 16:30 - 20:03 RIH. Calibrated CRM. Relogged section at 3387m.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							20:03 - 24:00 Logged up CMR main run from 3480.5m to 3256.5m.

Operations For Period 0000 Hrs to 0600 Hrs on 05 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0200	2.00	3482.0m	Performed log run#1 with SP-HRLA-HNGS-CMR toolstring. 00:00 - 00:30 Completed logging CMR main run to 3256.5m. 00:30 - 02:00 POOH with wireline run #1.
P17	P	C2	0200	0530	3.50	3482.0m	Laid down #1 toolstring; SP-HRLA- HMGS-CMR and make up run #2 toolstring XPT-MDT-DR.
P17	P	C2	0530	0600	0.50	3482.0m	RIH with run #2 XPT-MDT-DR toolstring.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 04 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	391	19 Jan 2010	04 Feb 2010	391.00	16.292	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 04 Feb 2010

WBM Data — Cost Today US$ 668

Mud Type	KCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:	38000mg/l	Solids(%vol):	4%	Viscosity	63sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	93%	PV	18cp
Time:	2200	HTHP-FL:	7.3cc/30min	Hard/Ca:	120mg/l	Oil(%):		YP	34lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.2	Gels 10s	10
Temp:				PM:	0.6	pH:	9	Gels 10m	14
				PF:	0.18	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	31
								Fann 200	43
								Fann 300	52
								Fann 600	70

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bit # 4RR1

Wear	I	O1	D	L	B	G	O2	R
	0	0	RR	A	X	I	NO	TD

Bitwear Comments:

				Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Size ("):	8.50in	IADC#	M423	No.	Size	Progress	0.0m	Cumul. Progress	173.0m
Mfr:	Security DBS	WOB(avg)		3	12/32nd"	On Bottom Hrs	0.0h	Cumul. On Btm Hrs	14.1h
Type:	PDC	RPM(avg)		3	15/32nd"	IADC Drill Hrs	0.0h	Cumul. IADC Drill Hrs	19.5h
Serial No.:	11374625	F.Rate				Total Revs	172000	Cumul. Total Revs	423000
Bit Model	FMF3653Z	SPP				ROP(avg)	N/A	ROP(avg)	12.27 m/hr
Depth In	3309.0m	HSI							
Depth Out	3482.0m	TFA	0.849						

Bit Comment

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	16	0	421.0
Drill Water	m3	0	22	0	421.0
Pot Water	m3	51	26	0	235.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	138.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

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Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97			
2	Continental Emsco	6.50	1.12	97			
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
	30		148	40		200	50		250
	30		148	40		200	50		250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	39
GRN	3
OMS	20
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	6
Sperry Sun	3
Sperry Sun	1
Swaco	1
Schlumberger (Wireline)	9
Total	96

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

				Equipment	Description	Mesh Size	Comments
Available	**2423.7bbl**	**Losses**	**24.5bbl**				
Active	604.0bbl	Downhole					
Mixing		Surf+ Equip	15.0bbl				
Hole	946.7bbl	Dumped					
Slug	25.0bbl	De-Gasser					
Reserve	848.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge Evaporation	9.5bbl				

Marine

Weather on 04 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	8kn	246.0deg	1009.0mbar	16C°	0.6m	246.0deg	5s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.3m	0.4deg	1.3deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.3m	7.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	180.0
2	217.0
3	168.0
4	222.0
5	245.0
6	225.0
7	180.0
8	256.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	18:30 4th Feb		Stand by at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		761
Potable Water	M3		487
Drill Water	M3		410
	t		0

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				Item	Unit	Used	Quantity
				Barite	t		0
				Bentonite	t		0
				Brine	M3		0
				Mud	bbl		0

24:00 - 09:00 Alongside #28 Sth Wharf
09:00 - 18:30 Enroute to Kan Tan IV
18:30 - 20:20 Cargo Ops
20:20 - 24:00 Stand by at Kan Tan IV

				Item	Unit	Used	Quantity
Far Fosna	00:50 2nd Feb		Stand by at Kan Tan IV	Rig Fuel	M3		444
				Pot Water	M3		504
				Drill Water	M3		560
				Bentonite	t		37.2
				Barite	t		24
					t		0
				Brine	M3		0
				Mud	bbl		0

00:00 - 20:30 Stand by at Kan Tan IV
20:30 - 22:30 Cargo Ops
22:30 - 24:00 Stand by at Kan Tan IV

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	/	/	No flights today

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Australian Drilling Associates Pty Ltd

05 Feb 2010

From: Bryan Houston /Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 18
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	05 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Stig Sundgaard
Report Number:	18	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$756,356
Rig	Kan Tan IV	Days from spud	67.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$12,265,557
Wtr Dpth (LAT)	74.3m	Days on well	17.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	96
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Laying out wireline tools from run #2.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue with wire line logging run #3.		

Summary of Period 0000 to 2400 Hrs

Continued with logging run #1 (SP-HRLA-HNGS-CMR). Laid down #1 toolstring and made up run #2 toolstring XPT-MDT-DR. Swapped out "weak point" head for ECRD head. Surface tested tools. RIH with run #2 XPT-MDT-DR toolstring to correlation point @ 2166m. Correlated and commenced pretest program.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	92 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	6 Days	Mustered to fire stations	
First Aid Case	1	0 Days	Superficial burn to for arm	Whilst in the process of fabricating and welding some grating for the helideck the welder reached underneath the section of grating for his grinder. As he did this the edge of his coverall sleeve caught the grating pulling his arm towards the hot metal he'd just welded. He received a superficial burn to his right forearm around 1" in length. After visiting the hospital for dressing he went back to work.
Permit To Work	12	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	5 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety meetings	
STOP Card	43	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 05 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0200	2.00	3482.0m	Performed log run#1 with SP-HRLA-HNGS-CMR Toolstring. 00:00 - 00:30 Completed logging CMR main run to 3256.5m. 00:30 - 02:00 POOH with wireline run #1.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0200	0530	3.50	3482.0m	Laid down #1 toolstring (SP-HRLA- HMGS-CMR) and made up run #2 toolstring XPT-MDT-DR. Swapped out "weak point" head for ECRD head. Surface tested tools.
P17	P	C2	0530	2400	18.50	3482.0m	RIH with run #2 XPT-MDT-DR toolstring. Set compensator @ 180m. RIH to correlation point @ 2166m. Correlated and commenced pretest program.

Operations For Period 0000 Hrs to 0600 Hrs on 06 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0345	3.75	3482.0m	Continued with wireline run #2 (XPT-MDT-DR).
P17	P	C2	0345	0600	2.25	3482.0m	POOH with wireline tools run #2 (XPT-MDT-DR) and laid out same.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 05 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	414.5	19 Jan 2010	05 Feb 2010	414.50	17.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 05 Feb 2010

WBM Data — Cost Today US$ 1699

Mud Type	KCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:	38000mg/l	Solids(%vol):	3%	Viscosity	66sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	19cp
Time:	2230	HTHP-FL:	7.0cc/30min	Hard/Ca:	120mg/l	Oil(%):		YP	32lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.25	Gels 10s	10
Temp:				PM:	0.4	pH:	9	Gels 10m	14
				PF:	0.2	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	33
								Fann 200	42
								Fann 300	52
								Fann 600	70

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	24	0	397.0
Drill Water	m3	0	39	0	382.0
Pot Water	m3	52	20	0	267.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	138.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2

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Personnel On Board

Maersk	42
GRN	3
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	4
Sperry Sun	1
Swaco	1
Schlumberger (Wireline)	9
Total	93

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2398.7bbl**	**Losses**	**20.0bbl**
Active	624.0bbl	Downhole	
Mixing		Surf+ Equip	19.0bbl
Hole	946.7bbl	Dumped	
Slug	17.0bbl	De-Gasser	
Reserve	811.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Evaporation	1.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 05 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	15kn	203.0deg	1017.0mbar	13C°	4.0m	203.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
4.0m	0.4deg	2.1deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
7.0m	290.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	187.0
2	218.0
3	158.0
4	193.0
5	219.0
6	219.0
7	189.0
8	263.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	18:30 4th Feb		Stand by at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		750
Potable Water	M3		484
Drill Water	M3		410
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

Stand by at Kan Tan IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	00:50 2nd Feb		Stand by at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		434
Pot Water	M3		500
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

00.00-0600 Running Standby
0600-1400 Discharge & Backload Deck Cargo / Load Barite
1400-2359 Running Standby

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Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT01	Bristow Helicopters	10.21 / 10.34	10 / 13	Crew Change

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Australian Drilling Associates Pty Ltd

06 Feb 2010

From: Bryan Houston /Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 19
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	06 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Stig Sundgaard
Report Number:	19	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$845,549
Rig	Kan Tan IV	Days from spud	68.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$13,111,106
Wtr Dpth (LAT)	74.3m	Days on well	18.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	97
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Continue with wireline run #3 MDT tests.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue to run wireline logs.		

Summary of Period 0000 to 2400 Hrs

Continued with wireline run #2 (XPT-MDT-DR). POOH with wireline tools run #2. Rigged up MDT and checked tools at surface. RIH with MDT and experienced drag from 2900m to 3010m. Correlated up from 2960-2850m. Moved to first sampling point. Conducted fall off test and set tool on point at 2941.2 m. Conducted pretest to confirm seal. Started pumping out with Quicksilver probe. RIH tried to pass 3010m. Held up at 2950m. Made another attempt and continued to RIH to 3435m for correlation. Set probe and started pumpout at 3410.2m. Increased pump rate and Quicksilver drew too much power and shut down. Retracted probe and rebooted software. Set probe and start pumpout at 3410.2m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	1	0 Days	Held abandon drill	
Emergency Drill	0	93 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	0 Days	Mustered to fire stations	
Permit To Work	20	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	6 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	58	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 06 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0345	3.75	3482.0m	Continued with wireline run #2 (XPT-MDT-DR).
P17	P	C2	0345	0600	2.25	3482.0m	POOH with wireline tools run #2 (XPT-MDT-DR) and laid out same.
P17	P	C2	0600	1030	4.50	3482.0m	Rigged up MDT. Checked tools at surface RIH. Performed regular tension checks on way in hole.
P17	P	C2	1030	1100	0.50	3482.0m	Experienced drag from 2900m to 3010m. Tool hung up at 3010m and then again coming up at 2980m. Freed tool with 25klbs overpull (9200lbs cable tension) on both occassions. Cable head tension reading 2500lbs over normal tool weight.
P17	P	C2	1100	1200	1.00	3482.0m	Correlate up from 2960m to 2850m. Moved to first sampling point at 2941.2m.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	1200	1500	3.00	3482.0m	Conducted fall off test and set tool on point at 2941.2m. Conducted pretest to confirm seal. Mobility reading of 67 MD recorded. Commenced pumping out with Quicksilver probe. Pumped out 180 litres to bore hole. Filled 2 x MPSRs at 2941.2m. MPSR#1 (Serial Number 56) and MPSR#2 (Serial Number 487).
P17	P	C2	1500	1800	3.00	3482.0m	Correlated out of hole (added 1.0m) and moved to next sampling point at 2766.7m. Set probe at 2766.7m. Pumped out 120 litres to bore hole. Took two water samples at 2766.7m. MPSR#3 (Serial Number 2040) and MPSR#4 (Serial Number 2590).
P17	P	C2	1800	2400	6.00	3482.0m	RIH and attempted to pass 3010.0m. Held up at 2950m. Picked up and made another attempt - successful. Continued to RIH to 3435m for correlation. Correlated from 3435m and tried to find a good mobility sample point close to 3409m. Set probe and started pump out at 3410.2m. Increased pump rate and Quicksilver drew too much power and shut down. Retracted probe and rebooted software. Set probe and commenced pump out at 3410.2m.

Operations For Period 0000 Hrs to 0600 Hrs on 07 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0100	1.00	3482.0m	Set probe and commenced pumpout at 3410.2m. Attempted to correlate (0.2m off depth - shallow).
P17	TP (TP)	C2	0100	0230	1.50	3482.0m	Schlumberger computers crashed. Rebooted system.
P17	P	C2	0230	0600	3.50	3482.0m	Set probe and started pretest at 3402m. Tight conditions and test aborted. Moved to next sample points at 3397.5m, 3398m, 3360m and 3360.5m. All tight conditions and tests aborted. Moved to next sample point. Set probe and start pretest at 3359.5m. Could not obtain a seal due to washed out hole conditions. Switched to PS probe. Still unable to obtain seal. Moved to next sample point. Set probe and started pretest at 3356.2m. Could not obtain a seal due to washed out hole conditions. Move to next sample point. Set probe and commenced pretest at 3331m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 06 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	438.5	19 Jan 2010	06 Feb 2010	438.50	18.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 06 Feb 2010

WBM Data

Cost Today US$ 2016

Mud Type	KCL/Polymer/PHPA	API FL:	4.3cc/30min	Cl:	38000mg/l	Solids(%vol):	3%	Viscosity	72sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	16cp
Time:	2200	HTHP-FL:	7.0cc/30min	Hard/Ca:	160mg/l	Oil(%):		YP	27lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.25	Gels 10s	9
Temp:				PM:	1.5	pH:	9.5	Gels 10m	13
				PF:	0.45	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	30
								Fann 200	38
								Fann 300	43
								Fann 600	59

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	5	0	392.0
Drill Water	m3	21	2	0	401.0
Pot Water	m3	25	25	0	267.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	138.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

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Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	42
GRN	3
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	4
Sperry Sun	1
Swaco	1
Schlumberger (Wireline)	9
Total	93

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2354.7bbl**
Active	704.0bbl
Mixing	
Hole	946.7bbl
Slug	7.0bbl
Reserve	697.0bbl
Kill	

Losses	**35.5bbl**
Downhole	
Surf+ Equip	30.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge Evaporation	5.5bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 06 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	24kn	64.0deg	1025.0mbar	14C°	3.0m	64.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
3.0m	0.3deg	1.0deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.2m	290.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	187.0
2	218.0
3	158.0
4	193.0
5	219.0
6	219.0
7	189.0
8	263.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	18:30 4th Feb		Stand by at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		739
Potable Water	M3		481
Drill Water	M3		410
	t		0
Barite	t		0
Bentonite	t		0

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Printed on 07 Feb 2010

				Item	Unit	Used	Quantity
				Brine	M3		0
				Mud	bbl		0

0000- 0100 Running stby KT4
0100- 0600 Cargo ops
0600 - 2400 Running stby KT4

				Item	Unit	Used	Quantity
Far Fosna	00:50 2nd Feb		Enroute Melbourne	Rig Fuel	M3		422
				Pot Water	M3		497
				Drill Water	M3		560
				Bentonite	t		37.2
				Barite	t		82
					t		0
				Brine	M3		0
				Mud	bbl		0

00.00-0500 Running Standby
0500-0510 Load 1 lift
0510-1530 Running Standby
1530-1740 Load deck Cargo
1740-2359 Enroute Melbourne

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Australian Drilling Associates Pty Ltd

DRILLING MORNING REPORT # 20
Rockhopper-1/ST1

07 Feb 2010

From: Bryan Houston /Paul leathem
To: Texas Richards

Rockhopper-1/ST1

Date:	07 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Stig Sundgaard
Report Number:	20	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$845,473
Rig	Kan Tan IV	Days from spud	69.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$13,956,579
Wtr Dpth (LAT)	74.3m	Days on well	19.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	98
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Continue with wireline run #3 (MDT tests).		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Complete wireline run #3 (MDT tests). RIH with wireline run #4 (FMI-DSI-GR).		

Summary of Period 0000 to 2400 Hrs

Continued with wireline run #3 (MDT tests). During the day Schlumberger computers crashed. Rebooted same. Oil leaking from oscillation unit. Replaced hose and refilled oil and restarted engine. Winch engine failure - oil change required. Continued with pretests and sample gathering.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	95 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	1 Day	Mustered to fire stations	
First Aid Case	0	2 Days	Superficial burn to for arm	
Permit To Work	12	0 Days	Permits administered	
Pre-tour Meeting	2	1 Day	Shift change meetings	
Safety Meeting	0	7 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	55	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 07 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0100	1.00	3482.0m	Set probe and commenced pumpout at 3410.2m. Attempted to correlate (0.2m off depth - shallow).
P17	TP (TP)	C2	0100	0230	1.50	3482.0m	Schlumberger computers crashed. Rebooted system.
P17	P	C2	0230	0600	3.50	3482.0m	Set probe and commenced pretest at 3402m. Tight conditions and test aborted. Moved to next sample points at 3397.5m, 3398m, 3360m and 3360.5m. All tight conditions and tests aborted. Moved to next sample point. Set probe and start pretest at 3359.5m. Could not obtain a seal due to washed out hole conditions. Switched to PS probe. Still unable to obtain seal. Moved to next sample point. Set probe and commenced pretest

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							at 3356.2m. Could not obtain a seal due to washed out hole conditions. Moved to next sample point. Set probe and commenced pretest at 3331m.
P17	P	C2	0600	1400	8.00	3482.0m	Set probe and started pretest at 3330.5 m Tight formation and test aborted. 3328.2m Tight formation and test aborted. 3319.5m Tight formation and test aborted. Continued with sampling program. Pumped out at 3313m and filled one MPSR#5 (Serial Number #2602) after pumping 38.0 litres. Correlated and moved to 3303.5m. Set tool at 3303.5m and conducted pretest. Mobility 5 mD. Retracted and moved to 3301.0m. Moved tool to 3301.0m and set tool. Mobility too low. Moved to 3303.5m and then 3303.3m.
P17	P	C2	1400	1900	5.00	3482.0m	Oil leaking from oscillation unit. Replaced hose and refilled oil and restarted engine. Set probe at 3301.3mMDRT and started pumpout. Could not pumpout - too much drawdown. Retracted and moved on to 3293.4m. Set tool and conducted pretest at 3293.4m. Mobility too low. Retracted and moved on to 3293.2m. Mobility too low. Set tool at 3293.5m and pretested. Realtime mobility 1.3 mD. Moved to 3257.0m and pretested. Moved to 3258.5m and pretested. Completed pretests at 3239.0, 3239.5, 3213.0 and 3212.5m. Moved on to 3204.0m - no seal. Suspected possible packer worn. Moved off point and use LDP instead of Quicksilver. Moved on to 3212.5m. Tight formation and test aborted.
P17	TP (TP)	C2	1900	1930	0.50	3482.0m	Winch engine failure. Oil change required.
P17	P	C2	1930	2400	4.50	3482.0m	Set probe and started pretest at 3204m. Tight formation and test aborted. Moved to next sample points at 3184m and 3185m. Tight formation and tests aborted. Set probe and commenced pretest at 3183.2m. Software crash occured. Rebooted software. Set probe and started pretest at 3183.2m. Mobility = 9mD. Commenced pumping out at 20:29hrs. Completed pumping at 3183.2m at 00:17hrs (approximately 88 litres into the borehole).

Operations For Period 0000 Hrs to 0600 Hrs on 08 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0600	6.00	3482.0m	Completed pumping out at 3183.2m at 00:17hrs (approximately 88 litres into the borehole). Attempted to acquire a sample but upwards pump stalled. Troubleshot and resolved issue. Observed pressure build up. Moved to next sample point. Set probe and started pretest at 3140m. Pumped out 79 litres between 01:18hrs and 04:26hrs. Filled one MPSR# 6 (Serial Number #2668). Moved to next sample point. Schlumberger Mechanic working on the units engine while retrieving samples.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 07 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	462.5	19 Jan 2010	07 Feb 2010	462.50	19.271	3482.0m

WBM Data

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	38500mg/l	Solids(%vol):	3%
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%
Time:	1400	HTHP-FL:	7.2cc/30min	Hard/Ca:	160mg/l	Oil(%):	
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.25
Temp:				PM:	0.7	pH:	9.5
				PF:	0.2	PHPA:	3ppb

Viscosity	74sec/qt
PV	16cp
YP	25lb/100ft²
Gels 10s	9
Gels 10m	13
Fann 003	8
Fann 006	9
Fann 100	27
Fann 200	36
Fann 300	4341
Fann 600	57

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Cost Today US$ 2016

Bit # 4RR1

Wear	I	O1	D	L	B	G	O2	R
	0	0	RR	A	X	I	NO	TD

Bitwear Comments:

Size ("):	8.50in	IADC#	M423
Mfr:	Security DBS	WOB(avg)	
Type:	PDC	RPM(avg)	
Serial No.:	11374625	F.Rate	
Bit Model	FMF3653Z	SPP	
Depth In	3309.0m	HSI	
Depth Out	3482.0m	TFA	0.849

Nozzles

No.	Size
3	12/32nd"
3	15/32nd"

Drilled over last 24 hrs

Progress	0.0m
On Bottom Hrs	0.0h
IADC Drill Hrs	0.0h
Total Revs	172000
ROP(avg)	N/A

Calculated over Bit Run

Cumul. Progress	173.0m
Cumul. On Btm Hrs	14.1h
Cumul. IADC Drill Hrs	19.5h
Cumul. Total Revs	595000
ROP(avg)	12.27 m/hr

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Bit Comment

BHA # 9

Weight(Wet)	43.00klb	Length	212.8m	Torque(max)	8680ft-lbs	D.C. (1) Ann Velocity	0fpm
Wt Below Jar(Wet)	34.00klb	String	390.00klb	Torque(Off.Btm)	4000ft-lbs	D.C. (2) Ann Velocity	0fpm
		Pick-Up	380.00klb	Torque(On.Btm)	7300ft-lbs	H.W.D.P. Ann Velocity	0fpm
		Slack-Off	375.00klb			D.P. Ann Velocity	0fpm

BHA Run Description

BHA Run Comment Hours on Jars:- 29.5

Equipment	Length	OD	ID	Serial #	Comment
8 1/2in Bit	0.39m	8.50in		11374625	PDC bit
Geo_Pilot	7.08m	6.75in	1.92in	GP850TL134	
NM Flex Monel	2.76m	6.69in	1.92in	CP919968	
Stab	0.62m	6.75in	1.92in	CP747628	8 3/8" Blades
LWD Tools	6.53m	6.75in	1.92in	90224657	DGR+EWR
LWD Tools	4.99m	6.75in	1.92in	PA90232813	ALD + 8 1/8" Stab
LWD Tools	4.15m	6.75in	1.92in	N2L-6	CTN
LWD Tools	2.53m	6.75in	1.92in	90215164W6	PWD
LWD Tools	6.68m	6.69in	1.92in	90230519-O6	BAT-Sonic
HOC	3.03m	6.75in	1.92in	202842	
LWD Tools	1.81m	7.25in	1.92in	PA90235611 B6	ACAL
Float Sub	0.91m	6.56in	2.94in	11029122	Ported float installed
Stab	1.70m	6.50in	2.88in	700802	8½" Blades
Drill Collar	27.92m	6.75in	2.88in		
HWDP	84.57m	5.00in	3.00in		
Drilling Jars	9.94m	6.50in	2.75in	17602029	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	13	0	379.0
Drill Water	m3	49	0	0	450.0
Pot Water	m3	0	18	0	249.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	138.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs | **Slow Pump Data**

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)	Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292	3333.0	30	500	148	40	630	200	50	760	250
2	Continental Emsco	6.50	1.12	97	59	2255	293	3333.0	30	500	148	40	640	200	50	770	250
3	Continental Emsco	6.50	1.12	97					30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4

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Personnel On Board

Origin Energy	2
Maersk	42
GRN	3
OMS	19
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	4
Sperry Sun	1
Swaco	1
Schlumberger (Wireline)	9
Total	93

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

				Equipment	Description	Mesh Size
Available	**2177.7bbl**	**Losses**	**175.5bbl**			
Active	704.0bbl	Downhole				
Mixing		Surf+ Equip	170.0bbl			
Hole	946.7bbl	Dumped				
Slug	7.0bbl	De-Gasser				
Reserve	520.0bbl	De-Sander				
Kill		De-Silter				
		Centrifuge Evaporation	5.5bbl			

Comments

The 175 bbl used was Sea Water from pit 1. All Volume f/ pit was transferred prior to filling w/ sea water, agitating and disposing.

Marine

Weather on 07 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	18kn	64.0deg	1020.0mbar	15C°	3.0m	64.0deg	6s
Heave	**Pitch**	**Roll**	**Rig Dir.**	**Ris. Tension**	**VDL**	**Weather Comments**	
4.0m	0.1deg	1.1deg	315.0deg	248.00klb	680.00klb		
Swell Height	**Swell Dir.**	**Swell Period**	**Comments**				
2.2m	290.0deg	5s					

Rig Support

Anchors	Tension (klb)
1	172.0
2	200.0
3	156.0
4	233.0
5	250.0
6	238.0
7	189.0
8	255.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar	18:30 4th Feb		Stand by at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		728
Potable Water	M3		478
Drill Water	M3		410
	t		0
Barite	t		0
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000- 2400 Running stby KT4

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna	00:50 2nd Feb		Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		758
Pot Water	M3		494
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0000- 0625 Enroute Melb
0625- 0840 S28
0840-1100 Bunkering
1100-2359 S28

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08 Feb 2010

From: Bryan Houston /Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 21
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	08 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Stig Sundgaard
Report Number:	21	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$886,307
Rig	Kan Tan IV	Days from spud	70.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$14,909,144
Wtr Dpth (LAT)	74.3m	Days on well	20.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	99
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Continue with run #5 (VSI-GR-LEHQT).		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue with run #5 (VSI-GR-LEHQT).		

Summary of Period 0000 to 2400 Hrs

Continued with pretests and pumpouts. Schlumberger mechanic working on the units engine while retrieving samples. POOH to surface with MDT. Rigged down MDT and rigged up and made up run #4 - FMI-DSI-GR tools. RIH to casing shoe. Performed caliper check and logged down from casing shoe to TD. Troubleshot tools. Appeared toolstring could not log down but could log up. Ran in hole to bottom for repeat pass. Logged up main section. POOH to surface with FMI-DSI-GR-ECRD-LEHQT toolstring.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	96 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	2 Days	Mustered to fire stations	
First Aid Case	0	3 Days	Superficial burn to for arm	
Permit To Work	14	0 Days	Permits administered	
Pre-tour Meeting	2	2 Days	Shift change meetings	
Safety Meeting	0	8 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety meetings	
STOP Card	34	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 08 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0930	9.50	3482.0m	Completed pumping out at 3183.2m at 00:17hrs (approximately 88 litres into the bore hole). Attempted to acquire a sample but upwards pump stalled. Troubleshot and resolved issue. Observed pressure build up. Moved to next sample point. Set probe and started pretest at 3140m. Pumped out 79 litres between 01:18hrs and 04:26hrs. Filled one MPSR# 6 (Serial Number #2668). Moved to next sample point. Continued with pretests and pump outs. Schlumberger mechanic worked on the units engine while retrieving samples.
P17	P	C2	0930	1130	2.00	3482.0m	Pulled out of hole to surface with MDT.

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Printed on 08 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G1	1130	1330	2.00	3482.0m	Rigged down MDT.
P17	P	G1	1330	1600	2.50	3482.0m	Rigged up and made up wireline run #4 (FMI-DSI-GR tools).
P17	P	C2	1600	1630	0.50	3482.0m	RIH to casing shoe and caliper checked. Read 8.63" and 8.75" (nominal ID=8.68").
P17	P	C2	1630	1700	0.50	3482.0m	Logged down from casing shoe to TD (basic acquisition only).
P17	TP (TP)	C2	1700	1800	1.00	3482.0m	Troubleshot tools as having power/software issues with tool string. Moved tool string up and down slowly while troubleshooting. Appeared tool string could not log down but could log up.
P17	P	C2	1800	2230	4.50	3482.0m	Ran in hole to bottom for repeat pass. Tool string unable to log down. Logged up repeat section from 3375m to 3275m. RIH to HUD of 3458.5m. Logged up main section (FMI to 2800m / DSI to 1965m).
P17	P	C2	2230	2400	1.50	3482.0m	POOH to surface with FMI-DSI-GR-ECRD-LEHQT tool string.

Operations For Period 0000 Hrs to 0600 Hrs on 09 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G1	0000	0100	1.00	3482.0m	Rigged down FMI-DSI-GR-ECRD-LEHQT tool string.
P17	P	CN3	0100	0200	1.00	3482.0m	Rig up VSI-GR-LEHQT toolstring and checked tools, guns and telemetry.
P17	P	C2	0200	0230	0.50	3482.0m	RIH to 250m and conducted check shot.
P17	TP (TP)	C2	0230	0300	0.50	3482.0m	Software/hardware issue preventing data acquisition at check shot depth of 250m. Troubleshot problem.
P17	P	C2	0300	0600	3.00	3482.0m	Conducted check shot at 250m. RIH to 1899m (approximate top cement) and conduct check shot. Continued running in hole to TD or HUD to begin VSI logging.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 08 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	486.5	19 Jan 2010	08 Feb 2010	486.50	20.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 08 Feb 2010

WBM Data

Cost Today US$ 295

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	38000mg/l	Solids(%vol):	3%	Viscosity	77sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	15cp
Time:	2200	HTHP-FL:	7.2cc/30min	Hard/Ca:	160mg/l	Oil(%):		YP	29lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.2	Gels 10s	10
Temp:				PM:	1	pH:	9.5	Gels 10m	14
				PF:	0.2	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	29
								Fann 200	37
								Fann 300	44
								Fann 600	59

Comment

Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	11	0	368.0
Drill Water	m3	27	0	0	477.0
Pot Water	m3	20	18	0	251.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	138.5
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner	MW	Eff (%)	SPM	SPP	Flow

Slow Pump Data

Depth	SPM1	SPP1	Flow1(gpm)	SPM2	SPP2	Flow2	SPM3	SPP3	Flow3

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Pumps

Pump Data - Last 24 Hrs								Slow Pump Data									
		(in)	(sg)		(SPM)	(psi)	(gpm)	(m)	(SPM)	(psi)		(SPM)	(psi)	(gpm)	(SPM)	(psi)	(gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292	3333.0	30	500	148	40	630	200	50	760	250
2	Continental Emsco	6.50	1.12	97	59	2255	293	3333.0	30	500	148	40	640	200	50	770	250
3	Continental Emsco	6.50	1.12	97					30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	3
OMS	20
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	2
3rd Party	1
Schlumberger (Wireline)	9
Total	90

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2177.7bbl**	**Losses**	**0.3bbl**
Active	704.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	946.7bbl	Dumped	
Slug	7.0bbl	De-Gasser	
Reserve	520.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Evaporation	0.3bbl

Equipment	Description	Mesh Size

Comments

Marine

Weather on 08 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	11kn	120.0deg	1020.0mbar	16C°	3.0m	120.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	0.2deg	0.6deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.2m	290.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	179.0
2	209.0
3	159.0
4	225.0
5	250.0
6	238.0
7	189.0
8	255.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Stand by at Kan Tan IV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		717
Potable Water	M3		475
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

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0000- 1330 Running stby KT4
1330 - 1630 Cargo ops
1630- 2400 Running stby

Far Fosna			Enroute Kan Tan IV

Item	Unit	Used	Quantity
Rig Fuel	M3		749
Pot Water	M3		491
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0000- 0700 S28
0700-1100 Discharge & Backload Deck Cargo
1100-1300 S28
1300-2359 Enroute Kan Tan IV

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4 -1	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	09.38 / 09.50	5 / 8	Crew Change

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Australian Drilling Associates Pty Ltd ADA

09 Feb 2010

From: Bryan Houston /Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 22
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	09 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Stig Sundgaard
Report Number:	22	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$862,914
Rig	Kan Tan IV	Days from spud	71.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$15,772,058
Wtr Dpth (LAT)	74.3m	Days on well	21.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	100
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Rigging down Schlumberger wire line.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Make up and RIH with fishing tools. Fish wireline tools amd POOH. Make up BHA for wiper trip.		

Summary of Period 0000 to 2400 Hrs

Rigged down FMI-DSI-GR-ECRD-LEHQT tool string. Rigge up VSI-GR-LEHQT toolstring and checked tools, guns and telemetry. RIH to 250m and conducted check shot. Software/hardware issues prevented data acquisition. Troubleshot problem. Continued to RIH to TD to begin VSP Seismic program. POOH to surface with VSI tools. Rigged down VSI tools. Rigged up MSCT and RIH. Correlated and began to cut cores. Tool arm would not close. Powered down tool. Powered tool back up and retracted arm. High tension at 3137m. Attempted to work tool. Pulled to maximum tension (8000 Lbf) - no success. Continued to try and work tool. Proceeded to overpull to 8500 Lbf (80%). Held for 1 hour.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	97 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days	Mustered to fire stations	
First Aid Case	0	4 Days	Superficial burn to forearm	
Permit To Work	13	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	9 Days	General safety meetings	
Safety Meeting	5	0 Days	Safety meetings	
STOP Card	52	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 09 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G1	0000	0100	1.00	3482.0m	Rigged down FMI-DSI-GR-ECRD-LEHQT tool string.
P17	P	G1	0100	0200	1.00	3482.0m	Rig up VSI-GR-LEHQT tool string and checked tools, guns and telemetry.
P17	P	C2	0200	0230	0.50	3482.0m	RIH to 250m and conducted check shot.
P17	TP (TP)	C2	0230	0300	0.50	3482.0m	Software/hardware issue prevented data acquisition at check shot depth of 250m. Troubleshot problem.
P17	P	C2	0300	1100	8.00	3482.0m	Conducted check shot at 250m. RIH to 1899m (approximate top cement) and conduct

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Printed on 09 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							check shot. Continued running and conducted VSP seismic program.
P17	P	C2	1100	1200	1.00	3482.0m	Pulled out of hole to surface with VSI tools.
P17	P	G1	1200	1300	1.00	3482.0m	Rigged down VSI tools.
P17	P	G1	1300	1530	2.50	3482.0m	Rigged up MSCT. Checked motor functions and cut test core using marble block. Cut time= 1 mins 40 seconds. Loaded marker chip tube and sample storage tube.
P17	P	C2	1530	2130	6.00	3482.0m	Ran in hole to 3420m. Correlated and began to cut cores. Cut cores over the interval 3410.5m to 3139.5m.
P17	TP (TP)	C2	2130	2330	2.00	3482.0m	At core depth 3137m (#27 of #33) tool arm would not close. Recorded arm position and powered down tool. Powered tool back up and retracted arm. High tension at 3137 m. Attempted to work tool passed 3137m pulling to maximum tension (8000 Lbf) - unsuccessful. Continued to try and work tool past 3137m. Unknown if tool or wireline was stuck.
P17	TP (TP)	C2	2330	2400	0.50	3482.0m	Proceeded to work wire line and hold over pull of 8500 Lbf (80%).

Operations For Period 0000 Hrs to 0600 Hrs on 10 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (TP)	C2	0000	0200	2.00	3482.0m	Continued to work wire line and hold overpull of 8500 Lbf (80%).
P17	TP (TP)	C2	0200	0430	2.50	3482.0m	Attempted to break weak link on down hole wire line tools. Schlumberger unit could not pull sufficent weight to break weak link. Rigged down wire line sheave and connected T-bar to the wire line and installed in the elevators. Pulled wire line using the draw works. Weak link parted at 10klbs placing the top of fish at 3124m.
P17	TP (TP)	G1	0430	0600	1.50	3482.0m	Pulled wire line to surface and noted that weak link parted in correct manner. Rigged down same.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 09 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	510.5	19 Jan 2010	09 Feb 2010	510.50	21.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 09 Feb 2010

WBM Data

Cost Today US$ 702

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	38000mg/l	Solids(%vol):	3%	Viscosity	78sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	15cp
Time:	2100	HTHP-FL:	7.2cc/30min	Hard/Ca:	160mg/l	Oil(%):		YP	25lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.2	Gels 10s	10
Temp:				PM:	0.4	pH:	9.5	Gels 10m	14
				PF:	0.1	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	27
								Fann 200	34
								Fann 300	40
								Fann 600	55

Comment

Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	2	0	366.0
Drill Water	m3	0	41	0	436.0
Pot Water	m3	48	28	0	271.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	-83.5	55.0
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

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Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	3
OMS	20
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	2
3rd Party	1
Schlumberger (Wireline)	9
Total	90

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2173.7bbl**	**Losses**	**7.4bbl**
Active	649.0bbl	Downhole	
Mixing		Surf+ Equip	3.0bbl
Hole	946.7bbl	Dumped	
Slug	10.0bbl	De-Gasser	
Reserve	568.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Evaporation	4.4bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 09 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	12kn	57.0deg	1017.0mbar	17C°	1.0m	57.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.1deg	0.3deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	290.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	174.0
2	207.0
3	166.0
4	223.0
5	250.0
6	238.0
7	182.0
8	255.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar		0118 9th Feb 2010	Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		717
Potable Water	M3		475
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0
Brine	M3		0

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				Item	Unit	Used	Quantity
				Mud	bbl		0
Far Scimitar off location: 09 Feb @ 0118 ETA South Wharf @ Pilot pick-up @ 0930							
Far Fosna			Standby Kan Tan IV	**Item**	**Unit**	**Used**	**Quantity**
				Rig Fuel	M3		739
				Pot Water	M3		488
				Drill Water	M3		560
				Bentonite	t		37.2
				Barite	t		82
					t		0
				Brine	M3		0
				Mud	bbl		0
0000- 0130 Enroute Kan Tan IV 0130-0840 Running Standby KTIV 0840-1000 Discharge Deck Cargo 1000-2359 Running Standby KTIV							

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Australian Drilling Associates Pty Ltd

10 Feb 2010

From: Bryan Houston /Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 23
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	10 Feb 2010	**Well Site Representative:**	Bryan Houston	**OIM:**	Stig Sundgaard
Report Number:	23	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$881,093
Rig	Kan Tan IV	Days from spud	72.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$16,653,151
Wtr Dpth (LAT)	74.3m	Days on well	22.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	101
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Picking up BHA for wiper trip.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue picking up BHA for wiper trip. Make up BOP test tool to string. RIH and test BOPs. POOH with test tool. Continue to RIH and perform wiper trip.		

Summary of Period 0000 to 2400 Hrs

Continued to work wire line and held over pull of 8500lbs (80%). Attempted to break weak link on down hole wire line tools - unsuccessful. Rigged down wire line sheave and connected T-bar to the wire line and installed in the elevators. Pulled wire line using the draw works. Pulled wire line to surface and rigged down same. Picked up and made up overshot assembly. Performed dropped object survey on TDS, blocks and compensator. RIH with fishing assembly. Circulated and conditioned mud. Took SCRs. Lowered overshot and engaged fish @ 3124m. Ruptured disk with 40spm/1220psi. Flow checked, pumped slug and POOH. Performed trip drill 30 sec.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	98 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	4 Days	Mustered to fire stations	
First Aid Case	0	5 Days	Superficial burn to forearm	
Permit To Work	10	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	10 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	52	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 10 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (TP)	C2	0000	0200	2.00	3482.0m	Continued to work wire line and held overpull of 8500lbs (80%).
P17	TP (TP)	C2	0200	0430	2.50	3482.0m	Attempted to break weak link on down hole wire line tools. Schlumberger unit could not pull sufficent weight to break weak link. Rigged down wire line sheave and connected T-bar to the wire line and installed in the elevators. Pulled wire line using the draw

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							works. Weak link parted at 10klbs placing the top of fish at 3124m.
P17	TP (TP)	G1	0430	0600	1.50	3482.0m	Pulled wire line to surface and noted that weak link parted in correct manner. Rigged down same.
P17	TP (TP)	G1	0600	0700	1.00	3482.0m	Cleared rig floor. Picked up overshot assembly and made up to stand of 5" drill pipe.
P17	TP (TP)	G11	0700	0730	0.50	3482.0m	Serviced TDS.
P17	TP (TP)	G11	0730	0800	0.50	3482.0m	Performed dropped object survey on TDS, blocks and compensator.
P17	TP (TP)	G8	0800	1200	4.00	3482.0m	RIH with fishing assembly to 1965m.
P17	TP (TP)	F4	1200	1230	0.50	3482.0m	Established circulating rates and increased to 700gpm / 1630psi.
P17	TP (TP)	G8	1230	1430	2.00	3482.0m	Continued to RIH from 1965m to 3110m.
P17	TP (TP)	F4	1430	1600	1.50	3482.0m	Circulated and conditioned mud at 140spm/700gpm/1630psi. Took SCRs (15spm = 150psi, 20 spm = 200psi).
P17	TP (TP)	G21	1600	1630	0.50	3482.0m	Reduced strokes to 15spm. Lowered overshot and engaged fish @ 3124m. Observed pressure increase form 150psi to 350psi. Shut down pump and pulled up to 3117m. Pumped 15spm and observed pressure at 350psi (confirmed fish still engaged). Ruptured disk with 40spm/1220psi.
P17	TP (TP)	G8	1630	2130	5.00	3482.0m	Flow checked for 15min. Pumped slug and POOH from 3117m to 1965m.
P17	TP (TP)	G11	2130	2200	0.50	3482.0m	Performed trip drill - 30 sec. Flow checked at the 9 5/8" shoe. Serviced topdrive. Filled trip tank.
P17	TP (TP)	G8	2200	2400	2.00	3482.0m	Continued to POOH in casing from 1965m to 954m at 3 mins per stand.

Operations For Period 0000 Hrs to 0600 Hrs on 11 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (TP)	G8	0000	0230	2.50	3482.0m	Continued to POOH fishing assembly from 954m to surface.
P17	TP (TP)	G1	0230	0430	2.00	3482.0m	Laid out fish and fishing assembly. No damage to MSCT tools observed. A total of 20 from 27 cores recovered.
P17	P	G6	0430	0600	1.50	3482.0m	Remove diverter insert. Picked up and made up 8 1/2" BHA for wiper trip.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 10 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	534.5	19 Jan 2010	10 Feb 2010	534.50	22.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 10 Feb 2010

WBM Data

Cost Today US$ 996

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	38000mg/l	Solids(%vol):	3%	Viscosity	77sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	15cp
Time:	2200	HTHP-FL:	7.2cc/30min	Hard/Ca:	160mg/l	Oil(%):		YP	29lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.2	Gels 10s	10
Temp:				PM:	1	pH:	9.5	Gels 10m	14
				PF:	0.2	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	29
								Fann 200	37
								Fann 300	44
								Fann 600	59

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	23	0	343.0
Drill Water	m3	0	0	0	436.0
Pot Water	m3	81	15	0	337.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0

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Printed on 10 Feb 2010

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Barite	MT	0	0	0	55.0
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	41
GRN	3
OMS	20
Halliburton Cementers	2
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	2
3rd Party	1
Schlumberger (Wireline)	9
Total	90

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

				Equipment	Description	Mesh Size	Comments
Available	**2177.7bbl**	**Losses**	**0.3bbl**				
Active	704.0bbl	Downhole					
Mixing		Surf+ Equip	0.0bbl				
Hole	946.7bbl	Dumped					
Slug	7.0bbl	De-Gasser					
Reserve	520.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge Evaporation	0.3bbl				

Marine

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Weather on 10 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
10.0nm	15kn	78.0deg	1015.0mbar	17C°	1.0m	78.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
1.0m	0.3deg	0.8deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	290.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	174.0
2	207.0
3	166.0
4	230.0
5	246.0
6	238.0
7	187.0
8	262.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Alongside 28 Sth Wharf

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		717
Potable Water	M3		475
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000 - 2400 Alongside 28 Sth Wharf

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			Running Standby KTIV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		733
Pot Water	M3		485
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0000-2359 Running Standby KTIV

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Australian Drilling Associates Pty Ltd ADA

11 Feb 2010

From: Mike Lanzer/Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 24
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	11 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundgaard
Report Number:	24	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$872,977
Rig	Kan Tan IV	Days from spud	73.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$17,526,128
Wtr Dpth (LAT)	74.3m	Days on well	23.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	102
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	POOH with wiper trip BHA @ 2198m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue to POOH with bit and BHA. Rig up and run dual packer MDT - Run #7.		

Summary of Period 0000 to 2400 Hrs

Continued to POOH with fishing assembly to surface. Laid out fish and fishing assembly. Picked up and made up 8-1/2" BHA for wiper trip. RIH to 89m and jetted wellhead and BOP stack cavities. Completed making up BHA to174m. Installed BOP test tool and RIH. Landed out test tool in 18-3/4" wellhead. Pressure tested BOP as per Maersk procedures. Unseated BOP test tool and POOH to surface. Laid out same. RIH and established circulation rates at the 9-5/8" shoe. RIH to 3100m. Precautionary washed and reamed from 3100m to bottom at 3482m.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	5 Days	Held abandon drill	
Emergency Drill	0	99 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	5 Days	Mustered to fire stations	
First Aid Case	0	6 Days	Superficial burn to forearm.	
Permit To Work	9	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	11 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	45	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 11 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	TP (TP)	G8	0000	0230	2.50	3482.0m	Continued to POOH with fishing assembly from 954m to surface.
P17	TP (TP)	G1	0230	0430	2.00	3482.0m	Laid out fish and fishing assembly. No damage to MSCT tools observed or reported by Schlumberger. A total of 19 acceptable cores recovered from the total of 27 cores cut.
P17	P	G6	0430	0630	2.00	3482.0m	Removed diverter insert bag. Picked up and ran 8-1/2" BHA for wiper trip. RIH to 89m.
P17	P	G12	0630	0700	0.50	3482.0m	Jetted wellhead and BOPs with the bit - 600gpm/120spm/450 psi.
P17	P	G6	0700	0730	0.50	3482.0m	Continued to RIH with BHA from 89m to 174m.

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Printed on 11 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	G6	0730	0830	1.00	3482.0m	Made up BOP test tool and RIH. Landed out in 18-3/4" wellhead with 40klbs down weight.
P17	P	G13	0830	1330	5.00	3482.0m	Held PJSM. Tested BOP Stack as per Maersk procedures: Annular BOP - 300psi/5 min and 3000psi/10 min. Pipe Rams - 300psi/5 min and 5000psi/10 min.
P17	P	G13	1330	1430	1.00	3482.0m	Unseated BOP Test tool with 10klbs overpull. POOH test tool to surface and laid out BOP test tool. Installed diverter packer insert.
P17	P	G8	1430	1630	2.00	3482.0m	RIH from 174m to 1965m.
P17	P	F4	1630	1700	0.50	3482.0m	Established circulation at the 9-5/8" shoe (700gpm/140spm/1670 psi).
P17	P	G8	1700	1930	2.50	3482.0m	Continued to RIH at controlled rate in open hole from 1965m to 3100m. Hole good with no excess drag.
P17	P	F1	1930	2400	4.50	3482.0m	Precautionary washed and reamed from 3100m to bottom at 3482m. Encountered minor resistance of 15-20klbs over the hole drag - cleaned out same. Significant flow of cuttings and fine solids with nominal filter cake in returns over the shale shakers.

Operations For Period 0000 Hrs to 0600 Hrs on 12 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0300	3.00	3482.0m	Circulated and conditioned well 1x bottoms up. Pumped 20bbl Lo weight 8.8ppg and 20bbl Hi weight pills to maximise the potential for cleaning. Circulated 2x bottoms up untill the returns over the shakers clean @ 670gpm/130spm/2200 psi. Continuous flow of a mixture of cuttings and filter cake in returns during the initial stages of circulation.
P17	P	G8	0300	0600	3.00	3482.0m	Performed flow check. POOH on elevators from 3482m to 3400m - hole good. Pumped slug and continued to POOH to 2198m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 11 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	558.5	19 Jan 2010	11 Feb 2010	558.50	23.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 11 Feb 2010

WBM Data

Cost Today US$ 849

Mud Type	KCL/Polymer/PHPA	API FL:	4.4cc/30min	Cl:	39000mg/l	Solids(%vol):	3%	Viscosity	65sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	16cp
Time:	2200	HTHP-FL:	7.7cc/30min	Hard/Ca:	280mg/l	Oil(%):		YP	29lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.2	Gels 10s	9
Temp:				PM:	0.25	pH:	8.5	Gels 10m	13
				PF:	0.1	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	29
								Fann 200	38
								Fann 300	45
								Fann 600	61

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bit # 7 RR1

Wear	I	O1	D	L	B	G	O2	R
	2	2	WT	A	E	1	NO	BHA

Bitwear Comments:

Size (''):	8.50in	IADC#		**Nozzles**		**Drilled over last 24 hrs**		**Calculated over Bit Run**	
Mfr:	Baker Huhes Chistensen	WOB(avg)		No.	Size	Progress	0.0m	Cumul. Progress	0.0m
Type:	tri	RPM(avg)	60			On Bottom Hrs	0.0h	Cumul. On Btm Hrs	0.0h
Serial No.:	6076381	F.Rate	570gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	8 1/2 GT-1	SPP	2450psi			Total Revs		Cumul. Total Revs	0
Depth In	3482.0m	HSI				ROP(avg)	N/A	ROP(avg)	0.00 m/hr
Depth Out	3482.0m	TFA	0.000						

Bit Comment: RR Bit to drill out Shoe Track & build initial angle.

BHA # 10

Weight(Wet)	40.00klb	Length	174.5m	Torque(max)		D.C. (1) Ann Velocity	523fpm

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Wt Below Jar(Wet)	28.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	296fpm
		Slack-Off				D.P. Ann Velocity	296fpm

BHA Run Description	Wiper Trip BHA Jets 3 x 20
BHA Run Comment	

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.24m	8.50in		6076381	
Bit Sub	1.18m	6.88in	2.75in	0087	
8-1/2" String Stab	2.03m	8.13in	2.88in	10988869	
6 3/4" DC	9.48m	6.75in	2.88in	1190	
String Stabiliser	1.35m	8.50in	2.88in	700802	
6 3/4" DC	9.29m	6.75in	2.88in	1788	
6 3/4" DC	9.19m	6.75in	2.88in	1188	
HWDP	84.57m	5.00in	3.00in		
Jar	9.84m	6.50in		17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	29	0	314.0
Drill Water	m3	50	0	0	486.0
Pot Water	m3	0	26	0	311.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	55.0
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	5
Origin Energy	2
Maersk	41
GRN	2
OMS	21
Halliburton Cementers	3
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	2
3rd Party	1

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Personnel On Board

Schlumberger (Wireline)	9
Swaco	1
ABB Vetco	1
Total	94

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	2094.0bbl	Losses	71.0bbl
Active	598.0bbl	Downhole	
Mixing		Surf+ Equip	59.0bbl
Hole	761.0bbl	Dumped	
Slug	45.0bbl	De-Gasser	
Reserve	690.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Evaporation	12.0bbl

Equipment	Description	Mesh Size	Comments

Marine

Weather on 11 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
4.0nm	8kn	207.0deg	1007.0mbar	17C°	2.0m	207.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	0.2deg	0.6deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	290.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	180.0
2	210.0
3	166.0
4	230.0
5	246.0
6	238.0
7	187.0
8	262.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Alongside 28 Sth Wharf

Item	Unit	Used	Quantity
Rig Fuel	M3		978
Potable Water	M3		550
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000 - 2400 Alongside 28 Sth Wharf

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			Running Standby KTIV

Item	Unit	Used	Quantity
Rig Fuel	M3		727
Pot Water	M3		482
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0000-2359 Running Standby KTIV

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4 #1	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	10.55 / 11.07	9 / 5	Crew Change.

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Australian Drilling Associates Pty Ltd

12 Feb 2010

From: Mike Lanzer/Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 25
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	12 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundgaard
Report Number:	25	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$872,976
Rig	Kan Tan IV	Days from spud	74.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$18,399,104
Wtr Dpth (LAT)	74.3m	Days on well	24.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	103
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Continuing with wireline run #7 - Dual packer at station no.4 @ 3214 m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue with wireline run #7 - Dual Packer.		

Summary of Period 0000 to 2400 Hrs

Circulated and conditioned well 1x bottoms up. Pumped 20bbl Lo weight 8.8ppg and 20bbl Hi weight pills to assist hole cleaning. Circulated 2x bottoms up untill the returns over the shakers clean. Flow checked and POOH on elevators from to 3400m - hole good. Pumped slug and continued to POOH to 9-5/8" shoe. Flow checked & continued to POOH to 174m. POOH BHA and racked back same. Rigged up to run wireline. Made up wireline toolstring run #7- Dual packer. RIH wireline tools run #7 to 3400m. Tight hole @ 2740m and 2793m. Unable to test the first point at ~3395m - difficulties to move and position toolstring. Continued with testing the points at stations #2, #3 and #4.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	6 Days	Held abandon drill	
Emergency Drill	0	100 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	6 Days	Mustered to fire stations	
First Aid Case	0	7 Days	Superficial burn to forearm	
Permit To Work	11	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	12 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	43	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 12 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	F4	0000	0300	3.00	3482.0m	Circulated and conditioned well 1x bottoms up. Pumped 20bbl Lo weight 8.8ppg and 20bbl Hi weight pills to assist and maximise the potential for hole cleaning. Circulated 2x bottoms up untill the returns over the shakers clean @ 670gpm/130spm/2200 psi. Observed significant and continuous flow of a mixture of cuttings, fine solids and filter cake in returns during the initial stages of circulation.
P17	P	G8	0300	0830	5.50	3482.0m	Performed flow check. POOH on elevators from 3482m to 3400m - hole good. Pumped slug and continued to POOH to 9-5/8" shoe. Flow checked - well static. Continued to

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							POOH to 174m.
P17	P	G6	0830	0930	1.00	3482.0m	POOH BHA to surface and racked back in mast.
P17	P	G1	0930	1030	1.00	3482.0m	Held PJSM. Rigged up to run wireline logs.
P17	P	C1	1030	1300	2.50	3482.0m	Made up wireline toolstring for run #7 - Dual packer.
P17	P	C2	1300	1600	3.00	3482.0m	RIH wireline tools run #7 to 3400m. Tight hole encountered at 2740m and 2793m. Worked the toolstring to get past 2795m. Tool hanging up on the way down. Pulled back up to 2740m and attempted to pass with the maximum total pull of 9400lbs - unsuccessful. Pulled maximum on winch (5000lbs on tools). RIH again and held up at 2810m. Worked tool down to 2835m. Continued to work tool down with difficulty to 3400m.
P17	P	C2	1600	2400	8.00	3482.0m	Correlated up from 3400m. Pulled with maximum tension at 3396m. Tried to work tools up from 3396m and cable appeared to be dragging. The tool and cable were able to move down hole freely but high drag up. The drag approached maximum safe working load to get the tool moving when coming up hole. Pulled and held maximum safe working load on cable (9700lbs). Continued to work tools up the hole. Attempted to come up to second point at 3302.5m - fiirst point @ ~3395m cancelled. Correlated up and moved to second point at 3302.5m. Set packers and commenced station sampling operations. Deflated packers and RIH to 3340m to correlate. Correlated up to 3294.2m - on depth. Set packers at third station point.

Operations For Period 0000 Hrs to 0600 Hrs on 13 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0600	6.00	3482.0m	(IN PROGRESS) Continued to test fluids at station no.3. Deflated packers and correlated up to 3230m (0.1 m off depth - deep). Moved to station no.4 and set packers at 3214m. Commenced testing at station no 4. Pumped out 40 litres to the borehole. Completed station and deflated packers.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 12 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	582.5	19 Jan 2010	12 Feb 2010	582.50	24.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 12 Feb 2010

WBM Data

Cost Today US$ 849

Mud Type	KCL/Polymer/PHPA	API FL:	4.5cc/30min	Cl:	38000mg/l	Solids(%vol):	3%	Viscosity	71sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	17cp
Time:	2200	HTHP-FL:	7.8cc/30min	Hard/Ca:	240mg/l	Oil(%):		YP	30lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.2	Gels 10s	9
Temp:				PM:	0.25	pH:	8.5	Gels 10m	13
				PF:	0.2	PHPA:	3ppb	Fann 003	8
								Fann 006	10
								Fann 100	27
								Fann 200	38
								Fann 300	47
								Fann 600	64

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bit # 7 RR1

Wear	I	O1	D	L	B	G	O2	R
	2	2	WT	A	E	1	NO	BHA

Bitwear Comments:

Size (")	8.50in	IADC#		Nozzles		Drilled over last 24 hrs		Calculated over Bit Run	
Mfr	Baker Huhes Chistensen	WOB(avg)		No.	Size	Progress	0.0m	Cumul. Progress	0.0m
Type	tri	RPM(avg)	60			On Bottom Hrs	0.0h	Cumul. On Btm Hrs	0.0h
Serial No.:	6076381	F.Rate	570gpm			IADC Drill Hrs		Cumul. IADC Drill Hrs	0.0h
Bit Model	8 1/2 GT-1	SPP	2450psi			Total Revs		Cumul. Total Revs	0
Depth In	3482.0m	HSI				ROP(avg)	N/A	ROP(avg)	0.00 m/hr
Depth Out	3482.0m	TFA	0.000						

Bit Comment: RR Bit to drill out Shoe Track & build initial angle.

BHA # 10

Weight(Wet)	40.00klb	Length	174.5m	Torque(max)	D.C. (1) Ann Velocity	523fpm

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Wt Below Jar(Wet)	28.00klb	String		Torque(Off.Btm)		D.C. (2) Ann Velocity	0fpm
		Pick-Up		Torque(On.Btm)		H.W.D.P. Ann Velocity	296fpm
		Slack-Off				D.P. Ann Velocity	296fpm
BHA Run Description		Wiper Trip BHA Jets 3 x 20					
BHA Run Comment							

Equipment	Length	OD	ID	Serial #	Comment
Bit	0.24m	8.50in		6076381	
Bit Sub	1.18m	6.88in	2.75in	0087	
8-1/2" String Stab	2.03m	8.13in	2.88in	10988869	
6 3/4" DC	9.48m	6.75in	2.88in	1190	
String Stabiliser	1.35m	8.50in	2.88in	700802	
6 3/4" DC	9.29m	6.75in	2.88in	1788	
6 3/4" DC	9.19m	6.75in	2.88in	1188	
HWDP	84.57m	5.00in	3.00in		
Jar	9.84m	6.50in		17602177	
HWDP	47.18m	5.00in	3.00in		

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	151	4	0	461.0
Drill Water	m3	0	9	0	477.0
Pot Water	m3	48	31	0	328.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	55.0
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	5
Origin Energy	2
Maersk	39
GRN	2
OMS	23
Halliburton Cementers	3
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	2
3rd Party	1

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Personnel On Board

Schlumberger (Wireline)	9
Swaco	1
3rd Party	3
Total	96

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2148.7bbl**	**Losses**	**8.1bbl**	Equipment	Description	Mesh Size
Active	639.0bbl	Downhole				
Mixing		Surf+ Equip	5.1bbl			
Hole	946.7bbl	Dumped				
Slug	7.0bbl	De-Gasser				
Reserve	556.0bbl	De-Sander				
Kill		De-Silter				
		Centrifuge Evaporation	3.0bbl			

Comments

Marine

Weather on 12 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
4.0nm	8kn	204.0deg	1007.0mbar	14C°	1.0m	204.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	0.2deg	1.5deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	250.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	210.0
2	194.0
3	158.0
4	219.0
5	229.0
6	232.0
7	193.0
8	272.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Alongside 28 Sth Wharf

Item	Unit	Used	Quantity
Rig Fuel	M3		966
Potable Water	M3		545
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000 - 1240 Alongside 28 Sth Wharf
1240 - 2400 En-route to KT IV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			Running Standby KTIV

Item	Unit	Used	Quantity
Rig Fuel	M3		576
Pot Water	M3		479
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0000-1330 Running Standby KTIV
1330-1635 Discharge FO / Load deck Cargo
1635-2359 Running Standby KTIV

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4 #1	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	10.55 / 11.07	9 / 5	Crew Change.

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Australian Drilling Associates Pty Ltd ADA

13 Feb 2010

From: Mike Lanzer/Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 26
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	13 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundgaard
Report Number:	26	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$848,297
Rig	Kan Tan IV	Days from spud	75.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$19,247,401
Wtr Dpth (LAT)	74.3m	Days on well	25.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	104
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Continuing with wireline run #7 - Dual packer set at station point no.9 @ 3184.6m.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Complete wireline run # 7 and rig down same. Slip and cut drilling line. Pick up tubing stinger and RIH on drill pipe and commence to set abandonment plugs.		

Summary of Period 0000 to 2400 Hrs

Completed test at station point no 3. Deflated packers and moved to station point No 4. Set packers @ 3214m. Completed tests at station point no.4 and deflated packers. Problem while attempting to move off station no.4 - unable to move up or down. Packers not fully deflated. Moved to the next station no.5 and set packers at 3205.4m. Pumped out 31 litres. Allowed pressure to build up for 90 minutes. Deflated packers and moved tool to next station no.6 @ 3110.4m. Performed station correlation and set packers. Allowed formation pressure to build up for 2 hours. Moved tool to next station no 7. Correlated and set packers at 3140.4m. Commenced pump-out.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	1	0 Days	Held abandon drill	
Emergency Drill	0	101 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	1	0 Days	Mustered to fire stations	
First Aid Case	0	8 Days	Superficial burn to forearm	
Permit To Work	15	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	13 Days	General safety meetings	
Safety Meeting	6	0 Days	Safety meetings	
STOP Card	47	1 Day	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 13 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0700	7.00	3482.0m	Continued to test fluids at station no.3. Deflated packers and correlated up to 3230m (0.1 m off depth - deep). Moved to station no.4 and set packers at 3214m. Commenced testing at station no 4. Pumped out 40 litres to the borehole. Completed station and deflated packers.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0700	1130	4.50	3482.0m	Attempted to move off station no.4 @ 3214.4m - unable to move up/down. Cycled several times. Maximum pull of 9700lbs with slacking off the total weight of the wireline cable - unsuccessful. Decision was made to inflate packers and continue pumping out at the station point no.4 before releasing at ECRD and run an overshot to fish the dual packer tool. While inflating the packers it was noticed that the fluid volume to inflate fully was low thus suggesting that the packers were not fully deflated when attempting to come off the wall and move the toolstring. Deflated packers once more and tool came free. Correlated up hole - on depth. Moved to next point.
P17	P	C2	1130	1400	2.50	3482.0m	Set packers at station no.5 @ 3205.4m. Pumped out 31 litres and allowed pressure to build up for 90 minutes. Deflated packers and moved tool to the next station and correlated point no.6 @ 3110.4m.
P17	P	C2	1400	1630	2.50	3482.0m	Inflated packers at station point no.6 @ 3110.4m. Performed station measurements. Pumped out 3 litres. Allowed formation pressure to build up. Mini-DST with 2 hours build-up.
P17	P	C2	1630	2400	7.50	3482.0m	Deflated packers and correlated @ 3110.4m. Moved tool down hole to the next station point no.7 @ 3140.4m. Correlated up - added 0.5m. Set packers at 3140.4m and pumped out 559 litres.

Operations For Period 0000 Hrs to 0600 Hrs on 14 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0200	2.00	3482.0m	Acquired 2x 450cc MPSR samples at station point No 7 @ 3,140.4 m MDBRT. Cancelled station No 8. Moved the Toolstring down the hole to station point No 9 at 3184.6 m MDRT. Correlated on depth from 3140.4 to 3218 m MDRT - added 0.7m.
P17	P	C2	0200	0600	4.00	3482.0m	(IN PROGRESS) Set Packers at station pont No 9 @ 3184.6 m MDRT and pumped out. Pumpout 445 litres. Stop pumpout and waited for buildup. Pumpout again for several minutes (481 litres total). Took 2 samples (MPSR#2750 and MPSR#3331). Problems with Isolation valve in MDT probe. Valve leaking making it difficult to sample properly.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 13 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	606.5	19 Jan 2010	13 Feb 2010	606.50	25.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 13 Feb 2010

WBM Data

Cost Today

Mud Type	KCL/Polymer/PHPA	API FL:	4.5cc/30min	Cl:	37500mg/l	Solids(%vol):	3%	Viscosity	71sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	18cp
Time:	2100	HTHP-FL:	7.6cc/30min	Hard/Ca:	280mg/l	Oil(%):		YP	27lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.2	Gels 10s	7
Temp:				PM:	1.2	pH:	8.5	Gels 10m	11
				PF:	0.16	PHPA:	2ppb	Fann 003	8
								Fann 006	9
								Fann 100	26
								Fann 200	36
								Fann 300	45
								Fann 600	63

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	0	0	461.0
Drill Water	m3	0	0	0	477.0
Pot Water	m3	0	0	0	328.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	55.0
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

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Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	39
GRN	2
OMS	23
Halliburton Cementers	3
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	2
3rd Party	1
Schlumberger (Wireline)	9
Swaco	1
3rd Party	3
ABB Offshore	1
Total	96

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2148.7bbl**	**Losses**	**0.0bbl**
Active	639.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	946.7bbl	Dumped	
Slug	7.0bbl	De-Gasser	
Reserve	556.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 13 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
4.0nm	20kn	85.0deg	1009.0mbar	16C°	2.5m	85.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
3.0m	0.4deg	1.0deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	90.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	177.0
2	194.0
3	161.0
4	229.0
5	239.0
6	242.0
7	189.0
8	272.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Running Standby KTIV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		953
Potable Water	M3		540
Drill Water	M3		410

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				Item	Unit	Used	Quantity
					t		0
				Barite	t		28
				Bentonite	t		0
				Brine	M3		0
				Mud	bbl		0
0000 - 0035 En-route to KT IV 0035 - 2400 On location							
Far Fosna			Running Standby KTIV	**Item**	**Unit**	**Used**	**Quantity**
				Rig Fuel	M3		570
				Pot Water	M3		476
				Drill Water	M3		560
				Bentonite	t		37.2
				Barite	t		82
					t		0
				Brine	M3		0
				Mud	bbl		0
0000-1620 Running Standby KTIV 1620-1740 Load deck Cargo 1740-2359 Running Standby KTIV							

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Printed on 14 Feb 2010

Australian Drilling Associates Pty Ltd ADA

14 Feb 2010

From: Mike Lanzer/Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 27
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	14 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundgaard
Report Number:	27	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$848,641
Rig	Kan Tan IV	Days from spud	76.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$20,096,042
Wtr Dpth (LAT)	74.3m	Days on well	26.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	105
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Slipping and cutting drilling line.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue to slip and cut drill Line. Pick up and make up 2-7/8" tubing. RIH on 5" drill pipe. Perform well abandonment as per program.		

Summary of Period 0000 to 2400 Hrs

Acquired samples at staion point no 7. Cancelled station no 8. Moved the toolstring down the hole to station point no.9. Correlated and set packers, pumped out and took 2 samples. Problems with isolation valve in MDT probe. Moved tools to next station point no.10. Re-correlated and set packers and commenced testing. Continued the same at station points 11, 12 and 13.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	1 Day	Held abandon drill	
Emergency Drill	0	102 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	1 Day	Mustered to fire stations	
First Aid Case	0	9 Days	Superficial burn to forearm	
Permit To Work	21	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	8	0 Days	Safety meetings	
Safety Meeting	2	0 Days	General safety meetings	
STOP Card	53	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 14 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0200	2.00	3482.0m	Acquired 2x 450cc MPSR samples at station point no.7 @ 3140.4m. Cancelled station no 8. Moved the toolstring down the hole to station point no.9 at 3184.6m. Correlated on depth from 3140.4m to 3218m - added 0.7m.
P17	P	C2	0200	0930	7.50	3482.0m	Set packers at station point no.9 @ 3184.6m and pumped out 445 litres. Stopped pumpout and waited for build up. Pumped out again for several minutes (481 litres total). Took 2 samples (MPSR#2750 and MPSR#3331). Problems with isolation valve in MDT probe. Valve leaking making it difficult to sample correctly.

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Printed on 14 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0930	1100	1.50	3482.0m	Moved tools to next station point no.10 at 3083.0m. Recorrelated on the way up. Set packers at 3083m and commenced testing. Pumped out 3 litres and waited for build up. Released packers and moved to the next point.
P17	P	C2	1100	1330	2.50	3482.0m	Correlated on depth and moved to next station point no.11 at 3172.8m and set packers. Test attempt aborted due to packers not setting. Repositioned and reset packers at 3172.8m and performed repeat test.
P17	P	C2	1330	1800	4.50	3482.0m	RIH to 3350.0m to correlate up. Moved to next station point no.12 at 3332.0m. Set packers and pumped out 30 litres followed by pressure build-up. Moved tool and correlated on depth. Continued to the next point at 3313.2m.
P17	P	C2	1800	2000	2.00	3482.0m	Opened packers at 3313.2m and commenced testing. Pumped out 39 litres. Moved tool and correlated on depth. Continued to the next station point no.13 at 3258.6m.
P17	P	C2	2000	2400	4.00	3482.0m	Set packers at 3258.6m and commenced testing. Pumped out 131.8 litres.

Operations For Period 0000 Hrs to 0600 Hrs on 15 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0030	0.50	3482.0m	Continued testing point no.13 at 3258.6m. Pumped out 131.8 litres.
P17	P	C2	0030	0200	1.50	3482.0m	Deflated packers and moved toolstring off position. POOH packer assembly to surface.
P17	P	C1	0200	0430	2.50	3482.0m	Recovered samples and laid out packer assembly and associated tools.
P17	P	G1	0430	0500	0.50	3482.0m	Rigged down wireline equipment.
P21	P	G11	0500	0600	1.00	3482.0m	Held PJSM. Hung off blocks. Commenced to slip and cut drill line as per Maersk procedures.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 14 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	630.5	19 Jan 2010	14 Feb 2010	630.50	26.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 14 Feb 2010

WBM Data — Cost Today US$ 431

Mud Type	KCL/Polymer/PHPA	API FL:	4.5cc/30min	Cl:	37500mg/l	Solids(%vol):	4%	Viscosity	73sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	17cp
Time:	2130	HTHP-FL:	7.6cc/30min	Hard/Ca:	280mg/l	Oil(%):		YP	29lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.2	Gels 10s	8
Temp:				PM:	1.5	pH:	8.5	Gels 10m	12
				PF:	0.15	PHPA:	3ppb	Fann 003	8
								Fann 006	9
								Fann 100	27
								Fann 200	37
								Fann 300	45
								Fann 600	63

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	2	0	459.0
Drill Water	m3	0	0	0	477.0
Pot Water	m3	39	168	0	199.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	55.0
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1(gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)

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Pumps

Pump Data - Last 24 Hrs

								Slow Pump Data									
1	Continental Emsco	6.50	1.12	97	58	2255	292	3333.0	30	500	148	40	630	200	50	760	250
2	Continental Emsco	6.50	1.12	97	59	2255	293	3333.0	30	500	148	40	640	200	50	770	250
3	Continental Emsco	6.50	1.12	97					30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	39
GRN	2
OMS	23
Halliburton Cementers	3
Halliburton (Baroid)	2
Other Contractor	1
Fugro ROV	3
Geoservices	2
3rd Party	1
Schlumberger (Wireline)	9
Swaco	1
3rd Party	3
ABB Offshore	1
Total	96

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	**2196.7bbl**
Active	639.0bbl
Mixing	
Hole	946.7bbl
Slug	55.0bbl
Reserve	556.0bbl
Kill	

Losses	**0.0bbl**
Downhole	
Surf+ Equip	0.0bbl
Dumped	
De-Gasser	
De-Sander	
De-Silter	
Centrifuge Evaporation	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 14 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
4.0nm	28kn	98.0deg	1013.0mbar	16C°	3.3m	98.0deg	6s
Heave	**Pitch**	**Roll**	**Rig Dir.**	**Ris. Tension**	**VDL**	**Weather Comments**	
3.0m	4.0deg	1.2deg	315.0deg	248.00klb	680.00klb		
Swell Height	**Swell Dir.**	**Swell Period**	**Comments**				
1.5m	90.0deg	5s					

Rig Support

Anchors	Tension (klb)
1	177.0
2	194.0
3	158.0
4	229.0
5	257.0
6	255.0
7	194.0
8	270.0

Vessel Name	**Arrived (Date/Time)**	**Departed (Date/Time)**	**Status**
Far Scimitar			Running Standby KTIV

Bulks

Item	**Unit**	**Used**	**Quantity**
Rig Fuel	M3		946
Potable Water	M3		535
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0

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				Item	Unit	Used	Quantity
				Brine	M3		0
				Mud	bbl		0
0000-2359 Running Standby KTIV							
Far Fosna			Running Standby KTIV	**Item**	**Unit**	**Used**	**Quantity**
				Rig Fuel	M3		559
				Pot Water	M3		473
				Drill Water	M3		560
				Bentonite	t		37.2
				Barite	t		82
					t		0
				Brine	M3		0
				Mud	bbl		0
0000-2359 Running Standby KTIV							

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Australian Drilling Associates Pty Ltd

15 Feb 2010

From: Mike Lanzer/Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 28
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	15 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundgaard
Report Number:	28	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$15,288,528
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$924,111
Rig	Kan Tan IV	Days from spud	77.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$21,020,153
Wtr Dpth (LAT)	74.3m	Days on well	27.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	106
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	POOH sideways and laying down drill pipe.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Continue to lay out drill pipe. Set cement plug #3. Continue to lay down drill pipe. Perform pressure test on cement plugs against shear rams.		

Summary of Period 0000 to 2400 Hrs

Continued to test point no.13 at 3258.6m. POOH dual packer assembly to surface. Recovered samples and laid out tools. Rigged down wireline equipment. Slipped and cut drilling line. Picked up and RIH 2-7/8" tubing. RIH 2-7/8" tubing on 5" drill pipe to TD. Circulated and conditioned mud. Made up cement swedge assembly. Commenced with cement plugs #1A, #1B, and #1C as per the program.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	2 Days	Held abandon drill	
Emergency Drill	0	103 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	2 Days	Mustered to fire stations	
First Aid Case	0	10 Days	Superficial burn to forearm	
Permit To Work	22	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	7	1 Day	Safety meetings	
Safety Meeting	0	1 Day	General safety meetings	
STOP Card	37	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 15 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P17	P	C2	0000	0030	0.50	3482.0m	Continued testing point no.13 at 3258.6m. Pumped out 131.8 litres.
P17	P	C2	0030	0200	1.50	3482.0m	Deflated packers and moved toolstring off position. POOH packer assembly to surface.
P17	P	C1	0200	0430	2.50	3482.0m	Recovered samples and laid out packer assembly and associated tools.
P17	P	G1	0430	0500	0.50	3482.0m	Rigged down wireline equipment.
P21	P	G11	0500	0630	1.50	3482.0m	Held PJSM. Hung-off blocks in mast. Slipped and cut drilling line as per Maersk procedures.
P21	P	G1	0630	0700	0.50	3482.0m	Rigged up 2-7/8" handling equipment.

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G2	0700	0900	2.00	3482.0m	Picked up 17x joints of 2-7/8" tubing and mule shoe to 168m.
P21	P	G8	0900	1130	2.50	3482.0m	RIH with 2-7/8" tubing on 5" drill pipe from 168m to 1961m.
P21	P	G11	1130	1200	0.50	3482.0m	Flow checked and serviced TDS.
P21	P	G8	1200	1430	2.50	3482.0m	Continued to RIH 5" drill pipe from 1961m to 3482m. Tagged bottom with 5klbs down weight.
P21	P	F4	1430	1630	2.00	3482.0m	Circulated and conditioned mud to even out MW @ 9.4ppg with 580gpm / 116spm / 1630psi.
P21	P	G1	1630	1700	0.50	3482.0m	Held PJSM. Made up cement swedge assembly with Lo-Torq and cement hose.
P21	P	F3	1700	1800	1.00	3482.0m	Lined up cement unit and pumped 10bbl drillwater spacer. Pressure tested surface lines to 1000psi / 5min. Mixed and pumped cement plug #1A as per program from 3482m to 3322m. Pumped 40.4bbl of 15.8 ppg cement slurry followed by 4bbl of drillwater spacer behind.
P21	P	F3	1800	1830	0.50	3482.0m	Lined up rig pumps and displaced cement with 187bbls of mud.
P21	P	G8	1830	1930	1.00	3482.0m	Rigged down cementing swedge assembly with cement hose and POOH from 3482m to 3322m.
P21	P	F4	1930	2030	1.00	3482.0m	Circulated 1.5 times bottoms up. Diverted 30bbl of cement contaminated mud for treatment.
P21	P	F3	2030	2100	0.50	3482.0m	Rigged up cement swedge assembly with Lo-Torq and cement hose and lined up cement unit. Pumped 10bbl of drill water spacer ahead and pressure tested surface lines to 1000psi / 5mins. Mixed and pumped cement plug #1B as per program from 3322m to 3162m. Pumped 40.4bbl of 15.8ppg cement slurry followed by 4bbl of drill water behind.
P21	P	F3	2100	2130	0.50	3482.0m	Lined up rig pumps and displaced cement with 177bbl of mud.
P21	P	G8	2130	2200	0.50	3482.0m	Rigged down cementing swedge assembly with cement hose and POOH from 3322m to 3162m.
P21	P	F4	2200	2300	1.00	3482.0m	Circulated 1.5 times bottoms up. Diverted 19bbls of cement contaminated mud for treatment.
P21	P	F3	2300	2400	1.00	3482.0m	Rigged up cement swedge assembly with Lo-Torq and cement hose and lined up cement unit. Pumped 10bbl of drill water spacer ahead and pressure tested surface lines to 1000psi / 5mins. Mixed and pumped cement plug #1C as per program from 3162m to 3002m. Pumped 40.4bbl of 15.8ppg cement slurry followed by 4bbl of drill water behind.

Operations For Period 0000 Hrs to 0600 Hrs on 16 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	F3	0000	0030	0.50	3482.0m	Displaced cement plug #1C with 165bbl of mud.
P21	P	G8	0030	0100	0.50	3482.0m	Rigged down cementing swedge and POOH from 3002m to 2965m.
P21	P	F4	0100	0200	1.00	3482.0m	Dropped wiper ball. Made up TDS and circulated 1.5 times bottoms up. Diverted 10.5bbl of cement contaminated mud for treatment. Lined up slug pit and pumped 12bbl of Hi-Vis 9.4ppg mud. Displaced a balanced pill from 2965m to 2915m with 164bbl of mud.
P21	P	G8	0200	0230	0.50	3482.0m	POOH from 2965m to 2915m.
P21	P	F3	0230	0300	0.50	3482.0m	Rigged up cementing swedge assembly and lined up cement unit. Pumped 10bbl of drill water ahead and pressure tested lines to 1000psi / 5mins. Mixed and pumped cement plug #2 as per program from 2915m to 2765m. Pumped 38bbl of 15.8 ppg slurry followed by 3.5bbl of drill water.
P21	P	F3	0300	0330	0.50	3482.0m	Lined up rig pumps and displaced cement with 150bbl of mud.
P21	P	G8	0330	0400	0.50	3482.0m	Rigged down cement swedge and POOH from 2915m to 2760m.
P21	P	F4	0400	0500	1.00	3482.0m	Dropped wiper ball. Made up TDS and circulated 1.5 times bottoms up. Diverted 9bbl of cement contaminated mud for treatment.
P21	P	G2	0500	0600	1.00	3482.0m	Held PJSM. POOH sideways and laid down drill pipe from 2760m to 2500m.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 15 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	635.5	19 Jan 2010	15 Feb 2010	635.50	26.479	3482.0m
Suspend and Abandon(P21)	19	15 Feb 2010	15 Feb 2010	654.50	27.271	3482.0m

General Comments

00:00 TO 24:00 Hrs ON 15 Feb 2010

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WBM Data

Cost Today US$ 1543

Mud Type	KCL/Polymer/PHPA	API FL:	4.5cc/30min	Cl:	37500mg/l	Solids(%vol):	3%	Viscosity	70sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	7%	H2O:	94%	PV	17cp
Time:	2120	HTHP-FL:	8.0cc/30min	Hard/Ca:	280mg/l	Oil(%):		YP	30lb/100ft²
Weight:	9.30ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.2	Gels 10s	8
Temp:				PM:	1.5	pH:	8.5	Gels 10m	11
				PF:	0.15	PHPA:	3ppb	Fann 003	7
								Fann 006	9
								Fann 100	27
								Fann 200	38
								Fann 300	47
								Fann 600	64

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	6	-11	442.0
Drill Water	m3	0	6	129	600.0
Pot Water	m3	35	15	-84	135.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	55.0
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	4
Origin Energy	2
Maersk	34
GRN	2
OMS	26
Halliburton Cementers	3
Halliburton (Baroid)	2
Fugro ROV	3
Geoservices	2
3rd Party	1
Schlumberger (Wireline)	9
Swaco	1
3rd Party	3
ABB Offshore	1
Total	93

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Printed on 16 Feb 2010

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Kosta Georgiou

Available	1977.1bbl	Losses	73.1bbl
Active	622.1bbl	Downhole	
Mixing		Surf+ Equip	73.1bbl
Hole	771.0bbl	Dumped	
Slug	42.0bbl	De-Gasser	
Reserve	542.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 15 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
4.0nm	7kn	146.0deg	1018.0mbar	16C°	1.0m	146.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	0.3deg	0.6deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
2.0m	150.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	183.0
2	203.0
3	148.0
4	229.0
5	250.0
6	235.0
7	194.0
8	270.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Running Standby KTIV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		939
Potable Water	M3		530
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000-2359 Running Standby KTIV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			Enroute Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		547
Pot Water	M3		470
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0000-1300 Running Standby KTIV
1300-2000 Loading Cargo
2000-2359 Enroute Melbourne

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4 - 01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	09.12 / 09.25	12 / 12	Crew Change

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Australian Drilling Associates Pty Ltd ADA

16 Feb 2010

From: Mike Lanzer/Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 29
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	16 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundgaard
Report Number:	29	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	Rob Blackmore

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$22,434,204
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$631,575
Rig	Kan Tan IV	Days from spud	78.02	Shoe MDBRT	1965.0m	Cumul. Cost	US$21,651,728
Wtr Dpth (LAT)	74.3m	Days on well	28.27	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	107
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600	Circulating and conditioning mud in preparation for re-setting cement plug #3.		
Datum	GDA 94	Last BOP Test	18 Jan 2010	Planned Op	Pump cement plug #3A on top of plug #3. POOH and lay out drill pipe. Retrieve wear bushing. Set EZSV as bridge plug.		

Summary of Period 0000 to 2400 Hrs

Displaced cement plug #1C with 165bbl of mud. POOH to 2965m, dropped wiper ball and circulated 1.5 times bottoms up. Pumped 12 bbl of Hi-Vis 9.4ppg mud and displaced as balanced pill. POOH to 2915m. Mixed and pumped cement plug #2 as per program. Displaced cement with 155bbl of mud. POOH to 2760m. Dropped wiper ball and circulated 1.5 times bottoms up. POOH laying down drill pipe. RIH to 2668m. Circulated and conditioned mud, tagged top of cement at 2768m. POOH to 2115m. Pumped 25bbl Hi-Vis pill and displaced as balanced pill. Mixed and pumped cement plug #3 as per program. POOH to 1730m and dropped wiper ball. Circulated 1.5 times bottoms up. POOH laying down excess drill pipe. Laid down excess BHA items from mast.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	18 Jan 2010			
Abandon Drill	0	3 Days	Held abandon drill	
Emergency Drill	0	104 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	3 Days	Mustered to fire stations	
First Aid Case	0	11 Days	Superficial burn to forearm	
Permit To Work	18	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	2 Days	General safety meetings	
Safety Meeting	7	0 Days	Safety meetings	
STOP Card	36	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 16 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	F3	0000	0030	0.50	3482.0m	Displaced cement plug #1C with 165bbl of mud.
P21	P	G8	0030	0100	0.50	3482.0m	Rigged down cementing swedge and POOH from 3002m to 2965m.
P21	P	F4	0100	0200	1.00	3482.0m	Dropped wiper ball. Made up TDS and circulated 1.5 times bottoms up. Diverted

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							10.5bbl of cement contaminated mud for treatment. Lined up slug pit and pumped 12bbl of Hi-Vis @ 9.4ppg mud. Displaced a balanced pill from 2965m to 2915m with 164bbl of mud.
P21	P	G8	0200	0230	0.50	3482.0m	POOH from 2965m to 2915m.
P21	P	F3	0230	0300	0.50	3482.0m	Rigged up cementing swedge assembly and lined up cement unit. Pumped 10bbl of drill water ahead and pressure tested lines to 1000psi/5 mins - ok. Mixed and pumped cement plug #2 as per program from 2915m to 2765m. Pumped 38bbl of 15.8ppg slurry followed by 3.5bbl of drill water spacer.
P21	P	F3	0300	0330	0.50	3482.0m	Lined up rig pumps and displaced cement with 155bbl of mud.
P21	P	G8	0330	0400	0.50	3482.0m	Rigged down cement swedge and POOH from 2915m to 2760m.
P21	P	F4	0400	0500	1.00	3482.0m	Dropped wiper ball. Made up TDS and circulated 1.5 times bottoms up. Diverted 9bbl of cement contaminated mud.
P21	P	G2	0500	0830	3.50	3482.0m	Held PJSM. POOH sideways and laid down drill pipe from 2760m to 1932m.
P21	P	G8	0830	1000	1.50	3482.0m	RIH from 1932m to 2655m.
P21	P	F4	1000	1330	3.50	3482.0m	Circulated and conditioned mud @ 500gpm/100spm/1250psi. WOC prior to tagging plug #2.
P21	P	G8	1330	1400	0.50	3482.0m	RIH from 2655m to 2768m and tagged top of cement plug #2 with 5klbs. Top of cement plug #2 found 3m below the theoretical TOC.
P21	P	G8	1400	1530	1.50	3482.0m	POOH from 2768m to 2115m.
P21	P	F3	1530	1630	1.00	3482.0m	Pumped 25bbl Hi-Vis pill and displaced as balanced pill from 2115m to 2015m.
P21	TP (WB)	F3	1630	1800	1.50	3482.0m	Rigged up cementing swedge assembly and lined up cement unit. Pumped 10bbl of drillwater ahead and pressure tested lines to 1000psi/5 mins - ok. Mixed and pumped cement plug #3 as per program from 2015m to 1915m to place the TOC 50 m above 9-5/8" casing shoe. Pumped 25bbl of 15.8ppg slurry followed by 2bbl of drill water.
P21	TP (WB)	G8	1800	1830	0.50	3482.0m	POOH from 2015m to 1730m.
P21	TP (WB)	F4	1830	1930	1.00	3482.0m	Dropped wiper ball and made up TDS. Circulated 1.5 times bottoms up @ 580gpm/116spm/1170 psi. Diverted 21bbl of cement contaminated mud.
P21	P	G2	1930	2200	2.50	3482.0m	Held PJSM. POOH laying down excess drill pipe (81 joints laid out).
P21	P	G2	2200	2400	2.00	3482.0m	Excess BHA items laid from the mast (8 joints of 5" HWDP, 6-3/4" drilling jars, 3 joints of 6-3/4" DC, 2 x 8-1/2" string stabiliser).

Operations For Period 0000 Hrs to 0600 Hrs on 17 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G2	0000	0100	1.00	3482.0m	Continued to lay out from the mast 8 joints of 5" HWDP, 6-3/4" drilling jars, 3 joints of 6-3/4" DC and 2 x 8-1/2" string stabilisers.
P21	TP (WB)	F3	0100	0230	1.50	3482.0m	Held PJSM. Lined up cememt unit to perform pressure test on cement plug#3 against pipe rams. Circulated 5bbl of water through cement line. Closed choke line failsafe valve on BOP stack and pressure tested lines to 2500psi/5 min - ok. Bled off pressure to 300psi and opened failsafe valve to confirm line up. Spaced out tool joint and closed the pipe rams. Performed pressure test on cement plug #3 pumping at 0.5bbl/min. At 1475psi pressure started to bleed off down to 1200 psi over 2min. Checked trip tank and confirmed no bleed back into tank. Bled off pressure at cement unit. Opened up pipe rams.
P21	TP (WB)	G8	0230	0500	2.50	3482.0m	RIH from 960m to 1978m and tagged top of cement with 5klbs. Confirmed top of cement 13m below 9-5/8" casing shoe.
P21	TP (WB)	F4	0500	0600	1.00	3482.0m	Circulated and conditioned mud while preparing to mix cement plug #3A to spot on top of cement plug #3.

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 16 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	635.5	19 Jan 2010	15 Feb 2010	635.50	26.479	3482.0m
Suspend and Abandon(P21)	43	15 Feb 2010	16 Feb 2010	678.50	28.271	3482.0m

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Printed on 16 Feb 2010

WBM Data

Mud Type	KCL/Polymer/PHPA	API FL:	5.5cc/30min	Cl:	35000mg/l	Solids(%vol):	7%	Viscosity	66sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	93%	PV	18cp
Time:	2000	HTHP-FL:	8.4cc/30min	Hard/Ca:	880mg/l	Oil(%):		YP	24lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.1	Gels 10s	7
Temp:				PM:	0.2	pH:	10	Gels 10m	10
				PF:	0.15	PHPA:	3ppb	Fann 003	7
								Fann 006	9
								Fann 100	26
								Fann 200	35
								Fann 300	42
								Fann 600	60

Comment: Note: Costs are in AUD
Metal recovered from ditch magnet:- 250gms

Cost Today

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	23	0	419.0
Drill Water	m3	0	41	0	559.0
Pot Water	m3	34	44	0	125.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	55.0
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax
ADA	5
Origin Energy	2
Maersk	34
GRN	2
OMS	28
Halliburton Cementers	4
Halliburton (Baroid)	1
Fugro ROV	3
Geoservices	1
3rd Party	1
Schlumberger (Wireline)	1
3rd Party	3
ABB Offshore	1
3rd Party	3
Total	89

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Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan

Available	2010.4bbl	Losses	59.5bbl
Active	613.0bbl	Downhole	
Mixing		Surf+ Equip	59.5bbl
Hole	854.4bbl	Dumped	
Slug	0.0bbl	De-Gasser	
Reserve	543.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 16 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
4.0nm	8kn	61.0deg	1016.0mbar	16C°	1.0m	61.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	0.2deg	0.9deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	90.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	207.0
2	208.0
3	155.0
4	222.0
5	245.0
6	222.0
7	187.0
8	223.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Running Standby KTIV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		932
Potable Water	M3		525
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000-2359 Running Standby KTIV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			Enroute Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		547
Pot Water	M3		540
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0000-0645 Enroute Melbourne
0645-1100 Discharge /Load Cargo
1100-1600 S28
1600-1800 Bunkering
1800-2359 S28

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4 - 01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	09.04 / 09.20	8 / 12	Crew Change

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Australian Drilling Associates Pty Ltd ADA

17 Feb 2010

From: Mike Lanzer/Paul leathem
To: Texas Richards

DRILLING MORNING REPORT # 30
Rockhopper-1/ST1

Rockhopper-1/ST1

Date:	17 Feb 2010	**Well Site Representative:**	Mike Lanzer	**OIM:**	Stig Sundgaard
Report Number:	30	**Night Representative:**	Paul Leathem	**Drilling Company:**	Maersk
Latitude (South):	39 ° 47 ' 34.18 "	**Longitude (East):**	145 ° 26 ' 21.46 "	**Geologist:**	

Well Data

Country	Australia	MDBRT	3482.0m	Cur. Hole Size	8.500in	AFE Cost	US$22,434,204
Field	Rockhopper	TVDBRT	3258.3m	Last Casing OD	9.625in	AFE No.	Rockhopper-1
Drill Co.	Maersk	Progress	0.0m	Shoe TVDBRT	1965.0m	Daily Cost	US$302,454
Rig	Kan Tan IV	Days from spud	78.50	Shoe MDBRT	1965.0m	Cumul. Cost	US$21,954,182
Wtr Dpth (LAT)	74.3m	Days on well	28.75	FIT/LOT:	/ 14.60ppg	Last LTI Date	01 Nov 2009
RT-ASL(LAT)	26.0m	Planned TD MD				Days Since Last LTI	108
RT-ML	100.3m	Planned TD TVDRT	3621.0m	Current Op @ 0600			
Datum	GDA 94	Last BOP Test	10 Feb 2010	Planned Op			

Summary of Period 0000 to 2400 Hrs

Continued to lay out from the mast excess BHA. Lined up cememt unit to perform pressure test on cement plug#3 against pipe Rams. Pressure tested lines to 2500psi/5 min. Spaced out tool joint and closed the pipe rams. Performed pressure test on cement plug #3. At 1475psi pressure started to bleed off - no test. RIH to 1978 m and tagged TOC with 5klbs. Confirmed top of cement 13m below 9-5/8" casing shoe. Circulated and conditioned mud. Tested lines to 1000psi /5 mins. Mixed and pumped cement plug #3A as per program from 1978m to 1905m. POOH from 1977m to 1701m. At 11.30hrs well reverted back to Rockhopper-1.

HSE Summary

Events	Num. Events	Days Since	Descr.	Remarks
Last BOP Test	10 Feb 2010			
Abandon Drill	0	4 Days	Held abandon drill	
Emergency Drill	0	105 Days	Full emergency response drill performed between the rig, Origin and ADA	
Fire Drill	0	4 Days	Mustered to fire stations	
First Aid Case	0	12 Days	Superficial burn to forearm	
Permit To Work	13	0 Days	Permits administered	
Pre-tour Meeting	2	0 Days	Shift change meetings	
Safety Meeting	0	3 Days	General safety meetings	
Safety Meeting	8	0 Days	Safety meetings	
STOP Card	42	0 Days	Number of STOP cards submitted	

FORMATION

Name	Top
P3	3055.00m
RL30	3163.50m
RL90	3287.60m
Top Cretaceous Volcanics	3432.00m
TD (Rockhopper 1 ST1)	3482.00m

Operations For Period 0000 Hrs to 2400 Hrs on 17 Feb 2010

Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
P21	P	G2	0000	0100	1.00	3482.0m	Continued to lay out from the mast 8 joints of 5" HWDP, 6-3/4" drilling jars, 3 joints of 6-3/4" DC and 2 x 8-1/2" stabilisers.
P21	TP (WB)	F3	0100	0230	1.50	3482.0m	Held PJSM. Lined up cememt unit to perform pressure test on cement plug#3 against pipe rams. Circulated 5bbl of water through cement line. Closed choke line failsafe valve on BOP stack and pressure tested lines to 2500psi / 5 min. Bled off pressure to 300psi and opened failsafe valve to confirm line up. Spaced out tool joint and closed the pipe rams. Performed pressure test on cement plug #3 pumping at 0.5bbl/min. At 1475psi pressure started to bleed off down to 1200 psi over 2 min. Checked triptank

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Phse	Cls (RC)	Op	From	To	Hrs	Depth	Activity Description
							and confirmed rams integrity - no bleed back into triptank. Bled off pressure at cement unit. Opened up piperams.
P21	TP (WB)	G8	0230	0500	2.50	3482.0m	RIH from 960m to 1978m and tagged top of cement with 5klbs. Confirmed top of cement 13m below 9-5/8" casing shoe.
P21	TP (WB)	F4	0500	0830	3.50	3482.0m	Circulated and conditioned mud while preparing to reset cement plug #3A to spot on top of cement plug #3.
P21	P	G1	0830	0900	0.50	3482.0m	Held PJSM. Rigged up cementing swedge assembly and lined up cement unit.
P21	P	F3	0900	1030	1.50	3482.0m	Pumped 12bbl of drillwater spacer ahead and pressure tested lines to 1000psi / 5 mins. Mixed and pumped cement plug #3A as per program from 1978m to 1905m to place the TOC 60m above 9-5/8" casing shoe. Mixed and pumped 18.7bbl (91 sx) of 15.8ppg slurry. Displaced with 2bbl drillwater spacer including 1bbl for surface Lines. Lined up rig pumps and and continued displacement with 103.8bbl mud (873 strokes).
P21	P	G8	1030	1130	1.00	3482.0m	POOH 10 stands from 1977m to 1701m. *** End of Rockhopper-1 ST1 at 11:30hrs ***

Operations For Period Hrs to Hrs on

Phase Data to 2400hrs, 17 Feb 2010

Phase	Phase Hrs	Start On	Finish On	Cumul. Hrs	Cumul. Days	Max Depth
Liner Hole (1)(P17)	635.5	19 Jan 2010	15 Feb 2010	635.50	26.479	3482.0m
Suspend and Abandon(P21)	54.5	15 Feb 2010	17 Feb 2010	690.00	28.750	3482.0m

WBM Data

Mud Type	KCL/Polymer/PHPA	API FL:	5.5cc/30min	Cl:	35000mg/l	Solids(%vol):	7%	Viscosity	66sec/qt
Sample-From:	pit 2	Filter-Cake:	1/32nd"	K+C*1000:	6%	H2O:	93%	PV	18cp
Time:	2000	HTHP-FL:	8.4cc/30min	Hard/Ca:	880mg/l	Oil(%):		YP	24lb/100ft²
Weight:	9.40ppg	HTHP-cake:	2/32nd"	MBT:	5	Sand:	.1	Gels 10s	7
Temp:				PM:	0.2	pH:	10	Gels 10m	10
				PF:	0.15	PHPA:	3ppb	Fann 003	7
								Fann 006	9
								Fann 100	26
								Fann 200	35
								Fann 300	42
								Fann 600	60

Cost Today

Comment	Note: Costs are in AUD Metal recovered from ditch magnet:- 250gms

Bulk Stocks

Name	Unit	In	Used	Adjust	Balance
Rig Fuel	m3	0	0	0	419.0
Drill Water	m3	0	0	0	559.0
Pot Water	m3	0	0	0	125.0
Brine	m3	0	0	0	14.0
Cement class \'G\'	MT	0	0	0	69.0
Barite	MT	0	0	0	55.0
Bentonite	MT	0	0	0	20.0
Generic Mesh 24	Screens	0	0	0	12.0
Techmesh 84	Screens	0	0	0	3.0
Techmesh 110	Screens	0	0	0	15.0
Techmesh 140	Screens	0	0	0	6.0
Techmesh 175	Screens	0	0	0	0.0

Pumps

Pump Data - Last 24 Hrs

No.	Type	Liner (in)	MW (sg)	Eff (%)	SPM (SPM)	SPP (psi)	Flow (gpm)
1	Continental Emsco	6.50	1.12	97	58	2255	292
2	Continental Emsco	6.50	1.12	97	59	2255	293
3	Continental Emsco	6.50	1.12	97			

Slow Pump Data

Depth (m)	SPM1 (SPM)	SPP1 (psi)	Flow1 (gpm)	SPM2 (SPM)	SPP2 (psi)	Flow2 (gpm)	SPM3 (SPM)	SPP3 (psi)	Flow3 (gpm)
3333.0	30	500	148	40	630	200	50	760	250
3333.0	30	500	148	40	640	200	50	770	250
	30		148	40		200	50		250

Personnel On Board

Company	Pax

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Personnel On Board

ADA	4
Other Contractor	1
Maersk	33
GRN	1
OMS	25
Halliburton Cementers	4
Halliburton (Baroid)	1
Fugro ROV	6
Dril-Quip	1
3rd Party	1
PCS	2
3rd Party	3
ABB Offshore	1
3rd Party	3
Total	86

Mud Volumes, Mud Losses and Shale Shaker Data

Engineer : Jay Wan

Available	**2010.4bbl**	**Losses**	**59.5bbl**
Active	613.0bbl	Downhole	
Mixing		Surf+ Equip	59.5bbl
Hole	854.4bbl	Dumped	
Slug	0.0bbl	De-Gasser	
Reserve	543.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge Evaporation	

Equipment	Description	Mesh Size

Comments

Marine

Weather on 17 Feb 2010

Visibility	Wind Speed	Wind Dir.	Pressure	Air Temp.	Wave Height	Wave Dir.	Wave Period
4.0nm	8kn	61.0deg	1016.0mbar	16C°	1.0m	61.0deg	6s

Heave	Pitch	Roll	Rig Dir.	Ris. Tension	VDL	Weather Comments
2.0m	0.2deg	0.9deg	315.0deg	248.00klb	680.00klb	

Swell Height	Swell Dir.	Swell Period	Comments
1.0m	90.0deg	5s	

Rig Support

Anchors	Tension (klb)
1	207.0
2	208.0
3	155.0
4	222.0
5	245.0
6	222.0
7	187.0
8	223.0

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Scimitar			Running Standby KTIV

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		932
Potable Water	M3		525
Drill Water	M3		410
	t		0
Barite	t		28
Bentonite	t		0
Brine	M3		0
Mud	bbl		0

0000-2359 Running Standby KTIV

Vessel Name	Arrived (Date/Time)	Departed (Date/Time)	Status
Far Fosna			Enroute Melbourne

Bulks

Item	Unit	Used	Quantity
Rig Fuel	M3		547
Pot Water	M3		540
Drill Water	M3		560
Bentonite	t		37.2
Barite	t		82
	t		0
Brine	M3		0
Mud	bbl		0

0000-0645 Enroute Melbourne

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0645-1100 Discharge /Load Cargo
1100-1600 S28
1600-1800 Bunkering
1800-2359 S28

Helicopter Movement

Flight #	Company	Arr/Dep. Time	Pax In/Out	Comment
KT4- 01	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	09.16 / 09.33	10 / 14	Crew Change
KT4- 02	BRISTOW HELICOPTERS AUSTRALIA PTY LTD	12.45 / 12.55	5 / 4	Crew Change

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APPENDIX 19: DAILY GEOLOGICAL REPORTS

origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 19 Jan 2010 | **Geology Report Number : 1** | (associated DDR # 1)

Well Details

Depth MDBRT:	0.0m	Rig:	Kan Tan IV	Date:	19 Jan 2010
Depth TVDBRT:	0.0m	Progress:	0.0m	Report Start:	0000
Depth TVDSS:		RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	0.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	50.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Well commenced at 17:30hrs Made up 8½" kick off BHA. Shallow tested Sperry tools. RIH from 216m to 1950m.
Forward Plan:	Kick off Rockhopper-1/ST1 and continue to build angle.

General Comments

00:00 TO 24:00 Hrs ON 19 Jan 2010

Operational Comments	This is the first DGR for Rockhopper-1/ST1
Operational Comments	Geoservices: 1 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 9 Jan 10. Sperry: 2 MWD engineers, 1 DD on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	LWD Tools: Distance to Bit Directional (PCD): 11.68 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	36000mg/l	Low Gravity Solids:		Viscosity	56sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	1240mg/l	High Gravity Solids:		PV	22cp
Time:	2200	Glycol CP Temp:		MBT:	7.5	Solids (corrected):		YP	30lb/100ft²
Weight:	9.40ppg	Glycol:		PM:	6.3	H2O:	94%	Gels 10s	9
ECD TD:		Nitrates:		PF:	1.3	Oil:		Gels 10m	13
ECD Shoe:		Sulphites:		MF:	5.4	Sand:	.25 %	Fann 003	8
ECD Cuttings:		API FL:	4.7cc/30min	pH:	11.5	Barite:		Fann 006	9
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	27
								Fann 200	41
								Fann 300	52
								Fann 600	74

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou/Mike Lawrance

Available	**1906.8bbl**	**Losses**	**8.6bbl**
Active	433.5bbl	Downhole	
Mixing		Surf+ Equip	8.6bbl
Hole	538.3bbl	Dumped	
Slug	20.0bbl	De-Gasser	
Reserve	915.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equip.	Descr.	Mesh Size	Hours

Comment

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
1968.42	0.69	57.75	1968.37	-6.30		6.4	6.3	

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06:00 Hrs Update	
Time:	06:00 Hrs on 20 Jan 2010
Depth:	1994 mMDRT
Progress Since Midnight (m):	4
Status @ 0600hrs:	Kick off cement plug from 1995m
Formation:	No new formation drilled
Lithology:	No new formation drilled
ROP:	No new formation drilled
Gas:	No new formation drilled

Wellsite Geologist(s)
(Days) - Cleve Mathews (Nights) -

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Rockhopper-1/ST1

Date : 20 Jan 2010 | **Geology Report Number : 2** | (associated DDR # 2)

Well Details

Depth MDBRT:	2065.0m	Rig:	Kan Tan IV	Date:	20 Jan 2010
Depth TVDBRT:	2064.8m	Progress:	75.0m	Report Start:	00:00
Depth TVDSS:	2038.8m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	1.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	51.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Drilled out cement from 1970m to 1990m. Commenced to kick off 216mm (8 1/2") side track from 1990m to 2065m.
Forward Plan:	POOH with kick off assembly. M/U 216mm (8 1/2") Geopilot BHA. RIH.

General Comments

00:00 TO 24:00 Hrs ON 20 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 9 Jan 10. Sperry: 3 MWD engineers, 1 DD on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	Second WSG (Larissa Hansen) on board
Operational Comments	LWD Tools: Distance to Bit Directional (PCD): 11.68 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	36000mg/l	Low Gravity Solids:		Viscosity	63sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	360mg/l	High Gravity Solids:		PV	21cp
Time:	1520	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	36lb/100ft²
Weight:	9.30ppg	Glycol:		PM:	1.6	H2O:	94%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.6	Oil:		Gels 10m	16
ECD Shoe:		Sulphites:		MF:	3.5	Sand:	.25 %	Fann 003	9
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9.5	Barite:		Fann 006	11
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	35
								Fann 200	47
								Fann 300	57
								Fann 600	78

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	36000mg/l	Low Gravity Solids:		Viscosity	66sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:		PV	21cp
Time:	2130	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	36lb/100ft²
Weight:	9.25ppg	Glycol:		PM:	2.6	H2O:	94%	Gels 10s	11
ECD TD:		Nitrates:		PF:	0.4	Oil:		Gels 10m	17
ECD Shoe:		Sulphites:		MF:	2.6	Sand:	.25 %	Fann 003	9
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9.5	Barite:		Fann 006	11
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	35
								Fann 200	47
								Fann 300	57
								Fann 600	78

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Shakers, Volumes and Losses Data

Engineer : Mike Lawrance

Available	1787.0bbl	Losses	0.0bbl
Active	259.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	598.0bbl	Dumped	
Slug	30.0bbl	De-Gasser	
Reserve	900.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equip.	Descr.	Mesh Size	Hours

Comment

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	1818.0bbl	Losses	182.1bbl
Active	253.0bbl	Downhole	
Mixing		Surf+ Equip	182.1bbl
Hole	598.0bbl	Dumped	
Slug	30.0bbl	De-Gasser	
Reserve	937.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equip.	Descr.	Mesh Size	Hours

Comment Recovered from ditch magnet: 0gms

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1990.00	1999.00	Min:1 Avg:17 Max:94	CEMENT
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
1999.00	2065.00	Min:2 Avg:9 Max:37	ARGILLACEOUS SILTSTONE and interbedded CLAYSTONE ARGILLACEOUS SILTSTONE (60-100%): olive black, greyish black, brownish black to dark grey, greenish black in part, very soft to firm, blocky to sub-blocky, 20-35% clay, 0-5% very fine quartz grains, trace carbonaceous specks, trace mica, trace lithic fragments. CLAYSTONE (0-40%): brownish black greyish black, dark grey, very soft to soft, amorphous, occasional trace mica.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
1990.00 - 1999.00	None								
Comment - CEMENT from 1990mMDRT- 1999mMDRT									
1999.00 - 2065.00	Drilled	0.198	0.0852	0.0028	0.0025	0.0018	0.0009	0.0010	0.000

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2076.85	8.58	180.86	2076.39	-1.06	7.8	-1.1	7.7	Sperry PM Tool

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Printed on 20 Jan 2010

06:00 Hrs Update	
Time:	06:00 Hrs on 21 Jan 2010
Depth:	2103 mMDRT/2101.5 mTVDRT
Progress Since Midnight (m):	38
Status @ 0600hrs:	Drill 8½" hole from 2106m.
Formation:	Eastern View Coal Measures
Lithology:	ARGILLACEOUS SILTSTONE interbedded with SANDSTONE and SILTSTONE and minor CLAYSTONE
ROP:	Ave 21.01 m/hr (3.34-72.24 m/hr)
Gas:	Ave background 0.1973%, C1 0.0821%, C2 0.0023%, C3 0.0023%, iC4 0.0022%, nC4 0.0013%, C5 0.0019%, CO2 0.0000%

Wellsite Geologist(s)
(Days) - Larissa Hansen (Nights) - Cleve Mathews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 21 Jan 2010 | **Geology Report Number : 3** | (associated DDR # 3)

Well Details

Depth MDBRT:	2112.0m	Rig:	Kan Tan IV	Date:	21 Jan 2010
Depth TVDBRT:	2111.2m	Progress:	47.0m	Report Start:	00:00
Depth TVDSS:	2085.2m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	2.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	52.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Drilled ahead in 216mm (8 1/2") hole section to 2112 mMDRT. POOH to make up 216mm (8 1/2") Geopilot BHA.
Forward Plan:	RIH. Log new hole from 1990mMDRT to 2112mMDRT. Drill ahead in 216mm (8 1/2") hole section to first coring point.

General Comments

00:00 TO 24:00 Hrs ON 21 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 9 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	LWD Tools: Distance to Bit until 2112 mMDRT Directional (PCD): 11.68 m
Operational Comments	LWD Tools: Distance to Bit from 2112 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.49 m Directional (PCD): 8.69 m Gamma (DGR): 11.47 m Resistivity (EWR-P4): 13.81 m Density (ALD): 20.69 m Caliper (ACAL): 23.74 m Porosity (CTN): 24.59 m Pressure while drilling (PWD): 27.54 m Sonic (BAT): 31.84 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	36000mg/l	Low Gravity Solids:		Viscosity	58sec/qt
Sample From:	pit 3	MWD Circ Temp:		Hard/Ca:	340mg/l	High Gravity Solids:		PV	22cp
Time:	2140	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	27lb/100ft²
Weight:	9.35ppg	Glycol:		PM:	1.5	H2O:	94%	Gels 10s	9
ECD TD:		Nitrates:		PF:	0.7	Oil:		Gels 10m	14
ECD Shoe:		Sulphites:		MF:	2.8	Sand:	.25 %	Fann 003	8
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	30
								Fann 200	41
								Fann 300	49
								Fann 600	67

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**1925.0bbl**	**Losses**	**28.4bbl**
Active	672.0bbl	Downhole	
Mixing		Surf+ Equip	28.4bbl
Hole	631.0bbl	Dumped	
Slug		De-Gasser	
Reserve	622.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2014.00	2069.00	2042.54	-28.54	0.00	Lithological

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2065.00	2069.00	Min:4 Avg:19 Max:72	ARGILLACEOUS SILTSTONE and interbedded CLAYSTONE ARGILLACEOUS SILTSTONE (40-60%): olive black, brownish black to dark grey in part, very soft to soft, blocky to sub-blocky, 30-35% clay, 0-1% very fine sand, trace carbonaceous material, trace mica, trace lithic fragments. CLAYSTONE (40-60%): brownish black, greyish black, dark grey, brownish black in part, very soft to soft, amorphous, trace mica.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2069.00	2112.00	Min:2 Avg:20 Max:72	Interbedded ARGILLACEOUS SILTSTONE and SANDSTONE with small interbeds of CLAYSTONE and SILTSTONE ARGILLACEOUS SILTSTONE (0-95%): light olive grey to rownish black, very soft to soft, amorphous to sub-blocky, 20-35% clay, 0-2% very fine sand, trace carbonaceous specks, trace mica, trace lithic fragments. SANDSTONE (0-95%): very light grey to light grey, light yellowish grey, light olive grey, olive grey, opaque, clear, friable to loose, blocky, 5-10% white clay matrix, 5-90% very fine sand, 5-15% fine sand, 0-50% medium sand, 0-40% course sand, friable to moderately hard, moderately to well sorted, subangular to sub-rounded, spherical to subspherical, 0-5% calcareous sand, trace-1% calcareous cement, poor to fair siliceous cement, trace mica, trace lithic fragments, trace carbonaceous specks, poor to good inferred visual porosity, no hydrocarbon fluorescence. SILTSTONE (0-100%): olive grey to olive black, dark grey to greyish black in part, soft to firm, blocky to sub-blocky, 5-15% clay, 0-2% very fine sand, trace mica, trace lithic fragments. CLAYSTONE (0-40%): olive black, brownish black and greyish black in part, very soft, amorphous, trace mica.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2065.00 - 2069.00	Drilled	0.183	0.0710	0.0024	0.0025	0.0024	0.0014	0.0019	0.000
2069.00 - 2112.00	Drilled	0.177	0.0717	0.0019	0.0019	0.0019	0.0011	0.0018	0.000
2070.50 -	Peak	0.254	0.1094	0.0033	0.0033	0.0028	0.0016	0.0021	0.000
2091.50 -	Peak	0.322	0.1637	0.0040	0.0035	0.0030	0.0017	0.0023	0.000

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2097.43	9.89	180.78	2096.70	-4.44	6.4	-4.4	11.4	Sperry PM Tool

06:00 Hrs Update

Time:	06:00 Hrs on 22 Jan 2010
Depth:	2112mMDRT/2111.2mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Logging new hole from 1990m to 2112m
Formation:	Eastern View Coal Measures
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)

(Days) - Larissa Hansen (Nights) - Cleve Mathews

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Printed on 21 Jan 2010

Rockhopper-1/ST1

Date : 22 Jan 2010 | **Geology Report Number : 4** | (associated DDR # 4)

Well Details

Depth MDBRT:	2368.0m	Rig:	Kan Tan IV	Date:	22 Jan 2010
Depth TVDBRT:	2347.2m	Progress:	256.0m	Report Start:	00:00
Depth TVDSS:	2321.2m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	3.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	53.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	RIH with 216mm (8 1/2") Geopilot BHA to 1970mMDRT. Logged down hole to 2112mMDRT. Drilled 216mm (8 1/2") hole to 2368mMDRT.
Forward Plan:	Drill 216mm (8 1/2") hole first coring point.

General Comments

00:00 TO 24:00 Hrs ON 22 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 9 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	Day WSG Changeover (Rob Blackmore on board, Larissa Hansen off)
Operational Comments	LWD Tools: Distance to Bit from 2112 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.49 m Directional (PCD): 8.69 m Gamma (DGR): 11.47 m Resistivity (EWR-P4): 13.81 m Density (ALD): 20.69 m Caliper (ACAL): 23.74 m Porosity (CTN): 24.59 m Pressure while drilling (PWD): 27.54 m Sonic (BAT): 31.84 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	36000mg/l	Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:	
Time:	2125	Glycol CP Temp:		MBT:	5	Solids (corrected):	
Weight:	9.40ppg	Glycol:		PM:	1.8	H2O:	94%
ECD TD:		Nitrates:		PF:	0.65	Oil:	
ECD Shoe:		Sulphites:		MF:	2.35	Sand:	.25 %
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9.5	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	66sec/qt
PV	18cp
YP	30lb/100ft²
Gels 10s	9
Gels 10m	13
Fann 003	8
Fann 006	10
Fann 100	30
Fann 200	41
Fann 300	48
Fann 600	66

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2078.6bbl**	**Losses**	**197.0bbl**
Active	725.0bbl	Downhole	
Mixing		Surf+ Equip	132.0bbl
Hole	616.6bbl	Dumped	
Slug		De-Gasser	
Reserve	737.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	41.0bbl
		Evaporation	24.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops							
Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	0.00	Res derc, appearence of SANDSTONE

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Lithology Summary		
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2112.00 - 2130.00	Min:8 Avg:23 Max:87	ARGILLACEOUS SILTSTONE interbedded with SANDSTONE and minor CLAYSTONE. SANDSTONE (0-90%): very light grey to light grey, white to yellowish grey, 5% very fine, 10% fine,50% medium, 35% coarse grains, friable to moderately hard, moderately to well sorted, rounded to subangular, subspherical to spherical, 5% clay, 5% calcareous sand, 1% calcareous cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence. ARGILLACEOUS SILTSTONE (10-100%): grey, very light grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 5% very fine sand grans, trace lithic fragments, trace loose medium grained quartz sand, trace carbonaceous specks. CLAYSTONE (0-10%): olive grey, white, very soft to soft, amorphous.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2130.00 - 2150.00	Min:3 Avg:32 Max:87	Interbedded SANDSTONE, ARGILLACEOUS SILTSTONE with minor CLAYSTONE. SANDSTONE (10-40%): loose grains, clear to opaque, rarely white and pale yellow, 10% very fine, 15% fine,70% medium, 5% coarse grains, very poorly sorted, sub-rounded to sub-angular, sub-elongated to sub-spherical, good inferred visual porosity, common fractured grains, trace inclusions, no hydrocarbon shows. ARGILLACEOUS SILTSTONE (60-90%): grey, very light grey, yellowish grey and white in part, very soft to firm, amorphous to sub-blocky, 5% very fine sand grains, trace lithic fragments, trace loose medium grained quartz sand, trace carbonaceous specks. CLAYSTONE (0-10%): olive black to dark grey, soft to firm, sub-blocky to blocky, trace pyrite, trace carbonaceous specks.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2150.00 - 2195.00	Min:10 Avg:29 Max:99	Interbedded ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE. ARGILLACEOUS SILTSTONE (5-95%): brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 5% very fine to fine sand grains, trace lithic fragments, trace carbonaceous specks, trace fine grained pyrite, trace micromica. SILTY CLAYSTONE (5-95%): olive grey to brown, rarely white, very soft to firm, amorphous to sub-blocky, trace pyrite and carbonaceous specks, calcareous in part and firm to moderately hard.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2195.00 - 2235.00	Min:11 Avg:48 Max:138	Interbedded ARGILLACEOUS SILTSTONE, SILTY CLAYSTONE, SANDSTONE with trace COAL. ARGILLACEOUS SILTSTONE (0-40%): brownish grey, yellowish grey and light brown in part, very soft to firm, amorphous to sub-blocky, 5% very fine to fine sand grains, trace lithic fragments, trace carbonaceous specks, trace fine grained pyrite, trace micromica. SILTY CLAYSTONE (5-95%): olive grey to brown, rarely white, very soft to firm, amorphous to sub-blocky, trace pyrite and carbonaceous specks, calcareous in part and firm to moderately hard. SANDSTONE (0-95%): white to yellowish grey, friable to firm, 80% very fine, 20% fine grained, moderately sorted, angular to sub-rounded, sub-spherical to sub-elongate, trace micromica, trace pyrite, poor to fair visual porosity, no hydrocarbon shows. COAL (Trace): black to dark greenish black, shiny, vitreous lustre, firm to hard, conchoidal fracture, commonly angular fragments.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2235.00 - 2300.00	Min:13 Avg:64 Max:173	Massive SANDSTONE with trace COAL. SANDSTONE (99-100%): loose grains with trace aggregates as above, clear, translucent, white, pale yellow, 60% very fine, 10% fine, 10% medium, 5% coarse, 5% very coarse grained, very poorly sorted, angular to sub-rounded, sub-spherical to elongate, common fractured grains, common inclusions, good inferred porosity, no hydrocarbon shows. COAL (0-1%): black to olive black, angular to conchoidal fracture, firm to moderately hard, shiny to vitreous lustre.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2300.00 - 2352.00	Min:3 Avg:21 Max:76	Interbedded ARGILLACEOUS SILTSTONE, SANDSTONE, SILTY CLAYSTONE and minor COAL. ARGILLACEOUS SILTSTONE (0-80%): light brown to light brownish grey, very soft to soft, amorphous to sub-blocky, trace micromica, pyrite and carbonaceous specks. SANDSTONE (0-95%): white, soft to firm in aggregates, 40% very fine, 40% fine, 10% medium, 5% coarse, 5% very coarse grains, very poorly sorted, angular to sub-rounded, sub-elongated to sub-spherical, trace pyrite, fair inferred porosity, no hydrocarbon shows. Aggregates are predominantly very fine to fine grained. Associated with loose grains. SILTY CLAYSTONE (0-90%): light brownish grey to light olive grey, very soft to soft, amorphous to dispersive, trace micromica and pyrite. COAL (0-90%): black to greyish black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, hackly appearance in part, trace calcite veinlets.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2352.00 - 2368.00	Min:10 Avg:22 Max:73	ARGILLACEOUS SILTSTONE interbedded with SILTSTONE, CLAYSTONE and minor COAL ARGILLACEOUS SILTSTONE (0-100%): light brown, light brownish grey, brownish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% clay, 5% very fine sand, trace lithic fragments, trace coal. SILTSTONE (0-100%): olive grey to dark greenish grey, brownish grey in part, very soft to soft, amorphous to sub-blocky, 5% clay, 5% very fine quartz sand, trace lithic fragments, trace coal. CLAYSTONE (0-100%): light olive grey to olive grey, yellowish grey, brownish grey and white in part, very soft, amorphous, 0-15% silt, trace lithic fragments, trace coal. COAL (0-10%): black, firm to hard, angular to conchoidal, shiny to vitreous lustre, occasionally hackly in appearance, trace calcite veins.

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Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2112.00 - 2130.00	Drilled	0.131	0.0521	0.0016	0.0012	0.0010	0.0050	0.0013	0.000
2130.00 - 2150.00	Drilled	0.172	0.0692	0.0023	0.0018	0.0015	0.0008	0.0017	0.000
2150.00 - 2195.00	Drilled	0.202	0.0749	0.0031	0.0024	0.0019	0.0012	0.0023	0.000
2192.50 -	Peak	0.301	0.1096	0.0061	0.0043	0.0026	0.0017	0.0028	0.000
2195.00 - 2235.00	Drilled	0.178	0.0515	0.0035	0.0024	0.0018	0.0013	0.0024	0.000
2235.00 - 2300.00	Drilled	0.158	0.0432	0.0025	0.0020	0.0017	0.0010	0.0022	0.000
2300.00 - 2352.00	Drilled	0.198	0.0643	0.0033	0.0026	0.0020	0.0011	0.0022	0.000
2306.00 -	Peak	0.228	0.0815	0.0048	0.0032	0.0020	0.0012	0.0022	0.000
2336.00 -	Peak	0.750	0.1880	0.0085	0.0036	0.0025	0.0013	0.0025	0.000
2352.00 - 2368.00	Drilled	0.198	0.0638	0.0032	0.0026	0.0021	0.0011	0.0022	0.000

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2101.74	10.33	180.02	2100.94	-11.59	3.2	-5.2	11.4	Sperry TCDC Tool
2133.86	11.00	184.57	2132.51	-17.53	1.0	-11.1	11.1	Sperry TCDC Tool
2162.64	12.26	191.23	2160.70	-23.26	1.9	-16.9	10.3	Sperry TCDC Tool
2191.04	14.09	193.69	2188.35	-29.58	2.0	-23.2	8.9	Sperry TCDC Tool
2221.57	17.24	200.87	2217.75	-37.42	3.6	-31.0	6.4	Sperry TCDC Tool
2249.96	21.12	203.77	2244.56	-46.03	4.2	-39.6	2.9	Sperry TCDC Tool
2279.09	25.17	203.19	2271.34	-56.54	4.2	-50.1	-1.7	Sperry TCDC Tool
2305.36	27.89	201.28	2294.84	-67.40	3.3	-61.0	-6.1	Sperry TCDC Tool
2335.32	29.38	198.65	2321.13	-80.89	2.0	-74.5	-11.0	Sperry TCDC Tool
2364.04	31.58	195.91	2345.88	-94.80	2.7	-88.4	-15.3	Sperry TCDC Tool

06:00 Hrs Update

Time:	06:00 Hrs on 23 Jan 2010
Depth:	2412mMDRT/2386.2mTVDRT
Progress Since Midnight (m):	44
Status @ 0600hrs:	Drilling 8½" hole
Formation:	Eastern View Coal Measures
Lithology:	SILTSTONE and CLAYSTONE with minor interbeds of SANDSTONE and COAL
ROP:	Ave 18.59 m/hr (6.99-44.3 m/hr)
Gas:	Ave background 0.266%, C1 0.1001%, C2 0.0054%, C3 0.0044%, iC4 0.0028%, nC4 0.0014%, C5 0.0026%, CO2 0.0000%

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Mathews

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Printed on 22 Jan 2010

origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 23 Jan 2010 | **Geology Report Number : 5** | (associated DDR # 5)

Well Details

Depth MDBRT:	2706.0m	Rig:	Kan Tan IV	Date:	23 Jan 2010
Depth TVDBRT:	2625.3m	Progress:	338.0m	Report Start:	00:00
Depth TVDSS:	2599.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	4.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	54.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Drilled 216mm (8 1/2") hole from 2368mMDRT / 2347.2mTVDRT to 2706mMDRT / 2625.3mTVDRT.
Forward Plan:	Drill ahead in 216mm (8 1/2") hole to core point #1.

General Comments

00:00 TO 24:00 Hrs ON 23 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 9 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	LWD Tools: Distance to Bit from 2112 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.49 m Directional (PCD): 8.69 m Gamma (DGR): 11.47 m Resistivity (EWR-P4): 13.81 m Density (ALD): 20.69 m Caliper (ACAL): 23.74 m Porosity (CTN): 24.59 m Pressure while drilling (PWD): 27.54 m Sonic (BAT): 31.84 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	36500mg/l	Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:	
Time:	2035	Glycol CP Temp:		MBT:	10	Solids (corrected):	
Weight:	9.35ppg	Glycol:		PM:	1.9	H2O:	94%
ECD TD:		Nitrates:		PF:	0.6	Oil:	
ECD Shoe:		Sulphites:		MF:	2.1	Sand:	.25 %
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9.5	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	66sec/qt
PV	19cp
YP	34lb/100ft²
Gels 10s	12
Gels 10m	16
Fann 003	8
Fann 006	10
Fann 100	32
Fann 200	45
Fann 300	53
Fann 600	72

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou.

Available	**2179.4bbl**	**Losses**	**222.0bbl**
Active	730.0bbl	Downhole	
Mixing		Surf+ Equip	150.0bbl
Hole	685.4bbl	Dumped	
Slug	30.0bbl	De-Gasser	
Reserve	734.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	36.0bbl
		Evaporation	36.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Printed on 23 Jan 2010

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	0.00	Res derc, appearence of SANDSTONE

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2368.00 - 2450.00		Min:6 Avg:23 Max:162	Interbedded ARGILLACEOUS SILTSTONE, SILTSTONE, SILTY CLAYSTONE and CLAYSTONE with minor interbeds of SANDSTONE. ARGILLACEOUS SILTSTONE (0-100%): light brown, light brownish grey, brownish grey and white in part, very soft to firm, amorphous to sub-blocky, 20% clay, 10% very fine sand, trace lithic fragments, trace coal. CLAYSTONE (0-100%): olive grey to light olive grey, yellowish grey in part, very soft, amorphous, trace coal. SANDSTONE (0-85%): colourless, opaque, white, pale yellow, loose to friable, 50% very fine, 40% fine, 10% medium grains, poorly to moderately sorted, angular to sub-rounded, sub-elongate to sub-spherical, trace white clay matrix, poor to fair inferred porosity, no hydrocarbon fluorescence. SILTSTONE (0-90%): light brownish grey, brownish grey and olive grey in part, very soft to soft, amorphous to sub-blocky, 10% clay, 5% fine grained sand, trace lithic fragments, trace carbonaceous specks. SILTY CLAYSTONE (0-100%): olive grey to light olive grey, yellowish grey and brownish grey in part, very soft, amorphous, 20% silt, 1% very fine sand, trace lithic fragments, trace mica, trace pyrite.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2450.00 - 2520.00		Min:7 Avg:29 Max:121	Interbedded SANDSTONE, ARGILLACEOUS SILTSTONE, CLAYSTONE, SILTY CLAYSTONE, CALCAREOUS SANDSTONE with minor COAL. SANDSTONE (0-20%): colourless, opaque, white, pale yellow, loose to friable, 50% very fine, 40% fine, 10% medium grains, poorly to moderately sorted, angular to sub-rounded, sub-elongate to sub-spherical, trace white clay matrix, poor to fair inferred porosity, no hydrocarbon fluorescence. CALCAREOUS SANDSTONE (0-30%): white to yellowish grey, firm to hard, 40% very fine, 40% fine, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical, trace micromica, trace pyrite, calcareous cemented, thin hard stringers, poor visual porosity, no hydrocarbon shows. ARGILLACEOUS SILTSTONE (10-95%): brownish grey to olive grey, soft to firm, sub-blocky to blocky, trace micromica, pyrite and black carbonaceous specks. SILTY CLAYSTONE (0-90%): light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, trace micromica, pyrite and carbonaceous specks. CLAYSTONE (0-10%): light brown to yellowish grey, very soft to soft, amorphous to dispersive. COAL (0-1%): black, firm to hard, angular to conchoidal fracture, hackly texture in part, shiny to vitreous lustre, trace calcite micro-veinlets.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2520.00 - 2565.00		Min:6 Avg:24 Max:62	Massive SANDSTONE with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE interbeds. SANDSTONE (0-100%): loose grains, clear, white, opaque, 20% very fine, 60% fine, 10% medium, 10% coarse grains, poorly sorted, sub-angular to sub-rounded, sub-spherical to sub-elongate, trace pyrite, trace fractured grains, fair inferred porosity, no hydrocarbon fluorescence. SILTY CLAYSTONE (0-65%): light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, trace micromica, pyrite and carbonaceous specks. ARGILLACEOUS SILTSTONE (0-80%): brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, trace micromica, pyrite and black carbonaceous specks.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2565.00 - 2706.00		Min:10 Avg:31 Max:112	Interbedded ARGILLACEOUS SILTSTONE, SILTSTONE, SILTY CLAYSTONE, SANDSTONE and minor COAL. ARGILLACEOUS SILTSTONE (0-100%): brownish grey to light brownish grey, soft to firm, sub-blocky to blocky, 20-30% clay, trace micromica, pyrite and black carbonaceous specks. SILTSTONE (0-100%): olive black to olive grey, light olive grey in part, soft to moderately hard, sub-blocky to angular, 10-15% clay, trace pyrite, trace mica, trace coal. SILTY CLAYSTONE (0-90%): light brownish grey to brownish grey, very soft to soft, amorphous to sub-blocky, 20-25% silt, trace micromica, pyrite and carbonaceous specks. SANDSTONE (0-70%): white, yellowish grey, loose to friable, 20-25% very fine, 60-70% fine, 5-10% medium, 0-10% coarse grains, sub-angular to sub-rounded, moderately to well sorted, sub-elongate to sub-spherical, poor to fair inferred porosity, no hydrocarbon fluorescence. COAL (0-30%): black, firm to hard, angular to conchoidal, trace pyrite.

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Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2368.00 - 2450.00	Drilled	0.320	0.1332	0.0071	0.0058	0.0033	0.0016	0.0028	0.000
2450.00 - 2520.00	Drilled	0.576	0.2725	0.0129	0.0095	0.0048	0.0020	0.0034	0.010
2467.00 -	Peak	1.020	0.5447	0.0210	0.0125	0.0051	0.0022	0.0026	0.000
2515.00 -	Peak	0.910	0.4821	0.0192	0.0115	0.0053	0.0022	0.0025	0.010
2520.00 - 2565.00	Drilled	0.409	0.1700	0.0089	0.0064	0.0040	0.0016	0.0034	0.015
2565.00 - 2706.00	Drilled	1.359	0.7393	0.0418	0.0238	0.0017	0.0038	0.0048	0.020
2581.00 -	Peak	2.525	1.6530	0.0575	0.0218	0.0074	0.0028	0.0037	0.020
2588.00 -	Peak	3.866	2.6680	0.0959	0.3290	0.0095	0.0037	0.0048	0.020
2635.00 -	Peak	2.846	1.7512	0.0856	0.0360	0.0099	0.0052	0.0059	0.010

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2393.22	33.12	193.25	2370.54	-109.91	2.2	-103.5	-19.3	Sperry TCDC Tool
2424.12	34.46	191.99	2396.22	-126.68	1.5	-120.3	-23.0	Sperry TCDC Tool
2453.55	35.45	189.16	2420.34	-143.25	1.9	-136.9	-26.1	Sperry TCDC Tool
2483.19	36.74	186.44	2444.29	-160.55	2.1	-154.1	-28.5	Sperry TCDC Tool
2512.34	35.42	185.57	2467.85	-177.62	1.5	-171.2	-30.3	Sperry TCDC Tool
2539.22	36.20	185.30	2489.65	-193.28	0.9	-186.9	-31.7	Sperry TCDC Tool
2567.35	35.96	183.83	2512.38	-209.79	1.0	-203.4	-33.1	Sperry TCDC Tool
2596.63	35.85	183.27	2536.10	-226.93	0.4	-220.5	-34.1	Sperry TCDC Tool
2623.25	35.76	182.90	2557.69	-242.48	0.3	-236.1	-35.0	Sperry TCDC Tool
2653.75	34.92	179.74	2582.57	-260.11	2.0	-253.7	-35.4	Sperry TCDC Tool
2684.95	36.05	178.78	2607.97	-278.22	1.2	-271.8	-35.1	Sperry TCDC Tool

06:00 Hrs Update

Time:	06:00 Hrs on 24 Jan 2010
Depth:	2766mMDRT / 2674.1mTVDRT
Progress Since Midnight (m):	60
Status @ 0600hrs:	Drill 8½" hole
Formation:	Eastern View Coal Measures
Lithology:	Interbedded SANDSTONE, SILTSTONE and ARGILLACEOUS SILTSTONE with minor SILTY CLAYSTONE and CLAYSTONE.
ROP:	Ave 26.19 m/hr (5.87-123.86 m/hr)
Gas:	Ave background 1.2583%, C1 0.5754%, C2 0.0402%, C3 0.0354%, iC4 0.0097%, nC4 0.0073%, C5 0.0070%, CO2 0.0200%

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Mathews

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origin

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Rockhopper-1/ST1

Date : 24 Jan 2010 | **Geology Report Number : 6** | (associated DDR # 6)

Well Details

Depth MDBRT:	2973.0m	Rig:	Kan Tan IV	Date:	24 Jan 2010
Depth TVDBRT:	2842.4m	Progress:	267.0m	Report Start:	00:00
Depth TVDSS:	2816.4m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	5.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	55.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Drilled 216mm (8 1/2") hole from 2706mMDRT / 2625.3mTVDRT to 2973mMDRT / 2842.4mTVDRT.
Forward Plan:	Drill ahead in 216mm (8 1/2") hole to core point #1.

General Comments

00:00 TO 24:00 Hrs ON 24 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 9 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	LWD Tools: Distance to Bit from 2112 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.49 m Directional (PCD): 8.69 m Gamma (DGR): 11.47 m Resistivity (EWR-P4): 13.81 m Density (ALD): 20.69 m Caliper (ACAL): 23.74 m Porosity (CTN): 24.59 m Pressure while drilling (PWD): 27.54 m Sonic (BAT): 31.84 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	36000mg/l	Low Gravity Solids:		Viscosity	65sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	320mg/l	High Gravity Solids:		PV	21cp
Time:	2030	Glycol CP Temp:		MBT:	10	Solids (corrected):		YP	39lb/100ft²
Weight:	9.35ppg	Glycol:		PM:	0.55	H2O:	94%	Gels 10s	12
ECD TD:		Nitrates:		PF:	0.35	Oil:		Gels 10m	15
ECD Shoe:		Sulphites:		MF:	2.9	Sand:	.25 %	Fann 003	10
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9.5	Barite:		Fann 006	12
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	38
								Fann 200	50
								Fann 300	60
								Fann 600	81

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**1451.7bbl**	**Losses**	**152.0bbl**
Active	677.0bbl	Downhole	
Mixing		Surf+ Equip	93.0bbl
Hole	739.7bbl	Dumped	
Slug	35.0bbl	De-Gasser	
Reserve		De-Sander	
Kill		De-Silter	
		Centrifuge	35.0bbl
		Evaporation	24.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Printed on 24 Jan 2010

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	0.00	Gamma decr, appearance of SANDSTONE.

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2706.00	2772.00	Min:6 Avg:26 Max:124	Interbedded SANDSTONE, SILTSTONE, ARGILLACEOUS SILTSTONE with minor SILTY CLAYSTONE and CLAYSTONE. SANDSTONE (0-85%): white to yellowish grey, colourless and opaque in part, loose to friable, 10-20% very fine, 20-50% fine, 30-40% medium, 0-20% coarse, 0-10% very coarse grains, sub-rounded to sub-angular, very poorly sorted, sub-spherical to spherical, good inferred porosity, no hydrocarbon fluorescence. SILTSTONE (0-50%): olive grey to light brownish grey, light olive grey in part, soft to firm, blocky to sub-blocky, 15% clay, trace coal, trace lithic fragments. ARGILLACEOUS SILTSTONE (0-100%): olive grey to brownish grey, soft to firm, blocky to sub-blocky, 20-30% clay, trace coal, trace lithic fragments, occasional very fine grained quartz aggregates. SILTY CLAYSTONE (0-15%): olive grey to light olive grey, brownish grey to light brownish grey in part, very soft, amorphous to dispersive, 20% silt. CLAYSTONE (0-100%): olive grey to light olive grey, brownish grey to light brownish grey, medium light grey in part, very soft, amorphous to dispersive, 10% silt, trace mica.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2772.00	2811.00	Min:3 Avg:18 Max:137	Interbedded SILTY CLAYSTONE, CLAYSTONE, SILTSTONE and ARGILLACEOUS SILTSTONE. SILTY CLAYSTONE (0-100%): olive grey to olive black, very soft to soft, sub-blocky, trace pyrite, trace carbonaceous specks. ARGILLACEOUS SILTSTONE (0-100%): olive grey to olive black, brownish grey to light brownish grey in part, soft to firm, sub-blocky to blocky, trace micromica, carbonaceous specks and pyrite. SILTSTONE (0-100%): olive black to olive grey, light olive grey in part, soft to firm, sub-blocky to blocky, 15% clay, trace coal, trace lithic fragments, trace very fine to fine grained quartz aggregates. CLAYSTONE (0-100%): olive grey to light olive grey, light yellow grey in part, very soft, amorphous to dispersive, trace very fine and fine sand, trace lithic fragments, trace coal.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2811.00	2877.00	Min:6 Avg:26 Max:125	Interbedded SILTY CLAYSTONE, ARGILLACEOUS SILTSTONE, CLAYSTONE and SANDSTONE. SILTY CLAYSTONE (0-65%): light olive grey, olive grey, brownish grey, very soft to soft, angular to sub-blocky, trace pyrite, micromica, carbonaceous specks. ARGILLACEOUS SILTSTONE (0-95%): olive grey, brownish grey, soft to firm, sub-blocky to blocky, trace micromica, carbonaceous specks and pyrite. SANDSTONE (0-60%): white to light brown, loose to friable, 30% very fine, 40% fine, 20% medium, 10% coarse grained, sub-angular to sub-rounded, sub-elongate to sub-spherical, very poorly sorted, abundant white amorphous rock flour, trace micromica, trace pyrite, trace carbonaceous specks, fair visual porosity, no hydrocarbon fluorescence. CLAYSTONE (0-70%): light olive grey, olive grey, soft to firm, angular to sub-blocky, trace pyrite, micromica.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2877.00	2940.00	Min:2 Avg:19 Max:72	Massive SILTY CLAYSTONE interbedded with minor ARGILLACEOUS SILTSTONE. SILTY CLAYSTONE (0-100%): light olive grey, olive black, brownish grey, very soft to firm, angular to sub-blocky, very silty in part, occasional trace loose sand grains, trace pyrite, trace micromica, carbonaceous specks. ARGILLACEOUS SILTSTONE (0-30%): olive grey, brownish grey, soft to firm, sub-blocky to blocky, trace micromica, carbonaceous specks and pyrite.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2940.00	2973.00	Min:11 Avg:27 Max:73	SANDSTONE with interbedded ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE. SANDSTONE (0-80%): white, light olive grey, yellowish grey, friable to firm, 5% white clay matrix, 25-40% very fine, 45-55% fine, 15-20% medium, 0-5% coarse grains, sub-angular to sub-rounded, poor to moderately sorted, sub-elongate to sub-spherical, trace silica cement, trace mica, poor to fair visual porosity, mostly nil hydrocarbon fluorescence except over interval from 2937.0 - 2949.0 mMDRT where poor to fair shows. ARGILLACEOUS SILTSTONE (5-95%): light olive grey, olive grey, brownish grey, soft to firm, angular to sub-blocky, 20-30% clay, trace mica, trace coal. SILTY CLAYSTONE (0-95%): light olive grey, olive grey, brownish grey, very soft to firm, amorphous to sub-blocky, 20-24% silt, occasional trace very fine grained quartz sand, trace pyrite, trace mica, trace coal.

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Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2706.00 - 2772.00	Drilled	1.242	0.5675	0.0392	0.0347	0.0096	0.0073	0.0071	0.060
2772.00 - 2811.00	Drilled	0.749	0.2832	0.2400	0.2360	0.0070	0.0067	0.0066	0.010
2811.00 - 2877.00	Drilled	1.447	1.0647	0.0485	0.0320	0.0069	0.0071	0.0070	0.060
2812.70 -	Peak	2.493	1.0636	0.0448	0.0288	0.0091	0.0087	0.0088	0.020
2823.00 -	Peak	5.942	4.6653	0.1984	0.1140	0.0123	0.0126	0.0102	0.020
2877.00 - 2937.00	Drilled	0.737	0.5737	0.0377	0.0319	0.0059	0.0076	0.0062	0.140
2937.00 - 2973.00	Drilled	3.220	1.6549	0.1638	0.1830	0.0362	0.0579	0.0368	0.090
2938.50 -	Peak	13.912	6.2678	0.8296	0.9887	0.2031	0.3284	0.2027	0.160
2960.00 -	Peak	2.837	1.5535	0.1382	0.1438	0.0278	0.0447	0.0291	0.950

Hydrocarbon Shows

From (m)	To (m)	Formation	Lithology	Percentage	White Light			UV Light			Rating
					Stain	Cut	Residue	Fluor.	Cut Fluor.	Residue	
2937.00	2949.00	Eastern View Coal Measures	SANDSTONE	5-20				dull yellow	slo str blu wh crush	dull yell grn film to ring residue	Poor to fair

Shows Description: In aggregates: overall dull yellow fluorescence, slow streaming blue white crush cut, dull yellow green film to ring residue, decrease with depth.

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2711.61	35.74	177.14	2629.57	-293.84	1.1	-287.4	-34.6	Sperry TCDC Tool
2739.68	35.53	177.12	2652.39	-310.17	0.2	-303.8	-33.8	Sperry TCDC Tool
2771.60	35.60	176.05	2678.35	-328.70	0.6	-322.3	-32.7	Sperry TCDC Tool
2799.25	35.65	174.76	2700.83	-344.76	0.8	-338.4	-31.4	Sperry TCDC Tool
2830.33	35.66	174.48	2726.08	-362.79	0.2	-356.4	-29.7	Sperry TCDC Tool
2858.86	35.48	174.28	2749.29	-379.31	0.2	-372.9	-28.1	Sperry TCDC Tool
2886.55	35.51	174.82	2771.83	-395.32	0.3	-388.9	-26.5	Sperry TCDC Tool
2912.81	35.67	174.71	2793.19	-410.53	0.2	-404.1	-25.1	Sperry TCDC Tool
2944.72	35.81	174.86	2819.09	-429.10	0.2	-422.7	-23.4	Sperry TCDC Tool

06:00 Hrs Update

Time:	06:00 Hrs on 25 Jan 2010
Depth:	3009mMDRT / 2873mTVDRT
Progress Since Midnight (m):	36
Status @ 0600hrs:	Drilling 8½" hole
Formation:	Eastern View Coal Measures
Lithology:	Massive SILTY CLAYSTONE interbedded with minor CLAYSTONE and ARGILLACEOUS SILTSTONE.
ROP:	Ave 14.92 m/hr (3.86-24.93 m/hr)
Gas:	Ave background 1.2460%, C1 0.7608%, C2 0.0553%, C3 0.0590%, iC4 0.0132%, nC4 0.0198%, C5 0.0151%, CO2 0.1600%

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Mathews

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Printed on 24 Jan 2010

origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 25 Jan 2010 | **Geology Report Number : 7** | (associated DDR # 7)

Well Details

Depth MDBRT:	3158.0m	Rig:	Kan Tan IV	Date:	25 Jan 2010
Depth TVDBRT:	2995.1m	Progress:	185.0m	Report Start:	00:00
Depth TVDSS:	2969.1m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	6.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	56.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Drilled 216mm (8 1/2") hole from 3098mMDRT / 2946.6mTVDRT to 3158mMDRT / 2995.1mTVDRT. POOH to 2492mMDRT / 2423.2mTVDRT due to LWD tool failure.
Forward Plan:	POOH and replace LWD tools. RIH with Geopilot BHA and drill 216mm (8 1/2") hole to core point #1.

General Comments

00:00 TO 24:00 Hrs ON 25 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 9 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board. 216 mm (8-1/2") hole section tools: Back up string checked OK.
Operational Comments	LWD Tools: Distance to Bit from 2112 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.49 m Directional (PCD): 8.69 m Gamma (DGR): 11.47 m Resistivity (EWR-P4): 13.81 m Density (ALD): 20.69 m Caliper (ACAL): 23.74 m Porosity (CTN): 24.59 m Pressure while drilling (PWD): 27.54 m Sonic (BAT): 31.84 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	36500mg/l	Low Gravity Solids:		Viscosity	56sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	320mg/l	High Gravity Solids:		PV	19cp
Time:	2005	Glycol CP Temp:		MBT:	10	Solids (corrected):		YP	40lb/100ft²
Weight:	9.35ppg	Glycol:		PM:	1.5	H2O:	94%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.35	Oil:		Gels 10m	13
ECD Shoe:		Sulphites:		MF:	2.8	Sand:	.2 %	Fann 003	9
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	34
								Fann 200	47
								Fann 300	59
								Fann 600	78

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2284.2bbl**	**Losses**	**438.0bbl**
Active	650.0bbl	Downhole	
Mixing		Surf+ Equip	280.0bbl
Hole	795.2bbl	Dumped	
Slug	42.0bbl	De-Gasser	
Reserve	797.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	110.0bbl
		Evaporation	48.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
2973.00	3055.00	Min:8 Avg:15 Max:31	Massive SILTY CLAYSTONE interbedded with minor CLAYSTONE and ARGILLACEOUS SILTSTONE. SILTY CLAYSTONE (0-100%): light olive grey, olive grey, brownish grey, very soft to firm, amorphous to sub-blocky, 20-30% silt, occasional trace very fine grained quartz sand, trace pyrite, trace mica, trace coaly specks. CLAYSTONE (0-100%): light olive grey, olive grey, brownish grey, soft to firm, blocky to sub-blocky, 15% silt, trace mica, trace coaly specks, trace pyrite. ARGILLACEOUS SILTSTONE (0-20%): olive grey, brownish grey, olive black, firm, angular to sub-blocky, 30% clay, trace mica, trace coaly specks.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3055.00	3158.00	Min:5 Avg:17 Max:73	Interbedded ARGILLACEOUS SANDSTONE, SANDSTONE, ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE with minor COAL. ARGILLACEOUS SANDSTONE (0-80%): white to yellowish grey, 40% very fine, 40% fine, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous specks, trace micromica, aggregates cemented with quartz overgrowths and clay matrix, fair visual porosity, no hydrocarbon fluorescence. SANDSTONE (0-98%): white to yellowish grey, 40% very fine, 40% fine, 20% medium grained, sub-angular to sub-rounded, sub-spherical to spherical, poorly sorted, trace pyrite, trace carbonaceous specks, trace micromica, fair visual porosity, weak hydrocarbon fluorescence from trace aggregates at 3078-3084 mMDRT, generally no hydrocarbon fluorescence. ARGILLACEOUS SILTSTONE (0-80%): olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace micromica, trace carbonaceous specks. SILTY CLAYSTONE (0-70%): olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% silt, trace coal, trace mica, trace pyrite, trace very fine grained quartz sand. COAL (0-5%): black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, trace calcite micro-veinlets.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2973.00 - 3055.00	Drilled	1.162	0.7185	0.0525	0.0528	0.0122	0.0166	0.0134	0.250
3055.00 - 3158.00	Drilled	1.546	1.0546	0.0743	0.0621	0.0140	0.0171	0.0126	0.130
3081.00 -	Peak	2.162	1.3993	0.0977	0.0866	0.0242	0.0240	0.0191	0.200
3131.80 -	Peak	3.884	2.0638	0.1994	0.1850	0.0416	0.0516	0.0319	0.250
3148.00 -	Peak	3.021	1.8809	0.1601	0.1083	0.0191	0.0262	0.0154	0.250

Hydrocarbon Shows

From (m)	To (m)	Formation	Lithology	Percentage	White Light			UV Light			Rating
					Stain	Cut	Residue	Fluor.	Cut Fluor.	Residue	
3078.00	3084.00	P3/2973 Seismic Marker	Sandstone	1-2				moderately bright white	slow streaming bluish-white	dull bluish-green	Weak
Shows Description:		moderately bright white direct UV fluorescence, slow bluish-white streaming cut, thin dull bluish-green residual ring.									

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2790.10	33.67	176.07	2693.57	-339.19	3.1	-332.8	-31.9	Sperry TCDC Tool
3001.24	33.20	177.20	2865.93	-460.65	1.6	-454.2	-21.3	Sperry TCDC Tool
3026.70	33.66	177.54	2887.18	-474.66	0.6	-468.3	-20.7	Sperry TCDC Tool
3059.36	34.73	177.11	2914.19	-493.00	1.0	-486.6	-19.8	Sperry TCDC Tool
3089.54	35.58	176.65	2938.87	-510.35	0.9	-503.9	-18.9	Sperry TCDC Tool
3118.07	35.65	177.66	2962.06	-526.94	0.6	-520.5	-18.1	Sperry TCDC Tool

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06:00 Hrs Update	
Time:	06:00 Hrs on 26 Jan 2010
Depth:	3158mMDRT / 2995.1mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Servicing Top Drive at shoe.
Formation:	Eastern View Coal Measures
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Mathews

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Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 26 Jan 2010 | **Geology Report Number : 8** | (associated DDR # 8)

Well Details

Depth MDBRT:	3158.0m	Rig:	Kan Tan IV	Date:	26 Jan 2010
Depth TVDBRT:	2995.1m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	2969.1m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	7.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	57.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	POOH. Made up replacement 216mm (8 1/2") BHA. RIH to 2526mMDRT / 2479.3mTVDRT
Forward Plan:	RIH to 3158mMDRT / 2995.1mTVDRT. Drill ahead to core point #1. POOH. Make up core barrel and BHA. RIH and commence core #1.

General Comments

00:00 TO 24:00 Hrs ON 26 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board. 216 mm (8-1/2") hole section tools: Back up string checked and run in hole.
Operational Comments	LWD Tools: Distance to Bit from 3158 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.45 m Directional (PCD): 8.69 m Gamma (DGR): 11.36 m Resistivity (EWR-P4): 13.68 m Density (ALD): 21.29 m Porosity (CTN): 21.49 m Pressure while drilling (PWD): 28.04 m Sonic (BAT): 32.36 m Caliper (ACAL): 39.17 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	37000mg/l	Low Gravity Solids:		Viscosity	57sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:		PV	19cp
Time:	2240	Glycol CP Temp:		MBT:	10	Solids (corrected):		YP	34lb/100ft²
Weight:	9.40ppg	Glycol:		PM:	1	H2O:	94%	Gels 10s	9
ECD TD:		Nitrates:		PF:	0.29	Oil:		Gels 10m	13
ECD Shoe:		Sulphites:		MF:	3.3	Sand:	.2 %	Fann 003	8
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	31
								Fann 200	43
								Fann 300	53
								Fann 600	72

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2183.2bbl**	**Losses**	**80.6bbl**
Active	724.0bbl	Downhole	
Mixing		Surf+ Equip	60.6bbl
Hole	795.2bbl	Dumped	
Slug	17.0bbl	De-Gasser	
Reserve	647.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	16.0bbl
		Evaporation	4.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.

06:00 Hrs Update

Time:	06:00 Hrs on 27 Jan 2010
Depth:	3158mMDRT / 2995.1mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Drilling 8½" hole
Formation:	Eastern View Coal Measures
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Mathews

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Rockhopper-1/ST1

Date : 27 Jan 2010 | **Geology Report Number : 9** | (associated DDR # 9)

Well Details

Depth MDBRT:	3196.0m	Rig:	Kan Tan IV	Date:	27 Jan 2010
Depth TVDBRT:	3026.0m	Progress:	38.0m	Report Start:	00:00
Depth TVDSS:	3000.0m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	8.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	58.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Drilled 216mm (8 1/2")" hole from 3158mMDRT / 2995.1mTVDRT to 3196mMDRT / 3026mTVDRT. POOH, Racked back BHA and downloaded Sperry tools.
Forward Plan:	RIH and cut 30m of core #1. POOH.

General Comments

00:00 TO 24:00 Hrs ON 27 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board. 216 mm (8-1/2") hole section tools: Back up string checked and run in hole.
Operational Comments	LWD Tools: Distance to Bit from 3158 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.45 m Directional (PCD): 8.69 m Gamma (DGR): 11.36 m Resistivity (EWR-P4): 13.68 m Density (ALD): 21.29 m Porosity (CTN): 21.49 m Pressure while drilling (PWD): 28.04 m Sonic (BAT): 32.36 m Caliper (ACAL): 39.17 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	37000mg/l	Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:	
Time:	2140	Glycol CP Temp:		MBT:	10	Solids (corrected):	
Weight:	9.35ppg	Glycol:		PM:	0.7	H2O:	94%
ECD TD:		Nitrates:		PF:	1.2	Oil:	
ECD Shoe:		Sulphites:		MF:	3.1	Sand:	.2 %
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9.5	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	56sec/qt
PV	19cp
YP	36lb/100ft²
Gels 10s	9
Gels 10m	13
Fann 003	8
Fann 006	10
Fann 100	34
Fann 200	46
Fann 300	55
Fann 600	72

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2158.6bbl**	**Losses**	**189.4bbl**
Active	710.0bbl	Downhole	
Mixing		Surf+ Equip	122.4bbl
Hole	880.6bbl	Dumped	
Slug	15.0bbl	De-Gasser	
Reserve	553.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	47.0bbl
		Evaporation	20.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2972.50	-0.50	0.00	GR decr, appearance of SANDSTONE.

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3158.00 - 3196.00		Min:1 Avg:13 Max:42	Interbedded ARGILLACEOUS SILTSTONE, SILTY CLAYSTONE and ARGILLACEOUS SANDSTONE with minor COAL. ARGILLACEOUS SANDSTONE (0-100%): white to light yellowish grey and light grey, soft to firm aggregates, common loose grains, 40% very fine, 40% fine, 20% medium grained, poorly sorted, sub-angular to sub-rounded, sub-spherical to spherical, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous specks, rare carbonaceous laminae, fair inferred porosity, no hydrocarbon fluorescence. ARGILLACEOUS SILTSTONE (0-85%): olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace micromica, trace carbonaceous specks. SILTY CLAYSTONE (0-40%): olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, 25% silt, trace mica. COAL (0-5%): black, firm to moderately hard, angular to conchoidal fracture, shiny to vitreous lustre, trace calcite micro-veinlets.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3158.00 - 3196.00	Drilled	0.926	0.5712	0.0450	0.0280	0.0045	0.0061	0.0029	0.070
3166.00 -	Peak	2.109	1.7592	0.1355	0.0687	0.0086	0.0122	0.0068	0.320
3181.00 -	Peak	1.336	1.0459	0.0649	0.0421	0.0067	0.0093	0.0062	0.250

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
3145.40	35.32	177.16	2984.32	-542.79	0.5	-536.4	-17.4	Sperry TCDC Tool
3167.94	35.69	178.03	3002.67	-555.87	0.8	-549.5	-16.8	Sperry TCDC Tool
3185.27	35.70	178.52	3016.74	-565.97	0.5	-559.6	-16.5	Sperry TCDC Tool

06:00 Hrs Update

Time:	06:00 Hrs on 28 Jan 2010
Depth:	3196mMDRT / 3026mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	RIH with core barrel BHA.
Formation:	Eastern View Coal Measures
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Mathews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 28 Jan 2010 | **Geology Report Number : 10** | (associated DDR # 10)

Well Details

Depth MDBRT:	3212.5m	Rig:	Kan Tan IV	Date:	28 Jan 2010
Depth TVDBRT:	3039.6m	Progress:	16.5m	Report Start:	00:00
Depth TVDSS:	3013.6m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	9.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	59.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Made up 30m core barrel and BHA. RIH and cut core from 3196mMDRT / 3026mTVDRT to 3212.5mMDRT / 3039.6mTVDRT. 16.5m of core cut. Core head jammed. POOH to 1097mMDRT / 1097mTVDRT.
Forward Plan:	Make up 216mm (8 1/2") Geopilot BHA and RIH. Drill ahead to core point #2.

General Comments

00:00 TO 24:00 Hrs ON 28 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:		Viscosity	58sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	320mg/l	High Gravity Solids:		PV	17cp
Time:	2110	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	31lb/100ft²
Weight:	9.35ppg	Glycol:		PM:	0.7	H2O:	94%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.2	Oil:		Gels 10m	14
ECD Shoe:		Sulphites:		MF:	3.3	Sand:	.25 %	Fann 003	8
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	30
								Fann 200	40
								Fann 300	48
								Fann 600	65

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2264.6bbl**	**Losses**	**244.0bbl**
Active	675.0bbl	Downhole	
Mixing		Surf+ Equip	181.0bbl
Hole	880.6bbl	Dumped	
Slug	20.0bbl	De-Gasser	
Reserve	689.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	47.0bbl
		Evaporation	16.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	0.00	GR decr, appearance of SANDSTONE.

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Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3196.00 - 3202.00		Min:1 Avg:10 Max:21	Interbedded SILTY CLAYSTONE, ARGILLACEOUS SANDSTONE and ARGILLACEOUS SILTSTONE. SILTY CLAYSTONE (30-45%): olive grey to olive black, brownish black in part, firm, blocky to sub-blocky, commonly laminated, 25% silt, trace mica, trace pyrite. ARGILLACEOUS SANDSTONE (10-30%): white to light yellowish grey and light grey, soft to firm aggregates, 40% very fine, 40% fine, 20% medium grained, poorly to moderately sorted, sub-angular to sub-rounded, sub-spherical to spherical grains, trace inclusions and fractured grains, common argillaceous matrix and carbonaceous specks, rare carbonaceous laminae, poor inferred porosity, no hydrocarbon fluorescence. ARGILLACEOUS SILTSTONE (25-80%): olive grey, brownish grey, light olive grey, soft to firm, angular to sub-blocky, trace pyrite, trace micromica, trace carbonaceous specks.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3196.00 - 3202.00	Drilled	0.432	0.2432	0.0213	0.0122	0.0022	0.0029	0.0026	0.340
3198.00 -	Peak	0.669	0.4021	0.0323	0.0176	0.0030	0.0042	0.0036	0.300

06:00 Hrs Update

Time:	06:00 Hrs on 29 Jan 2010
Depth:	3212.5mMDRT / 3039.6mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Laying out inner core barrels with core.
Formation:	Eastern View Coal Measures
Lithology:	No returns to surface (including from 3202mMDRT / 3030.9mTVDRT to 3212.5mMDRT / 3039.6mTVDRT due to coring)
ROP:	No returns to surface (including from 3202mMDRT / 3030.9mTVDRT to 3212.5mMDRT / 3039.6mTVDRT due to coring)
Gas:	No returns to surface (including from 3202mMDRT / 3030.9mTVDRT to 3212.5mMDRT / 3039.6mTVDRT due to coring)

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Mathews

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Rockhopper-1/ST1

Date : 29 Jan 2010 | **Geology Report Number : 11** | (associated DDR # 11)

Well Details

Depth MDBRT:	3234.0m	Rig:	Kan Tan IV	Date:	29 Jan 2010
Depth TVDBRT:	3056.4m	Progress:	21.5m	Report Start:	00:00
Depth TVDSS:	3030.4m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	10.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	60.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	POOH with core run #1. Made up 216mm (8 1/2") Geopilot BHA and RIH. Relogged well from 3175mMDRT / 3008.9mTVDRT to 3212.5mMDRT / 3039.6mTVDRT. Drilled 216mm (8 1/2") hole from 3212.5mMDRT / 3039.6mTVDRT to 3234mMDRT / 3056.4mTVDRT.
Forward Plan:	POOH and make up core barrel BHA for core run #2. Cut core and POOH.

General Comments

00:00 TO 24:00 Hrs ON 29 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board.
Operational Comments	LWD Tools: Distance to Bit from 3212.5 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.45 m Directional (PCD): 8.69 m Gamma (DGR): 11.36 m Resistivity (EWR-P4): 13.68 m Density (ALD): 21.29 m Porosity (CTN): 24.49 m Pressure while drilling (PWD): 28.04 m Sonic (BAT): 32.32 m Caliper (ACAL): 39.13 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:		Viscosity	62sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:		PV	15cp
Time:	2100	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	25lb/100ft²
Weight:	9.40ppg	Glycol:		PM:	0.8	H2O:	94%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.28	Oil:		Gels 10m	15
ECD Shoe:		Sulphites:		MF:	2.9	Sand:	.15 %	Fann 003	9
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9.5	Barite:		Fann 006	11
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	26
								Fann 200	35
								Fann 300	40
								Fann 600	55

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2150.3bbl**	**Losses**	**94.0bbl**
Active	650.0bbl	Downhole	
Mixing		Surf+ Equip	75.0bbl
Hole	793.3bbl	Dumped	
Slug	15.0bbl	De-Gasser	
Reserve	692.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	13.0bbl
		Evaporation	6.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	0.00	GR decr, appearance of SANDSTONE.

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3212.50 - 3234.00		Min:6 Avg:15 Max:57	ARGILLACEOUS SANDSTONE with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE interbeds. ARGILLACEOUS SANDSTONE (5-90%): white, yellowish grey, soft to firm, 20-30% clay, 40-50% very fine, 30-40% fine, 15-20% medium, 0-5% coarse grains, angular to sub-rounded, very poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair visual porosity, no hydrocarbon fluorescence. ARGILLACEOUS SILTSTONE (15-90%): olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% clay, trace mica, trace pyrite, trace coal. SILTY CLAYSTONE (5-75%): olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% silt, trace coal, trace mica, trace pyrite.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3212.50 - 3234.00	Drilled	0.483	0.2290	0.0309	0.0197	0.0034	0.0049	0.0037	1.050
3220.00 -	Peak	0.608	0.3013	0.0416	0.0253	0.0040	0.0059	0.0043	1.150
3228.00 -	Peak	1.297	0.6612	0.0901	0.0591	0.0101	0.0142	0.0082	1.170

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
3203.43	35.56	178.76	3031.50	-576.55	0.3	-570.2	-16.3	Sperry TCDC Tool

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Core Run					
Core Number	1	Start Depth (MD)	3196.0 (m)	Amount Recovered	13.4
Formation	Eastern View Coal Measures	End Depth (MD)	3212.5 (m)	Sleeve Type	Aluminium
Contractor	CorePro	Core Diameter	102.0 (mm)	Encapsulation Type	Nil
Equipment	5x6 m barrels	Barrel Length	30.0 (m)		
Shipping		Comments	Full core description to follow when core cut.		

Core Detail

Core Chip Depth (m)	Description
3196.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks.
3196.54	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, trace large platy mica grains.
3197.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large platy mica grains on fracture planes.
3198.00	Interbedded SILTY CLAYSTONE and ARGILLACEOUS SANDSTONE. SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large platy mica grains on fracture planes. ARGILLACEOUS SANDSTONE: light olive grey, brownish grey, yellowish grey, very firm to hard, friable in part, laminated with claystone in part, very fine to granular, predominantly coarse-grained, very poorly sorted, common light brown argillaceous matrix, common quartz overgrowths and mica flakes, trace pyrite, poor visual porosity, no hydrocarbon fluorescence, no hydrocarbon odour, weak mineral fluorescence only.
3199.00	ARGILLACEOUS SANDSTONE: white to light yellowish grey with black specks, very firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace dark brown/black mica specks, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3200.00	LITHIC SANDSTONE: medium grey to dark olive grey, very firm to hard, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, trace argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, abundant dark brown/black/silvery grey mica specks (muscovite and biotite), poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3201.00	ARGILLACEOUS SILTSTONE: dark grey to olive black, blocky to sub-fissile, very firm to hard, abundant dark grey argillaceous matrix, common dark grey to black mica flakes, trace medium to coarse sand grains, very poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3202.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large dark grey-black platy mica grains on fracture planes.
3202.63	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common dark grey-black platy mica grains on fracture planes.
3203.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large dark grey-black platy mica grains on fracture planes.
3204.00	SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large dark grey-black platy mica grains on fracture planes.
3205.00	LITHIC SANDSTONE: white to medium grey, firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, trace argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, abundant dark brown/black/silvery grey mica specks (muscovite and biotite) on some surfaces, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3206.00	LITHIC SANDSTONE: white to medium grey, firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, common dark brown/black/silvery grey mica specks (muscovite and biotite), poor inferred porosity, no hydrocarbon fluorescence, abundant bright white-yellow mineral fluorescence from quartz overgrowths and mica(?), no cut obtained.
3207.00	ARGILLACEOUS SANDSTONE: white to light yellowish grey with black specks, very firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace dark brown/black mica specks, poor inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3208.00	ARGILLACEOUS SANDSTONE: white to light yellowish grey, very firm to friable, 40% very fine, 40% fine, 20% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, common brown/black mica crystals, poor-fair inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3209.00	ARGILLACEOUS SANDSTONE: white to light yellowish grey, very firm to friable, 40% very fine, 50% fine, 10% medium grains, poorly to moderately sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, common argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, common brown/black mica crystals, poor-fair

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Core Run	
	inferred porosity, no hydrocarbon fluorescence, no hydrocarbon odour.
3209.38	Interbedded SILTY CLAYSTONE and ARGILLACEOUS SANDSTONE. SILTY CLAYSTONE: dark grey, greyish black, olive black, very firm to hard, blocky to sub-fissile, 25% silt grains, trace micromica, trace disseminated pyrite, trace carbonaceous specks, common large platy mica grains on fracture planes. ARGILLACEOUS SANDSTONE: white, light olive grey, brownish grey, yellowish grey, very firm to hard, laminated with claystone, very fine to medium, predominantly fine-grained, poorly sorted, common argillaceous matrix, common quartz overgrowths and mica flakes, trace pyrite, poor visual porosity, no hydrocarbon fluorescence, no hydrocarbon odour, weak mineral fluorescence only.

06:00 Hrs Update	
Time:	06:00 Hrs on 30 Jan 2010
Depth:	3252mMDRT / 3071.5mTVDRT
Progress Since Midnight (m):	18
Status @ 0600hrs:	Drilling 8½" hole
Formation:	Eastern View Coal Measures
Lithology:	ARGILLACEOUS SANDSTONE and SANDSTONE interbedded with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE
ROP:	Ave 13.69 m/hr (1.47-32.92 m/hr)
Gas:	Ave background 0.7580%, C1 0.3313%, C2 0.0550%, C3 0.0365%, iC4 0.0065%, nC4 0.0304%, C5 0.0054%, CO2 1.2500%

Wellsite Geologist(s)	
(Days) - Rob Blackmore	(Nights) - Cleve Mathews

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Rockhopper-1/ST1

Date : 30 Jan 2010 | **Geology Report Number : 12** | (associated DDR # 12)

Well Details

Depth MDBRT:	3283.0m	Rig:	Kan Tan IV	Date:	30 Jan 2010
Depth TVDBRT:	3096.7m	Progress:	49.0m	Report Start:	00:00
Depth TVDSS:	3070.7m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	11.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	61.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Drilled 216mm (8 1/2") hole from 3234mMDRT / 3056.4mTVDRT to 3283mMDRT / 3096.7mTVDRT. Circulated bottoms up and POOH. Made up 30m core barrel and RIH to 1125mMDRT / 1125mTVDRT.
Forward Plan:	Complete core. POOH at controlled rate. Lay out core. Make up 216mm (8 1/2") Geopilot BHA.

General Comments

00:00 TO 24:00 Hrs ON 30 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board.
Operational Comments	LWD Tools: Distance to Bit from 3212.5 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.45 m Directional (PCD): 8.69 m Gamma (DGR): 11.36 m Resistivity (EWR-P4): 13.68 m Density (ALD): 21.29 m Porosity (CTN): 24.49 m Pressure while drilling (PWD): 28.04 m Sonic (BAT): 32.32 m Caliper (ACAL): 39.13 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38500mg/l	Low Gravity Solids:		Viscosity	58sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:		PV	18cp
Time:	1940	Glycol CP Temp:		MBT:	10	Solids (corrected):		YP	33lb/100ft²
Weight:	9.35ppg	Glycol:		PM:	0.85	H2O:	94%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.24	Oil:		Gels 10m	14
ECD Shoe:		Sulphites:		MF:	3.3	Sand:	.2 %	Fann 003	8
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	31
								Fann 200	43
								Fann 300	51
								Fann 600	69

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2103.3bbl**	**Losses**	**59.0bbl**
Active	676.0bbl	Downhole	
Mixing		Surf+ Equip	23.0bbl
Hole	860.3bbl	Dumped	
Slug	11.0bbl	De-Gasser	
Reserve	556.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	30.0bbl
		Evaporation	6.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	0.00	GR decr, appearance of SANDSTONE.

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3234.00	3258.00	Min:1 Avg:14 Max:39	ARGILLACEOUS SANDSTONE and SANDSTONE interbedded with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE ARGILLACEOUS SANDSTONE (0-80%): white, yellowish grey, light olive grey, soft to firm, 25% clay, 50% very fine, 30% fine, 20% medium grains, sub-angular to sub-rounded, moderately to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace coal, trace mica, poor to fair visual porosity, no hydrocarbon fluorescence. SANDSTONE (0-65%): white, yellowish grey, light olive grey, firm, 10% clay, 20% very fine, 20% fine, 50% medium, 5% coarse, 5% very coarse grains, angular to sub-rounded, very poorly to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, fair visual porosity, no hydrocarbon fluorescence. ARGILLACEOUS SILTSTONE (15-75%): olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 30% clay, trace mica, trace pyrite, trace coal. SILTY CLAYSTONE (0-40%): olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% silt, trace coal, trace mica, trace pyrite.
Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3258.00	3283.00	Min:5 Avg:14 Max:54	SILTY CLAYSTONE and CLAYSTONE with interbeds of ARGILLACEOUS SILTSTONE ARGILLACEOUS SILTSTONE (20-35%): olive grey, brownish grey, light olive grey, soft to firm, amorphous to blocky, 20-30% clay, trace mica, trace pyrite, trace coal. SILTY CLAYSTONE (0-80%): olive grey to olive black, light olive grey, soft to very soft, amorphous to sub-blocky, 20% silt, trace coal, trace mica, trace pyrite. CLAYSTONE (0-100%): olive grey to olive black, brownish grey, soft to very soft, amorphous to sub-blocky, 15% silt, trace coal, trace mica, trace pyrite.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3234.00 - 3258.00	Drilled	0.709	0.3180	0.0488	0.0320	0.0058	0.0092	0.0064	1.100
3235.50 -	Peak	2.264	1.1079	0.1818	0.1190	0.0195	0.0304	0.0167	1.060
3253.00 -	Peak	0.724	0.3702	0.0422	0.0235	0.0045	0.0069	0.0054	1.250
3258.00 - 3283.00	Drilled	0.526	0.2162	0.0353	0.0229	0.0050	0.0069	0.0030	1.127

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
3234.73	35.91	179.25	3056.91	-594.83	0.4	-588.4	-15.9	Sperry TCDC Tool
3264.81	35.73	178.72	3081.30	-612.43	0.4	-606.0	-15.6	Sperry TCDC Tool

06:00 Hrs Update

Time:	06:00 Hrs on 31 Jan 2010
Depth:	3283mMDRT / 3096.7mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Coring
Formation:	Eastern View Coal Measures
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Mathews

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Rockhopper-1/ST1

Date : 31 Jan 2010 | **Geology Report Number : 13** | (associated DDR # 13)

Well Details

Depth MDBRT:	3298.5m	Rig:	Kan Tan IV	Date:	31 Jan 2010
Depth TVDBRT:	3109.3m	Progress:	15.5m	Report Start:	00:00
Depth TVDSS:	3083.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	12.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	62.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	RIH and cored from 3283mMDRT / 3096.7mTVDRT to 3298.5mMDRT / 3109.4mTVDRT. 15.5m of core cut. Core head jammed. POOH and laid out core.
Forward Plan:	RIH with core run #3. Cut core. POOH and lay out recovered core.

General Comments

00:00 TO 24:00 Hrs ON 31 Jan 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38500mg/l	Low Gravity Solids:		Viscosity	58sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:		PV	18cp
Time:	1920	Glycol CP Temp:		MBT:	10	Solids (corrected):		YP	34lb/100ft²
Weight:	9.35ppg	Glycol:		PM:	0.45	H2O:	94%	Gels 10s	9
ECD TD:		Nitrates:		PF:	0.25	Oil:		Gels 10m	13
ECD Shoe:		Sulphites:		MF:	3.1	Sand:	.2 %	Fann 003	8
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	33
								Fann 200	42
								Fann 300	52
								Fann 600	70

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2116.3bbl**	**Losses**	**31.7bbl**
Active	641.0bbl	Downhole	
Mixing		Surf+ Equip	24.0bbl
Hole	904.3bbl	Dumped	
Slug	21.0bbl	De-Gasser	
Reserve	550.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	5.0bbl
		Evaporation	2.7bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	0.00	Gamma decr, appearance of SANDSTONE.

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Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3283.00	3290.00	Min:2 Avg:8 Max:24	Interbedded ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE with minor SANDSTONE ARGILLACEOUS SILTSTONE (30-70%): olive grey, brownish grey, soft to firm, amorphous to blocky, 20% clay, trace mica, trace pyrite, trace carbonaceous specks. SILTY CLAYSTONE (30-69%): olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% silt, trace carbonaceous specks, trace micromica, trace pyrite. SANDSTONE (0-5%): white, yellowish grey, light olive grey, firm to friable aggregates, 15% clay, 30% very fine, 50% fine, 20% medium grains, angular to sub-rounded, poorly to moderately sorted, sub-elongate to sub-spherical, trace quartz overgrowths, poor visual porosity, no hydrocarbon fluorescence, weak mineral fluorescence only.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3283.00 - 3290.00	Drilled	0.399	0.1857	0.0255	0.0154	0.0033	0.0043	0.0020	0.738

06:00 Hrs Update

Time:	06:00 Hrs on 01 Feb 2010
Depth:	3298.5mMDRT / 3109.4mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	RIH with core run #3
Formation:	Eastern View Coal Measures
Lithology:	No returns to surface (including from 3290mMDRT / 3102.5mTVDRT to 3298.5mMDRT / 3109.4mTVDRT due to coring)
ROP:	No returns to surface (including from 3290mMDRT / 3102.5mTVDRT to 3298.5mMDRT / 3109.4mTVDRT due to coring)
Gas:	No returns to surface (including from 3290mMDRT / 3102.5mTVDRT to 3298.5mMDRT / 3109.4mTVDRT due to coring)

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Mathews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 01 Feb 2010 | **Geology Report Number : 14** | (associated DDR # 14)

Well Details

Depth MDBRT:	3309.0m	Rig:	Kan Tan IV	Date:	01 Feb 2010
Depth TVDBRT:	3117.8m	Progress:	10.5m	Report Start:	00:00
Depth TVDSS:	3091.8m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	13.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	63.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	RIH and cored from 3298.5mMDRT / 3109.4mTVDRT to 3309mMDRT / 3117.8mTVDRT. 10.5m of core cut. Core head jammed. POOH from shoe to 374.0mMDRT at controlled rate.
Forward Plan:	POOH and lay out core. Make up Geopilot BHA and drill 216mm (8 1/2") hole directionally to final well TD.

General Comments

00:00 TO 24:00 Hrs ON 01 Feb 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 3 MWD engineers, 2 DD's on board.
Operational Comments	LWD Tools: Distance to Bit from 3309.0 mMDRT Vibration (DDSr-DGR): 0.00 m Gamma (ABG): 1.45 m Directional (PCD): 8.69 m Gamma (DGR): 11.36 m Resistivity (EWR-P4): 13.68 m Density (ALD): 21.29 m Porosity (CTN): 25.10 m Pressure while drilling (PWD): 28.04 m Sonic (BAT): 32.33 m Caliper (ACAL): 39.13 m

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:	
Time:	2000	Glycol CP Temp:		MBT:	10	Solids (corrected):	
Weight:	9.40ppg	Glycol:		PM:	0.85	H2O:	94%
ECD TD:		Nitrates:		PF:	0.2	Oil:	
ECD Shoe:		Sulphites:		MF:	3.4	Sand:	.2 %
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	68sec/qt
PV	19cp
YP	35lb/100ft²
Gels 10s	10
Gels 10m	14
Fann 003	9
Fann 006	11
Fann 100	34
Fann 200	45
Fann 300	54
Fann 600	73

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2074.9bbl**	**Losses**	**48.5bbl**
Active	649.0bbl	Downhole	
Mixing		Surf+ Equip	28.5bbl
Hole	906.9bbl	Dumped	
Slug	27.0bbl	De-Gasser	
Reserve	492.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	17.0bbl
		Evaporation	3.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

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Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	0.00	GR decr, appearance of SANDSTONE.

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3298.50	3300.00	Min:19 Avg:9 Max:26	Interbedded ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE with minor SANDSTONE ARGILLACEOUS SILTSTONE (30-70%): olive grey, brownish grey, soft to firm, amorphous to blocky, 20% clay, trace mica, trace pyrite, trace carbonaceous specks. SILTY CLAYSTONE (30-69%): olive grey to olive black, soft to very soft, amorphous to sub-blocky, 20% silt, trace carbonaceous specks, trace micromica, trace pyrite. SANDSTONE (0-1%): white, yellowish grey, light olive grey, firm to friable aggregates, 30% very fine, 50% fine, 19% medium, 1% coarse grains, angular to sub-rounded, sub-elongate to sub-spherical grains, very poorly sorted, 30% quartz overgrowths and white argillaceous non-calcareous matrix, poor visual porosity, no cut fluorescence, dull yellow mineral fluorescence.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3298.50 - 3300.00	Drilled	0.611	0.3766	0.0299	0.0165	0.0039	0.0096	0.0023	1.430

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Core Run					
Core Number	2	Start Depth (MD)	3283.0 (m)	Amount Recovered	14.1
Formation	Eastern View Coal Measures	End Depth (MD)	3298.5 (m)	Sleeve Type	Aluminium
Contractor	CORPRO	Core Diameter	102.0 (mm)	Encapsulation Type	Nil
Equipment	5 x 6m barrels	Barrel Length	30.0 (m)		
Shipping		Comments			

Core Detail	
Core Chip Depth (m)	Description
3283.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3284.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3284.20	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3285.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3286.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, trace micromica, trace pyrite.
3287.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black micromica flakes on fractured surfaces, trace pyrite.
3288.00	SANDSTONE: medium grey to dark olive grey, firm to moderately hard, occasionally friable, 20% very fine, 20% fine, 40% medium, 10% coarse, 10% very coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, abundant dark brown/black/silvery grey mica specks (muscovite and biotite), poor inferred porosity, no cut fluorescence, dull yellow mineral fluorescence, no hydrocarbon odour.
3289.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black and silvery grey mica flakes on fractured surfaces, trace pyrite.
3290.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 30% silt, non-calcareous, trace carbonaceous specks, common black and silvery grey mica flakes on fractured surfaces, trace pyrite, grading to micaceous siltstone in part.
3290.30	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 30% silt, non-calcareous, trace carbonaceous specks, common black mica flakes on fractured surfaces, trace pyrite, very silty in part grading to micaceous siltstone.
3291.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black mica flakes on fractured surfaces, trace pyrite.
3292.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black mica flakes on fractured surfaces, trace pyrite.
3293.00	SILTY CLAYSTONE: medium dark grey to dark grey, very firm to hard, blocky to sub-fissile, 20% silt, non-calcareous, trace carbonaceous specks, common black mica flakes on fractured surfaces, trace pyrite.
3294.00	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 20% very fine, 40% fine, 30% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, common pinpoint bright yellow mineral fluorescence from quartz/clay matrix, no hydrocarbon odour.
3295.00	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 20% very fine, 40% fine, 30% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, dull yellow mineral fluorescence, no hydrocarbon odour.
3296.00	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 20% very fine, 20% fine, 40% medium, 20% coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, dull yellow mineral fluorescence, no hydrocarbon odour.
3296.61	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 10% very fine, 20% fine, 40% medium, 20% coarse, 10% very coarse grains, very poorly sorted, sub-angular to sub-rounded, spherical to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, no mineral fluorescence, no hydrocarbon odour.
3297.08	SANDSTONE: white to light yellowish grey, light olive brown in parts, firm to friable, 20% very fine, 40% fine, 30% medium, 10% coarse grains, very poorly sorted, sub-angular to sub-rounded, sub-elongate to sub-spherical grains, 30% white non-calcareous argillaceous matrix and quartz overgrowths, trace carbonaceous specks, trace pyrite, trace silvery-brown to black mica flakes, poor inferred porosity, no cut fluorescence, no mineral fluorescence, no hydrocarbon odour.

Core Run					
Core Number	3	Start Depth (MD)	3298.5 (m)	Amount Recovered	9.5
Formation	Eastern View Coal	End Depth (MD)	3309.0 (m)	Sleeve Type	Aluminium

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Core Run					
	Measures				
Contractor	CORPRO	Core Diameter	102.0 (mm)	Encapsulation Type	Nil
Equipment	5 x 6m barrels	Barrel Length	30.0 (m)		
Shipping		Comments			

Core Detail	
Core Chip Depth (m)	Description

06:00 Hrs Update	
Time:	06:00 Hrs on 02 Feb 2010
Depth:	3309mMDRT / 3117.8mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	RIH with 8½" Geopilot drilling assembly.
Formation:	Eastern View Coal Measures
Lithology:	No returns to surface (including from 3300mMDRT / 3110.6mTVDRT to 3309mMDRT / 3117.8mTVDRT due to coring)
ROP:	No returns to surface (including from 3300mMDRT / 3110.6mTVDRT to 3309mMDRT / 3117.8mTVDRT due to coring)
Gas:	No returns to surface (including from 3300mMDRT / 3110.6mTVDRT to 3309mMDRT / 3117.8mTVDRT due to coring)

Wellsite Geologist(s)	
(Days) - Rob Blackmore	(Nights) - Cleve Matthews

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Rockhopper-1/ST1

Date : 02 Feb 2010 | **Geology Report Number : 15** | (associated DDR # 15)

Well Details

Depth MDBRT:	3357.0m	Rig:	Kan Tan IV	Date:	02 Feb 2010
Depth TVDBRT:	3156.8m	Progress:	48.0m	Report Start:	00:00
Depth TVDSS:	3130.8m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	14.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	64.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	POOH with core #3 and laid out core. Made up 216mm (8 1/2") Geopilot BHA and shallow tested LWD tools. RIH and logged well from 3260mMDRT / 3078.1mTVDRT to 3309mMDRT / 3117.8mTVDRT. Drilled ahead 216mm (8 1/2") hole to 3357mMDRT / 3156.8mTVDRT.
Forward Plan:	Drill 216mm (8 1/2") hole directionally to final well TD.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:	
Time:	1940	Glycol CP Temp:		MBT:	10	Solids (corrected):	
Weight:	9.45ppg	Glycol:		PM:	0.7	H2O:	94%
ECD TD:		Nitrates:		PF:	0.23	Oil:	
ECD Shoe:		Sulphites:		MF:	3.1	Sand:	.2 %
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	68sec/qt
PV	15cp
YP	30lb/100ft²
Gels 10s	11
Gels 10m	13
Fann 003	9
Fann 006	11
Fann 100	29
Fann 200	38
Fann 300	45
Fann 600	60

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2461.8bbl**	**Losses**	**8.0bbl**
Active	639.0bbl	Downhole	
Mixing	250.0bbl	Surf+ Equip	4.0bbl
Hole	817.8bbl	Dumped	
Slug	35.0bbl	De-Gasser	
Reserve	720.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	3.0bbl
		Evaporation	1.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	0.00	GR decr, appearance of SANDSTONE.

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3309.00 - 3357.00		Min:4 Avg:14 Max:189	SANDSTONE interbedded with SILTY CLAYSTONE and ARGILLACEOUS SILTSTONE SANDSTONE (0-90%): white, yellowish grey, loose to friable, 5% white clay matrix, 0-35% very fine, 10-60% fine, 10-55% medium, 5-50% coarse, 0-20% very coarse grains, angular to rounded, very poorly to poorly sorted, sub-elongate to sub-spherical, trace quartz cement, trace very fine quartz grains, poor to fair visual porosity, no hydrocarbon fluorescence.

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Lithology Summary

		SILTY CLAYSTONE (0-90%): olive black to to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% silt, trace mica, trace pyrite. ARGILLACEOUS SILTSTONE (0-70%): olive black to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% clay, trace mica, trace pyrite.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3309.00 -	Trip	0.926	0.5721	0.0428	0.0246	0.0051	0.0060	0.0025	5.830
3309.00 - 3357.00	Drilled	0.520	0.2550	0.0309	0.0133	0.0025	0.0033	0.0034	2.870
3341.00 -	Peak	0.837	0.4407	0.0604	0.0267	0.0045	0.0066	0.0051	2.810
3354.00 -	Peak	1.484	0.8336	0.1103	0.0505	0.0082	0.0121	0.0073	2.750

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
3293.65	35.03	178.07	3104.81	-629.12	0.8	-622.7	-15.2	Sperry TCDC Tool
3324.89	36.06	178.66	3130.23	-647.27	1.0	-640.9	-14.6	Sperry TCDC Tool

06:00 Hrs Update

Time:	06:00 Hrs on 03 Feb 2010
Depth:	3381mMDRT / 3176.9mTVDRT
Progress Since Midnight (m):	24
Status @ 0600hrs:	Drilling 8½" hole
Formation:	Eastern View Coal Measures
Lithology:	SANDSTONE interbedded with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE
ROP:	Ave 128.21 m/hr (27.56-402.22 m/hr)
Gas:	Ave background 0.5797%, C1 0.2699%, C2 0.0379%, C3 0.0195%, iC4 0.0038%, nC4 0.0059%, C5 0.0040%, CO2 2.2400%

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Matthews

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Rockhopper-1/ST1

Date : 03 Feb 2010 | **Geology Report Number : 16** | (associated DDR # 16)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	03 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	125.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	15.29
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	0.00
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Drilled 216mm (8 1/2") hole from 3357mMDRT / 3156.8mTVDRT to 3482mMDRT / 3258.3mTVDRT. Circulated BU and Performed wiper trip. Circulated well clean and POOH to 1965mMDRT / 1965mTVDRT.
Forward Plan:	Log well with SP-HRLA-PEX-HNGS-CMR-LEHQT toolstring.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:		Viscosity	59sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	200mg/l	High Gravity Solids:		PV	20cp
Time:	1930	Glycol CP Temp:		MBT:	10	Solids (corrected):		YP	35lb/100ft²
Weight:	9.30ppg	Glycol:		PM:	0.6	H2O:	93%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.21	Oil:		Gels 10m	14
ECD Shoe:		Sulphites:		MF:	3.4	Sand:	.25 %	Fann 003	8
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	43
								Fann 200	46
								Fann 300	55
								Fann 600	6075

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

				Equip.	Descr.	Mesh Size	Hours
Available	**2299.7bbl**	**Losses**	**72.8bbl**				
Active	597.0bbl	Downhole					
Mixing		Surf+ Equip	35.0bbl				
Hole	883.7bbl	Dumped					
Slug	31.0bbl	De-Gasser					
Reserve	788.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge	28.0bbl				
		Evaporation	9.8bbl				

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	Gamma decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

Lithology Summary

Interval MDBRT (m) From	To	ROP (m/hr)	Lithology
3357.00 - 3399.00		Min:5	SANDSTONE interbedded with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE

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Lithology Summary

	Avg:17 Max:35	SANDSTONE (5-80%): white, yellowish grey, loose to friable, 5% white clay matrix, 30-40% very fine, 50-60% fine, 0-20% medium grains, sub-angular to rounded, sub-spherical, poorly to moderately sorted, trace quartz cement, poor visual porosity, no cut fluorescence, bright pin-point white mineral fluorescence in parts. ARGILLACEOUS SILTSTONE (15-90%): olive black to to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20-25% clay, trace mica, trace pyrite. SILTY CLAYSTONE (0-25%): olive black to light olive grey, soft to firm, blocky to sub-blocky, 20% silt, non-calcareous, trace mica, trace pyrite.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
3399.00 - 3432.00	Min:3 Avg:15 Max:42	SANDSTONE interbedded with ARGILLACEOUS SILTSTONE and SILTY CLAYSTONE SANDSTONE (5-95%): white, yellowish grey, firm to friable, 5% calcareous clay, 20% very fine, 20% fine, 60% medium grains, sub-angular to sub-rounded, sub-spherical to spherical, poorly to moderately sorted, trace mica and carbonaceous specks, poor visual porosity, no cut fluorescence, common pinpoint bright white mineral fluorescence from sandstone matrix. ARGILLACEOUS SILTSTONE (5-15%): olive black to to light olive grey, brownish grey in part, soft to firm, blocky to sub-blocky, 20% clay, trace very fine and fine grained quartz sand, trace mica, trace pyrite, trace lithic fragments, trace coal. SILTY CLAYSTONE (0-90%): olive black to light olive grey, very soft to firm, amorphous to blocky, non-calcareous, trace micromica and pyrite.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
3432.00 - 3482.00	Min:6 Avg:18 Max:25	VARIABLY WEATHERED / DEGRADED VOLCANICS interbedded with minor SANDSTONE VARIABLY WEATHERED / DEGRADED VOLCANICS (95-100%): white to light green, occasionally dark green to greenish black, firm to hard in parts, angular to blocky, occasional remnant basaltic texture visible (clay replacement), trace quartz fragments (infilling vesicles), common white calcareous matrix, common light brown kaolinitic clay, common chlorite, trace pyrite and red haematite, rare bright white mineral fluorescence, no cut fluorescence. SANDSTONE (0-5%): light green, dark greenish grey, friable to firm, 40% very fine. 40% fine, 20% medium grains, poorly sorted, sub-angular to angular, sub-elongate to sub-spherical, common chlorite, mildly calcareous in part, trace pyrite, no hydrocarbon fluorescence.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3357.00 - 3399.00	Drilled	0.830	0.4200	0.0547	0.0258	0.0049	0.0079	0.0032	2.210
3368.00 -	Peak	1.355	0.7327	0.0979	0.0481	0.0087	0.0136	0.0087	2.320
3399.00 - 3432.00	Drilled	0.646	0.2851	0.0372	0.0184	0.0039	0.0065	0.0029	1.640
3432.00 - 3482.00	Drilled	0.364	0.1273	0.0106	0.0062	0.0025	0.0038	0.0026	1.570

Survey

MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
3350.05	35.41	178.82	3150.65	-661.96	0.8	-655.6	-14.3	Sperry TCDC Tool
3379.25	35.71	179.95	3174.41	-678.94	0.7	-672.5	-14.1	Sperry TCDC Tool
3408.14	35.85	180.50	3197.85	-695.84	0.4	-689.4	-14.2	Sperry TCDC Tool
3439.04	36.10	180.75	3222.85	-713.99	0.3	-707.6	-14.4	Sperry TCDC Tool
3467.05	35.47	179.36	3245.58	-730.36	1.1	-724.0	-14.4	Sperry TCDC Tool

06:00 Hrs Update

Time:	06:00 Hrs on 04 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Rigging up Schlumberger Wireline
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)

(Days) - Rob Blackmore (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 04 Feb 2010 | **Geology Report Number : 17** | (associated DDR # 17)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	04 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	16.29
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	66.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	POOH and laid out Sperry tools. Rigged up Schlumberger wireline and RIH with run #1 toolstring (SP-HRLA-PEX-HNGS-CMR) and logged well.
Forward Plan:	Continue to wireline log well.

General Comments

00:00 TO 24:00 Hrs ON 04 Feb 2010

Operational Comments	Geoservices: 2 data engineers, 2 mudloggers, 2 sample catchers on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 3 MWD engineers, 1 DD on board. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	120mg/l	High Gravity Solids:	
Time:	2200	Glycol CP Temp:		MBT:	5	Solids (corrected):	
Weight:	9.30ppg	Glycol:		PM:	0.6	H2O:	93%
ECD TD:		Nitrates:		PF:	0.18	Oil:	
ECD Shoe:		Sulphites:		MF:	3.3	Sand:	.2 %
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	63sec/qt
PV	18cp
YP	34lb/100ft²
Gels 10s	10
Gels 10m	14
Fann 003	8
Fann 006	10
Fann 100	31
Fann 200	43
Fann 300	52
Fann 600	70

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2423.7bbl**	**Losses**	**24.5bbl**
Active	604.0bbl	Downhole	
Mixing		Surf+ Equip	15.0bbl
Hole	946.7bbl	Dumped	
Slug	25.0bbl	De-Gasser	
Reserve	848.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	9.5bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.

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Formation Tops							
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update	
Time:	06:00 Hrs on 05 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Schlumberger in hole with log run #2
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 05 Feb 2010 | **Geology Report Number : 18** | (associated DDR # 18)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	05 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	17.29
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	67.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Completed logging run #1 and POOH. Laid out Schlumberger wireline run #1 toolstring (SP-HRLA-PEX-HNGS-CMR). Rigged up wireline run #2 toolstring (XPT-GR-ECRD-LEHQT) and logged well.
Forward Plan:	Rig up Schlumberger wireline logging toolstring #3 and continue to log well.

General Comments

00:00 TO 24:00 Hrs ON 05 Feb 2010

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger, 1 sample catcher on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 1 MWD engineer. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:		Viscosity	66sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	120mg/l	High Gravity Solids:		PV	19cp
Time:	2230	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	32lb/100ft²
Weight:	9.30ppg	Glycol:		PM:	0.4	H2O:	94%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.2	Oil:		Gels 10m	14
ECD Shoe:		Sulphites:		MF:	3	Sand:	.25 %	Fann 003	8
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	33
								Fann 200	42
								Fann 300	52
								Fann 600	70

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

				Equip.	Descr.	Mesh Size	Hours
Available	**2398.7bbl**	**Losses**	**20.0bbl**				
Active	624.0bbl	Downhole					
Mixing		Surf+ Equip	19.0bbl				
Hole	946.7bbl	Dumped					
Slug	17.0bbl	De-Gasser					
Reserve	811.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge					
		Evaporation	1.0bbl				

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.

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Formation Tops							
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update	
Time:	06:00 Hrs on 06 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Lay Out SchlumbergerTools from Run # 2
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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Rockhopper-1/ST1

Date : 06 Feb 2010 | **Geology Report Number : 19** | (associated DDR # 19)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	06 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	18.29
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	68.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Completed wireline run #2 and rigged down XPT-GR-ECRD-LEHQT toolstring. Rigged up Schlumberger MDT(Quicksilver)-GR-ECRD-LEHQT toolstring for logging run #3 and continued to log well.
Forward Plan:	Continue MDT(Quicksilver)-GR-ECRD-LEHQT logging run #3.

General Comments

00:00 TO 24:00 Hrs ON 06 Feb 2010

Operational Comments	Geoservices: 2 data engineers, 1 mudlogger, 1 sample catcher on board. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: 1 MWD engineer. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:		Viscosity	72sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:		PV	16cp
Time:	2200	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	27lb/100ft²
Weight:	9.30ppg	Glycol:		PM:	1.5	H2O:	94%	Gels 10s	9
ECD TD:		Nitrates:		PF:	0.45	Oil:		Gels 10m	13
ECD Shoe:		Sulphites:		MF:	3	Sand:	.25 %	Fann 003	8
ECD Cuttings:		API FL:	4.3cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	30
								Fann 200	38
								Fann 300	43
								Fann 600	59

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2354.7bbl**	**Losses**	**35.5bbl**
Active	704.0bbl	Downhole	
Mixing		Surf+ Equip	30.0bbl
Hole	946.7bbl	Dumped	
Slug	7.0bbl	De-Gasser	
Reserve	697.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	5.5bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.

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Formation Tops							
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update	
Time:	06:00 Hrs on 07 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Continue with Schlumberger wireline run #3 MDT tests.
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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Rockhopper-1/ST1

Date : 07 Feb 2010 | **Geology Report Number : 20** | (associated DDR # 20)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	07 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	19.29
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	69.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Continued MDT(Quicksilver)-GR-ECRD-LEHQT logging run #3.
Forward Plan:	Complete MDT(Quicksilver)-GR-ECRD-LEHQT logging run #3 and rig down toolstring. Rig up FMI-DSI-GR-ECRD-LEHQT toolstring for logging run #4 and continue to log well.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38500mg/l	Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:	
Time:	1400	Glycol CP Temp:		MBT:	5	Solids (corrected):	
Weight:	9.30ppg	Glycol:		PM:	0.7	H2O:	94%
ECD TD:		Nitrates:		PF:	0.2	Oil:	
ECD Shoe:		Sulphites:		MF:	2.9	Sand:	.25 %
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9.5	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	74sec/qt
PV	16cp
YP	25lb/100ft²
Gels 10s	9
Gels 10m	13
Fann 003	8
Fann 006	9
Fann 100	27
Fann 200	36
Fann 300	4341
Fann 600	57

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2177.7bbl**	**Losses**	**175.5bbl**
Active	704.0bbl	Downhole	
Mixing		Surf+ Equip	170.0bbl
Hole	946.7bbl	Dumped	
Slug	7.0bbl	De-Gasser	
Reserve	520.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	5.5bbl

Equip.	Descr.	Mesh Size	Hours

Comment The 175 bbl used was Sea Water from pit 1. All Volume f/ pit was transferred prior to filling w/ sea water, agitating and disposing.

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update

Time:	06:00 Hrs on 08 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0

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06:00 Hrs Update	
Status @ 0600hrs:	Continue with Schlumberger wireline run #3 MDT tests.
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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origin

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Rockhopper-1/ST1

Date : 08 Feb 2010 | **Geology Report Number : 21** | (associated DDR # 21)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	08 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	20.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	70.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Completed MDT(Quicksilver)-GR-ECRD-LEHQT logging run #3. POOH and rigged down wireline toolstring #3. Rigged up FMI-DSI-GR-ECRD-LEHQT toolstring #4. RIH and completed logging run #4. POOH and began rigging down FMI-DSI-GR-ECRD-LEHQT toolstring #4.
Forward Plan:	Complete rigging down wireline toolstring #4 and begin run #5 (VSI-GR-LEHQT).

General Comments

00:00 TO 24:00 Hrs ON 08 Feb 2010

Operational Comments	Geoservices: 2 data engineers. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: No personnel onboard. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:		Viscosity	77sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:		PV	15cp
Time:	2200	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	29lb/100ft²
Weight:	9.30ppg	Glycol:		PM:	1	H2O:	94%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.2	Oil:		Gels 10m	14
ECD Shoe:		Sulphites:		MF:	2.9	Sand:	.2 %	Fann 003	8
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	29
								Fann 200	37
								Fann 300	44
								Fann 600	59

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2177.7bbl**	**Losses**	**0.3bbl**
Active	704.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	946.7bbl	Dumped	
Slug	7.0bbl	De-Gasser	
Reserve	520.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	0.3bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.

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Formation Tops							
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update	
Time:	06:00 Hrs on 09 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Continue with Run #5 VSI-GR-LEHQT
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 09 Feb 2010 | **Geology Report Number : 22** | (associated DDR # 22)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	09 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	21.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	71.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Completed run #5 (VSI-GR-LEHQT). POOH and rigged down wireline toolstring #5. Rigged up MSCT-GR-LEHQT toolstring #6. RIH and completed cutting 27/33 cores. Tool became stuck at 3137mMDRT / 2977.5mTVDRT. Attempted to work tool loose, no success.
Forward Plan:	POOH with wireline and commence fishing operations.

General Comments

00:00 TO 24:00 Hrs ON 09 Feb 2010

Operational Comments	Geoservices: 2 data engineers. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: No personnel onboard. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:	
Time:	2100	Glycol CP Temp:		MBT:	5	Solids (corrected):	
Weight:	9.30ppg	Glycol:		PM:	0.4	H2O:	94%
ECD TD:		Nitrates:		PF:	0.1	Oil:	
ECD Shoe:		Sulphites:		MF:	3	Sand:	.2 %
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9.5	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	78sec/qt
PV	15cp
YP	25lb/100ft²
Gels 10s	10
Gels 10m	14
Fann 003	8
Fann 006	10
Fann 100	27
Fann 200	34
Fann 300	40
Fann 600	55

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2173.7bbl**	**Losses**	**7.4bbl**
Active	649.0bbl	Downhole	
Mixing		Surf+ Equip	3.0bbl
Hole	946.7bbl	Dumped	
Slug	10.0bbl	De-Gasser	
Reserve	568.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	4.4bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.

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Formation Tops							
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update	
Time:	06:00 Hrs on 10 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Rig down Schlumberger wire line.
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 10 Feb 2010 | **Geology Report Number : 23** | (associated DDR # 23)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	10 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	22.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	72.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Pulled wireline free using the draw works. POOH with wireline and rigged up and RIH with fishing assembly. Engaged fish at 3124mMDRT / 2966.9mTVDRT. POOH with fishing assembly.
Forward Plan:	Continue picking up BHA for wiper trip. RIH and Test BOPs. Continue to RIH and perform Wiper trip.

General Comments

00:00 TO 24:00 Hrs ON 10 Feb 2010

Operational Comments	Geoservices: 2 data engineers. Reserval and back up gas equipment calibrated 26 Jan 10. Sperry: No personnel onboard. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:		Viscosity	77sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	160mg/l	High Gravity Solids:		PV	15cp
Time:	2200	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	29lb/100ft²
Weight:	9.30ppg	Glycol:		PM:	1	H2O:	94%	Gels 10s	10
ECD TD:		Nitrates:		PF:	0.2	Oil:		Gels 10m	14
ECD Shoe:		Sulphites:		MF:	2.9	Sand:	.2 %	Fann 003	8
ECD Cuttings:		API FL:	4.4cc/30min	pH:	9.5	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	29
								Fann 200	37
								Fann 300	44
								Fann 600	59

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2177.7bbl**	**Losses**	**0.3bbl**
Active	704.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	946.7bbl	Dumped	
Slug	7.0bbl	De-Gasser	
Reserve	520.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	0.3bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.
TD (Rockhopper 1	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

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Formation Tops							
ST1)							

06:00 Hrs Update	
Time:	06:00 Hrs on 11 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Picking Up BHA for wiper trip.
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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Rockhopper-1/ST1

Date : 11 Feb 2010 | **Geology Report Number : 24** | (associated DDR # 24)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	11 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	23.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	73.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Made up 216mm (8 1/2") BHA, RIH and pressure tested BOP's. Continued to RIH for wiper trip to well TD (3482mMDRT / 3258.3mTVDRT).
Forward Plan:	POOH. Rig down 216mm (8 1/2") BHA and rig up and run Schlumberger dual packer (Wireline Run #7).

General Comments

00:00 TO 24:00 Hrs ON 11 Feb 2010

Operational Comments	Geoservices: 2 data engineers. Sperry: No personnel onboard. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard. Origin: 2 Wellsite Geologists, 1 Drilling Engineer onboard.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	39000mg/l	Low Gravity Solids:		Viscosity	65sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:		PV	16cp
Time:	2200	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	29lb/100ft²
Weight:	9.40ppg	Glycol:		PM:	0.25	H2O:	94%	Gels 10s	9
ECD TD:		Nitrates:		PF:	0.1	Oil:		Gels 10m	13
ECD Shoe:		Sulphites:		MF:	3.4	Sand:	.2 %	Fann 003	8
ECD Cuttings:		API FL:	4.4cc/30min	pH:	8.5	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	29
								Fann 200	38
								Fann 300	45
								Fann 600	61

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2094.0bbl**	**Losses**	**71.0bbl**
Active	598.0bbl	Downhole	
Mixing		Surf+ Equip	59.0bbl
Hole	761.0bbl	Dumped	
Slug	45.0bbl	De-Gasser	
Reserve	690.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	12.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.

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Formation Tops							
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update	
Time:	06:00 Hrs on 12 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	POOH Wiper trip.
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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Rockhopper-1/ST1

Date : 12 Feb 2010 | **Geology Report Number : 25** | (associated DDR # 25)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	12 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	24.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	74.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	POOH and rigged down 216mm (8 1/2") BHA. Rigged up and commenced Schlumberger MDT-Dual Packer-GR-ECRD-LEHQT wireline run #7.
Forward Plan:	Continue MDT-Dual Packer-GR-ECRD-LEHQT wireline run #7.

General Comments

00:00 TO 24:00 Hrs ON 12 Feb 2010

Operational Comments	Geoservices: 2 data engineers. Sperry: No personnel onboard. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard. Origin: 2 Wellsite Geologists.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	38000mg/l	Low Gravity Solids:		Viscosity	71sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	240mg/l	High Gravity Solids:		PV	17cp
Time:	2200	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	30lb/100ft²
Weight:	9.30ppg	Glycol:		PM:	0.25	H2O:	94%	Gels 10s	9
ECD TD:		Nitrates:		PF:	0.2	Oil:		Gels 10m	13
ECD Shoe:		Sulphites:		MF:	2.7	Sand:	.2 %	Fann 003	8
ECD Cuttings:		API FL:	4.5cc/30min	pH:	8.5	Barite:		Fann 006	10
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	27
								Fann 200	38
								Fann 300	47
								Fann 600	64

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2148.7bbl**	**Losses**	**8.1bbl**
Active	639.0bbl	Downhole	
Mixing		Surf+ Equip	5.1bbl
Hole	946.7bbl	Dumped	
Slug	7.0bbl	De-Gasser	
Reserve	556.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	3.0bbl

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.

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Printed on 12 Feb 2010

Formation Tops							
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update	
Time:	06:00 Hrs on 13 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Continuing with Wireline tool Run #7, Dual packer.
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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origin

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Rockhopper-1/ST1

Date : 13 Feb 2010 | **Geology Report Number : 26** | (associated DDR # 26)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	13 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	25.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	75.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Continued with MDT-Dual Packer-GR-ECRD-LEHQT wireline run #7.
Forward Plan:	Continue MDT-Dual Packer-GR-ECRD-LEHQT wireline run #7.

General Comments

00:00 TO 24:00 Hrs ON 13 Feb 2010

Operational Comments	Geoservices: 2 data engineers. Sperry: No personnel onboard. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard. Origin: 2 Wellsite Geologists.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	37500mg/l	Low Gravity Solids:		Viscosity	71sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:		PV	18cp
Time:	2100	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	27lb/100ft²
Weight:	9.30ppg	Glycol:		PM:	1.2	H2O:	94%	Gels 10s	7
ECD TD:		Nitrates:		PF:	0.16	Oil:		Gels 10m	11
ECD Shoe:		Sulphites:		MF:	2.8	Sand:	.2 %	Fann 003	8
ECD Cuttings:		API FL:	4.5cc/30min	pH:	8.5	Barite:		Fann 006	9
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	26
								Fann 200	36
								Fann 300	45
								Fann 600	63

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2148.7bbl**	**Losses**	**0.0bbl**
Active	639.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	946.7bbl	Dumped	
Slug	7.0bbl	De-Gasser	
Reserve	556.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.
TD (Rockhopper 1	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

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Printed on 13 Feb 2010

Formation Tops							
ST1)							

06:00 Hrs Update	
Time:	06:00 Hrs on 14 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Continuing with wireline run #7 - Dual packer at station point No 9 @ 3140 m MDRT
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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origin

Australian Drilling Associates Pty Ltd ADA

Rockhopper-1/ST1

Date : 14 Feb 2010 | **Geology Report Number : 27** | (associated DDR # 27)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	14 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	26.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	76.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	Completed MDT-Dual Packer-GR-ECRD-LEHQT wireline run #7.
Forward Plan:	POOH with MDT-Dual Packer-GR-ECRD-LEHQT toolstring and rig down. Prepare for demobilisation from the Kan Tan IV.

General Comments

00:00 TO 24:00 Hrs ON 14 Feb 2010

Operational Comments	Geoservices: 2 data engineers. Sperry: No personnel onboard. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard. Origin: 2 Wellsite Geologists.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	37500mg/l	Low Gravity Solids:		Viscosity	73sec/qt
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:		PV	17cp
Time:	2130	Glycol CP Temp:		MBT:	5	Solids (corrected):		YP	29lb/100ft²
Weight:	9.30ppg	Glycol:		PM:	1.5	H2O:	94%	Gels 10s	8
ECD TD:		Nitrates:		PF:	0.15	Oil:		Gels 10m	12
ECD Shoe:		Sulphites:		MF:	2.7	Sand:	.2 %	Fann 003	8
ECD Cuttings:		API FL:	4.5cc/30min	pH:	8.5	Barite:		Fann 006	9
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:				Fann 100	27
								Fann 200	37
								Fann 300	45
								Fann 600	63

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**2196.7bbl**	**Losses**	**0.0bbl**
Active	639.0bbl	Downhole	
Mixing		Surf+ Equip	0.0bbl
Hole	946.7bbl	Dumped	
Slug	55.0bbl	De-Gasser	
Reserve	556.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.

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Formation Tops							
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update	
Time:	06:00 Hrs on 15 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	Slipping and cutting drilling line.
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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Rockhopper-1/ST1

Date : 15 Feb 2010 | **Geology Report Number : 28** | (associated DDR # 28)

Well Details

Depth MDBRT:	3482.0m	Rig:	Kan Tan IV	Date:	15 Feb 2010
Depth TVDBRT:	3258.3m	Progress:	0.0m	Report Start:	00:00
Depth TVDSS:	3232.3m	RTE agl:		Report End:	24:00
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	27.27
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	77.02
Water Depth (MSL)	74.3m	Last Csg Shoe:	1965.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	/ 14.60ppg		

Operations Summary

24hr Summary:	
Forward Plan:	

General Comments

00:00 TO 24:00 Hrs ON 15 Feb 2010

Operational Comments	Geoservices: 2 data engineers. Sperry: No personnel onboard. Schlumberger: 3 Engineers, 2 Crew-Chiefs, 2 Operators, 1 MDT Specialist, 1 Mechanic onboard. Origin: 2 Wellsite Geologists.
Operational Comments	This is the final Daily Geological Report for Rockhopper-1/ST1.

WBM Data

Mud Type:	KCL/Polymer/PHPA	Flowline Temp:		Cl:	37500mg/l	Low Gravity Solids:	
Sample From:	pit 2	MWD Circ Temp:		Hard/Ca:	280mg/l	High Gravity Solids:	
Time:	2120	Glycol CP Temp:		MBT:	5	Solids (corrected):	
Weight:	9.30ppg	Glycol:		PM:	1.5	H2O:	94%
ECD TD:		Nitrates:		PF:	0.15	Oil:	
ECD Shoe:		Sulphites:		MF:	2.7	Sand:	.2 %
ECD Cuttings:		API FL:	4.5cc/30min	pH:	8.5	Barite:	
KCl Equiv:	7%	API Cake:	1/32nd"	PHPA Excess:			

Viscosity	70sec/qt
PV	17cp
YP	30lb/100ft²
Gels 10s	8
Gels 10m	11
Fann 003	7
Fann 006	9
Fann 100	27
Fann 200	38
Fann 300	47
Fann 600	64

Shakers, Volumes and Losses Data

Engineer : Kosta Georgiou

Available	**1977.1bbl**	**Losses**	**73.1bbl**
Active	622.1bbl	Downhole	
Mixing		Surf+ Equip	73.1bbl
Hole	771.0bbl	Dumped	
Slug	42.0bbl	De-Gasser	
Reserve	542.0bbl	De-Sander	
Kill		De-Silter	
		Centrifuge	
		Evaporation	

Equip.	Descr.	Mesh Size	Hours

Comment

Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Eastern View Coal Measures	2066.00	2040.00	2067.00	2041.00	-1.00	744.00	Res derc, appearence of SANDSTONE.
E1 Seismic Marker	2807.00	2674.00	2811.00	2684.37	-10.37	244.00	GR decr, appearance of SANDSTONE.
RL30	3151.00	2972.00	3163.50	2946.50	25.50	124.10	GR decr, appearance of SANDSTONE.
RL90	3279.00	3079.00	3287.60	3073.79	5.21	144.40	GR decr, appearance of SANDSTONE.
Top Cretaceous Volcanics	3377.00	3161.00	3432.00	3191.90	-30.90	50.00	GR decrease, appearence of VOLCANICS.

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Formation Tops							
TD (Rockhopper 1 ST1)	3437.00	3211.00	3482.00	3232.30	-21.30	0.00	50m rat hole into VOLCANICS.

06:00 Hrs Update	
Time:	06:00 Hrs on 16 Feb 2010
Depth:	3482mMDRT / 3258.3mTVDRT
Progress Since Midnight (m):	0
Status @ 0600hrs:	POOH sideways and laying down drill pipe.
Formation:	Cretaceous Volcanics
Lithology:	No returns to surface
ROP:	No returns to surface
Gas:	No returns to surface

Wellsite Geologist(s)
(Days) - Rob Blackmore (Nights) - Cleve Matthews

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APPENDIX 20: FIT/LOT SUMMARY SHEETS

FIT / LOT SUMMARY SHEET

Australian Drilling Associates Pty Ltd

RIG	Kan Tan 4
WELL	Rockhopper 1
DATE	9-Dec-09

Casing Size:	13.375 in
Shoe Depth:	961.00 m TVD
Hole Depth:	971.00 m TVD
Mud Weight:	9.00 ppg
Pump Rate:	0.4 BPM
Vol pumped:	3.25 BBL
Vol bled back:	2.5 BBL

Target LOT EMW	>10.5 ppg
Target Surf Press	>246 psi

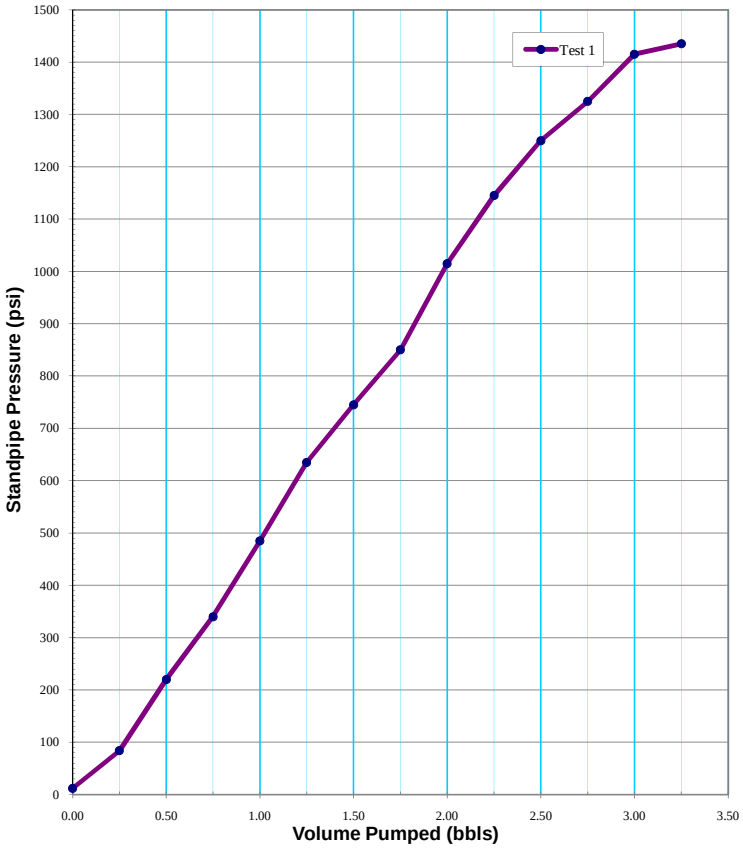
Actual Max Press	1400 psi
Actual EMW	**17.50 ppg**

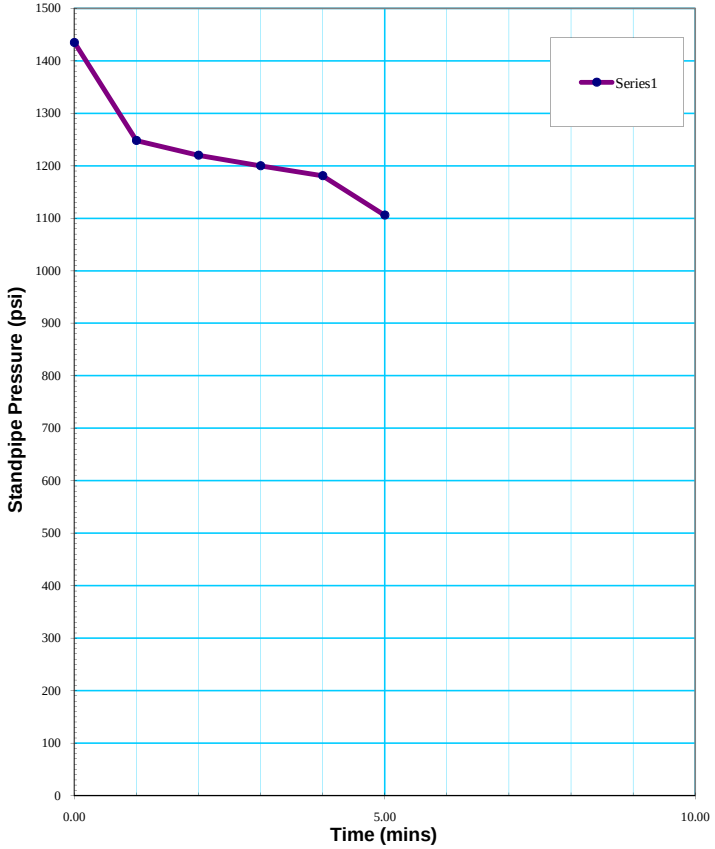
Build-up Data

Volume bbls	Pressure psi	Volume bbls	Pressure psi
Test 1		Test 2	
0.00	12		
0.25	84		
0.50	220		
0.75	340		
1.00	485		
1.25	635		
1.50	745		
1.75	850		
2.00	1015		
2.25	1145		
2.50	1250		
2.75	1325		
3.00	1415		
3.25	1435		

Shut-in Data

Time mins	Pressure psi	Time mins	Pressure psi
Test 1		Test 2	
0.00	1435		
1.00	1248		
2.00	1220		
3.00	1200		
4.00	1181		
5.00	1106		





NOTES

Test 1:

1. Performed FIT at 0.4 BPM, recording data every 0.25 BBL pumped.
2. After 3.0 BBL pumped the formation started taking fluid. Based on this the intersection between the tangetial lines of the Pressure Build-up 1,400 psi was taken as the break-over pressure point.
3. At **1,400 psi** an **EMW** of **17.5 pp**g is obtained.

FIT / LOT SUMMARY SHEET

Australian Drilling Associates Pty Ltd

RIG	Kan Tan 4
WELL	Rockhopper 1
DATE	19-Dec-09

Casing Size:	9.625 in
Shoe Depth:	1965.00 m TVD
Hole Depth:	1977.00 m TVD
Mud Weight:	9.50 ppg
Pump Rate:	0.25 BPM
Vol pumped:	3.15 BBL
Vol bled back:	3 BBL

Target LOT EMW	>12.6 ppg
Target Surf Press	>1039 psi

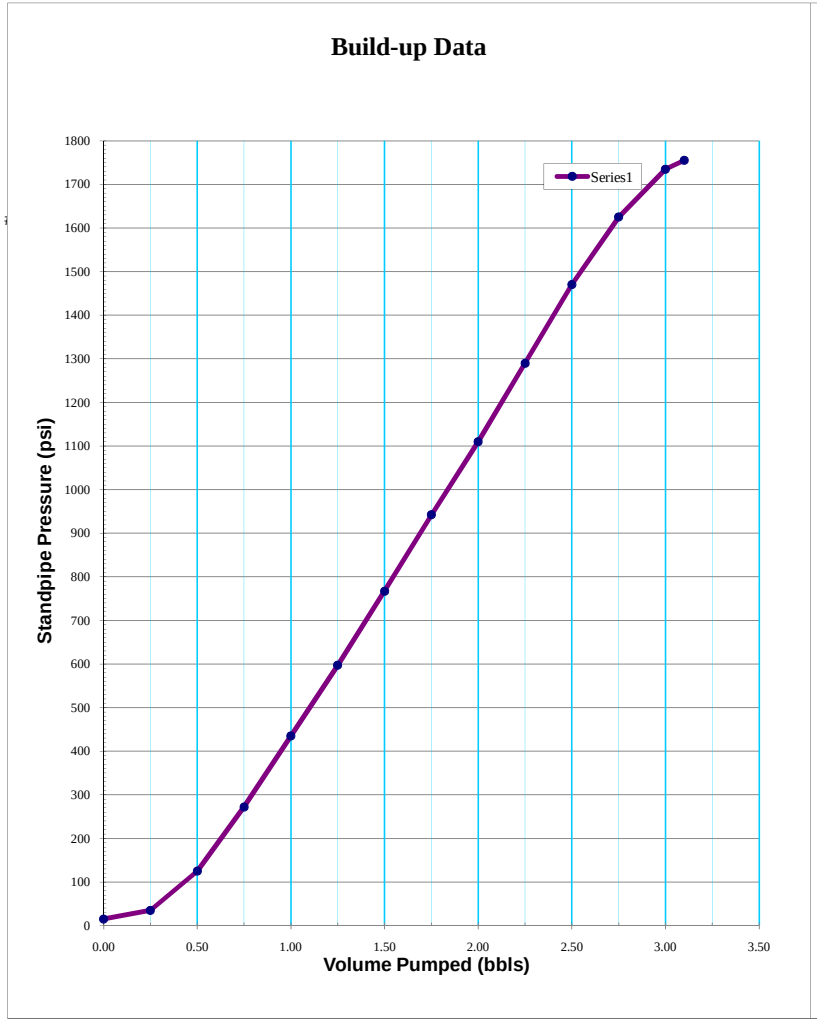
Actual Max Press	1710 psi
Actual EMW	**14.60 ppg**

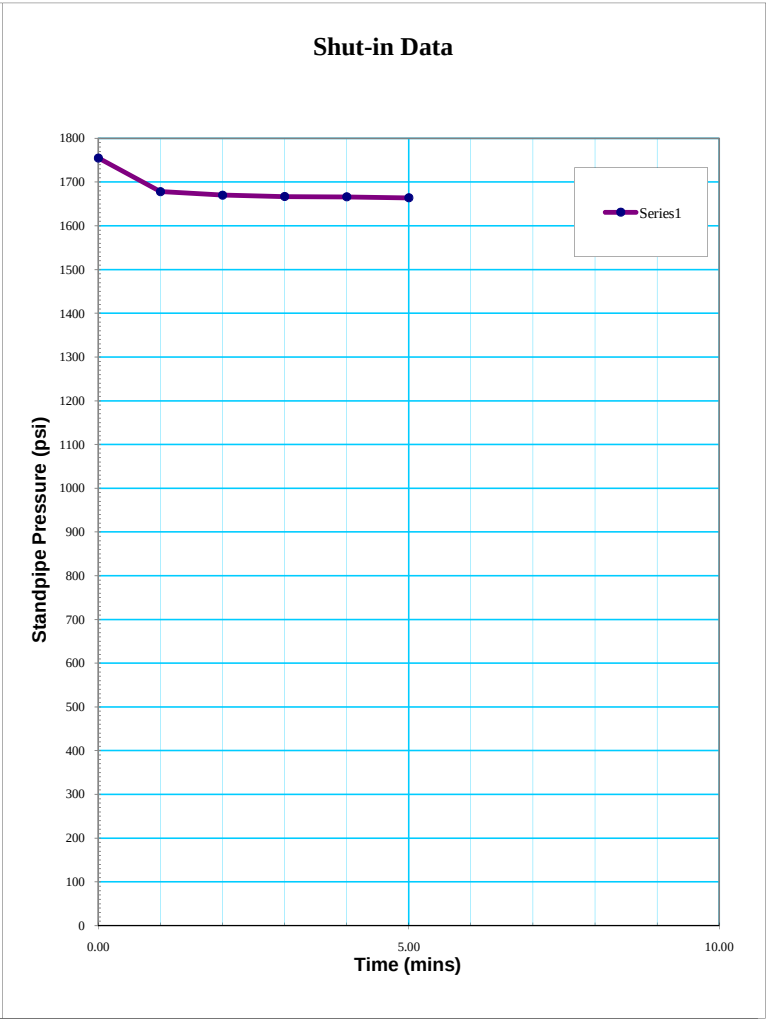
Build-up Data

Volume bbls	Pressure psi	Volume bbls	Pressure psi
Test 1		Test 2	
0.00	15		
0.25	35		
0.50	125		
0.75	272		
1.00	435		
1.25	597		
1.50	767		
1.75	942		
2.00	1110		
2.25	1290		
2.50	1470		
2.75	1625		
3.00	1735		
3.10	1755		

Shut-in Data

Time mins	Pressure psi	Time mins	Pressure psi
Test 1		Test 2	
0.00	1755		
1.00	1678		
2.00	1670		
3.00	1667		
4.00	1666		
5.00	1664		





NOTES

Test 1:

1. Performed FIT at ¼ BPM, recording data every 0.25 BBL pumped.
2. After 2.8 BBL pumped the formation started taking fluid. Based on this the intersection between the tangetial lines of the Pressure Build-up 1,710 psi was taken as the break-over pressure point.
3. At **1,710 psi** an **EMW** of **14.6 ppg** is obtained.

APPENDIX 21: MUD ENGINEERS REPORTS

HALLIBURTON

Fluid Systems

BAROID FLUID SERVICES RECAP

ADA/ORIGIN ENERGY RESOURCE LTD
ROCKHOPPER-1 & ROCKHOPPER-1 ST1
BASS STRAIT, TASMANIA

Prepared by: 'Jay' Tien Guan Wan, Mike Lawrance
James Munford, Kosta Georgiou

Date: 1st March 2010

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    - Operations Log Recap
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13. DAILY DRILLING FLUIDS REPORTS

1. WELL SUMMARY

1.1 Well Data

Well Name	:	**Rockhopper-1**	**/ Rockhopper-1 ST1**
Operator	:	Origin Energy Ltd	
Well Type	:	Deviated, Exploration	
Bottom Hole Temperature	:	92 °C (Dynamic)	/ 89 °C (Dynamic)
Maximum Inclination	:	43.5 deg	/ 36.74 deg
Location	:	T/18P, Bass Basin, Bass Strait, Tasmania	
Contractor/Rig	:	ADA / Kan Tan IV	
Start Date (Rig)	:	29th November 2009	/ 19th January 2010
Baroid On Location	:	29th November 2009	
Drill Out Date	:	30th November 2009	/ 19th January 2010
RT to Mudline	:	100.2 m	
Total Depth	:	3522 mMDRT, 3191 mTVD	/ 3482 mMDRT, 3232.20mTVD
Date TD Reached	:	27th December 2009	/ 3rd February 2010
Total Days Actual Drilling	:	21 days	/ 16 days
Date Released	:	19th February 2010	
Total Days on Well	:	41 days	/ 32 days
Drilling Cuttings Volume	:	2215.5 bbl / 352 m3 (combined RH-1 & RH-1 ST1)	

1.2 Formation Tops - ROCKHOPPER-1

Formation	PREDICTED TOP (mMDRT)	PREDICTED TOP (mTVDRT)	ACTUAL TOP (mMDRT)	ACTUAL TOP (mTVDRT)	HIGH/ LOW (mTVD)
Torquay Group	102.5	102.5	102.5	102.5	0
Upper Angahook	1168	1142	1099	1099	6m High
Angahook Volcanics Equivalent	1323	1297	1331	1305	8m Low
Lower Angahook	1564	1538	1569	1543	5m Low
Demons Bluff Fm.	1839	1813	1850	1824	11m Low
Eastern View Coal Measures	2092	2066	2105	2079	13m Low

Formation Tops - ROCKHOPPER-1 ST1

Formation	PREDICTED TOP (mMDRT)	PREDICTED TOP (mTVDRT)	ACTUAL TOP (mMDRT)	ACTUAL TOP (mTVDRT)	HIGH/ LOW (mTVD)
Eastern View Coal Measures	2066	2040	2067	2041	1.0m Low
E1 Seismic Marker	2807	2674	2811	2684.37	10.37m Low
RL 30	3151	2972	3163.50	2964.5	25.5m High
RL 90	3279	3079	3287.60	3073.8	5.20m High
Cretaceous Volcanics	3377	3161	3432	3191.90	30.90m Low

1.3 Casing Program

30" X 20"	Conductor	@	157 mMDRT
13 ⅜"	Surface Casing	@	961 mMDRT
9 ⅝ "	Casing	@	1965 mMDRT

1.4 Personnel

Drilling Supervisors	:	Bryan Houston	Kevin Monkhouse
	:	Mike Lanzer	Paul Leathem
Baroid Field Service Reps	:	Jay Tien Guan Wan	Mike Lawrance
	:	James Munford	Kostandinos Georgiou

COST SUMMARY

2.1 Drilling Fluid Costs - ROCKHOPPER-1

	Drilling Fluid	Hole Size	MD From	MD To	Cost AUD $
1.	Seawater / Hi-Vis Gel Sweeps	36"	100 m	158 m	0.00**
2.	Seawater / Hi-Vis Gel Sweeps	17 ½"	158 m	966 m	38,288.87
3.	KCl / PHPA / CLAYSEAL PLUS	12 ¼"	966 m	1972 m	278,636.64
4.	KCl / PHPA / CLAYSEAL PLUS	8 ½"	1972 m	3522 m	258,231.53
Total Mud Materials used for Drilling				AUD $	575,157.03
Mud Materials used for Cementing				AUD $	542.04
Contingency Chemicals i.e. spotting fluids / lubricants				AUD $	33,593.54
Cost of Shaker Screens				AUD $	24,105.08
Mud Materials used for Completion				AUD $	0.00
Mud Materials lost or damaged				AUD $	0.00
				Total Mud Materials Cost AUD $	663,397.69

**Mud was received from previous well.

2.2 Engineering Costs - ROCKHOPPER-1

Service Representatives	From (date)	To (date)	Days
'Jay' Tien Guan Wan	29/11/09	8/12/09	10
	30/12/09	07/01/09	9
Mike Lawrance	09/12/09	29/12/09	21
	08/01/10	19/01/10	12
James Munford	29/11/09	01/12/09	3
	14/12/09	22/12/09	9
Kostandinos Georgiou	02/12/09	13/12/09	12
	23/12/09	08/01/10	17
Total Days:			93
Service Cost @ AUD $1,540/day		**AUD $**	**143,220.00**
		Total Actual Cost of Materials & Engineering AUD $:	**776,617.69**
		Predicted Cost of Materials & Engineering AUD $:	**632,238.45**
		Variance :	**22.8 % (higher)**

2.3 Drilling Fluid Costs – ROCKHOPPER-1 ST1

	Drilling Fluid	Hole Size	MD From	MD To	Cost AUD $
5.	KCl / PHPA / CLAYSEAL PLUS	8 ½"	1965 m	3482 m	237,823.07
Total Mud Materials used for Drilling				AUD $	237,823.07
Mud Materials used for Cementing				AUD $	0.00
Contingency Chemicals i.e. spotting fluids / lubricants				AUD $	57,283.44
Cost of Shaker Screens				AUD $	21,456.28
Mud Materials used for Completion				AUD $	0.00
Mud Materials lost or damaged				AUD $	76.08
			Total Mud Materials Cost	AUD $	316,638.87

2.4 Engineering Costs - ROCKHOPPER-1 ST1

Service Representatives	From (date)	To (date)	Days
'Jay' Tien Guan Wan	11/02/10	19/02/10	9
Mike Lawrance	20/01/10	10/02/10	22
Kostandinos Georgiou	19/01/10	15/02/10	28
Total Days:			59
Service Cost @ AUD $1,540/day		**AUD $**	**90,860.00**
		Total Actual Cost of Materials & Engineering AUD $:	**407,498.87**
		Predicted Cost of Materials & Engineering AUD $:	**210,935.33**
		Variance :	**93.2 % (higher)**

3. PERFORMANCE SUMMARY

3.1 Performance Indicators

Interval 1. (100 m - 158 m) - 36" Hole	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	60	58	Y
• Volume Built, bbl	772	997	N
• Mud Cost / bbl, AUD$	53.69	0.00	N
• Mud Cost / m, AUD$	690.80	0.00	N
• Interval Mud Cost, AUD$	41,448.10	0.00	N

Interval 2. (158 m - 966 m) - 17 ½" Hole	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	803	808	Y
• Volume Built, bbl	4318	3374	N
• Mud Cost / bbl, AUD$	11.03	11.35	Y
• Mud Cost / m, AUD$	59.33	47.39	N
• Net Interval Mud Cost, AUD$	47,640.12	38,288.87	N

Interval 3. (966 m - 1972 m) - 12 ¼" Hole	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	1001	1006	Y
• Volume Built, bbl	2675	2645	Y
• Dilution Rate, bbl/m	1.1	0.46	N
• Mud Cost / bbl, AUD$	73.59	105.34	N
• Mud Cost / m, AUD$	196.65	276.97	N
• Net Interval Mud Cost, AUD$	196,849.80	278,636.64	N

Interval 4. (1972 m - 3522 m) - 8 ½" Hole	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	1520	1550	Y
• Volume Built, bbl	2915	1380	N
• Dilution Rate, bbl/m	1.3	1.09	Y
• Mud Cost / bbl, AUD$	65.49	187.07	N
• Mud Cost / m, AUD$	125.60	166.55	N
• Net Interval Mud Cost, AUD$	190,914.83	258,157.03	N

Interval 5. (1965 m - 3482 m) - 8 ½" Hole - ST1	Program	Actual	Achieved (+/- 10 %)
• Drilled, m	1653	1517	Y
• Volume Built, bbl	1957	2180	Y
• Dilution Rate, bbl/m	1.2	1.27	Y
• Mud Cost / bbl, AUD$	76.31	109.09	N
• Mud Cost / m, AUD$	90.34	156.77	N
• Interval Mud Cost, AUD$	149,335.33	237,823.07	N

3.3 Explanation of Non-Conformance

Interval 1:
The interval mud cost came in well under the programmed values for this interval. This occurred for several reasons. Firstly the mud from the previous well "Trefoil-2" was carried over and used to build Kill Mud and also as a spud mud along with seawater to drill this interval.
Secondly, the bulk system on the Kan Tan IV is such that a correction made by the barge engineer to the measured volumes wiped out any cost associated with this interval. The bulk quantities are taken from 'dips' and results vary depending on the engineer and the formula they apply to measure the bulk. Several times adjustments were made to volumes with no actual bulk usage taking place.

Interval 2:
Interval length was drilled 5 m deeper than programmed. The total mud cost for this section was lower than programmed. During the drilling phase the company man changed the mud program to reduce the size of the high viscosity sweeps used to 90 bbl/stand instead of the 120 bbl/stand in the mud program. BARAZAN D PLUS was required as viscosifer in this section to suspend solids because the 10.0 ppg Kill mud was diluted with sea water/PHG hi-vis to 8.8 ppg pad mud.

Interval 3:
The cost for this section was higher than programmed. This can be traced to two products being used more than programmed. 70% extra KCL was required for this interval as well as 30 ton of barite. Most of the barite used was actually a correction made by the Kan Tan IV control room due to the measurement of the bulks. The barite had been previously used in interval 2. Significant portion of the excess KCL can be accounted for in the 600 bbl of premix that was brought over to the 8 ½" section.

Interval 4:
The cost for this section well exceeded the program estimate. The use of 15 drums of Radiagreen EME (lubricant) was not in the original program except as a contingency material. This addition added over AUD $33,000 to the fluids cost but succeeded in reducing torque. The fluid volume carried over from the previous section was in excess of 2100 bbl, significantly more than programmed. This assisted in keeping the cost down as less fluid was required to be built. Time was lost due to stuck wireline, resulting in a lengthy fishing operation and also a damaged crane that halted drilling progress. This section charges include all the engineer and maintenance costs associated with the downtime from these incidents.

Interval 5:
The cost of the sidetrack was more than that programmed. The mud that was received from the previous 8 ½ inch interval was heavily contaminated by cement. This was principally due to the final cement plug failing twice with the ensuing circulation bringing contaminants into the pits. The contamination gave both high pH and high hardness. This was treated out with both citric acid and sodium bicarbonate whose use was not included in the fluids program cost estimate. The high pH and hardness led to some deterioration of the premium products such as EZ-MUD (PHPA) and CLAYSEAL PLUS that had to be compensated for. Consequently, to achieve the programmed concentrations and fluid properties, greater product usage was required.
The use of Radiagreen EME was not factored into the cost of the sidetrack. A total of 25 drums were added during this interval increasing the cost by AUD $ 55,000.
To maintain the programmed pH considerably more units of potassium hydroxide were required. It was noted that upon circulating bottom's up prior to cutting the final core, 5% CO_2 was detected at the shakers. This would lead to a lowering of the pH and consequently increase the quantity of potassium hydroxide required maintain pH at programmed levels.
Due to the amount of tripping a considerable number of slugs were pumped. This led to barite usage which was not factored into the cost estimate. To maintain the programmed mud weight the centrifuge was used both whilst circulating and during tripping. This led to the stripping out of calcium carbonate bridging agents. Additional bridging agent were therefore required to maintain the programmed concentration.

More PAC-LE and N-DRIL HT PLUS was used than programmed. This can be traced to both the additional treatment required post cement contamination and the challenge of maintaining a fluid loss of under 4.5 ml/30mins.

4. INTERVAL - 1

4.1 SUMMARY

36" Hole From 100 m To 158 m In 4 Hours

Drilling Fluid Seawater with PHB/Guar Sweeps
Formations Torquay Group

The well was spudded at 23:30 hrs on November 30th with a 26" bit and a 36" hole opener located 1 m behind the bit. Prior to spudding, an initial volume of 879 bbl of 10ppg hi-vis prehydrated bentonite kill mud was prepared as per program. Bentonite gel and guar gum was mixed as necessary to ensure adequate volumes for sweeps as drilling commenced.

Drilling commenced from the seabed at 100 m RKB and was successfully drilled to 158 m using seawater and hi-vis sweeps. Three 50 bbl sweeps per stand were pumped (each drill pipe single) and spotted hi-vis around BHA on connections. Lime and caustic was utilized to flocculate the sweeps prior to pumping down hole.

At interval TD, the hole was swept with 100 bbl of hi-vis bentonite. The hole was then displaced with 330 bbl of PHB mud and the BHA was pulled to surface. No drag was observed when pulling out of hole. The tapered 20x30" casing was successfully run and cemented with the 20" shoe at 157 m RKB.

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Funnel Viscosity	120	-	125	126	Yes
Chlorides (mg/lt)		1500		1000	Yes
pH		9		9	Yes

Explanation of Non-Conformance
- All properties were maintained in the programmed range

Solids Control Equipment
- In this interval, all returns were to the seabed; hence no solids control equipment was utilized.

4.2 EVALUATION

Comments

This interval was drilled and cased trouble free.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem None
   Cause
   Action

Drilling Fluid

1) Problem None.
   Cause
   Action

Solids Control and Mud Mixing Equipment

1) Problem Difficulty in ascertaining how much barite was being added via the surge tank
   Cause Weight scale is not working.
   Action Requested that the scale be checked and calibrated.

4.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- None.

Drilling Fluid

- None.

Solids Control and Mud Mixing Equipment

- None.

5. INTERVAL - 2

5.1 SUMMARY

17 ½" Hole From 158 m To 966 m In 3 Days

Drilling Fluid Seawater/Hi-Vis PHG Sweeps
Formations Torquay Group

The 17 ½" interval was drilled with Seawater / PHG / Guar Gum hi-vis sweeps. A 17 ½" BHA with a Smith MT bit with 3x22 and 1x13 nozzles was made up and ran in hole. Top of cement was tagged at 147 m. The 30x20" conductor shoe track and cement was drilled and a 40 bbl hi-vis pill was pumped to assist in hole cleaning.

The 17 ½" hole was drilled and surveyed from 158 m to section TD at 966 m. 40 bbl PHG hi-vis pills were pumped at half a stand and another 50 bbl pill after a full stand assist hole cleaning. At TD, 80 bbl of hi-vis was pumped and the hole was circulated clean. A wiper trip was carried out and a single tight spot with 30k overpull was noticed from 909 m to 841 m interval. The BHA was ran in and washed down to bottom and no fill was encountered.

A 100 bbl hi-vis pill was pumped and the hole was displaced with 1200 bbl of 8.8 ppg pad mud. The BHA was pulled out of hole with normal drag and was racked back.

Finally, the 13 ⅜" casing handling equipment was rigged up and 13 ⅜" casing was ran to bottom without hole problems. The 13 ⅜" casing was cemented with shoe at 961 m.

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Funnel Viscosity	120	-	122	130	Y
Chlorides (mg/L)		1500	1000	1200	Y
Calcium (mg/L)		400	120	240	Y
pH		9		9	Y

Explanation of Non-Conformance

- The PHB hi-vis was mixed to the recommended guidelines with drill water and within required specifications.

Solids Control Equipment

- In this interval, all returns were to the seabed; hence no solids control equipment was utilized.

5.2 EVALUATION

Comments

This interval was drilled and cased trouble free.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem None
   Cause
   Action

Drilling Fluid

1) Problem Reduced weight of pad mud and utilization of BARAZAN D PLUS
   Cause Changes in Company man preference with pad mud weight and Guar Gum utilization.
   Action Reduced 9.0 ppg pad mud weight in program to 8.8 ppg. Guar Gum was not used at the later part of hi-vis preparation and substituted with BARAZAN D PLUS.

Solids Control and Mud Mixing Equipment

1) Problem None
   Cause
   Action

5.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- None.

Drilling Fluid

- None.

Solids Control and Mud Mixing Equipment

- None.

6. INTERVAL - 3

6.1 SUMMARY

Whilst drilling out the shoe track, the seawater was displaced to new 9.0 ppg KCl/Polymer fluid. 5 meters of new formation was drilled and a LOT performed, yielding an EMW of 17.5 ppg. The 12 ¼" hole was then drilled to a TD of 1972 m. No hole issues were identified. On pulling out of hole only minimal over pull was observed. As a consequence no wiper trip was required prior to running casing. The 9 ⅝" casing was run to bottom without any issues and cemented as per program.

12 ¼" Hole From 966 m To 1972 m In 4 Days

Drilling Fluid KCl/Polymer/PHPA/CLAYSEAL PLUS
Formations Angahook, Demons Bluff, Eastern V.C. Measures

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Mud Weight (ppg)	8.8	9.5	9.0	9.5	Yes
6 Rpm	12	14	4	11	No
Pv (cp)	alap	-	10	19	Yes
KCl %	8	10	8	8.4	Yes
CLAYSEAL PLUS (%v/v)	2	2	2	2	Yes
LGS (% by vol)	-	5	0.3	3.4	Yes
Sand content (%)	-	1	0.1	0.35	Yes
API Fluid loss (ml/30 mins)	-	6	4.5	7.0	No
Cake (_/32nd)	-	1	1	1	Yes
HPHT FL (ml/30 mins)	-	15	9.5	12.5	Yes
MBT (ppb Eq)	-	25	2.5	15	Yes
Hardness (mg/l)	-	400	160	400	Yes

Explanation of Non-Conformance
The 6 rpm readings were generally lower than programmed. This can be traced to the short notice change in the fluids program in terms of EZ-MUD incorporation. This is expanded on further below. The API Filtrate loss was initially higher than programmed as less PAC-LE was used from the start for the same reason. Once circulation commenced and the fluid sheared sufficiently, further PAC-LE was added and the filtrate loss quickly achieved targeted levels.

Maintenance

- At the request of the ADA company man there was a deviation in the fluid program prior to the commencement of drilling operations. It was required that EZ-MUD (PHPA) be incorporated in the freshly formulated fluid. This differed to the programmed requirement in that EZ-MUD was to be added to the system following displacement and the treating out of cement contamination. This led to the challenge of trying to sufficiently shear the PHPA on surface to ensure that there would be no issues in terms of losses over the shakers when the fluid returned to surface.
- As EZ-MUD was incorporated into the new mud prior to displacement the initial formulation was revised. The concentration of BARAZAN D PLUS was initially lower. This reflected the concern that the shakers may have trouble passing target rheology fluid with poorly sheared PHPA incorporated. This concern was justified, as on the commencement of drilling, the fluid took 2-3 circulations to shear to an extent that the programmed flow rate could be reached without losing fluid over the shakers.

- The rheology on the commencement of drilling was therefore initially lower than programmed. The addition of BARAZAN D PLUS had to be staged as it was found that if the concentration was raised too quickly the combination of poorly sheared PHPA and increased viscosity from the BARAZAN D PLUS led to mud loss over the shakers at the normal drilling flow rate.
- No Calcium Carbonate Bridging agents were added to the fluid prior to displacement for the same reasons as detailed above. These were incorporated into the fluid once drilling progressed. Additions were made to the active to compensate for losses from the solids control equipment.
- CLAYSEAL PLUS was added to the programmed 2% by volume following the LOT and the start of drilling. Further additions were made to compensate for depletion through reserve volume addition.
- Caustic Potash and caustic soda were added to the system to maintain the pH within the programmed range.
- ALDACIDE G was added to surface volume and active pits to inhibit bacterial growth.
- PAC LE was added directly to the active system to maintain low filtration loss.
- The KCl concentration was maintained to the required level by controlling the ratio of 21% brine to Drillwater in the premix.
- OXYGON was added to programmed concentrations.
- In response to cavings ADA instructed the mud weight to be raised to 9.5 ppg with the Barite.

Solids Control Equipment

- Four Brandt VSM-300 shakers, were employed. All were dressed with API 20 mesh on the top scalping deck throughout the entirety of the 12 ¼" section. Initially the lower decks were all dressed with API 50 mesh. As the fluid thinned with temperature they were changed out to a combination of API 100 and API 80 mesh as per the solids control program.

- Two MI Swaco 518 centrifuges were used to control the build up of solids in the system.

- Sand traps were utilized from the start of the drilling. They were at no time dumped as the centrifuges take from suction from the base of the 5 sand traps, which are all equalized.

6.2 EVALUATION

Comments

This interval was drilled successfully. Whilst the short notice change to the drilling program impacted the starting rheology and pump rates, the interval was drilled successfully. The programmed concentrations mirrored the required properties well.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem None
   Cause
   Action

Drilling Fluid

1) Problem None.
   Cause
   Action

Solids Control and Mud Mixing Equipment

1) Problem None
   Cause
   Action

6.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

- The hole was in excellent condition throughout. This is highlighted by the ease in which the 9 ⅝" casing went to bottom.

Drilling Fluid

- The fluid system worked well. No recommendations are identified in terms of drilling fluid performance. As discussed above, the program was changed at short notice. This impacted on the initial fluid properties, with the rheology being lower than programmed to compensate for poorly sheared PHPA.

Solids Control and Mud Mixing Equipment

- If EZ-MUD is to be incorporated into virgin mud prior to displacing the well then consideration should be given to a different shaker screen strategy. A number of circulations were required for the fluid to sufficiently shear to allow easy passage through the API 20 mesh screens that were on the top deck of the shakers. A coarser top screen would have allowed programmed flow rates to be used without mud loss.
- The shakers have no angle adjustment on them. As a consequence the poorly sheared PHPA was able to flow over the top of the shakers. If the angle could be adjusted then greater fluid retention time on the shakers would allow more potential for the fluid to pass through the screens as opposed to flowing over them.
- The mud mixing equipment and shear hoppers were not effective in fully shearing the PHPA in the cold virgin mud. The mud pits are a significant distance from the mixing hoppers. As a consequence there is significant pressure loss in the system.

7. INTERVAL - 4

7.1 SUMMARY

Drilling the floats and shoe track inside the 9 ⅝" casing with a PDC bit proved unsuccessful. It was pulled and a tri-cone bit was run. This successfully drilled through the shoe and 5 meters of new formation prior to the leak off test which revealed an equivalent mud weight of 14.6 ppg. The bit was pulled at 2019 mMDRT and was changed out for a PDC bit with a GEOPILOT rotary steerable tool. At 2753 mMDRT a wiper trip to the shoe was performed. Whilst pulling out, at 2129 mMDRT, the pipe became stuck. A 60 bbl Radiagreen EME / EZ-MUD pill was spotted around the BHA. After 10 minutes of soaking and jarring the pipe became free and the trip to the shoe completed. Following running in hole the 8 ½" hole was drilled to 3199 mMDRT where another wiper trip was enforced due to required maintenance in the top drive. On pulling out to the shoe only one tight spot was identified, between 2930 mMDRT and 2900 mMDRT. The trip back in went well and the 8 ½" hole was drilled from 3199 mMDRT to a final TD of 3522 mMDRT. A short wiper trip was followed by pulling out of hole for wireline logging.

Due to the extensive logging program two wiper trips were carried out between wireline logging operations to condition the mud and the hole. The active mud weight was reduced and maintained at 9.4 ppg and API water loss was kept around 4.3 mls/30 min. Five wireline runs were performed as follows:
Run #1 – PEX-HRLA-CMR
Run #2 – MDT
Run #3 – VSI
Run #4 – MSCT
Run #5 – FMI-MSIP
Finally five balanced abandonment cement plugs were spotted. On running in to drill out cement and kick off the sidetrack it was found that the final balanced cement plug failed. This resulted in a further cement job, which again failed as the top of the cement was below the shoe. The third balanced plug was successful, being tagged at 1886 mMDRT. Following this operations were suspended pending repairs on the cranes. Whilst repairs were carried out on the cranes, 5 inch open ended drill pipe was run into 1880 m and the mud circulated at 12 hour intervals to allow treatment.

8 ½" Hole From 1972 m To 3522 m In 7 Days

Drilling Fluid KCl/Polymer/PHPA/CLAYSEAL PLUS
Formations Eastern V.C. Measures

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Mud Weight (ppg)	9	10	9.4	9.6	Yes
6 Rpm	9	13	9	13	Yes
Pv (cp)	alap	-	10	20	Yes
KCl %	6	8	6.3	8.2	Yes
CLAYSEAL PLUS (%v/v)	2	2	2	2	Yes
LGS (% by vol)	-	5	1.1	4.3	Yes
Sand content (%)	-	1	0.15	0.3	Yes
API Fluid loss (ml/30 mins)	-	5	3.9	5.4	Yes
Cake (_/32nd)	-	1	1	1	Yes
HPHT FL (ml/30 mins)	-	13	8.5	11.0	Yes
MBT (ppb Eq)	-	25	5.5	10	Yes
Hardness (mg/l)	-	400	120	300	Yes

Explanation of Non-Conformance
Not applicable. Full conformance.

Maintenance

- 2141 bbl of fluid was carried over from the 12 ¼" fluid set.
- The mud weight was maintained at 9.5 - 9.6 ppg with controlled additions of unweighted pre-mix. The finest available screens were run coupled with the use of centrifuges to control solids.
- Due to the high bottom hole temperature calculated additions of water were made directly to the active to compensate for that lost through evaporation.
- Reserve fluid was bled into the active to maintain volume and properties.
- CLAYSEAL PLUS and EZ-MUD were added to the active to ensure programmed concentrations were maintained.
- Low filtration was maintained with the addition of DEXTRID LTE and as the bottom hole temperature increased, PAC-LE. As the bottom hole temperature further increased N-DRIL HT PLUS was added.
- Circal 60/16, sized calcium carbonate bridging agent was added direct to the active to compensate for depletion from filter cake formation and losses from solids control equipment
- Caustic Soda and Caustic Potash were added to maintain pH.
- Soda ash was added to control the hardness. The target hardness of 400 mg/l was lowered on the direction of the ADA company man to under 200 mg/l for unspecified reasons.
- OXYGON, corrosion inhibitor was added as per program.
- As detailed in the interval summary, whilst pulling out of hole to the shoe at 2129 m the string became stuck. It was believed to be differential sticking in a zone of sandstone around the BHA. The ADA Company man directed Baroid to make up a pill, detailing the exact recipe. It consisted of 50 bbl of pre-mix (concentrations as per the fluids program), 7 bbl drillwater, an additional of 1.6 ppb EZ-MUD and PAC-LE. Two drums of Radiagreen EME were then added equating to a concentration of 3.6 %vol. The pill weight was 9.2 ppg, 0.3 ppg below the current mud weight.
- To combat High torque, Radiagreen EME was added directly to the active up to a concentration of 1% by volume. A reduction in torque was identified, from 24 Klbs-ft to 6-8 Klbs-ft.
- Circulation following the setting of 7 balanced cement plugs led to significant cement contamination in the active fluid set. Efforts were made to treat this with sodium bicarbonate and citric acid.
- Whilst working on the cranes the fluid in the well was circulated daily. This ensured minimal polymer degradation due to extended exposure to down hole conditions.
- A perceived lack of citric acid and sodium bicarbonate meant that the pH and hardness remained over the programmed range following the completion of the cementing operation for some days. In actual fact it was later found that the citric acid and sodium bicarbonate had been on the rig for several days sitting in sea containers but the mud engineer was not advised of its arrival the materials controller.

7.2 EVALUATION

Comments

This interval was drilled and logged successfully.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions

1) Problem: High torque, in excess on 20 Klbs-ft experienced
   Cause: Combination of bit mechanics and high angle
   Action: The addition of Radiagreen EME reduced torque as detailed above.

Drilling Fluid

1) Problem: None.
   Cause:
   Action:

Solids Control and Mud Mixing Equipment

1) Problem: Centrifuge number 2 went down for circa 36 hours.
   Cause: Torque limiter failed.
   Action: Spare located on rig eventually. Swaco advised to have full inventory of spares and be aware of their location at all times.

7.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions

The addition of Radiagreen EME prior to building angle is recommended. This would be a proactive rather than a reactive step to control and limit excessive torque.

Drilling Fluid

The drilling fluid performed as expected. The KCl concentration was lowered from 8% to 6.5% on the direction of ADA. Initially to maintain the mud weight at 9.5 ppg was challenging. Once API 120 TECHMESH screens mesh replaced API 80 TECHMESH screens the mud weight was relatively stable. Clear and consistent direction from ADA would assist in the planning and execution of a successful fluid program. Pills of Lo-weight and Hi-weight mud did not show significant improvement in terms of hole cleaning but resulted in longer circulation time to condition the mud to achieve uniform mud weights. All pills, their make up, weight and viscosity were dictated by the Company man.

During cementing operations, if it is the intention to carry over the active fluid to another well or sidetrack, it is recommended that a short circulation system be employed. Here the circulating volume should be minimized i.e. low active pit volume with sandtraps being by-passed. This would mean that any cement contamination would affect the lowest possible volume of fluid and either mean treating or dumping the lowest possible volume.

Solids Control and Mud Mixing Equipment

The Brandt VSM 300 shakers have a 7 degree inward tilt (i.e. towards the possum belly) that is not adjustable. This lack of flexibility impacted significantly on screen life span. During normal circulation rates the edge of the fluid bed would be approximately only a third of the way from the rear of the shaker. At this point, due to poor solids progression, the solids would reciprocate on the same spot and not advance effectively to the front of the shaker for discharge. This would therefore lead to concentrated wear and poor mesh life at that point. The front and back screens were regularly rotated to enhance life span and where practicable the shakers were patched.

When the screens were changed out from API 80 TECHMESH to API 120 TECHMESH it was noticeable that the forward progression of the retained solids improved. It was clear that the finer retained solids were more mobile than the coarser solids retained on the API 80 TECHMESH. Even though solids progression improved the pattern of screen wear as described was maintained.

Finer scalping screens would reduce the volume of solids received on the lower deck thereby reducing wear and improving lifespan. A finer mesh screen on the lower deck would produce a more mobile solids bed whilst improving solids control due to higher mesh size.
The centrifuges were run continuously whilst drilling. One time the centrifuge was down for about 36 hours, this coincided with a wiper trip so did not impact significantly on mud properties.

Indicators from the fluid properties revealed that there was no significant build up of drilled solids. The MW remained stable throughout and there was no significant increase in PV and the MBT remained low. This can be attributed principally to a high level of inhibition/encapsulation as opposed to a high performing solids control system.

The mud mixing equipment performed adequately. There were no delays in mixing chemicals due to equipment downtime. The pressure in the mixing lines however is low due to the distance the pits are away from the mixing hopper.

8. INTERVAL - 5

8.1 SUMMARY

The original well was spudded on the 29th of November 2009. The 9 ⅝" casing was set at 1965 m. The 8 ½ inch section reached a TD of 3522 mMDRT on the 27th December 2009. An extensive logging program was performed prior plugging back inside the 9 ⅝" casing shoe. For reporting purposes the sidetrack was initiated on the 19th January 2010, when the kick off assembly was run in hole. This drilled to 2112 mMDRT where the assembly was pulled in favor of a GEOPILOT directional tool. The GEOPILOT drilled to 3158 m, where it was pulled due to communication problems. A new bit was run and the 8 ½ inch hole was drilled to the first core point at 3196 mMDRT. A coring assembly was made up, including a 30 m core barrel and tripped in without any problems. After 17 meters of coring, torque dropped back and no further progress was made. The core had become jammed in the barrel. The 8 ½ inch hole was then conventionally drilled to the next coring point of 3283 m. Only 15.5 meters of core was cut before yet again no further progress could be achieved. The core assembly was pulled out and the same coring assembly was then run in and cored a further 10.5 m to 3309 mMDRT. A GEOPILOT rotary drilling assembly was then picked up and the 8 ½ inch hole was drilled to a final TD of 3462 mMDRT, 3232.30 mTVD. The BHA was pulled out of hole and laid down.

A total of seven wireline logging runs were conducted on this section. They were:
Run # 1 CMR
Run # 2 XPT, GR, ECRD, LEHQT
Run # 3 Quick Silver Probe MDT
Run # 4 FMI - OSI
Run # 5 Seismic String
Run # 6 MSCT
Run # 7 Dual Packer

The MSCT tool became stuck and was successfully fished out with an overshot assembly on drillpipe. This was followed by a wiper trip to condition the hole before Run # 7. During Run # 7, the Dual Packer also became stuck briefly at 3214 m and was worked free. A total of 13 stations were logged successfully. A cement stinger was made up and the hole was plugged back with cement plugs 1A, 1B, 1C, 2 and 3 as per plug and abandonment program. Cement plug 3A was required as the TOC of cement plug # 3 was deeper at 1978 m. A successful pressure test was conducted at 2000 psi for 15 minutes after waiting on cement. Subsequently, a bridge plug was set at 205 m after the casing pressure test. Finally the 9 ⅝" casing and 20x30 inch conductors were cut and pulled out. The BOP and marine riser were lifted and a cement plug was set at seabed.

8 ½" Hole From 1965 m To 3482 m In 16 Days

Drilling Fluid KCl/Polymer/PHPA/CLAYSEAL PLUS
Formations Eastern V.C. Measures, Cretaceous Volcanics

Properties	**Programmed**		**Actual (Typical Drilling)**		
	Min	**Max**	**Min**	**Max**	**Conformance** (10% variance)
Mud Weight (ppg)	9	9.5	9.3	9.4	Yes
6 Rpm	9	13	9	12	Yes
Pv (cp)	alap	-	15	22	Yes
KCl %	7	7	6.4	7.0	Yes
CLAYSEAL PLUS (%v/v)	2	2	2	2.1	Yes
LGS (% by vol)	-	5	0.9	2.7	Yes
Sand content (%)	-	1	0.15	0.25	Yes

API Fluid loss (ml/30 mins)	-	4.5	4.1	4.6	Yes
Cake (_/32nd)	-	1	1	1	Yes
HPHT FL (ml/30 mins)	-	13	6.6	9.5	Yes
MBT (ppb Eq)	-	25	5	10	Yes
Hardness (mg/l)	-	400	80	1280	No
pH	8.5	9.5	9.0	11.5	No

Explanation of Non-Conformance
Initially the pH and the hardness were higher than programmed; this was due to the high level of cement contamination present in the fluid set carried over from the original wellbore. The final balanced plug failed twice, so in total 3 final plugs were set to secure cement inside the 9 ⅝" casing. Fluid that was heavily contaminated with green cement was dumped when it reached surface however some of it found its way into the mud. A short system, by-passing the sandtraps was employed to minimize the potential volume impacted by cement contamination. The high pH and hardness was treated out quickly with citric acid and sodium bicarbonate respectively. Only 5 meters of new formation was drilled with excessive hardness and pH before treatment was applied.

Maintenance

- 1713.9 bbl of fluid was carried over from the original 8 ½" fluid set.
- The mud weight was maintained at 9.3 - 9.4 ppg with the addition of unweighted premix added to the active while circulating, and the almost continual use of two centrifuges. Significant attention was paid to screen maintenance to ensure maximum solids control efficiency. A desirable mud weight of 9.3 ppg was achieved at TD.
- During periods when there was no circulation/drilling the surface volume was centrifuged. The active fluid would be pumped from the pits up to sandtraps (where the centrifuges took suction from). With the incorporation of a number of slugs in the active fluid set this was necessary to ensure the target mud weight was not exceeded.
- The concentration of both CLAYSEAL PLUS and EZ-MUD (PHPA) was maintained by controlled addition to both premix and when necessary the active fluid set.
- The pH was maintained with the addition of caustic potash also yeilding extra potassium for clay inhibition.
- Soda ash was added directly to the active and premixes to control hardness.
- Tight filtration was maintained with the addition of DEXTRID LTE and PAC-LE. As the bottom hole temperature increased, N-DRIL HT PLUS was added.
- A significant focus was placed on maintaining the concentration of bridging agents. Typically pre-mixes were made up at a concentration 10 ppb (6 ppb Circal 60/16 and 4 ppb Circal Y). This is double the concentration detailed in the fluids program. This higher concentration took into account continuous depletion from solids control equipment and meant no direct additions were made to the active. This led to a stable concentration of bridging agents and assisted in the geological interpretation of cuttings.
- ALDACIDE G bactericide was added into premixes and prior to tripping, to the active.
- OXYGON corrosion inhibitor was added as per program.
- From circa 2480 m, Radiagreen EME was added at a concentration of 0.5% volume directly to the active to reduce torque. As per the original well, a reduction in torque was evident. At 3158 m this concentration was increased to 1% vol. At 3309 m the remaining Radiagreen EME was added to the active system, giving a final concentration of just under 1.5% per volume at TD.
- BAROLIFT sweeps at a concentration of 0.3 ppb, were used regularly, both during connections whilst drilling ahead and at the TD of bit runs. Typically 15 bbl was pumped. When the head of the pill reached the riser the third mud pump was used to boost the riser via the kill lines, thereby increasing the annular velocity in this section. See details in attached pill report.

- Whilst circulating water was bled into the active to offset losses from evaporation. This ensured the polymer based fluids system remained hydrated enabling a consistent rheology.

8.2 EVALUATION

Comments

This interval was drilled and logged successfully.

Problems, Causes, Remedial Action Taken or Recommended

Hole Conditions – No hole problems identified
1) Problem
   Cause
   Action

Drilling Fluid
1) Problem None.
   Cause
   Action

Solids Control and Mud Mixing Equipment
1) Problem Poor shaker efficiency. Discussed further below.
   Cause
   Action

8.3 RECOMMENDATIONS FOR IMPROVEMENT

Hole Conditions
No hole condition issues were identified. The proactive addition of Radiagreen EME assisted in ensuring that there was no excessive torque.

Drilling Fluid
The drilling fluid performed well and no areas for improvement are identified. Clear and consistent instructions from ADA with no deviations from the fluids program assisted in delivering a stable and high performing fluid.

Solids Control and Mud Mixing Equipment
The limitations of the Brandt VSM 300 shakers have been discussed at length in the recap for the original Rockhopper-1 well section. For this interval API 40 screens were used for the scalping deck instead of coarser API 20's. This assisted in reducing the volume of solids received by the lower deck. The problem of poor lower deck lifespan remained however due to the severe backward shaker angle. API 140 mesh screens were initially used on the lower deck. However, due to the finer fibers used in the manufacture of these screens the lifespan was both unacceptable and uneconomical. Screens would typically last only 6-8 hours before they were damaged beyond repair. This is not believed to be due to the fact that they are poor quality screens, but the performance of the shakers means that the lower deck sees minimal or no solids progression. It is recommended that an engineer investigates the limitations of this shaker system. The use of API 100 screens gave the best compromise of screen life and solids control.

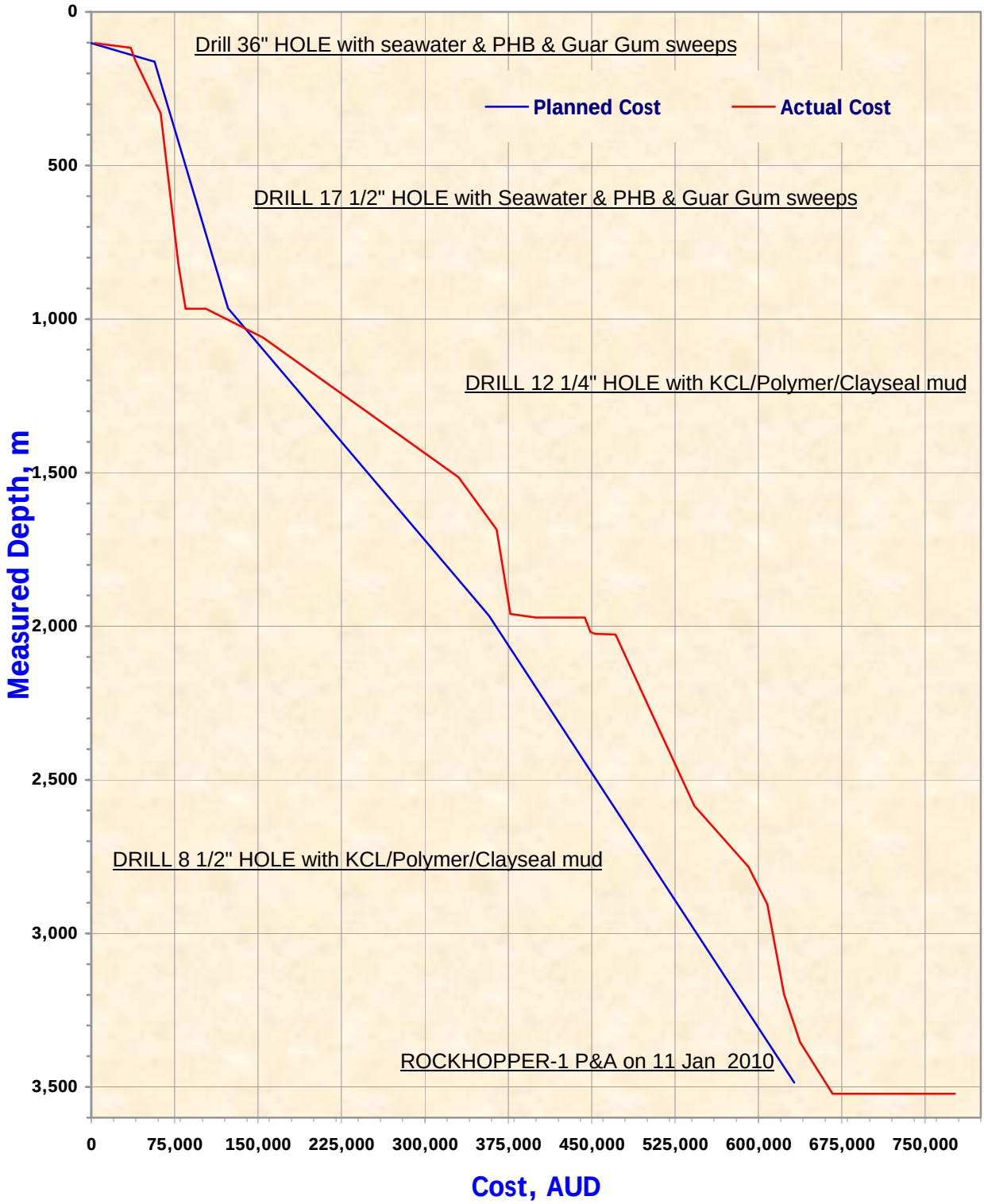
9. PILL & SWEEPS REPORT

Well: ROCKHOPPER-1 / ROCKHOPPER-1 ST-1

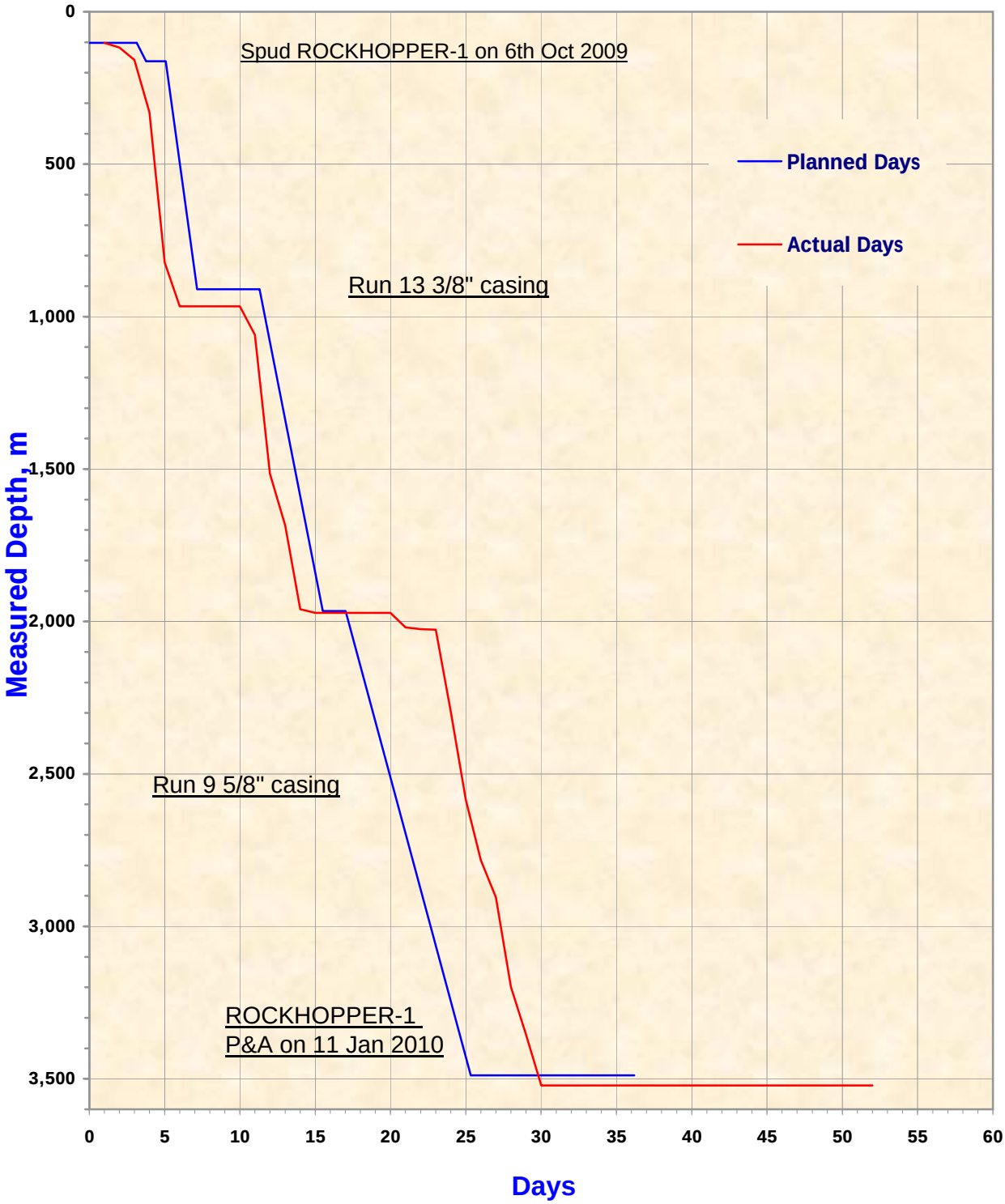
Date	Time	Hole Size (in)	Bit Depth (mMDRT)	Hole Angle (º)	Pill Volume (bbl)	Pill Weight (ppg)	Pill Composition & Key Properties	Remarks / Results (e.g. % incr cuttings at shakers)
24/12/09	0800	8.5	2752	43.00	60	9.2	50 bbl Premix, 7 bbl Drillwater, 2 x drums Radiagreen EME, + 1.5 ppb PAC-LE, 1.5 ppb PHPA.	Premix composition as per fluids program. Pill pumped and soaked around BHA.. Pipe free after 10 minutes of down-jarring. Continue POOH to casing shoe.
25/12/09	0100	8.5	2877	42.00	31	9.5	KCl- PHPA w/ 3 Sx BARAZAN D PLUS	Pumped pill, and waited for shakers to reduce cuttings load. Cuttings load increased by up to 20%, took two circulations.
27/12/09	2000	8.5	3522	41.35	30	9.3	Low Wt KCl- PHPA Fluid	This was the Initial Pill
27/12/09	2005	8.5	3522	41.35	30	10	High Wt KCl- PHPA Fluid	Chased by High Wt, High rheology Fluid until shaker was clean. Increased cuttings by 25%
28/12/09	0014	8.5	3522	41.35	30	9.3	Low Wt KCl- PHPA Fluid	This was the Initial Pill
28/12/09	0019	8.5	3522	41.35	30	10	High Wt KCl- PHPA Fluid	Chased by High Wt, High rheology Fluid until shaker was clean. Did 3x Bottoms up before shakers were clean. It took 2 hours. Increased cuttings by 40%
30/12/09	2037	8.5	3522	41.35	47	9.0	Low Wt KCl- PHPA Fluid	This was the Initial Pill
30/12/09	2052	8.5	3522	41.35	47	10	High Wt KCl- PHPA Fluid	Chased by High Wt, High rheology Fluid until shaker were clean. No great Change in cuttings load. Stopped circulating at 0100 hrs.
02/01/10	2350	8.5	3522	41.35	40	9.0	Low Wt KCl- PHPA Fluid	This was the Initial Pill
02/01/10	0007	8.5	3522	41.35	40	10	High Wt KCl- PHPA Fluid	No change was noticed, hole by this time was clean.
23/01/10	0505	8.5 ST-1	2780	35.61	20	9.4	BAROLIFT pill	Very slight increase in cuttings returned.
25/01/10	1700	8.5 ST-1	3157	35.40	15	9.4	Active mud + 0.3 ppb BAROLIFT	When pill reached riser section, kill lines were utilized to boost riser to maximize hole cleaning in the riser annular section. No increase in cuttings visible
03/02/02	1500	8.5 ST-1	3482	35.5	20	9.4	Active mud + 0.3 ppb BAROLIFT	Pill pumped at TD. Minimal increase in cuttings seen.
12/02/10	0100	8.5 ST-1	3482	35.47	20	8.9	Low Wt KCl- PHPA Fluid	This was the Initial Pill
12/0210	0115	8.5 ST-1	3482	35.47	20	10.3	High Wt KCl- PHPA Fluid	No change was noticed, hole by this time was clean.

GRAPHS

Cost vs Depth



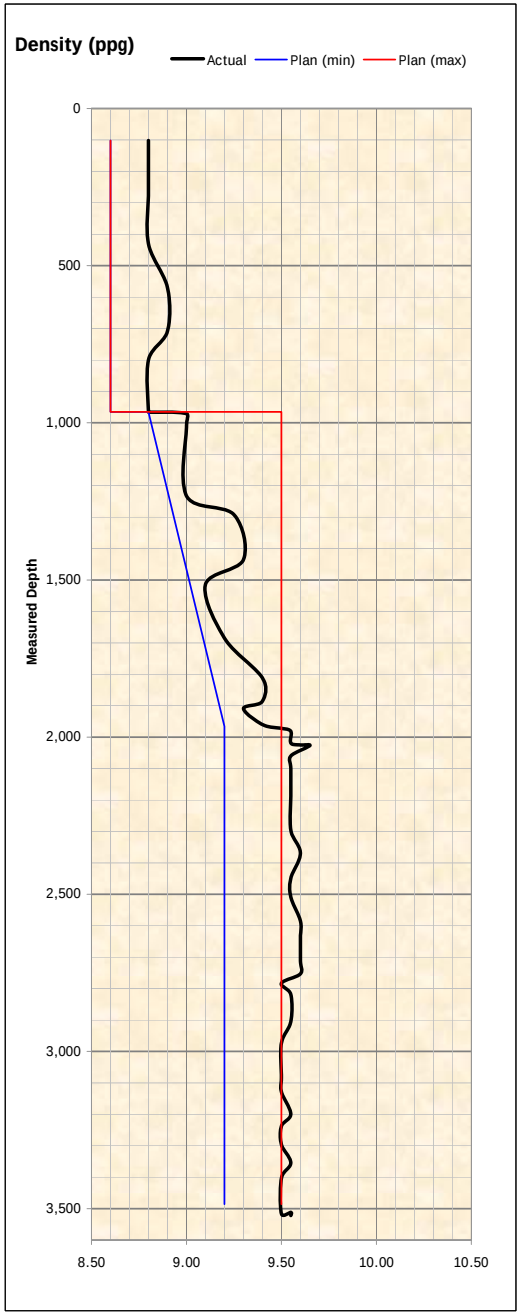
Days vs Depth

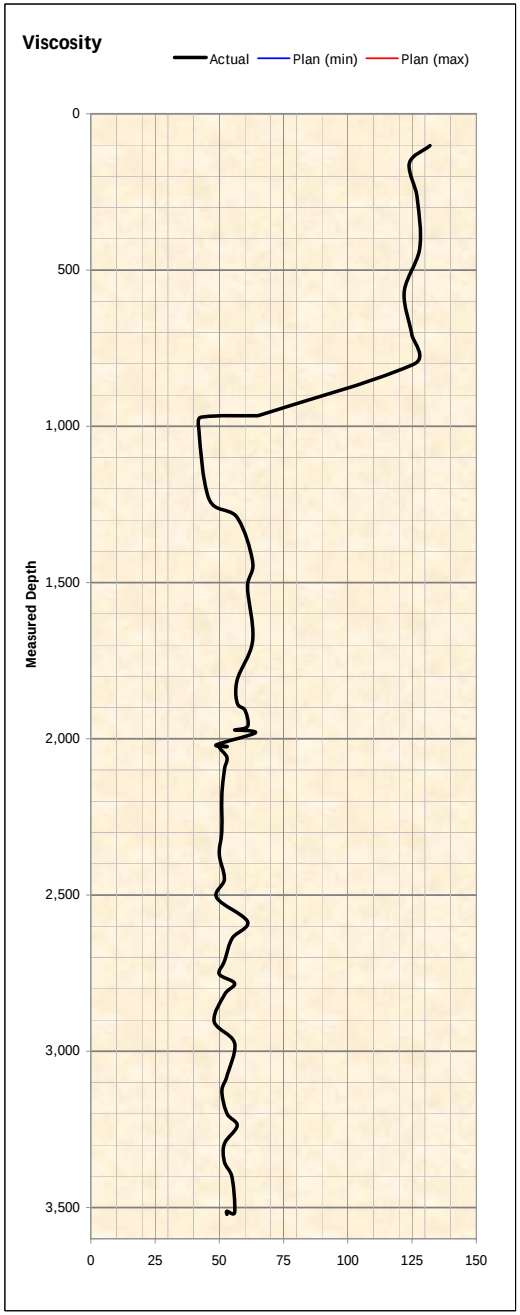


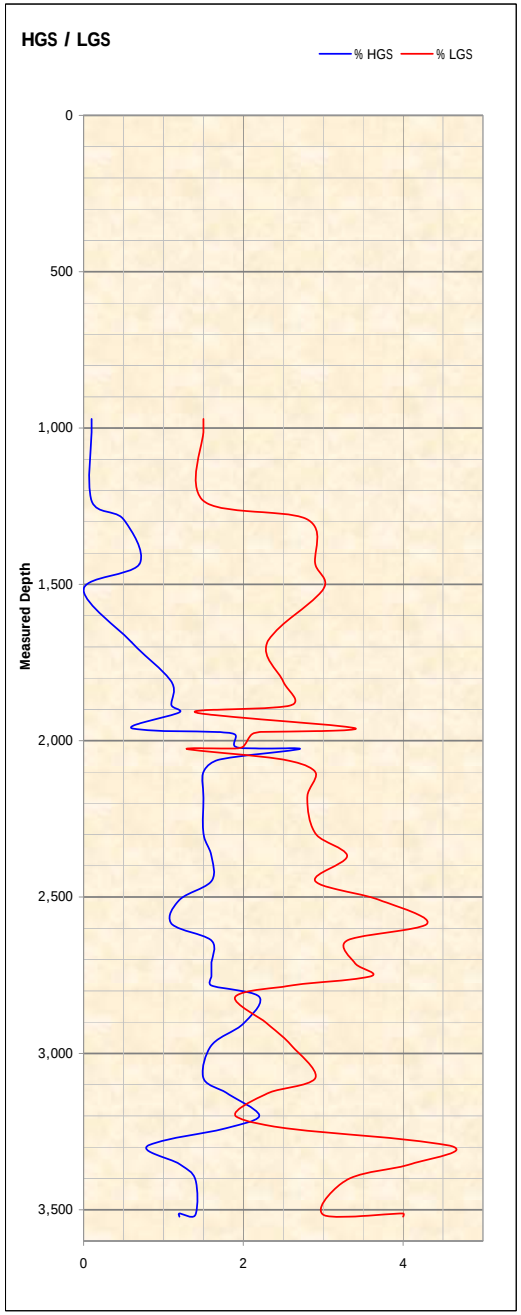
Origin Energy

ROCKHOPPER-1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long







HALLIBURTON
Fluid Systems

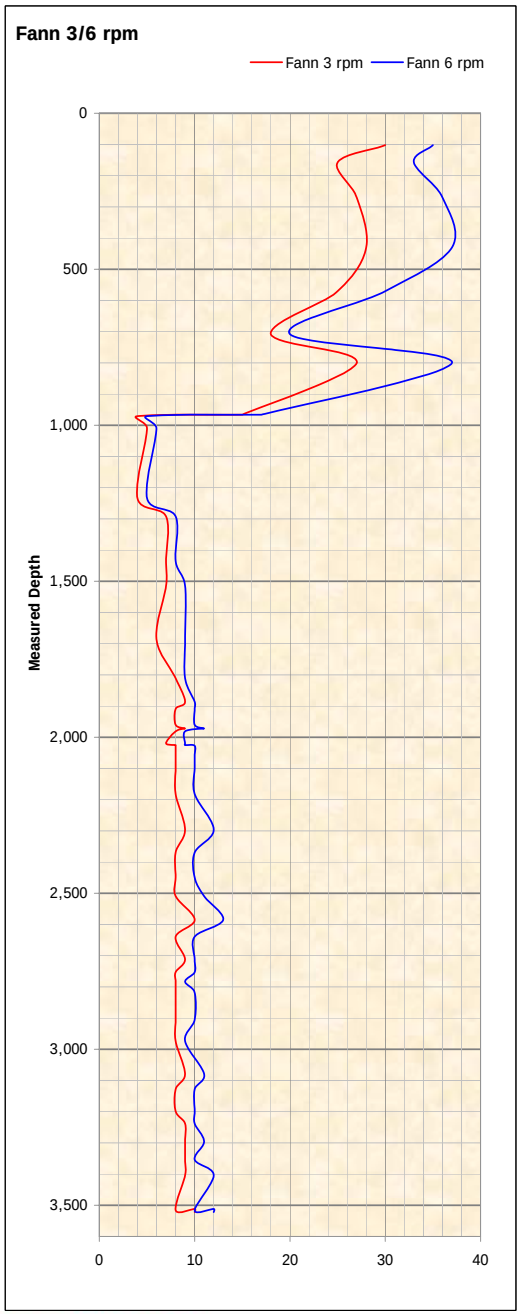
Physical Properties

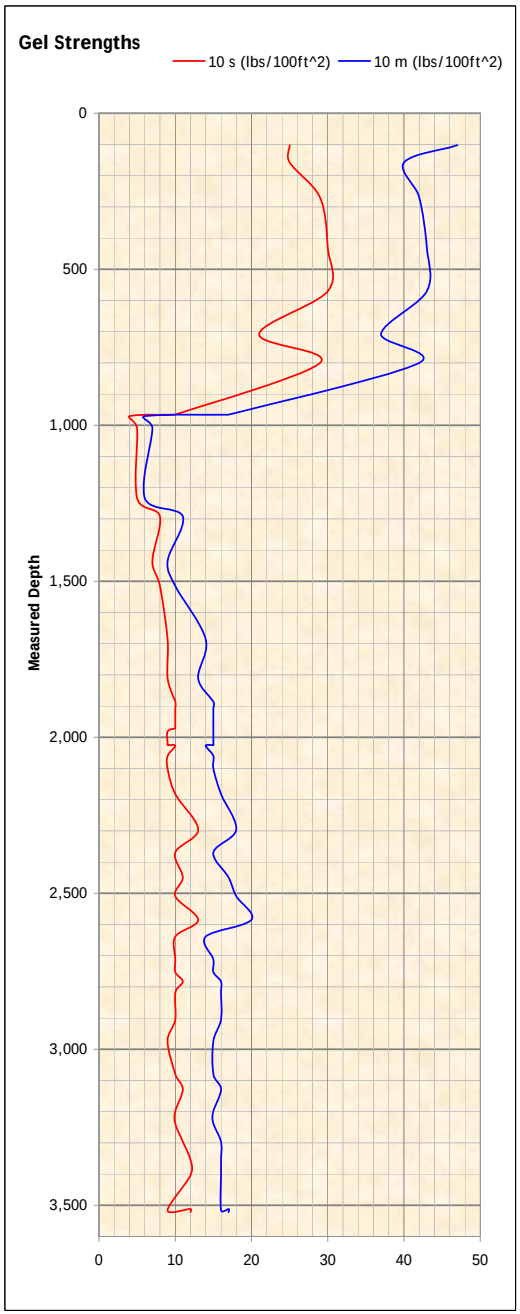
Baroid Fluid Services

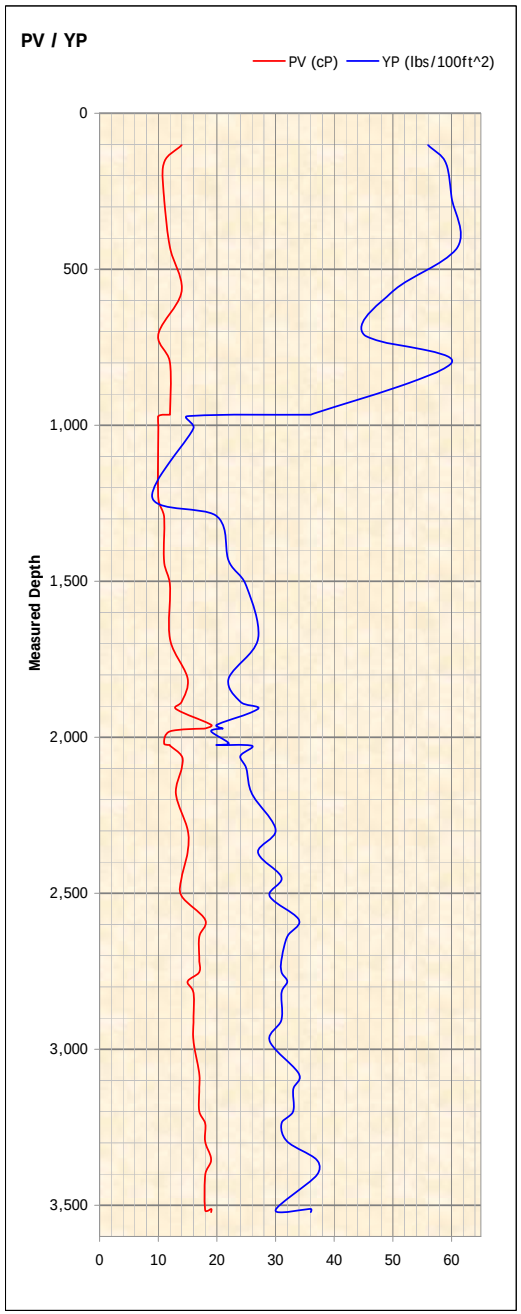
Origin Energy

ROCKHOPPER-1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long







HALLIBURTON
Fluid Systems

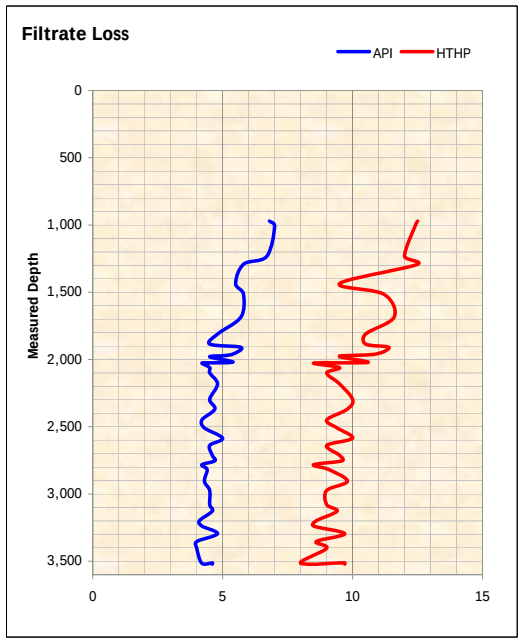
Physical Properties

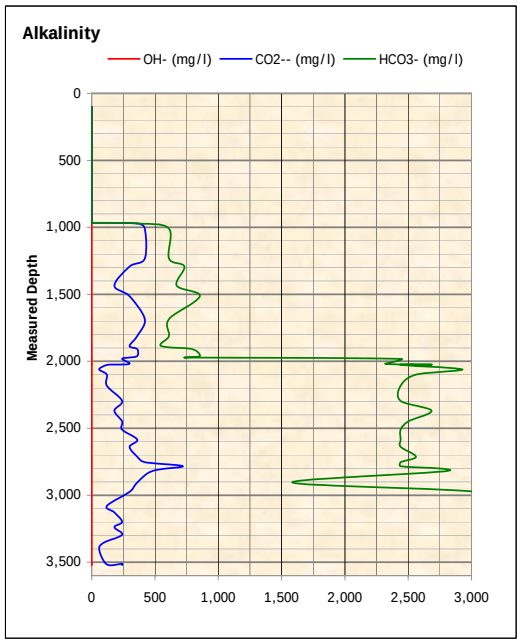
Baroid Fluid Services

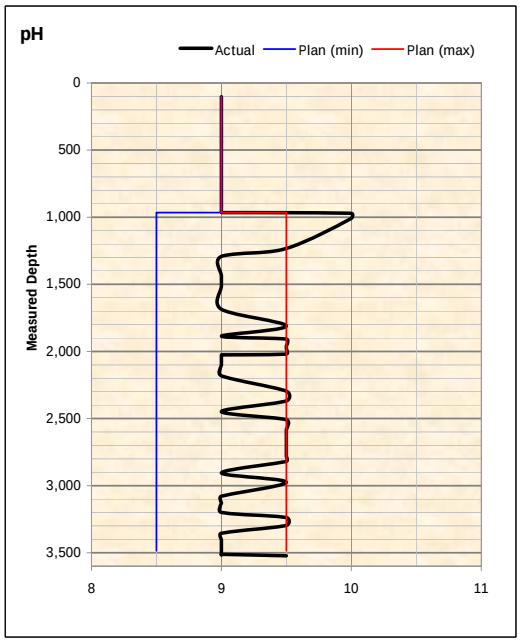
Origin Energy

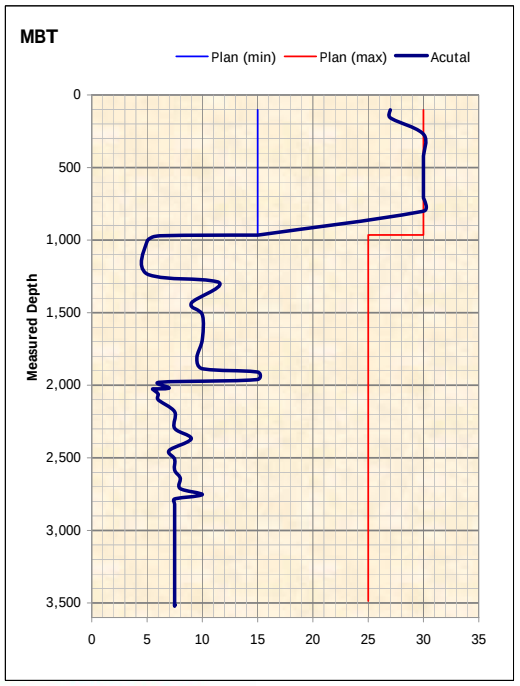
ROCKHOPPER-1

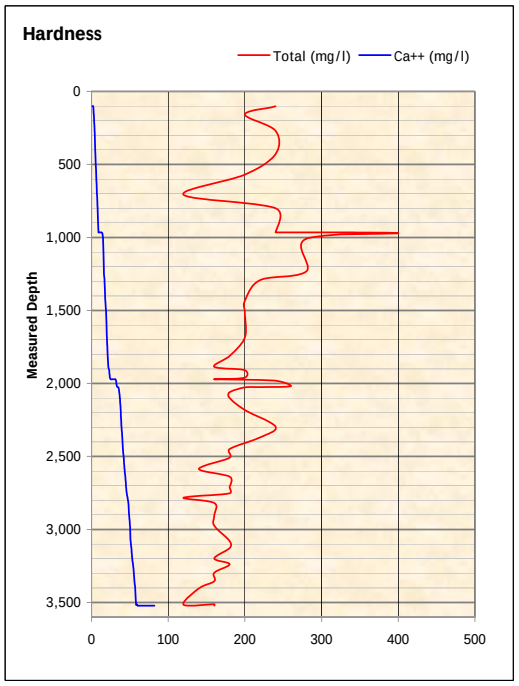
39o 47’34.1833”S Lat X 145o 26’21.4671”E Long

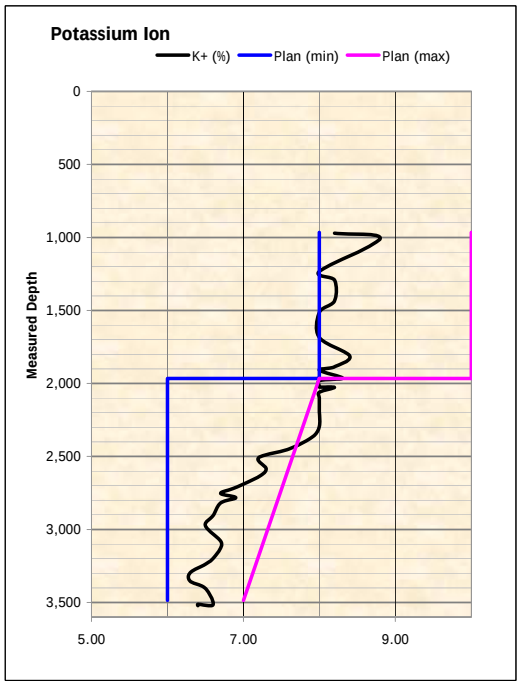










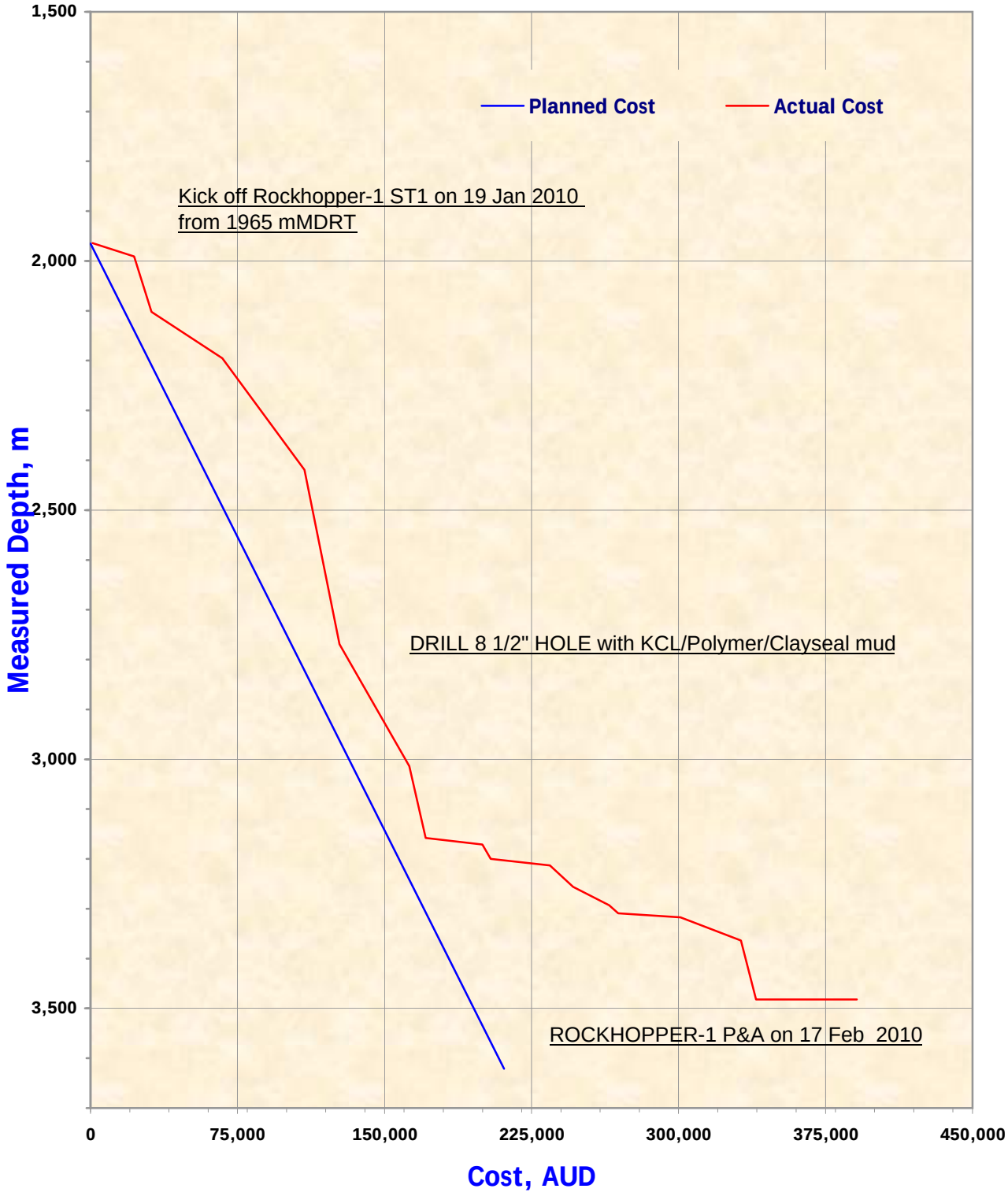


HALLIBURTON
Fluid Systems

WBM Properties

Baroid Fluid Services

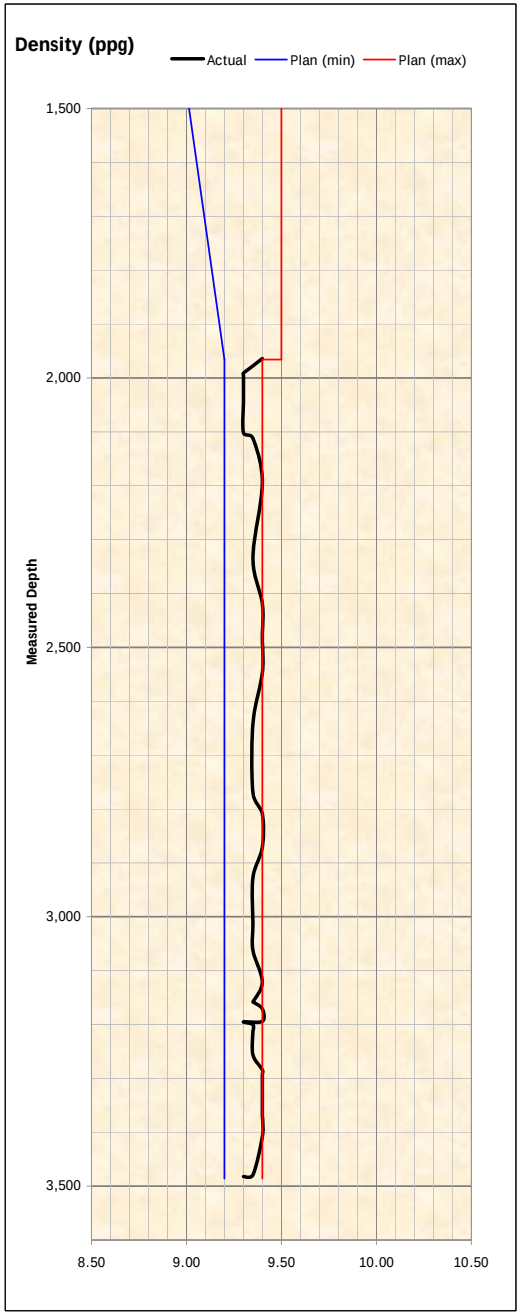
Cost vs Depth

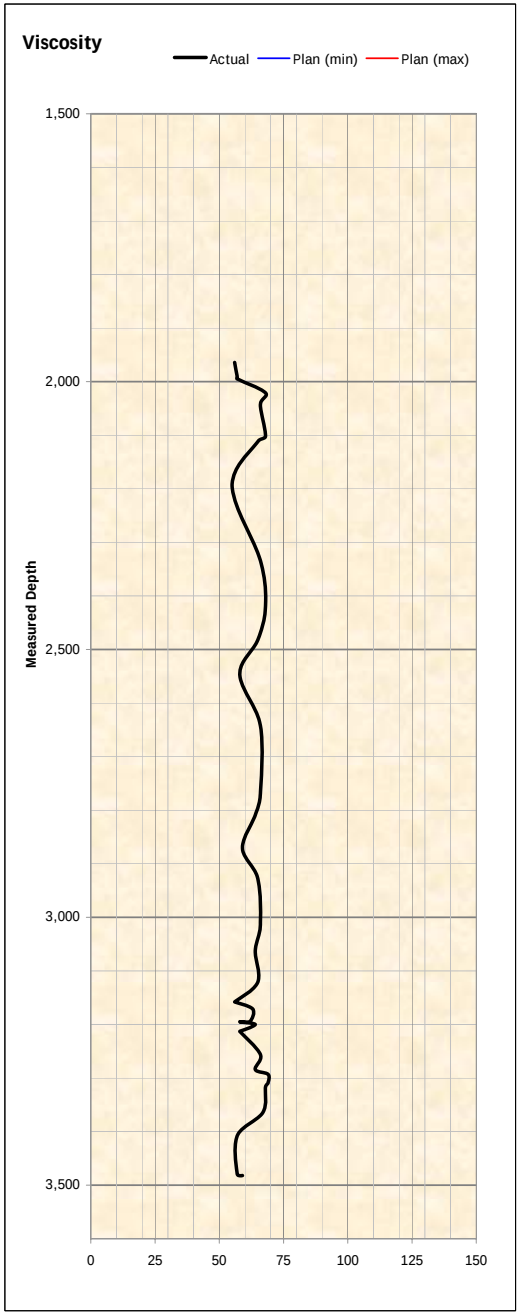


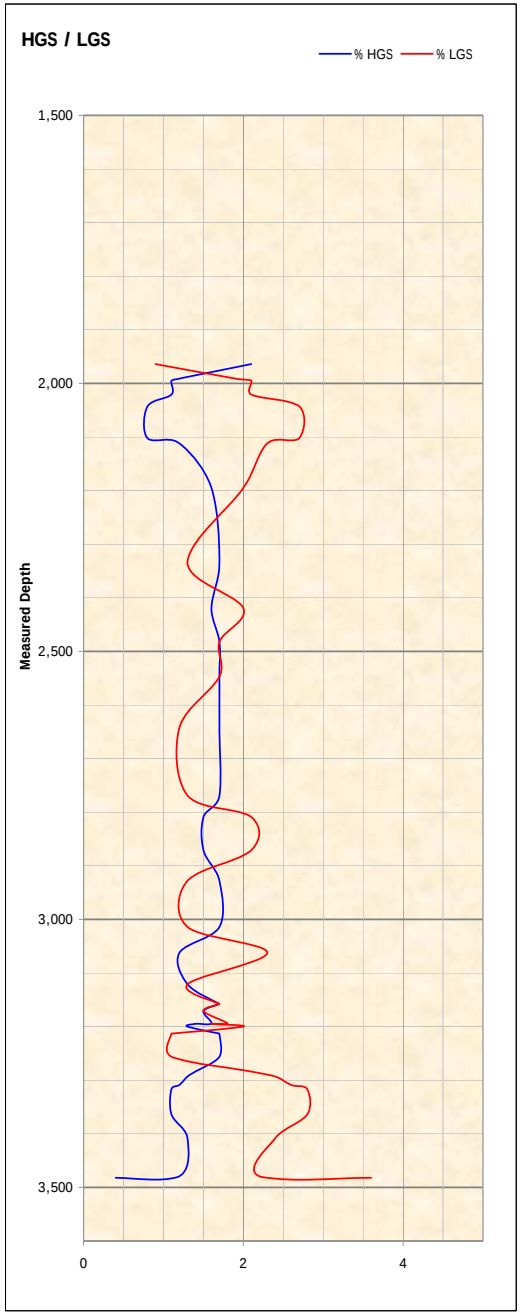
Origin Energy

ROCKHOPPER-1 ST1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long







HALLIBURTON
Fluid Systems

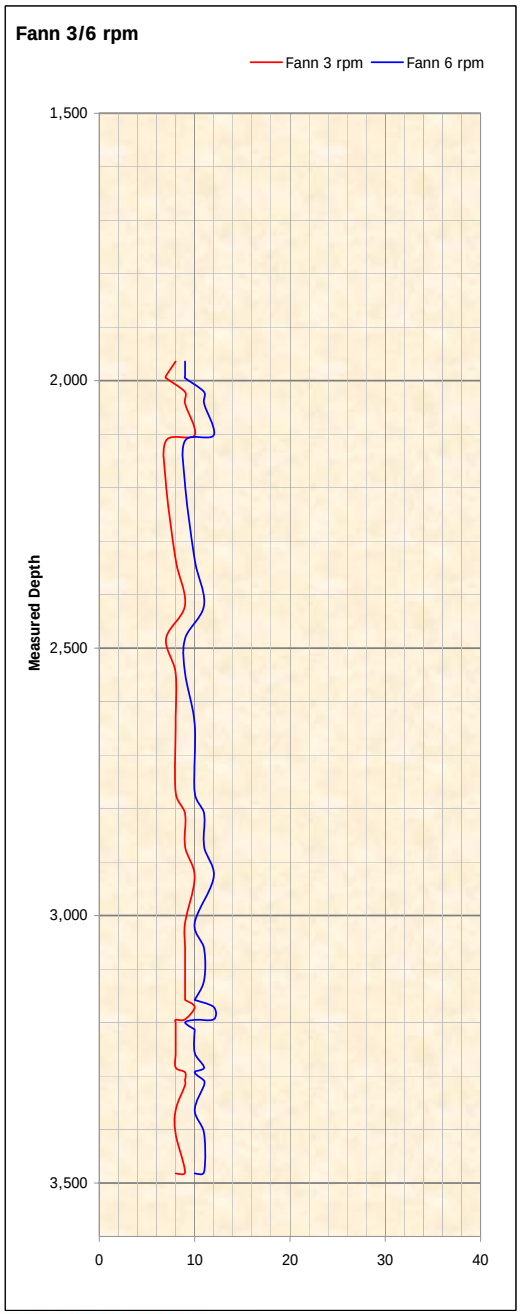
Physical Properties

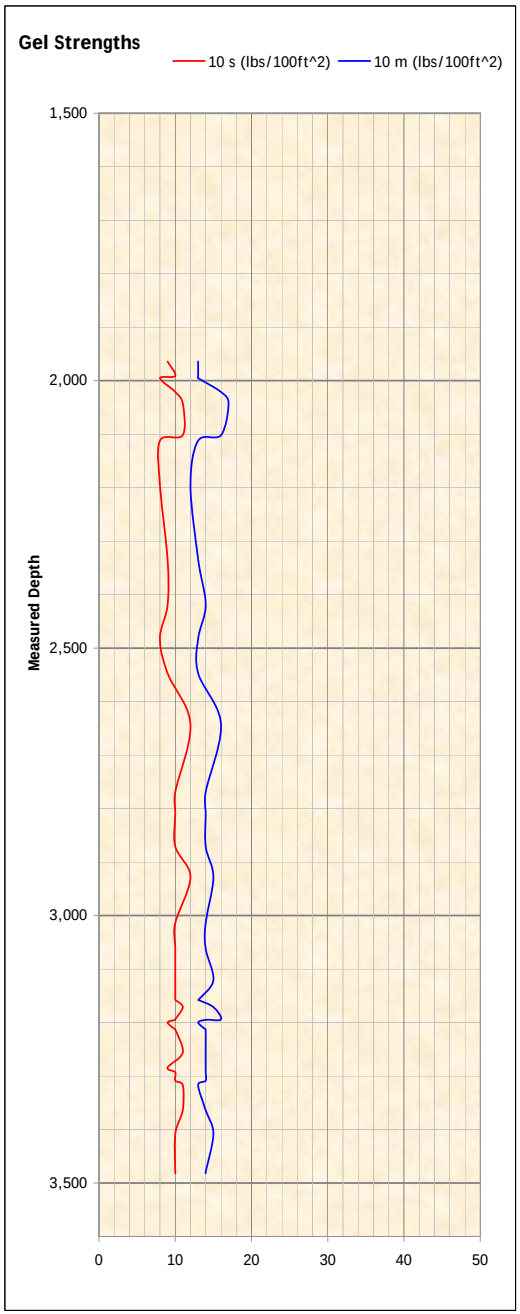
Baroid Fluid Services

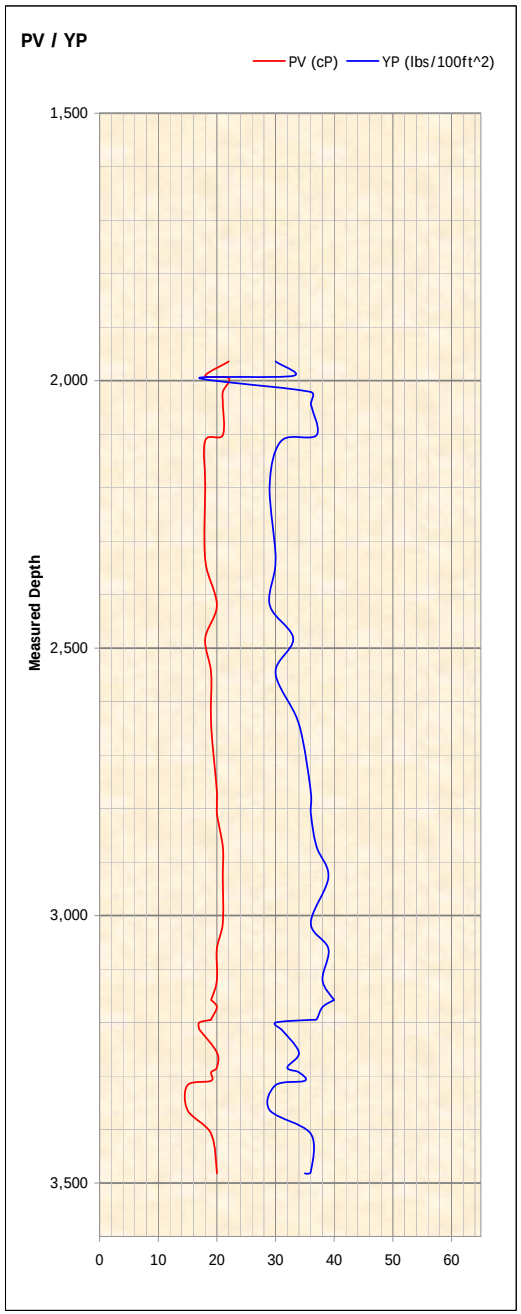
Origin Energy

ROCKHOPPER-1 ST1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long







HALLIBURTON
Fluid Systems

Physical Properties

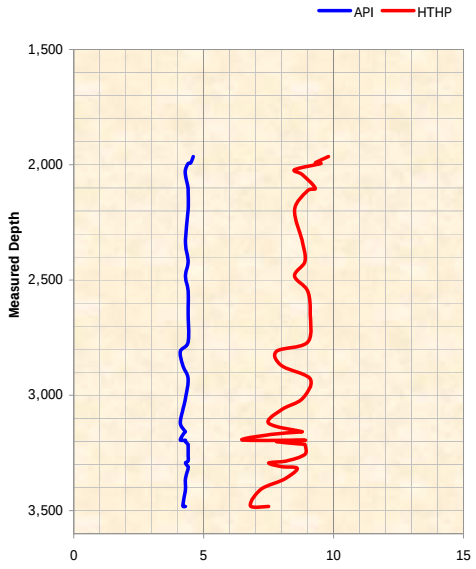
Baroid Fluid Services

Origin Energy

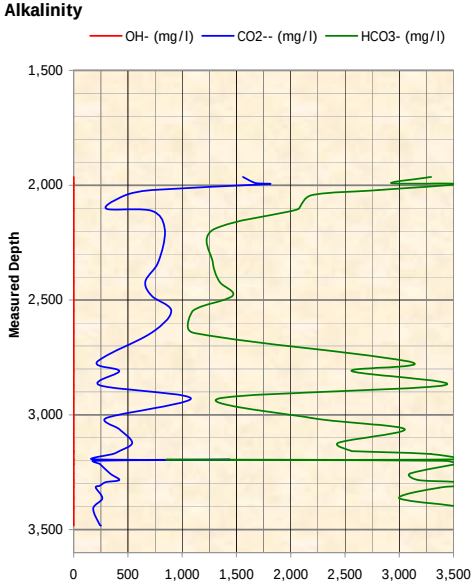
ROCKHOPPER-1 ST1

39o 47’34.1833”S Lat X 145o 26’21.4671”E Long

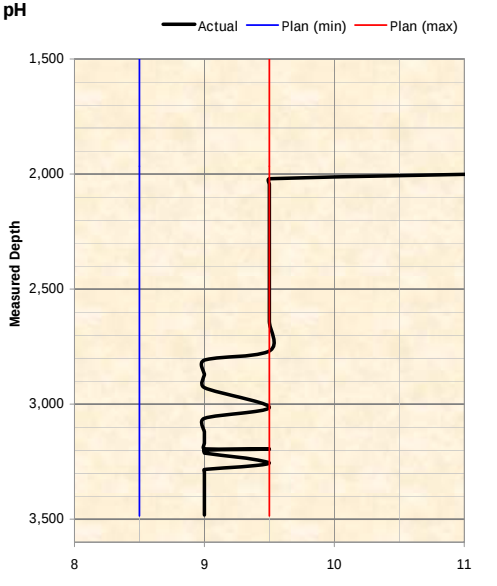
Filtrate Loss



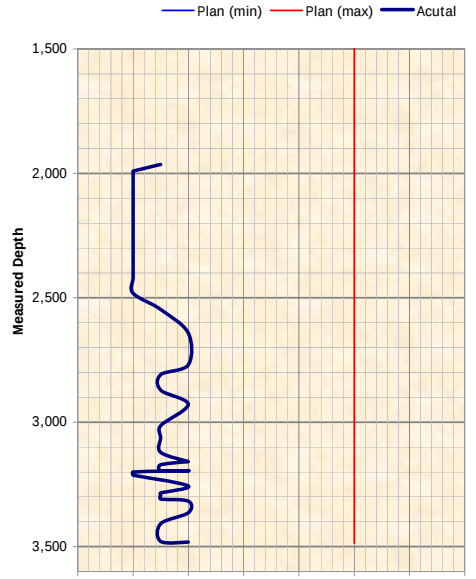
Alkalinity



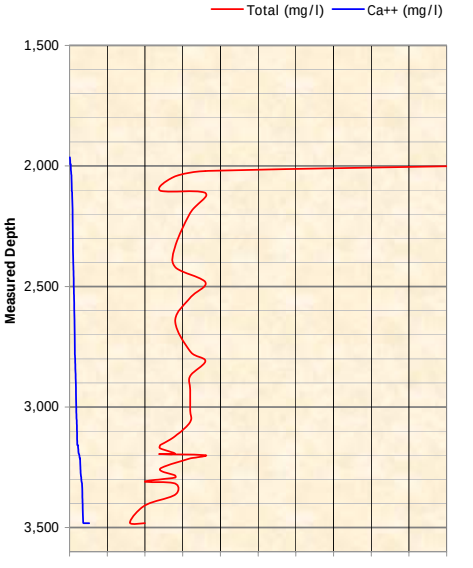
pH



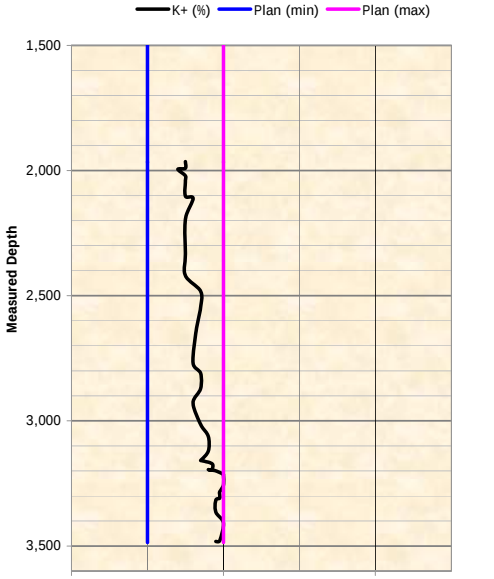
MBT



Hardness



Potassium Ion



HALLIBURTON
Fluid Systems

WBM Properties

Baroid Fluid Services

POSTWELL AUDIT

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Well Summary Report

Well Data

Spud Date		30/11/2009	Fluids/Products: Drilling Cost	$A	812,980.10
TD Date		03/02/2010	Fluids/Products: Completion Cost	$A	0.00
Project			Solids Control/Waste Management Cost	$A	45,561.36
Days on Well		82	Fluids/Products: Cementing Cost	$A	542.04
From Date		29/11/2009	Prod Lost/Damaged Cost	$A	76.08
To Date		18/02/2010	Engineer Services Cost	$A	234,080.00
Drilling Days		37	Equipment Cost	$A	0.00
Rotating / Drilling Hours		413.5/394.5	Transport/Packaging	$A	0.00
Average ROP	ft/hr	41.1	Other Cost	$A	90,876.98
Maximum Density	ppg	9.70	Total Well Cost	$A	1,184,116.56
Total Measured Depth	m	3,522	Planned Cost	$A	843,173.78
True Vertical Depth	m	3,161	Fluid Cost Per Fluid Volume	$A/bbl	49.44
Distance Drilled	m	4,939	Fluid Cost Per Length Drilled	$A/m	164.60
Maximum Deviation	deg	43.47	Fluid Cost/Vol of Hole Drilled	$A/bbl	367.14
Max. Horz. Displacement	m	724	Total Additions/Hole Drilled	bbl/bbl	7.425
Bottom Hole Temp	Deg C	110	Total Additions/Length Drilled	bbl/m	3.329

Casing Design

Description	Set Date & Time	Top MD m	Top TVD m	End MD m	End TVD m	CSG OD in	CSG ID in	Max. Hole Size in	Hole MD m	Hole TVD m
30 APISAW 457.9	05/12/2009 23:59	100	100	158	158	30.000	27.000	36.000	158	158
13.375 K-55 72.0	05/12/2009 23:59	100	100	961	961	13.375	12.347	17.500	966	966
9.625 HCK-55 36.0	13/12/2009 22:20	100	100	1,965	1,964	9.625	8.921	12.25	1,972	1,971

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Well Summary Report

Fluid Program

Int #	Fluid Type	Interval Days	BHT Deg C	Max. Dens ppg	Whole fluid + Mix products	Other material charges	Other charges	Total Interval Cost $A		
								Plan	Actual	Variance
1	Seawater	3		8.80		84.84	9,240.00	56,848.10	9,324.84	-47,523.26
2	Seawater	6	21	9.00	38,288.87	583.02	18,480.00	66,120.12	57,351.89	-8,768.23
3	Seawater 12 1/4" KCl/Polymer	10	53	9.65	278,636.64	12,447.96	30,800.00	234,728.52	321,884.60	87,156.08
4	Hi-Vis PHB/Guar sweeps 12 1/4" KCl/Polymer Brine 8 1/2" KCl/Polymer	33	110	9.70	258,231.53	45,124.84	84,700.00	274,541.71	388,056.37	113,514.66
5	Brine 8 1/2" KCl/Polymer 8 1/2" ST-1 KCl/Polymer	31	83	9.50	237,823.07	78,815.80	90,860.00	210,935.33	407,498.87	196,563.54
Total Well Cost $A					**812,980.10**	**137,056.46**	**234,080.00**	**843,173.78**	**1,184,116.56**	**340,942.78**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	ADA Drilling

Total Cost Breakdown

	Unit Size	Quantity	Total Cost
Engineering/Services			
Drilling Fluids Engineer	day(s)	83.00	127,820.00
Drilling Fluids Engineer 2	day(s)	69.00	106,260.00
		SubTotal **$A**	**234,080.00**
Fluids/Products: Cementing Cost			
citric acid	25 kg bag	6.00	457.20
mica	25 kg bag	2.00	84.84
		SubTotal **$A**	**542.04**
Fluid/Product: Lost Damage			
Circal 60/16	25 kg bag	6.00	76.08
		SubTotal **$A**	**76.08**
Other			
BARA-DEFOAM W300	25 l can	2.00	251.64
BAROLIFT	15 lb box	7.00	2,226.14
Radiagreen EME-Salt	175 kg drum	40.00	88,399.20
		SubTotal **$A**	**90,876.98**
Solids Control/Waste Management Cost			
Generic Mesh 40 (API 40)	1 each box	9.00	5,268.60
Techmesh 110 (API 60)	1 each box	12.00	6,415.20
Techmesh 140 (API 80)	1 each box	1.00	559.96
Techmesh 175 (API 100)	1 each box	15.00	8,399.40
Techmesh 210 (API 120)	1 each box	24.00	14,049.60
Techmesh 260(API 140)	1 each box	14.00	8,195.60
Techmesh 84 (API 50)	1 each box	5.00	2,673.00
		SubTotal **$A**	**45,561.36**
Fluids/Products: Drilling Cost			
ALDACIDE G	25 kg can	41.00	7,096.69
BARAZAN D PLUS	25 kg bag	240.00	51,681.60
barite	1 tons bulk	119.400	87,231.25
bentonite	1000 kg bulk	54.000	41,112.90
caustic soda	25 kg can	32.00	1,736.96
Circal 60/16	25 kg bag	781.00	9,903.08
Circal Y	25 kg bag	155.00	4,171.05
citric acid	25 kg bag	65.00	4,953.00
CLAYSEAL PLUS	55 gal drum	149.00	224,925.93
DEXTRID LTE	25 kg sack	458.00	24,264.84
EZ-MUD	25 kg pail	425.00	40,370.75
guar gum	25 kg bag	74.00	6,567.50
hec	25 kg bag	32.00	No Charge
lime	25 kg bag	47.00	781.14
N-DRIL HT PLUS	50 lb bag	105.00	15,629.25

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	ADA Drilling

Total Cost Breakdown

Omyacarb 5	25 kg bag	6.00	103.86
OXYGON	50 lb can	33.00	18,876.99
PAC-L	25 kg bag	289.00	46,332.48
potassium chloride	1000 kg bag	131.00	194,341.12
potassium hydroxide	20 kg pail	190.00	25,100.90
soda ash	25 kg bag	118.00	3,589.56
sodium bicarbonate	25 kg bag	149.00	4,209.25
		SubTotal	**$A** **812,980.10**
		Total Well Cost:	**$A** **1,184,116.56**

Well	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Net Well Cost Breakdown

Cost Breakdown I $A	Interval 01	Interval 02	Interval 03	Interval 04	Interval 05	Total
Fluid/Product: Drilling	30,298.00	41,407.63	279,397.99	224,053.42	237,823.07	812,980.10
Fluid/Product: Comp/Filtration						
Solids Control/Waste Management Cost			12,447.96	11,657.12	21,456.28	45,561.36
Fluids/Products: Cementing Cost	84.84	457.20				542.04
Engineering Services	9,240.00	18,480.00	30,800.00	84,700.00	90,860.00	234,080.00
Fluid/Product: Lost Damage					76.08	76.08
Other Cost		125.82		33,467.72	57,283.44	90,876.98
Equipment Cost						
Transport/Packaging Cost						
Total Cost	39,622.84	60,470.65	322,645.95	353,878.26	407,498.87	1,184,116.56

Cost Breakdown II $A	Interval 01	Interval 02	Interval 03	Interval 04	Interval 05	Total
Total Products Cost	30,382.84	41,990.65	291,845.95	269,178.26	316,638.87	950,036.56
Total Fluids Cost						
Total Charges Cost	9,240.00	18,480.00	30,800.00	84,700.00	90,860.00	234,080.00
Allocated To / From Other Interval						
Total Cost	39,622.84	60,470.65	322,645.95	353,878.26	407,498.87	1,184,116.56
Planned Cost	56,848.10	66,120.12	234,728.52	274,541.71	210,935.33	843,173.78
Variance	-17,225.26	-5,649.47	87,917.43	79,336.55	196,563.54	340,942.79

Volume Breakdown bbl	Interval 01	Interval 02	Interval 03	Interval 04	Interval 05	Total
Total Base Fluids Addition						
Total Chemical Addition	3.9	111.9	413.1	242.4	270.4	1,041.7
Total Barite Addition	55.7		45.3	40.5	37.5	178.9
Total Water Addition	937.9	3,261.9	2,186.8	1,096.9	1,865.1	9,348.6
Total Fluid Built	997.5	3,373.8	2,645.2	1,379.8	2,172.9	10,569.2
Total Fluid Received	1,142.5	92.6	1,147.3	780.8	2,709.7	5,872.9
Total Influx Addition						
Not Used In Interval	-1,141.0		-52.5		-22.5	
Total Fluid Volume	999.0	4,900.7	3,874.2	4,354.1	6,968.9	16,442.1

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 1	**Max Bit Size: 36.0 in**	**Hole Size Avg/Max**	**36.0 / 36.0 in**

Interval Start Date		29/11/2009	Planned Cost	$A	56,848.10
Interval End Date		01/12/2009	Total Interval Cost	$A	9,324.84
Interval TD Date		01/12/2009	Program Variance	$A	-47,523.26
Drilling Days		2.00	Other material charges	$A	84.84
Rotating/Hours		4.00 / 4.00	Total Fluids Cost		
Interval Top MD/TVD	m	100.0 / 100.0	Total Charges Cost	$A	9,240.00
Interval End MD/TVD	m	158.0 / 158.0	Total Cementing Cost	$A	84.84
Footage	m	58.0	Fluid Cost Per Vol Unit	$A/bbl	0.00
Average ROP	m/hr	14.5	Fluid Cost/Hole Drilled	$A/m	0.00
Max Hole Angle	degrees	0.00	Fluid Cost/Vol Drilled	$A/bbl	0.00
Casing Size	in	0.000	Fluid Built	bbl	997.5
Casing Shoe MD	m	0.0	Total Additions/Vol Drilled	bbl/bbl	4.19
Casing Length	m	0.0	Total Additions/Hole Drilled	bbl/m	17.22
Bottom Hole Temp			Fluid Loss/Vol Drilled	bbl/bbl	0.00
Max Fluid Density	ppg	8.80	Fluid Loss/Hole Drilled	bbl/m	0.00

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Lost Circulation/Bridging Agent				
mica	No Fluid	25 kg bag	2.000	84.84
			Total	**$A 84.84**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 2	**Max Bit Size: 17.50 in**	**Hole Size Avg/Max**	**17.50 / 17.50 in**

Interval Start Date		02/12/2009	Planned Cost	$A	66,120.12
Interval End Date		07/12/2009	Total Interval Cost	$A	57,351.89
Interval TD Date		04/12/2009	Program Variance	$A	-8,768.23
Drilling Days		3.00	Other material charges	$A	583.02
Rotating/Hours		41.00 / 41.00	Total Fluids Cost	$A	38,288.87
Interval Top MD/TVD	m	158.0 / 158.0	Total Charges Cost	$A	18,480.00
Interval End MD/TVD	m	966.0 / 966.0	Total Cementing Cost	$A	457.20
Footage	m	808.0	Fluid Cost Per Vol Unit	$A/bbl	7.81
Average ROP	m/hr	19.7	Fluid Cost/Hole Drilled	$A/m	47.39
Max Hole Angle	degrees	0.00	Fluid Cost/Vol Drilled	$A/bbl	48.55
Casing Size	in	13.375	Fluid Built	bbl	3,373.8
Casing Shoe MD	m	961.0	Total Additions/Vol Drilled	bbl/bbl	6.21
Casing Length	m	861.0	Total Additions/Hole Drilled	bbl/m	6.07
Bottom Hole Temp	Deg C	21	Fluid Loss/Vol Drilled	bbl/bbl	1.74
Max Fluid Density	ppg	9.00	Fluid Loss/Hole Drilled	bbl/m	1.70

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Defoamer				
BARA-DEFOAM W300	No Fluid	25 l can	1.000	125.82
			Total	**$A 125.82**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	Seawater	25 kg bag	11.000	2,368.74
bentonite	Seawater	1000 kg bulk	40.000	30,454.00
guar gum	Seawater	25 kg bag	45.000	3,993.75
			Total	**$A 36,816.49**
Alkalinity Control				
caustic soda	Seawater	25 kg can	13.000	705.64
citric acid	No Fluid	25 kg bag	6.000	457.20
lime	Seawater	25 kg bag	26.000	432.12
soda ash	Seawater	25 kg bag	11.000	334.62
			Total	**$A 1,929.58**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 3	**Max Bit Size: 12.25 in**	**Hole Size Avg/Max**	**12.25 / 12.25 in**

Interval Start Date		08/12/2009	Planned Cost	$A	234,728.52
Interval End Date		17/12/2009	Total Interval Cost	$A	321,884.60
Interval TD Date		17/12/2009	Program Variance	$A	87,156.08
Drilling Days		4.00	Other material charges	$A	12,447.96
Rotating/Hours		52.00 / 53.50	Total Fluids Cost	$A	278,636.64
Interval Top MD/TVD	m	966.0 / 966.0	Total Charges Cost	$A	30,800.00
Interval End MD/TVD	m	1,972.0 / 1,971.9	Total Cementing Cost	$A	0.00
Footage	m	1,006.0	Fluid Cost Per Vol Unit	$A/bbl	71.92
Average ROP	m/hr	19.3	Fluid Cost/Hole Drilled	$A/m	176.97
Max Hole Angle	degrees	0.67	Fluid Cost/Vol Drilled	$A/bbl	579.12
Casing Size	in	9.625	Fluid Built	bbl	2,645.2
Casing Shoe MD	m	1,965.0	Total Additions/Vol Drilled	bbl/bbl	8.05
Casing Length	m	1,865.0	Total Additions/Hole Drilled	bbl/m	3.85
Bottom Hole Temp	Deg C	53	Fluid Loss/Vol Drilled	bbl/bbl	4.03
Max Fluid Density	ppg	9.65	Fluid Loss/Hole Drilled	bbl/m	1.93

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Bactericides				
ALDACIDE G	KCl/Polymer	25 kg can	4.000	692.36
			Total	**$A 692.36**
Weighting Material				
barite	KCl/Polymer	1 tons bulk	30.250	22,100.05
			Total	**$A 22,100.05**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	KCl/Polymer	25 kg bag	95.000	20,457.30
bentonite	KCl/Polymer	1000 kg bulk	13.000	9,897.55
			Total	**$A 30,354.85**
Alkalinity Control				
caustic soda	KCl/Polymer	25 kg can	11.000	597.08
potassium hydroxide	KCl/Polymer	20 kg pail	24.000	3,170.64
sodium bicarbonate	KCl/Polymer	25 kg bag	38.000	1,073.50
			Total	**$A 4,841.22**
Corrosion Inhibitor				
OXYGON	KCl/Polymer	50 lb can	8.000	4,576.24
			Total	**$A 4,576.24**
Shale Control				
EZ-MUD	KCl/Polymer	25 kg pail	121.000	11,493.79
potassium chloride	KCl/Polymer	1000 kg bag	80.000	118,681.60
CLAYSEAL PLUS	KCl/Polymer	55 gal drum	45.000	67,930.65
			Total	**$A 198,106.04**
Lost Circulation/Bridging Agent				
Circal Y	KCl/Polymer	25 kg bag	16.000	430.56
Circal 60/16	KCl/Polymer	25 kg bag	166.000	2,104.88
			Total	**$A 2,535.44**
Filtration Control				

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

DEXTRID LTE	KCl/Polymer	25 kg sack	146.000		7,735.08
PAC-L	KCl/Polymer	25 kg bag	48.000		7,695.36
			Total	**$A**	**15,430.44**
Solids Control Equipment					
Techmesh 110 (API 60)	No Fluid	1 each box	12.000		6,415.20
Techmesh 175 (API 100)	No Fluid	1 each box	5.000		2,799.80
Techmesh 140 (API 80)	No Fluid	1 each box	1.000		559.96
Techmesh 84 (API 50)	No Fluid	1 each box	5.000		2,673.00
			Total	**$A**	**12,447.96**

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 4	**Max Bit Size: 8.50 in**	**Hole Size Avg/Max**	**8.50 / 8.50 in**

Interval Start Date		18/12/2009	Planned Cost	$A	274,541.71
Interval End Date		19/01/2010	Total Interval Cost	$A	388,056.37
Interval TD Date		02/01/2010	Program Variance	$A	113,514.66
Drilling Days		12.00	Other material charges	$A	45,124.84
Rotating/Hours		152.00 / 139.50	Total Fluids Cost	$A	258,231.53
Interval Top MD/TVD	m	1,972.0 / 1,971.9	Total Charges Cost	$A	84,700.00
Interval End MD/TVD	m	3,522.0 / 3,131.9	Total Cementing Cost	$A	0.00
Footage	m	1,550.0	Fluid Cost Per Vol Unit	$A/bbl	59.31
Average ROP	m/hr	10.2	Fluid Cost/Hole Drilled	$A/m	166.60
Max Hole Angle	degrees	43.47	Fluid Cost/Vol Drilled	$A/bbl	723.50
Casing Size	in	9.625	Fluid Built	bbl	1,379.8
Casing Shoe MD	m	1,965.0	Total Additions/Vol Drilled	bbl/bbl	12.20
Casing Length	m	1,865.0	Total Additions/Hole Drilled	bbl/m	2.81
Bottom Hole Temp	Deg C	110	Fluid Loss/Vol Drilled	bbl/bbl	6.29
Max Fluid Density	ppg	9.70	Fluid Loss/Hole Drilled	bbl/m	1.45

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Bactericides				
ALDACIDE G	KCl/Polymer	25 kg can	25.000	4,327.25
			Total	**$A 4,327.25**
Weighting Material				
barite	KCl/Polymer	1 tons bulk	27.000	19,725.66
barite	Seawater	1 tons bulk	37.150	27,141.05
			Total	**$A 46,866.71**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	KCl/Polymer	25 kg bag	47.000	10,120.98
BARAZAN D PLUS	Seawater	25 kg bag	12.000	2,584.08
bentonite	Seawater		1.000	761.35
guar gum	Seawater		29.000	2,573.75
hec	KCl/Polymer	25 kg bag	32.000	No Charge
			Total	**$A 16,040.16**
Filtration Control				
N-DRIL HT PLUS	KCl/Polymer	50 lb bag	37.000	5,507.45
DEXTRID LTE	KCl/Polymer	25 kg sack	208.000	11,019.84
PAC-L	KCl/Polymer	25 kg bag	138.000	22,124.16
			Total	**$A 38,651.45**
Alkalinity Control				
caustic soda	Seawater		8.000	434.24
citric acid	KCl/Polymer	25 kg bag	32.000	2,438.40
lime	Seawater		21.000	349.02
potassium hydroxide	KCl/Polymer	20 kg pail	63.000	8,322.93
soda ash	KCl/Polymer	25 kg bag	34.000	1,034.28
soda ash	Seawater	25 kg bag	11.000	334.62
sodium bicarbonate	KCl/Polymer	25 kg bag	48.000	1,356.00
			Total	**$A 14,269.49**

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Corrosion Inhibitor					
OXYGON	KCl/Polymer	50 lb can	18.000		10,296.54
			Total	**$A**	**10,296.54**
Shale Control					
EZ-MUD	KCl/Polymer	25 kg pail	168.000		15,958.32
potassium chloride	KCl/Polymer	1000 kg bag	21.000		31,153.92
CLAYSEAL PLUS	KCl/Polymer	55 gal drum	51.000		76,988.07
			Total	**$A**	**124,100.31**
Lost Circulation/Bridging Agent					
Circal 60/16	KCl/Polymer	25 kg bag	282.000		3,575.76
Omyacarb 5	KCl/Polymer	25 kg bag	6.000		103.86
BAROLIFT	No Fluid	15 lb box	1.000		318.02
			Total	**$A**	**3,997.64**
Lubricant					
Radiagreen EME-Salt	No Fluid	175 kg drum	15.000		33,149.70
			Total	**$A**	**33,149.70**
Solids Control Equipment					
Techmesh 175 (API 100)	No Fluid	1 each box	2.000		1,119.92
Techmesh 210 (API 120)	No Fluid	1 each box	18.000		10,537.20
			Total	**$A**	**11,657.12**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

Interval # 5	**Max Bit Size: 8.50 in**	**Hole Size Avg/Max**	**8.50 / 8.50 in**

Interval Start Date		19/01/2010	Planned Cost	$A	210,935.33
Interval End Date		18/02/2010	Total Interval Cost	$A	407,498.87
Interval TD Date		12/02/2010	Program Variance	$A	196,563.54
Drilling Days		16.00	Other material charges	$A	78,815.80
Rotating/Hours		164.50 / 145.00	Total Fluids Cost	$A	237,823.07
Interval Top MD/TVD	m	1,964.0 / 1,964.0	Total Charges Cost	$A	90,860.00
Interval End MD/TVD	m	3,482.0 / 3,161.3	Total Cementing Cost	$A	0.00
Footage	m	1,517.0	Fluid Cost Per Vol Unit	$A/bbl	34.13
Average ROP	m/hr	9.2	Fluid Cost/Hole Drilled	$A/m	156.77
Max Hole Angle	degrees	36.06	Fluid Cost/Vol Drilled	$A/bbl	680.82
Casing Size	in	0.000	Fluid Built	bbl	2,172.9
Casing Shoe MD	m	0.0	Total Additions/Vol Drilled	bbl/bbl	19.95
Casing Length	m	0.0	Total Additions/Hole Drilled	bbl/m	4.59
Bottom Hole Temp	Deg C	83	Fluid Loss/Vol Drilled	bbl/bbl	9.15
Max Fluid Density	ppg	9.50	Fluid Loss/Hole Drilled	bbl/m	2.11

Interval Product and Base Fluids Usage and Cost

Product Function / Name	Drilling Fluid	Packaging	Quantity Used	Product Cost
Bactericides				
ALDACIDE G	KCl/Polymer	25 kg can	12.000	2,077.08
			Total	**$A 2,077.08**
Defoamer				
BARA-DEFOAM W300	No Fluid	25 l can	1.000	125.82
			Total	**$A 125.82**
Weighting Material				
barite	KCl/Polymer	1 tons bulk	25.000	18,264.50
			Total	**$A 18,264.50**
Viscosifier/Suspension Agent				
BARAZAN D PLUS	KCl/Polymer	25 kg bag	75.000	16,150.50
			Total	**$A 16,150.50**
Filtration Control				
N-DRIL HT PLUS	KCl/Polymer	50 lb bag	68.000	10,121.80
DEXTRID LTE	KCl/Polymer	25 kg sack	104.000	5,509.92
PAC-L	KCl/Polymer	25 kg bag	103.000	16,512.96
			Total	**$A 32,144.68**
Corrosion Inhibitor				
OXYGON	KCl/Polymer	50 lb can	7.000	4,004.21
			Total	**$A 4,004.21**
Alkalinity Control				
citric acid	KCl/Polymer	25 kg bag	33.000	2,514.60
potassium hydroxide	KCl/Polymer	20 kg pail	103.000	13,607.33
soda ash	KCl/Polymer	25 kg bag	62.000	1,886.04
sodium bicarbonate	KCl/Polymer	25 kg bag	63.000	1,779.75
			Total	**$A 19,787.72**
Shale Control				
EZ-MUD	KCl/Polymer	25 kg pail	136.000	12,918.64

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Summary

potassium chloride	KCl/Polymer	1000 kg bag	30.000		44,505.60
CLAYSEAL PLUS	KCl/Polymer	55 gal drum	53.000		80,007.21
			Total	**$A**	**137,431.45**
Lost Circulation/Bridging Agent					
Circal Y	KCl/Polymer	25 kg bag	139.000		3,740.49
Circal 60/16	KCl/Polymer	25 kg bag	333.000		4,222.44
Circal 60/16	No Fluid	25 kg bag	6.000		76.08
BAROLIFT	No Fluid	15 lb box	6.000		1,908.12
			Total	**$A**	**9,947.13**
Lubricant					
Radiagreen EME-Salt	No Fluid	175 kg drum	25.000		55,249.50
			Total	**$A**	**55,249.50**
Solids Control Equipment					
Techmesh 175 (API 100)	No Fluid	1 each box	8.000		4,479.68
Techmesh 260(API 140)	No Fluid	1 each box	14.000		8,195.60
Techmesh 210 (API 120)	No Fluid	1 each box	6.000		3,512.40
Generic Mesh 40 (API 40)	No Fluid	1 each box	9.000		5,268.60
			Total	**$A**	**21,456.28**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval #	**01**	**From Date**	**29/11/2009**	**Top of Interval**	**100.0 m**
Max. Hole Size / Bit Size	**36.000 / 26.000 in**	**To Date**	**01/12/2009**	**Bottom of Interval**	**158.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	3.00		4620.00
Drilling Fluids Engineer 2	day(s)	3.00		4620.00
		SubTotal	**$A**	**9,240.00**
Fluids/Products: Cementing Cost				
mica	25 kg bag	2.00		84.84
		SubTotal	**$A**	**84.84**
Fluids/Products: Drilling Cost				
barite	1 tons bulk	37.150		27141.05
caustic soda	25 kg can	8.00		434.24
guar gum	25 kg bag	27.00		2396.25
lime	25 kg bag	5.00		83.10
soda ash	25 kg bag	8.00		243.36
		SubTotal	**$A**	**30,298.00**
		Interval Total Cost	**$A**	**39,622.84**
	Charged To/From Other Interval		**$A**	**-30,298.00**
	Net Description Total Cost		**$A**	**9,324.84**
	Programmed Cost		**$A**	**56,848.10**
	Program Variance		**$A**	**-47,523.26**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval #	**02**	**From Date**	**02/12/2009**	**Top of Interval**	**158.0 m**
Max. Hole Size / Bit Size	**17.50 / 17.50 in**	**To Date**	**07/12/2009**	**Bottom of Interval**	**966.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	6.00		9240.00
Drilling Fluids Engineer 2	day(s)	6.00		9240.00
		SubTotal	**$A**	**18,480.00**
Fluids/Products: Cementing Cost				
citric acid	25 kg bag	6.00		457.20
		SubTotal	**$A**	**457.20**
Other				
BARA-DEFOAM W300	25 l can	1.00		125.82
		SubTotal	**$A**	**125.82**
Fluids/Products: Drilling Cost				
BARAZAN D PLUS	25 kg bag	23.00		4952.82
bentonite	1000 kg bulk	40.000		30454.00
caustic soda	25 kg can	13.00		705.64
guar gum	25 kg bag	47.00		4171.25
lime	25 kg bag	42.00		698.04
soda ash	25 kg bag	14.00		425.88
		SubTotal	**$A**	**41,407.63**
		Interval Total Cost	**$A**	**60,470.65**
	Charged To/From Other Interval		**$A**	**-3,118.76**
	Net Description Total Cost		**$A**	**57,351.89**
	Programmed Cost		**$A**	**66,120.12**
	Program Variance		**$A**	**-8,768.23**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval # 03		**From Date**	**08/12/2009**	**Top of Interval**	**966.0 m**
Max. Hole Size / Bit Size	**12.25 / 12.25 in**	**To Date**	**17/12/2009**	**Bottom of Interval**	**1,972.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	10.00		15400.00
Drilling Fluids Engineer 2	day(s)	10.00		15400.00
		SubTotal	**$A**	**30,800.00**
Solids Control/Waste Management Cost				
Techmesh 110 (API 60)	1 each box	12.00		6415.20
Techmesh 140 (API 80)	1 each box	1.00		559.96
Techmesh 175 (API 100)	1 each box	5.00		2799.80
Techmesh 84 (API 50)	1 each box	5.00		2673.00
		SubTotal	**$A**	**12,447.96**
Fluids/Products: Drilling Cost				
ALDACIDE G	25 kg can	4.00		692.36
BARAZAN D PLUS	25 kg bag	95.00		20457.30
barite	1 tons bulk	30.250		22100.05
bentonite	1000 kg bulk	14.000		10658.90
caustic soda	25 kg can	11.00		597.08
Circal 60/16	25 kg bag	166.00		2104.88
Circal Y	25 kg bag	16.00		430.56
CLAYSEAL PLUS	55 gal drum	45.00		67930.65
DEXTRID LTE	25 kg sack	146.00		7735.08
EZ-MUD	25 kg pail	121.00		11493.79
OXYGON	50 lb can	8.00		4576.24
PAC-L	25 kg bag	48.00		7695.36
potassium chloride	1000 kg bag	80.00		118681.60
potassium hydroxide	20 kg pail	24.00		3170.64
sodium bicarbonate	25 kg bag	38.00		1073.50
		SubTotal	**$A**	**279,397.99**
		Interval Total Cost	**$A**	**322,645.95**
	Charged To/From Other Interval		**$A**	**-761.35**
	Net Description Total Cost		**$A**	**321,884.60**
	Programmed Cost		**$A**	**234,728.52**
	Program Variance		**$A**	**87,156.08**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval #	**04**	**From Date**	**18/12/2009**	**Top of Interval**	**1,972.0 m**
Max. Hole Size / Bit Size	**8.50 / 8.50 in**	**To Date**	**19/01/2010**	**Bottom of Interval**	**3,522.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	33.00		50820.00
Drilling Fluids Engineer 2	day(s)	22.00		33880.00
		SubTotal	**$A**	**84,700.00**
Other				
BAROLIFT	15 lb box	1.00		318.02
Radiagreen EME-Salt	175 kg drum	15.00		33149.70
		SubTotal	**$A**	**33,467.72**
Solids Control/Waste Management Cost				
Techmesh 175 (API 100)	1 each box	2.00		1119.92
Techmesh 210 (API 120)	1 each box	18.00		10537.20
		SubTotal	**$A**	**11,657.12**
Fluids/Products: Drilling Cost				
ALDACIDE G	25 kg can	25.00		4327.25
BARAZAN D PLUS	25 kg bag	47.00		10120.98
barite	1 tons bulk	27.000		19725.66
Circal 60/16	25 kg bag	282.00		3575.76
citric acid	25 kg bag	32.00		2438.40
CLAYSEAL PLUS	55 gal drum	51.00		76988.07
DEXTRID LTE	25 kg sack	208.00		11019.84
EZ-MUD	25 kg pail	168.00		15958.32
hec	25 kg bag	32.00		No Charge
N-DRIL HT PLUS	50 lb bag	37.00		5507.45
Omyacarb 5	25 kg bag	6.00		103.86
OXYGON	50 lb can	18.00		10296.54
PAC-L	25 kg bag	138.00		22124.16
potassium chloride	1000 kg bag	21.00		31153.92
potassium hydroxide	20 kg pail	63.00		8322.93
soda ash	25 kg bag	34.00		1034.28
sodium bicarbonate	25 kg bag	48.00		1356.00
		SubTotal	**$A**	**224,053.42**
		Interval Total Cost	**$A**	**353,878.26**
	Charged To/From Other Interval		**$A**	**34,178.11**
	Net Description Total Cost		**$A**	**388,056.37**
	Programmed Cost		**$A**	**274,541.71**
	Program Variance		**$A**	**113,514.66**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Cost Breakdown

Interval #	**05**	**From Date**	**19/01/2010**	**Top of Interval**	**1,964.0 m**
Max. Hole Size / Bit Size	**8.50 / 8.50 in**	**To Date**	**18/02/2010**	**Bottom of Interval**	**3,482.0 m**

Material	Unit Size	Quantity		Total Cost
Engineering/Services				
Drilling Fluids Engineer	day(s)	31.00		47740.00
Drilling Fluids Engineer 2	day(s)	28.00		43120.00
		SubTotal	**$A**	**90,860.00**
Fluid/Product: Lost Damage				
Circal 60/16	25 kg bag	6.00		76.08
		SubTotal	**$A**	**76.08**
Other				
BARA-DEFOAM W300	25 l can	1.00		125.82
BAROLIFT	15 lb box	6.00		1908.12
Radiagreen EME-Salt	175 kg drum	25.00		55249.50
		SubTotal	**$A**	**57,283.44**
Solids Control/Waste Management Cost				
Generic Mesh 40 (API 40)	1 each box	9.00		5268.60
Techmesh 175 (API 100)	1 each box	8.00		4479.68
Techmesh 210 (API 120)	1 each box	6.00		3512.40
Techmesh 260(API 140)	1 each box	14.00		8195.60
		SubTotal	**$A**	**21,456.28**
Fluids/Products: Drilling Cost				
ALDACIDE G	25 kg can	12.00		2077.08
BARAZAN D PLUS	25 kg bag	75.00		16150.50
barite	1 tons bulk	25.000		18264.50
Circal 60/16	25 kg bag	333.00		4222.44
Circal Y	25 kg bag	139.00		3740.49
citric acid	25 kg bag	33.00		2514.60
CLAYSEAL PLUS	55 gal drum	53.00		80007.21
DEXTRID LTE	25 kg sack	104.00		5509.92
EZ-MUD	25 kg pail	136.00		12918.64
N-DRIL HT PLUS	50 lb bag	68.00		10121.80
OXYGON	50 lb can	7.00		4004.21
PAC-L	25 kg bag	103.00		16512.96
potassium chloride	1000 kg bag	30.00		44505.60
potassium hydroxide	20 kg pail	103.00		13607.33
soda ash	25 kg bag	62.00		1886.04
sodium bicarbonate	25 kg bag	63.00		1779.75
		SubTotal	**$A**	**237,823.07**
		Interval Total Cost	**$A**	**407,498.87**
	Charged To/From Other Interval		**$A**	
	Net Description Total Cost		**$A**	**407,498.87**
	Programmed Cost		**$A**	**210,935.33**
	Program Variance		**$A**	**196,563.54**

Australia

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Inventory Report

Interval # 01	**From Date**	**29/11/2009**		**Top of Interval**		**100.0 m**	
Max. Hole Size / Bit Size	**To Date**	**01/12/2009**		**Bottom of Interval**		**158.0 m**	
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**
ALDACIDE G	25 kg can		8.0			8.0	440.92
Amodrill 1235	1 bbl bulk		19.400			19.400	5,320.82
BARA-DEFOAM W300	25 l can		8.0			8.0	386.88
BARAZAN D PLUS	25 kg bag		155.0			155.0	8,542.91
barite	1 tons bulk		116.400	37.150		79.250	174,716.34
BAROLIFT	15 lb box		16.0			16.0	240.00
BARO-SEAL FINE	40 lb bag		40.0			40.0	1,600.00
BARO-SEAL MEDIUM	40 lb bag		70.0			70.0	2,800.00
bentonite	1000 kg bulk		94.500			94.500	208,336.83
caustic soda	25 kg can		32.0	8.0		24.0	1,322.77
Circal 60/16	25 kg bag		149.0			149.0	8,212.22
Circal Y	25 kg bag		91.0			91.0	5,015.52
citric acid	25 kg bag		38.0			38.0	2,094.39
CLAYSEAL PLUS	55 gal drum		46.0			46.0	21,944.21
CON DET	5 gal can		32.0			32.0	1,367.76
DEXTRID LTE	25 kg sack		126.0			126.0	6,944.56
EZ SPOT	55 gal drum		5.0			5.0	5,275.05
EZ-MUD	25 kg pail		121.0			121.0	6,668.98
Generic mesh 24 (API 20)	1 each box		12.0			12.0	
guar gum	25 kg bag		150.0	27.0		123.0	6,779.21
lime	25 kg bag		89.0	5.0		84.0	4,629.71
mica	25 kg bag		38.0	2.0		36.0	1,984.16
N-DRIL HT PLUS	50 lb bag		105.0			105.0	5,250.00
Omyacarb 5	25 kg bag		6.0			6.0	330.69
OXYGON	50 lb can		33.0			33.0	1,650.00
PAC-L	25 kg bag		87.0			87.0	4,795.05
potassium chloride	1000 kg bag		33.0			33.0	72,752.54
potassium hydroxide	20 kg pail		44.0			44.0	1,940.07
sapp	25 kg bag		18.0			18.0	992.08
soda ash	25 kg bag		22.0	8.0		14.0	771.62
sodium bicarbonate	25 kg bag		38.0			38.0	2,094.39
SOURSCAV	25 kg pail		32.0			32.0	1,763.70
STEELSEAL 100	50 lb sack		40.0			40.0	2,000.00
STEELSEAL 400	50 lb sack		40.0			40.0	2,000.00
Techmesh 110 (API 60)	1 each box		24.0			24.0	
Techmesh 140 (API 80)	1 each box		16.0			16.0	
Techmesh 175 (API 100)	1 each box		7.0			7.0	
Techmesh 84 (API 50)	1 each box		8.0			8.0	
					Total Weight of Products in Stock lb		**570,963.39**
					Total Weight of Products in Stock, Metric Tons		**258.98**

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Inventory Report

Interval # 02		**From Date**	**02/12/2009**		**Top of Interval**		**158.0 m**	
Max. Hole Size / Bit Size	**17.50 / 17.5 in**	**To Date**	**07/12/2009**		**Bottom of Interval**		**966.0 m**	
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**	
ALDACIDE G	25 kg can	8.0				8.0	440.92	
Amodrill 1235	1 bbl bulk	19.400				19.400	5,320.82	
BARA-DEFOAM W300	25 l can	8.0		1.0		7.0	338.52	
BARAZAN D PLUS	25 kg bag	155.0		23.0		132.0	7,275.25	
barite	1 tons bulk	79.250				79.250	174,716.34	
BAROLIFT	15 lb box	16.0				16.0	240.00	
BARO-SEAL FINE	40 lb bag	40.0				40.0	1,600.00	
BARO-SEAL MEDIUM	40 lb bag	70.0				70.0	2,800.00	
bentonite	1000 kg bulk	94.500		40.000	21.500	33.000	72,752.54	
caustic soda	25 kg can	24.0		13.0		11.0	606.27	
Circal 60/16	25 kg bag	149.0				149.0	8,212.22	
Circal Y	25 kg bag	91.0				91.0	5,015.52	
citric acid	25 kg bag	38.0		6.0		32.0	1,763.70	
CLAYSEAL PLUS	55 gal drum	46.0				46.0	21,944.21	
CON DET	5 gal can	32.0				32.0	1,367.76	
DEXTRID LTE	25 kg sack	126.0				126.0	6,944.56	
EZ SPOT	55 gal drum	5.0				5.0	5,275.05	
EZ-MUD	25 kg pail	121.0				121.0	6,668.98	
Generic mesh 24 (API 20)	1 each box	12.0				12.0		
guar gum	25 kg bag	123.0		47.0	76.0			
lime	25 kg bag	84.0		42.0	42.0			
mica	25 kg bag	36.0				36.0	1,984.16	
N-DRIL HT PLUS	50 lb bag	105.0				105.0	5,250.00	
Omyacarb 5	25 kg bag	6.0				6.0	330.69	
OXYGON	50 lb can	33.0				33.0	1,650.00	
PAC-L	25 kg bag	87.0				87.0	4,795.05	
potassium chloride	1000 kg bag	33.0	17.0			50.0	110,231.13	
potassium hydroxide	20 kg pail	44.0				44.0	1,940.07	
sapp	25 kg bag	18.0				18.0	992.08	
soda ash	25 kg bag	14.0		14.0				
sodium bicarbonate	25 kg bag	38.0				38.0	2,094.39	
SOURSCAV	25 kg pail	32.0				32.0	1,763.70	
STEELSEAL 100	50 lb sack	40.0				40.0	2,000.00	
STEELSEAL 400	50 lb sack	40.0				40.0	2,000.00	
Techmesh 110 (API 60)	1 each box	24.0				24.0		
Techmesh 140 (API 80)	1 each box	16.0				16.0		
Techmesh 175 (API 100)	1 each box	7.0				7.0		
Techmesh 84 (API 50)	1 each box	8.0				8.0		
					Total Weight of Products in Stock lb		**458,313.94**	
					Total Weight of Products in Stock, Metric Tons		**207.89**	

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Inventory Report

Interval # 03		**From Date**	**08/12/2009**		**Top of Interval**		**966.0 m**	
Max. Hole Size / Bit Size	**12.25 / 12.25 in**	**To Date**	**17/12/2009**		**Bottom of Interval**		**1,972.0 m**	
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**	
ALDACIDE G	25 kg can	8.0		4.0		4.0	220.46	
Amodrill 1235	1 bbl bulk	19.400				19.400	5,320.82	
BARA-DEFOAM W300	25 l can	7.0				7.0	338.52	
BARAZAN D PLUS	25 kg bag	132.0	40.0	95.0		77.0	4,243.90	
barite	1 tons bulk	79.250	44.000	30.250		93.000	205,029.89	
BAROLIFT	15 lb box	16.0				16.0	240.00	
BARO-SEAL FINE	40 lb bag	40.0				40.0	1,600.00	
BARO-SEAL MEDIUM	40 lb bag	70.0				70.0	2,800.00	
bentonite	1000 kg bulk	33.000		14.000		19.000	41,887.83	
caustic soda	25 kg can	11.0		11.0				
Circal 60/16	25 kg bag	149.0	319.0	166.0		302.0	16,644.90	
Circal Y	25 kg bag	91.0		16.0		75.0	4,133.67	
citric acid	25 kg bag	32.0				32.0	1,763.70	
CLAYSEAL PLUS	55 gal drum	46.0	48.0	45.0		49.0	23,375.35	
CON DET	5 gal can	32.0				32.0	1,367.76	
DEXTRID LTE	25 kg sack	126.0	180.0	146.0		160.0	8,818.49	
EZ SPOT	55 gal drum	5.0				5.0	5,275.05	
EZ-MUD	25 kg pail	121.0	192.0	121.0		192.0	10,582.19	
Generic mesh 24 (API 20)	1 each box	12.0				12.0		
guar gum	25 kg bag							
lime	25 kg bag							
mica	25 kg bag	36.0				36.0	1,984.16	
N-DRIL HT PLUS	50 lb bag	105.0				105.0	5,250.00	
Omyacarb 5	25 kg bag	6.0				6.0	330.69	
OXYGON	50 lb can	33.0		8.0		25.0	1,250.00	
PAC-L	25 kg bag	87.0	80.0	48.0		119.0	6,558.75	
potassium chloride	1000 kg bag	50.0	54.0	80.0		24.0	52,910.94	
potassium hydroxide	20 kg pail	44.0	32.0	24.0		52.0	2,292.81	
sapp	25 kg bag	18.0				18.0	992.08	
soda ash	25 kg bag							
sodium bicarbonate	25 kg bag	38.0		38.0				
SOURSCAV	25 kg pail	32.0				32.0	1,763.70	
STEELSEAL 100	50 lb sack	40.0				40.0	2,000.00	
STEELSEAL 400	50 lb sack	40.0				40.0	2,000.00	
Techmesh 110 (API 60)	1 each box	24.0		12.0		12.0		
Techmesh 140 (API 80)	1 each box	16.0		1.0		15.0		
Techmesh 175 (API 100)	1 each box	7.0		5.0		2.0		
Techmesh 84 (API 50)	1 each box	8.0		5.0		3.0		
					Total Weight of Products in Stock lb		**410,975.66**	
					Total Weight of Products in Stock, Metric Tons		**186.42**	

Baroid Fluid Services

Interval Inventory Report

Interval # 04	From Date 18/12/2009	Top of Interval 1,972.0 m
Max. Hole Size / Bit Size 8.50 / 8.50 in	To Date 19/01/2010	Bottom of Interval 3,522.0 m

Product Name	Units	Starting	Received	Used	Returned	Ending	Weight lb
ALDACIDE G	25 kg can	4.0	32.0	25.0		11.0	606.27
Amodrill 1235	1 bbl bulk	19.400				19.400	5,320.82
BARA-DEFOAM W300	25 l can	7.0				7.0	338.52
BARAZAN D PLUS	25 kg bag	77.0	80.0	47.0		110.0	6,062.71
barite	1 tons bulk	93.000	81.000	27.000		147.000	324,079.51
BAROLIFT	15 lb box	16.0		1.0		15.0	225.00
BARO-SEAL FINE	40 lb bag	40.0				40.0	1,600.00
BARO-SEAL MEDIUM	40 lb bag	70.0				70.0	2,800.00
bentonite	1000 kg bulk	19.000				19.000	41,887.83
caustic soda	25 kg can						
Circal 60/16	25 kg bag	302.0	195.0	282.0		215.0	11,849.85
Circal Y	25 kg bag	75.0				75.0	4,133.67
citric acid	25 kg bag	32.0		32.0			
CLAYSEAL PLUS	55 gal drum	49.0	56.0	51.0		54.0	25,760.59
CON DET	5 gal can	32.0				32.0	1,367.76
DEXTRID LTE	25 kg sack	160.0	152.0	208.0		104.0	5,732.02
EZ SPOT	55 gal drum	5.0				5.0	5,275.05
EZ-MUD	25 kg pail	192.0	96.0	168.0		120.0	6,613.87
Generic mesh 24 (API 20)	1 each box	12.0				12.0	
Generic Mesh 40 (API 40)	1 each box		24.0			24.0	
guar gum	25 kg bag						
hec	25 kg bag		32.0	32.0			
lime	25 kg bag						
mica	25 kg bag	36.0				36.0	1,984.16
N-DRIL HT PLUS	50 lb bag	105.0		37.0		68.0	3,400.00
Omyacarb 5	25 kg bag	6.0		6.0			
OXYGON	50 lb can	25.0		18.0		7.0	350.00
PAC-L	25 kg bag	119.0	42.0	138.0		23.0	1,267.66
potassium chloride	1000 kg bag	24.0	15.0	21.0		18.0	39,683.21
potassium hydroxide	20 kg pail	52.0	82.0	63.0		71.0	3,130.56
Radiagreen EME-Salt	175 kg drum		40.0	15.0		25.0	9,645.22
sapp	25 kg bag	18.0				18.0	992.08
soda ash	25 kg bag		96.0	34.0		62.0	3,417.16
sodium bicarbonate	25 kg bag		48.0	48.0			
SOURSCAV	25 kg pail	32.0				32.0	1,763.70
STEELSEAL 100	50 lb sack	40.0				40.0	2,000.00
STEELSEAL 400	50 lb sack	40.0				40.0	2,000.00
Techmesh 110 (API 60)	1 each box	12.0				12.0	
Techmesh 140 (API 80)	1 each box	15.0				15.0	
Techmesh 175 (API 100)	1 each box	2.0	8.0	2.0		8.0	
Techmesh 210 (API 120)	1 each box		24.0	18.0		6.0	
Techmesh 84 (API 50)	1 each box	3.0				3.0	
					Total Weight of Products in Stock lb		**513,287.22**
					Total Weight of Products in Stock, Metric Tons		**232.82**

Baroid Fluid Services

Interval Inventory Report

Interval # 05		From Date 19/01/2010		Top of Interval			1,964.0 m
Max. Hole Size / Bit Size 8.50 / 8.50 in		To Date 18/02/2010		Bottom of Interval			3,482.0 m
Product Name	**Units**	**Starting**	**Received**	**Used**	**Returned**	**Ending**	**Weight lb**
ALDACIDE G	25 kg can	11.0	6.0	12.0	5.0		
Amodrill 1235	1 bbl bulk	19.400			19.400		
BARA-DEFOAM W300	25 l can	7.0		1.0	6.0		
BARAZAN D PLUS	25 kg bag	110.0		75.0	35.0		
barite	1 tons bulk	147.000	12.000	25.000	134.000		
BAROLIFT	15 lb box	15.0		6.0	9.0		
BARO-SEAL FINE	40 lb bag	40.0			40.0		
BARO-SEAL MEDIUM	40 lb bag	70.0			70.0		
bentonite	1000 kg bulk	19.000			19.000		
caustic soda	25 kg can						
Circal 60/16	25 kg bag	215.0	280.0	339.0	156.0		
Circal Y	25 kg bag	75.0	192.0	139.0	128.0		
citric acid	25 kg bag		80.0	33.0	47.0		
CLAYSEAL PLUS	55 gal drum	54.0	8.0	53.0	9.0		
CON DET	5 gal can	32.0			32.0		
DEXTRID LTE	25 kg sack	104.0		104.0			
EZ SPOT	55 gal drum	5.0			5.0		
EZ-MUD	25 kg pail	120.0	32.0	136.0	16.0		
Generic mesh 24 (API 20)	1 each box	12.0			12.0		
Generic Mesh 40 (API 40)	1 each box	24.0		9.0	15.0		
guar gum	25 kg bag						
hec	25 kg bag						
lime	25 kg bag						
mica	25 kg bag	36.0			36.0		
N-DRIL HT PLUS	50 lb bag	68.0		68.0			
Omyacarb 5	25 kg bag						
OXYGON	50 lb can	7.0		7.0			
PAC-L	25 kg bag	23.0	80.0	103.0			
potassium chloride	1000 kg bag	18.0	12.0	30.0			
potassium hydroxide	20 kg pail	71.0	32.0	103.0			
Radiagreen EME-Salt	175 kg drum	25.0		25.0			
sapp	25 kg bag	18.0			18.0		
soda ash	25 kg bag	62.0		62.0			
sodium bicarbonate	25 kg bag		96.0	63.0	33.0		
SOURSCAV	25 kg pail	32.0			32.0		
STEELSEAL 100	50 lb sack	40.0			40.0		
STEELSEAL 400	50 lb sack	40.0			40.0		
Techmesh 110 (API 60)	1 each box	12.0			12.0		
Techmesh 140 (API 80)	1 each box	15.0			15.0		
Techmesh 175 (API 100)	1 each box	8.0		8.0			
Techmesh 210 (API 120)	1 each box	6.0		6.0			
Techmesh 260(API 140)	1 each box		20.0	14.0	6.0		
Techmesh 84 (API 50)	1 each box	3.0			3.0		

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 01																				
Fluid Name: Hi-Vis PHB/Guar sweeps																				
002	30/11/2009		1,050.0			482.1	55.7	2.3		1,590.1			151.1			151.1			1,439.0	1,439.0
003	1/12/2009	1,439.0				255.0		1.6		256.6			554.6			554.6			1,141.0	1,141.0
Cumulative Volume			1,050.0			737.1	55.7	3.9		1,846.7			705.7			705.7				
Fluid Name: Seawater																				
002	30/11/2009					123.6				123.6							68.6	55.0		123.6
003	1/12/2009	123.6				77.2			92.5	169.7							238.3	55.0		293.3
Cumulative Volume						200.8			92.5	293.3										

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 02																				
Fluid Name:	**Hi-Vis PHB/Guar sweeps**																			
004	2/12/2009	1,141.0				748.0				748.0			551.0			551.0			1,338.0	1,338.0
005	3/12/2009	1,338.0				1,500.0				1,500.0			1,500.0			1,500.0			1,338.0	1,338.0
006	4/12/2009	1,338.0						2.6		2.6			759.6			759.6			581.0	581.0
007	5/12/2009	581.0											581.0			581.0				
Cumulative Volume						2,248.0		2.6		2,250.6			3,391.6			3,391.6				
Fluid Name:	**Seawater**																			
004	2/12/2009	293.3	0.1			114.5		53.2		167.8			24.9			24.9	288.7	55.0		343.7
005	3/12/2009	343.7				418.6		35.7	92.5	546.8							743.0	55.0		798.0
006	4/12/2009	798.0				246.3				246.3			141.6			141.6	934.5	55.0	54.9	1,044.4
007	5/12/2009	1,044.4				234.5		20.1		254.6			875.8			875.8	589.5			589.5
008	6/12/2009	589.5											166.3			166.3	589.5			589.5
009	7/12/2009	589.5											166.3			166.3	589.5			589.5
Cumulative Volume			0.1			1,013.9		109.0	92.5	1,215.5			1,374.9			1,374.9				

Baroid Fluid Services

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 03																				
Fluid Name:	**Hi-Vis PHB/Guar sweeps**																			
11A	9/12/2009					190.0				190.0			115.0			115.0			75.0	75.0
013	11/12/2009	75.0	45.0							45.0									120.0	120.0
014	12/12/2009	120.0				65.0				65.0									185.0	185.0
015	13/12/2009	185.0									2.0					2.0			183.0	183.0
016	14/12/2009	183.0											133.0			133.0			50.0	50.0
019	17/12/2009	50.0						2.5		2.5			22.5			22.5			30.0	30.0
Cumulative Volume			45.0			255.0		2.5		302.5	2.0		270.5			272.5				
Fluid Name:	**Seawater**																			
010	8/12/2009	589.5				414.8				414.8			61.4			61.4	942.9			942.9
11A	9/12/2009	942.9				175.4				175.4			1,103.3			1,103.3			15.0	15.0
012	10/12/2009	15.0							30.0	30.0									45.0	45.0
013	11/12/2009	45.0											45.0			45.0				
Cumulative Volume						590.2			30.0	620.2			1,209.7			1,209.7				
Fluid Name:	**12 1/4" KCl/Polymer**																			
11A	9/12/2009		820.0			818.0		81.6	164.3	1,883.9	132.0		36.0			168.0	589.9	712.0	414.0	1,715.9
012	10/12/2009	1,715.9				28.0	22.5	265.1		315.6	185.0		34.0			219.0	778.6	804.0	230.0	1,812.6
013	11/12/2009	1,812.6	88.0			250.0		36.5		374.5	63.1		7.0			70.1	938.0	269.0	910.0	2,117.0
014	12/12/2009	2,117.0				245.6		5.6		251.2	45.0		13.0			58.0	1,026.2	277.0	1,007.0	2,310.2
015	13/12/2009	2,310.2					22.9	15.2		38.1	36.5		69.0			105.5	600.7	433.0	1,209.0	2,242.7
016	14/12/2009	2,242.7						0.6		0.6	3.0		77.3			80.3	473.0	800.0	890.0	2,163.0
017	15/12/2009	2,163.0						1.8		1.8							473.0	800.0	891.8	2,164.8
018	16/12/2009	2,164.8						1.2		1.2							473.0	800.0	893.0	2,166.0
019	17/12/2009	2,166.0						3.3		3.3			28.0			28.0	597.4	599.0	945.0	2,141.4

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Cumulative Volume			908.0			1,341.6	45.4	410.9	164.3	2,870.2	464.6		264.3			728.9				

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 04																				
Fluid Name:	**Hi-Vis PHB/Guar sweeps**																			
023	21/12/2009	30.0												30.0		30.0				
Cumulative Volume														30.0		30.0				
Fluid Name:	**12 1/4" KCl/Polymer**																			
020	18/12/2009	2,141.4												2,141.4		2,141.4				
Cumulative Volume														2,141.4		2,141.4				
Fluid Name:	**Brine**																			
023	21/12/2009		50.0							50.0				50.0		50.0				
024	22/12/2009		100.0							100.0				100.0		100.0				
041	8/01/2010		74.0							74.0				74.0		74.0				
Cumulative Volume			224.0							224.0				224.0		224.0				
Fluid Name:	**8 1/2" KCl/Polymer**																			
020	18/12/2009			2,141.4				18.1		2,159.5	54.0					54.0	571.5	799.0	735.0	2,105.5
021	19/12/2009	2,105.5						3.9		3.9	124.5		49.0			173.5	571.9	719.0	645.0	1,935.9
022	20/12/2009	1,935.9						1.1		1.1	7.3					7.3	597.4	729.0	590.0	1,916.4
023	21/12/2009	1,916.4		80.0		75.0		18.7		173.7	161.4		30.0			191.4	579.7	644.0	675.0	1,898.7
024	22/12/2009	1,898.7		100.0		100.0		39.4		239.4	117.2		20.0			137.2	644.8	639.0	717.0	2,000.8
025	23/12/2009	2,000.8	200.0			200.0		47.9		447.9	141.0		56.5			197.5	686.1	738.0	827.0	2,251.1
026	24/12/2009	2,251.1	20.2			15.0		6.6		41.8	161.0		80.0			241.0	708.9	643.0	700.0	2,051.9
027	25/12/2009	2,051.9						14.6		14.6	127.0		26.5			153.5	773.1	677.0	463.0	1,913.1
028	26/12/2009	1,913.1				90.0		10.5		100.5	95.0		25.6			120.6	799.9	639.0	454.0	1,892.9
029	27/12/2009	1,892.9				300.0		9.1		309.1	140.0		84.5			224.5	853.5	812.0	312.0	1,977.5
030	28/12/2009	1,977.5	222.5				16.5	17.4		256.4	42.0		14.9			56.9	955.9	707.0	514.0	2,176.9

Baroid Fluid Services

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume bbl	Received bbl	Mixed bbl	Base bbl	Water bbl	Barite bbl	Chemicals bbl	Other bbl	Daily Total bbl	SCE bbl	Downhole bbl	Misc bbl	Mixed bbl	Returned bbl	Daily Total bbl	Hole Volume bbl	Active Pit Volume bbl	Reserve Volume bbl	Final Volume bbl
031	29/12/2009	2,176.9						0.6		0.6		10.6				10.6	955.9	697.0	514.0	2,166.9
032	30/12/2009	2,166.9	100.0			32.0	16.5	22.4		170.9	116.3		49.0			165.3	853.5	293.0	1,026.0	2,172.5
033	31/12/2009	2,172.5				61.9		1.4		63.3							955.9	715.0	565.0	2,235.9
034	1/01/2010	2,235.9										8.0				8.0	955.9	707.0	565.0	2,227.9
035	2/01/2010	2,227.9						3.2		3.2	69.5		10.0			79.5	853.5	619.0	679.0	2,151.5
036	3/01/2010	2,151.5									38.0		5.6			43.6	955.9	660.0	492.0	2,107.9
037	4/01/2010	2,107.9											9.0			9.0	955.9	637.0	506.0	2,098.9
039	6/01/2010	2,098.9						0.6		0.6	36.0		17.3			53.3	772.2	752.0	522.0	2,046.2
040	7/01/2010	2,046.2	13.0					0.7		13.7							955.9	359.0	745.0	2,059.9
041	8/01/2010	2,059.9		74.0		200.0		14.1		288.1	3.1					3.1	955.9	642.0	747.0	2,344.9
42	9/01/2010	2,344.9					7.5	5.3		12.8	104.8					104.8	955.9	729.0	568.0	2,252.9
43	10/01/2010	2,252.9						1.4		1.4	2.4		0.6			3.0	907.3	776.0	568.0	2,251.3
44	11/01/2010	2,251.3						0.3		0.3	78.7					78.7	907.7	327.2	938.0	2,172.9
45	12/01/2010	2,172.9	1.1			5.0		1.9		8.0	3.0		5.0			8.0	907.7	327.2	938.0	2,172.9
46	13/01/2010	2,172.9				4.0		0.6		4.6	0.6		4.0			4.6	907.7	327.2	938.0	2,172.9
47	14/01/2010	2,172.9				4.0		0.1		4.1	0.1		4.0			4.1	907.7	327.2	938.0	2,172.9
48	15/01/2010	2,172.9				4.0		0.5		4.5	39.0		6.0			45.0	955.9	277.5	899.0	2,132.4
49	16/01/2010	2,132.4						0.8		0.8	5.3		12.0			17.3	955.9	255.0	905.0	2,115.9
50	17/01/2010	2,115.9				4.0		0.4		4.4			4.4			4.4	955.9	255.0	905.0	2,115.9
51	18/01/2010	2,115.9						0.1		0.1							896.1	320.0	899.9	2,116.0
52A	19/01/2010	2,116.0				2.0				2.0	19.5		26.0	0.1		45.6	955.9	226.5	890.0	2,072.4
Cumulative Volume			556.8	2,395.4		1,096.9	40.5	241.7		4,331.3	1,686.7	18.6	539.9	0.1		2,245.3				

Fluid Name: 8 1/2" ST-1 KCl/Polymer

52A	19/01/2010			0.1						0.1	0.1					0.1				
Cumulative Volume				0.1						0.1	0.1					0.1				

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume	Received	Mixed	Base	Water	Barite	Chemicals	Other	Daily Total	SCE	Downhole	Misc	Mixed	Returned	Daily Total	Hole Volume	Active Pit Volume	Reserve Volume	Final Volume
		bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl	bbl
Interval # 05																				
Fluid Name:	**Brine**																			
052B	19/01/2010		60.0							60.0				60.0		60.0				
055	22/01/2010		125.0							125.0				125.0		125.0				
056	23/01/2010		0.1			0.1				0.2				0.2		0.2				
061	28/01/2010		100.0							100.0				100.0		100.0				
Cumulative Volume			285.1			0.1				285.2				285.2		285.2				
Fluid Name:	**8 1/2" KCl/Polymer**																			
052B	19/01/2010	2,072.4											358.5	1,713.9		2,072.4				
081	17/02/2010		2,010.5							2,010.5	5.7					5.7	597.4	543.0	515.1	1,655.5
082	18/02/2010	1,655.5											853.6			853.6	801.8			801.8
Cumulative Volume			2,010.5							2,010.5	5.7		1,212.1	1,713.9		2,931.7				
Fluid Name:	**8 1/2" ST-1 KCl/Polymer**																			
052B	19/01/2010			1,773.9		110.0		11.5		1,895.4	8.6					8.6	538.3	433.5	915.0	1,886.8
053	20/01/2010	1,886.8				25.0		19.7		44.7	104.1		78.0			182.1	558.8	253.5	937.0	1,749.3
054	21/01/2010	1,749.3				200.0		3.7		203.7	21.5		6.4			27.9	631.2	672.0	622.0	1,925.2
055	22/01/2010	1,925.2		125.0		200.0		40.7		365.7	132.0		80.3			212.3	616.6	725.0	737.0	2,078.6
056	23/01/2010	2,078.6	90.8	0.2		164.0		21.4		276.4	150.5		55.1			205.6	685.4	730.0	734.0	2,149.4
057	24/01/2010	2,149.4	152.6			150.0		9.5		312.1	110.0		33.8			143.8	739.7	677.0	901.0	2,317.7
058	25/01/2010	2,317.7	151.3			150.0		44.2		345.5	308.0		113.0			421.0	795.2	650.0	797.0	2,242.2
059	26/01/2010	2,242.2						3.8		3.8	60.6		20.0			80.6	794.3	724.0	647.0	2,165.3
060	27/01/2010	2,165.3	9.4			150.0		8.3		167.7	161.0		28.4			189.4	880.6	710.0	553.0	2,143.6
061	28/01/2010	2,143.6	0.6	100.0		210.0		0.8		311.4	218.8		29.0			247.8	842.6	675.0	689.0	2,206.6
062	29/01/2010	2,206.6	1.3					21.9		23.2	75.0		19.5			94.5	793.3	650.0	692.0	2,135.3
063	30/01/2010	2,135.3						16.7		16.7	53.6		7.9			61.5	860.3	676.0	556.0	2,092.3

Company	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Volume Record Report

			Additions								Losses						Volumes			
Report No	Date	Initial Volume bbl	Received bbl	Mixed bbl	Base bbl	Water bbl	Barite bbl	Chemicals bbl	Other bbl	Daily Total bbl	SCE bbl	Downhole bbl	Misc bbl	Mixed bbl	Returned bbl	Daily Total bbl	Hole Volume bbl	Active Pit Volume bbl	Reserve Volume bbl	Final Volume bbl
064	31/01/2010	2,092.3					25.5	1.2		26.7	18.0		5.7			23.7	904.3	641.0	550.0	2,095.3
065	1/02/2010	2,095.3						1.1		1.1	66.4		3.0			69.4	886.0	649.0	492.0	2,027.0
066	2/02/2010	2,027.0	8.1			122.0		26.7		156.8	6.0		1.0			7.0	817.7	639.0	720.0	2,176.7
067	3/02/2010	2,176.7				134.0	12.0	21.8		167.8	58.0		17.8			75.8	883.7	597.0	788.0	2,268.7
068	4/02/2010	2,268.7				150.0		4.5		154.5			24.5			24.5	946.7	604.0	848.0	2,398.7
069	5/02/2010	2,398.7						3.3		3.3	15.0		5.0			20.0	946.7	624.0	811.3	2,382.0
070	6/02/2010	2,382.0						1.2		1.2	30.0		5.5			35.5	946.7	704.0	697.0	2,347.7
071	7/02/2010	2,347.7						3.5		3.5	175.0		5.5			180.5	946.7	704.0	520.0	2,170.7
072	8/02/2010	2,170.7						0.3		0.3			0.3			0.3	946.7	704.0	520.0	2,170.7
073	9/02/2010	2,170.7						0.4		0.4			7.4			7.4	946.7	649.0	568.0	2,163.7
074	10/02/2010	2,163.7						0.7		0.7	37.0		7.1			44.1	921.2	663.0	536.0	2,120.2
075	11/02/2010	2,120.2						0.8		0.8	37.0		34.9			71.9	761.0	598.0	690.0	2,049.0
076	12/02/2010	2,049.0				100.0		0.8		100.8	3.0		5.1			8.1	946.7	639.0	556.0	2,141.7
078	14/02/2010	2,141.7						0.2		0.2							946.7	586.2	609.0	2,141.9
079	15/02/2010	2,141.9						1.2		1.2	73.1					73.1	771.0	757.0	542.0	2,070.0
080	16/02/2010	2,070.0											59.5			59.5	854.4	613.0	543.1	2,010.5
081	17/02/2010	2,010.5									5.7				2,004.8	2,010.5				
Cumulative Volume			414.1	1,999.1		1,865.0	37.5	269.9		4,585.6	1,927.9		653.7		2,004.8	4,586.4				

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Interval #	**01**	**From Report Date**	**29/11/2009**	**Top of Interval**	**100.0 m**
Max. Hole Size / Bit Size	**36.0 / 36.0 in**	**To Report Date**	**01/12/2009**	**Bottom of Interval**	**158.0 m**

Fluid Name: **Hi-Vis PHB/Guar sweeps**

Material	Average ppb	Minimum ppb	Maximum ppb
barite	47.61	43.71	51.51
caustic soda	0.18	0.10	0.25
guar gum	0.79	0.76	0.81
lime	0.16	0.16	0.16
soda ash	0.16	0.07	0.25

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Interval # 02		**From Report Date**	**02/12/2009**	**Top of Interval**	**158.0 m**
Max. Hole Size / Bit Size	**17.5 / 17.5 in**	**To Report Date**	**07/12/2009**	**Bottom of Interval**	**966.0 m**

Fluid Name: Hi-Vis PHB/Guar sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
BARAZAN D PLUS	0.49	0.49	0.49
barite	15.92	12.42	26.40
caustic soda	0.09	0.07	0.15
guar gum	0.34	0.23	0.49
lime	0.39	0.05	0.70
soda ash	0.15	0.07	0.20

Fluid Name: Seawater

Material	Average ppb	Minimum ppb	Maximum ppb
BARA-DEFOAM W300	0.04	0.03	0.05
BARAZAN D PLUS	0.50	0.41	0.66
bentonite	67.64	58.10	90.84
caustic soda	0.61	0.48	0.84
guar gum	2.28	1.62	4.18
lime	1.18	0.96	1.56
soda ash	0.53	0.40	0.84

Baroid Fluid Services

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Interval Chemical Concentration

Interval # 03		From Report Date	08/12/2009	Top of Interval	966.0 m
Max. Hole Size / Bit Size	12.25 / 12.25 in	To Report Date	17/12/2009	Bottom of Interval	1,972.0 m

Fluid Name: Hi-Vis PHB/Guar sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
BARAZAN D PLUS	0.28	0.19	0.49
barite	6.95	4.80	12.42
bentonite	41.99	41.99	41.99
caustic soda	0.04	0.03	0.07
guar gum	0.17	0.12	0.31
lime	0.39	0.27	0.70
soda ash	0.11	0.08	0.20

Fluid Name: Seawater

Material	Average ppb	Minimum ppb	Maximum ppb
BARA-DEFOAM W300	0.01	0.00	0.02
BARAZAN D PLUS	0.11	0.04	0.21
bentonite	16.79	5.51	31.37
caustic soda	0.13	0.04	0.25
guar gum	0.45	0.15	0.84
lime	0.27	0.09	0.50
soda ash	0.11	0.04	0.21

Fluid Name: 12 1/4" KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.07	0.05	0.09
BARAZAN D PLUS	1.29	0.97	1.76
barite	20.83	9.24	25.63
bentonite	9.68	6.16	10.85
caustic soda	0.20	0.11	0.25
Circal 60/16	2.70	0.44	3.38
Circal Y	0.32	0.25	0.43
CLAYSEAL PLUS	7.63	6.26	8.83
DEXTRID LTE	2.24	1.74	2.75
EZ-MUD	1.56	1.07	1.99
OXYGON	0.12	0.06	0.18
PAC-L	0.77	0.44	0.87
potassium chloride	53.60	19.89	74.37
potassium hydroxide	0.30	0.19	0.37
sodium bicarbonate	0.59	0.44	0.81

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Interval # 04		**From Report Date**	**18/12/2009**	**Top of Interval**	**1,972.0 m**
Max. Hole Size / Bit Size	**8.50 / 8.50 in**	**To Report Date**	**19/01/2010**	**Bottom of Interval**	**3,522.0 m**

Fluid Name: Hi-Vis PHB/Guar sweeps

Material	Average ppb	Minimum ppb	Maximum ppb
BARAZAN D PLUS	0.19	0.19	0.19
barite	4.80	4.80	4.80
bentonite	41.99	41.99	41.99
caustic soda	0.03	0.03	0.03
guar gum	0.12	0.12	0.12
lime	0.27	0.27	0.27
soda ash	0.08	0.08	0.08

Fluid Name: 12 1/4" KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.09	0.09	0.09
BARAZAN D PLUS	1.76	1.76	1.76
barite	25.58	25.58	25.58
bentonite	10.34	10.34	10.34
caustic soda	0.25	0.25	0.25
Circal 60/16	3.37	3.37	3.37
Circal Y	0.30	0.30	0.30
CLAYSEAL PLUS	7.64	7.64	7.64
DEXTRID LTE	2.13	2.13	2.13
EZ-MUD	1.99	1.99	1.99
OXYGON	0.18	0.18	0.18
PAC-L	0.87	0.87	0.87
potassium chloride	56.14	56.14	56.14
potassium hydroxide	0.34	0.34	0.34
sodium bicarbonate	0.53	0.53	0.53

Fluid Name: 8 1/2" KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.33	0.12	0.46
BARAZAN D PLUS	1.37	1.03	2.18
barite	26.42	12.71	31.25
bentonite	5.30	3.07	10.25
caustic soda	0.12	0.07	0.25
Circal 60/16	5.22	3.67	6.03

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Circal Y	0.15	0.08	0.30
citric acid	0.78	0.13	0.87
CLAYSEAL PLUS	9.33	7.08	10.79
DEXTRID LTE	3.39	2.90	4.03
EZ-MUD	3.05	2.54	3.47
guar gum	0.00	0.00	0.00
hec	0.40	0.04	0.74
lime	0.00	0.00	0.00
N-DRIL HT PLUS	0.54	0.11	0.76
Omyacarb 5	0.08	0.04	0.15
OXYGON	0.29	0.16	0.37
PAC-L	2.11	1.01	2.65
potassium chloride	37.35	24.99	55.67
potassium hydroxide	0.78	0.36	0.92
Radiagreen EME-Salt	1.43	1.09	1.71
soda ash	0.43	0.10	0.67
sodium bicarbonate	0.72	0.21	1.49

Fluid Name: 8 1/2" ST-1 KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.46	0.46	0.46
BARAZAN D PLUS	1.40	1.40	1.40
barite	31.12	31.12	31.12
bentonite	3.71	3.71	3.71
caustic soda	0.09	0.09	0.09
Circal 60/16	5.51	5.51	5.51
Circal Y	0.10	0.10	0.10
citric acid	0.86	0.86	0.86
CLAYSEAL PLUS	8.56	8.56	8.56
DEXTRID LTE	4.02	4.02	4.02
EZ-MUD	3.08	3.08	3.08
guar gum	0.00	0.00	0.00
hec	0.73	0.73	0.73
lime	0.00	0.00	0.00
N-DRIL HT PLUS	0.76	0.76	0.76
Omyacarb 5	0.05	0.05	0.05
OXYGON	0.35	0.35	0.35
PAC-L	2.63	2.63	2.63
potassium chloride	30.21	30.21	30.21
potassium hydroxide	0.92	0.92	0.92
Radiagreen EME-Salt	1.32	1.32	1.32
soda ash	0.39	0.39	0.39
sodium bicarbonate	1.48	1.48	1.48

Baroid Fluid Services

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

Interval # 05		**From Report Date**	**19/01/2010**	**Top of Interval**	**1,964.0 m**
Max. Hole Size / Bit Size	**8.50 / 8.50 in**	**To Report Date**	**18/02/2010**	**Bottom of Interval**	**3,482.0 m**

Fluid Name: 8 1/2" KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.39	0.38	0.39
BARAZAN D PLUS	1.18	1.16	1.19
barite	26.27	25.74	26.53
bentonite	3.13	3.07	3.16
caustic soda	0.07	0.07	0.07
Circal 60/16	4.65	4.56	4.70
Circal Y	0.09	0.08	0.09
citric acid	0.73	0.71	0.74
CLAYSEAL PLUS	7.22	7.08	7.30
DEXTRID LTE	3.40	3.33	3.43
EZ-MUD	2.60	2.54	2.62
guar gum	0.00	0.00	0.00
hec	0.62	0.61	0.63
lime	0.00	0.00	0.00
N-DRIL HT PLUS	0.64	0.63	0.65
Omyacarb 5	0.04	0.04	0.04
OXYGON	0.29	0.29	0.30
PAC-L	2.22	2.18	2.25
potassium chloride	25.49	24.98	25.75
potassium hydroxide	0.78	0.76	0.78
Radiagreen EME-Salt	1.11	1.09	1.12
soda ash	0.33	0.32	0.33
sodium bicarbonate	1.25	1.23	1.26

Fluid Name: 8 1/2" ST-1 KCl/Polymer

Material	Average ppb	Minimum ppb	Maximum ppb
ALDACIDE G	0.30	0.21	0.37
BARA-DEFOAM W300	0.01	0.01	0.02
BARAZAN D PLUS	1.40	1.11	1.52
barite	23.85	11.03	32.14
bentonite	1.37	1.00	2.77
caustic soda	0.03	0.02	0.06
Circal 60/16	5.85	4.44	6.49
Circal Y	1.63	0.04	2.89
citric acid	0.71	0.52	1.57

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval Chemical Concentration

CLAYSEAL PLUS	8.71	6.48	10.07
DEXTRID LTE	2.75	2.18	3.36
EZ-MUD	2.76	2.40	3.02
guar gum	0.00	0.00	0.00
hec	0.27	0.20	0.55
lime	0.00	0.00	0.00
N-DRIL HT PLUS	1.05	0.40	1.32
Omyacarb 5	0.02	0.01	0.04
OXYGON	0.20	0.15	0.26
PAC-L	2.14	1.59	2.48
potassium chloride	25.30	20.44	28.32
potassium hydroxide	1.23	0.46	1.89
Radiagreen EME-Salt	2.38	0.49	3.33
soda ash	0.79	0.21	1.25
sodium bicarbonate	1.31	1.07	1.86

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
Interval # 01										**From Date**				**29/11/2009**						**Top of Interval**			**100.0**		**m**						
Max. Hole Size / Bit Size	**36.0 / 36.0 in**									**To Date**				**01/12/2009**						**Bottom of Interval**			**158.0**		**m**						
30/11/2009	100		8.80	132	14	56	25	47	60						9.00				1,000	240	27.0					95	84.0	70.0	60.0	56.0	35.0	30.0
30/11/2009	100		8.80	130	15	55	25	47	60						9.00				1,000	240	27.0					95	85.0	70.0	60.0	55.0	34.0	29.0
01/12/2009	158		8.80	124	11	59	25	40	51						9.00				1,000	200	27.0					95	81.0	70.0	60.0	55.0	33.0	25.0
01/12/2009	158		8.80	122	12	58	26	39	47						9.00				1,000	200	27.0					95	82.0	70.0	60.0	52.0	35.0	26.0
Interval # 02										**From Date**				**02/12/2009**						**Top of Interval**			**158.0**		**m**						
Max. Hole Size / Bit Size	**17.50 / 17.50 in**									**To Date**				**07/12/2009**						**Bottom of Interval**			**966.0**		**m**						
02/12/2009	158		8.80	130	12	61	30	43	55						9.00				1,000	240	27.5					95	85.0	73.0	63.0	55.0	37.0	28.0
02/12/2009	270		8.80	127	11	60	29	42	54						9.00				1,000	240	30.0					96	82.0	71.0	61.0	53.0	36.0	27.0
03/12/2009	430		8.80	128	12	61	30	43	55						9.00				1,000	240	30.0					96	85.0	73.0	63.0	55.0	37.0	28.0
03/12/2009	570		8.90	122	14	50	30	43	55						9.00				1,200	200	30.0					95	78.0	64.0	54.0	47.0	30.0	25.0
03/12/2009	708		8.90	125	10	45	21	37	50						9.00				1,000	120	30.0					95	65.0	55.0	49.0	43.0	20.0	18.0
03/12/2009	800		8.80	126	12	60	29	42	54						9.00				1,100	240	30.0					96	84.0	72.0	62.0	54.0	37.0	27.0
04/12/2009	966		8.80	65	12	36	10	17	21	7.2					9.00				1,500	240	15.0					95	60.0	48.0	42.0	35.0	17.0	15.0
04/12/2009	966		8.80	62	12	37	10	17	21	7.4					9.00				1,400	240	15.0					96	61.0	49.0	43.0	36.0	17.0	15.0
05/12/2009	966		8.80	60	12	36	10	16	20	7.4					9.50				1,500	240	15.0					95	60.0	48.0	40.0	35.0	16.0	15.0
05/12/2009	966		8.80	58	12	36	10	16	20	7.6					9.00				1,400	240	15.0					96	60.0	48.0	40.0	35.0	16.0	14.0
06/12/2009	966		9.00	80	14	44	13	18	25	7.6					9.00				1,500	320	15.0					95	72.0	58.0	48.0	35.0	17.0	15.0
06/12/2009	966		9.00	80	14	44	13	18	25	7.6					9.00				1,300	280	15.0					96	72.0	58.0	48.0	35.0	18.0	
Interval # 03										**From Date**				**08/12/2009**						**Top of Interval**			**966.0**		**m**						
Max. Hole Size / Bit Size	**12.25 / 12.25 in**									**To Date**				**17/12/2009**						**Bottom of Interval**			**1,972.0**		**m**						
08/12/2009	966		9.00	51	10	13	4	6	8	7.2	10.0	1	2		9.50	0.30	0.25	1.10	41,000	280	2.5		1.07	0.436		95.5	33.0	23.0	18.0	13.0	4.0	3.0
08/12/2009	966		8.90	49	10	13	4	6	8	7.4	10.4	1	2		9.00	0.20	0.25	1.10	40,000	280	9.0		0.64	0.258		96	33.0	23.0	16.0	12.0	4.0	3.0
09/12/2009	966		9.00	47	9	15	4	6	9	7.0	12.2	1	2		9.50	0.30	0.30	0.80	42,000	240	6.0	0.10	1.5	1.362		95	33.0	24.0	15.0	12.0	5.0	4.0
09/12/2009	971	22	9.00	43	10	15	4	6	9	6.8	12.5	1	2	120	10.00	0.50	0.30	0.90	41,000	400	6.0	0.10	1.59	1.455		95	35.0	25.0	16.0	13.0	5.0	4.0
09/12/2009	1,009	25	9.00	42	10	16	5	7	11	7.0	12.4	1	2	120	10.00	0.40	0.35	1.20	41,000	280	5.0	0.10	1.59	1.455		95	36.0	26.0	17.0	13.0	6.0	5.0

Baroid Fluid Services

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
10/12/2009	1,233	30	9.00	46	10	9	5	6	7	6.7	12.0	1	2	120	9.50	0.50	0.35	1.20	40,000	280	5.0	0.10	1.67	1.547		95	29.0	19.0	17.0	13.0	5.0	4.0
10/12/2009	1,292	33	9.25	57	11	20	8	11	14	5.8	12.5	1	2	120	9.00	0.30	0.25	1.10	39,000	220	11.5	0.25	3.31	2.821		93.5	42.0	31.0	24.0	18.0	8.0	7.0
10/12/2009	1,435	28	9.30	63	11	22	7	9	12	5.5	9.5	1	2	120	9.00	0.20	0.15	0.85	39,000	200	9.0	0.25	3.52	2.853		93.3	44.0	33.0	25.0	19.0	8.0	7.0
10/12/2009	1,515	31	9.10	61	12	25	8	10	14	5.8	11.2	1	2	120	9.00	0.30	0.25	1.20	38,000	200	10.0	0.40	2.88	3.016		94	49.0	37.0	29.0	22.0	9.0	7.0
11/12/2009	1,685	40	9.20	63	12	27	9	14	17	5.7	11.6	1	2	120	9.00	0.35	0.35	1.20	38,000	200	10.0	0.35	2.88	2.267		94	51.0	39.0	32.0	24.0	9.0	6.0
11/12/2009	1,811	43	9.40	57	15	22	9	13	16	4.8	10.5	1	2	120	9.50	0.40	0.30	1.10	41,000	180	9.5	0.25	3.66	2.536		93	52.0	37.0	32.0	24.0	9.0	8.0
11/12/2009	1,886	44	9.40	57	14	24	10	15	18	4.5	10.5	1	2	120	9.00	0.30	0.25	0.95	40,000	160	10.0	0.25	3.74	2.626		93	52.0	38.0	31.0	24.0	10.0	9.0
11/12/2009	1,909	51	9.30	60	13	27	10	15	18	5.7	11.4	1	2	120	9.50	0.35	0.30	1.25	41,000	200	15.0	0.35	2.62	1.246		94	53.0	40.0	33.0	25.0	10.0	8.0
12/12/2009	1,960	51	9.40	61	19	20	10	15	18	5.4	10.9	1	2	120	9.50	0.30	0.30	1.30	43,000	200	15.0	0.30	4.01	3.374		92.5	58.0	39.0	35.0	26.0	10.0	8.0
12/12/2009	1,972	45	9.50	56	18	21	10	15	18	5.0	9.5	1	2	120	9.50	0.35	0.25	1.10	41,000	160	10.0	0.25	3.87	2.194		92.8	57.0	39.0	35.0	27.0	11.0	9.0
12/12/2009	1,972	25	9.50	51	18	22	11	16	19	5.6	11.7	1	2	120	9.00	0.35	0.30	1.25	42,000	200	15.0	0.30	3.57	1.696		93	58.0	40.0	36.0	28.0	11.0	9.0
13/12/2009	1,972		9.50	61	19	19	10	14	18	4.8	11.5	1	2	120	9.50	0.35	0.25	1.10	40,000	200	10.0	0.25	3.74	1.877		93	57.0	38.0	33.0	25.0	10.0	9.0
13/12/2009	1,972	25	9.50	59	18	22	10	13	17	5.1	11.3	1	2	120	9.00	0.35	0.30	1.25	42,000	200	15.0	0.35	3.57	1.696		93	58.0	40.0	35.0	26.0	10.0	8.0
14/12/2009	1,972		9.65	69	13	27	10	15	19	4.8	11.5	1	2	120	9.50	0.30	0.20	1.30	41,000	240	10.0	0.25	4.69	2.701		92	53.0	40.0	33.0	25.0	10.0	9.0
14/12/2009	1,972		9.65	70	11	27	10	15	18	5.2	11.5	1	2	120	9.00	0.30	0.30	2.00	44,000	240	8.0	0.25	3.92	1.41		92.5	49.0	38.0	32.0	24.0	10.0	8.0
15/12/2009	1,972		9.65	71	13	26	10	15	19	5.5	10.5	1	2	120	9.50	0.30	0.20	1.65	40,000	240	8.0	0.25	4.26	1.772		92.5	52.0	39.0	33.0	24.0	10.0	9.0
15/12/2009	1,972		9.65	70	11	28	10	15	18	5.3	10.5	1	2	120	9.50	0.30	0.30	1.90	41,000	240	8.0	0.25	4.18	1.682		92.5	50.0	39.0	32.0	24.0	10.0	8.0
16/12/2009	1,972		9.65	69	13	25	9	14	18	5.0	9.5	1	2	120	9.50	0.30	0.35	2.10	41,000	240	7.5	0.20	4.18	1.682		92.5	51.0	38.0	32.0	24.0	10.0	8.0
16/12/2009	1,972		9.65	70	13	26	10	15	18	5.2	10.3	1	2	120	9.50	0.30	0.30	2.00	42,000	240	8.0	0.10	4.2	1.796		92.4	52.0	39.0	33.0	24.0	10.0	8.0
17/12/2009	1,972		9.65	72	14	24	9	14	18	4.5	9.5	1	2	120	9.00	0.30	0.25	2.20	40,000	260	7.0	0.20	4.78	2.791		92	52.0	38.0	32.0	24.0	9.0	8.0
17/12/2009	1,972		9.65	69	13	25	10	15	18	4.8	10.0	1	2	120	9.50	0.30	0.30	2.10	42,000	240	8.0	0.10	4.4	2.204		92.2	51.0	38.0	32.0	24.0	10.0	8.0
Interval # 04										**From Date**				**18/12/2009**						**Top of Interval**			**1,972.0**	**m**							
Max. Hole Size / Bit Size 8.50 / 8.50 in										**To Date**				**19/01/2010**						**Bottom of Interval**			**3,522.0**	**m**							
18/12/2009	1,972	33	9.60	63	11	25	9	15	17	4.5	10.0	1	2	49	9.00	0.25	0.15	2.40	40,500	280	6.5	0.20	4.22	2.102		92.5	47.0	36.0	31.0	24.0	9.0	8.0
18/12/2009	1,972	37	9.55	55	11	21	9	15	18	4.5	9.0	1	2	49	9.00	0.15	0.10	2.30	40,000	280	5.5	0.15	4.05	2.113		92.7	43.0	32.0	27.0	21.0	9.0	8.0
18/12/2009	1,972		9.55	54	10	21	10	15	18	5.4	10.2	1	2	49	9.00	0.20	0.20	2.40	42,000	280	7.5	0.15	3.88	1.933		92.7	41.0	31.0	26.0	20.0	9.0	7.0
19/12/2009	1,972		9.60	68	11	20	9	13	16	4.8	11.0	1	2	49	8.50	0.05	0.05	2.60	40,500	300	5.5	0.15	4.11	1.898		92.6	42.0	31.0	26.0	20.0	9.0	8.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
19/12/2009	1,981	33	9.55	64	12	19	9	15	19	4.5	9.5	1	2	49	9.50	0.25	0.20	2.40	40,000	240	6.0	0.15	4.05	2.113		92.7	43.0	31.0	27.0	20.0	9.0	8.0
19/12/2009	2,019	44	9.55	49	11	22	9	15	18	5.4	10.6	1	2	49	9.50	0.30	0.25	2.40	41,000	260	7.0	0.15	3.97	2.024		92.7	44.0	33.0	28.0	21.0	9.0	7.0
20/12/2009	2,019		9.60	58	11	22	10	16	19	4.5	10.5	1	2	49	9.00	0.10	0.05	2.30	40,500	260	6.0	0.20	4.22	2.102		92.5	44.0	33.0	28.0	20.0	9.0	8.0
20/12/2009	2,023		9.60	53	12	20	9	15	18	4.5	10.0	1	2	49	9.00	0.20	0.15	2.50	40,000	220	5.5	0.20	4.16	1.943		92.6	44.0	32.0	27.0	21.0	9.0	8.0
20/12/2009	2,023		9.60	52	11	22	10	14	18	4.9	10.3	1	2	49	9.50	0.30	0.20	2.30	41,000	220	7.0	0.20	3.97	1.649		92.7	44.0	33.0	28.0	21.0	9.0	8.0
21/12/2009	2,027	37	9.65	50	12	26	10	14	17	4.2	8.5	1	2	49	9.00	0.15	0.10	2.20	41,000	200	5.5	0.20	3.97	1.275		92.7	50.0	38.0	31.0	24.0	10.0	8.0
21/12/2009	2,060	43	9.55	53	14	24	9	15	19	4.5	9.5	1	2	49	9.00	0.10	0.05	2.50	40,000	180	6.0	0.25	4.26	2.521		92.5	52.0	38.0	32.0	24.0	10.0	8.0
21/12/2009	2,100	47	9.55	52	14	25	9	15	18	4.5	9.0	1	2	49	9.00	0.15	0.10	2.30	40,000	180	6.0	0.25	4.47	2.928		92.3	53.0	39.0	33.0	26.0	10.0	8.0
21/12/2009	2,182	51	9.55	51	13	26	10	16	19	4.8	9.5	1	2	49	9.00	0.20	0.10	2.20	41,000	200	7.5	0.20	4.38	2.839		92.3	52.0	39.0	33.0	25.0	10.0	8.0
22/12/2009	2,296	57	9.55	51	15	30	13	18	22	4.5	10.0	1	2	49	9.50	0.30	0.20	2.40	40,000	240	7.5	0.20	4.47	2.928		92.3	60.0	45.0	39.0	29.0	12.0	9.0
22/12/2009	2,369	58	9.60	50	15	27	10	15	20	4.7	9.8	1	2	49	9.50	0.20	0.15	2.50	39,000	220	9.0	0.25	4.86	3.254		92	57.0	42.0	36.0	27.0	10.0	8.0
22/12/2009	2,449	59	9.55	52	14	31	11	17	21	4.2	9.0	1	2	49	9.00	0.30	0.20	2.45	38,000	180	7.0	0.25	4.53	2.902		92.4	59.0	45.0	38.0	28.0	10.0	8.0
22/12/2009	2,509	59	9.55	49	14	29	10	18	21	4.3	9.4	1	2	49	9.50	0.30	0.20	2.40	38,000	180	7.5	0.30	4.94	3.716		92	57.0	43.0	36.0	28.0	11.0	8.0
23/12/2009	2,585	60	9.60	61	18	34	13	20	30	5.0	10.0	1	2	49	9.50	0.40	0.30	2.60	39,000	140	7.5	0.30	5.38	4.272		91.5	70.0	52.0	43.0	32.0	13.0	10.0
23/12/2009	2,639	61	9.60	55	17	32	10	14	23	4.5	9.0	1	2	49	9.50	0.30	0.25	2.50	38,500	180	8.0	0.30	4.9	3.298		92	66.0	49.0	41.0	30.0	10.0	8.0
23/12/2009	2,712	62	9.60	52	17	31	10	15	19	4.6	9.5	1	2	49	9.50	0.30	0.30	2.70	37,000	180	8.0	0.25	5.03	3.43		92	65.0	48.0	40.0	30.0	10.0	9.0
23/12/2009	2,753	58	9.60	50	17	31	10	15	19	4.7	9.6	1	2	49	9.50	0.35	0.35	2.70	35,000	180	10.0	0.30	5.19	3.603		92	65.0	48.0	40.0	30.0	10.0	8.0
24/12/2009	2,753	55	9.60	55	17	32	11	16	19	4.8	9.6	1	2	49	9.00	0.35	0.35	2.80	35,000	180	7.5	0.30	5.19	3.603		92	66.0	49.0	41.0	31.0	11.0	9.0
24/12/2009	2,753		9.65	62	17	31	10	16	22	4.5	10.0	1	2	49	9.00	0.15	0.10	2.70	38,000	220	7.5	0.25	4.84	2.764		92.1	65.0	48.0	41.0	29.0	10.0	9.0
24/12/2009	2,783	61	9.50	56	15	32	9	15	20	4.2	8.5	1	2	49	9.50	0.40	0.60	3.20	37,000	120	7.5	0.25	4.2	2.551		92.8	62.0	47.0	39.0	30.0	9.0	8.0
24/12/2009	2,819	53	9.55	52	16	31	10	16	19	4.4	9.1	1	2	49	9.50	0.35	0.40	3.10	36,000	160	7.5	0.30	4.08	1.858		93	63.0	47.0	39.0	30.0	10.0	8.0
25/12/2009	2,905	63	9.55	48	16	31	10	16	19	4.3	9.8	1	2	49	9.00	0.30	0.30	1.90	36,000	160	7.5	0.30	4.28	2.264		92.8	63.0	47.0	39.0	30.0	10.0	8.0
25/12/2009	2,974	64	9.50	56	16	29	9	15	20	4.5	9.0	1	2	49	9.50	0.30	0.25	3.00	37,000	160	7.5	0.25	4.2	2.551		92.8	61.0	45.0	37.0	27.0	9.0	8.0
25/12/2009	3,079	64	9.50	53	17	34	10	15	19	4.5	9.0	1	2	49	9.00	0.15	0.10	3.20	35,000	180	7.5	0.25	4.47	2.929		92.7	68.0	51.0	42.0	31.0	11.0	9.0
25/12/2009	3,128	57	9.50	51	17	33	11	16	19	4.6	9.4	1	2	49	9.00	0.20	0.15	3.30	35,000	180	7.5	0.30	4.16	2.319		93	67.0	50.0	42.0	31.0	10.0	8.0
26/12/2009	3,199	52	9.55	53	17	33	10	15	18	4.1	8.6	1	2	49	9.00	0.20	0.20	3.00	35,000	160	7.5	0.25	4.16	1.945		93	67.0	50.0	42.0	31.0	10.0	8.0
26/12/2009	3,199		9.60	57	20	41	11	16	20	4.0	8.5	1	2	49	9.00	0.10	0.05	3.20	34,000	180	7.5	0.25	4.65	2.47		92.6	81.0	61.0	51.0	39.0	13.0	10.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
26/12/2009	3,238	62	9.50	57	18	31	10	15	17	4.2	8.5	1	2	49	9.50	0.20	0.15	3.10	33,000	180	7.5	0.25	4.32	2.493		93	67.0	49.0	41.0	31.0	10.0	9.0
26/12/2009	3,296	58	9.50	52	18	32	11	16	18	4.8	9.7	1	2	49	9.50	0.20	0.20	3.20	32,000	160	7.5	0.20	5.43	4.608		92	68.0	50.0	42.0	32.0	11.0	9.0
27/12/2009	3,404	65	9.50	55	18	37	12	16	19	4.0	9.0	1	2	49	9.00	0.15	0.05	3.20	33,000	140	7.5	0.30	4.73	3.305		92.6	73.0	55.0	46.0	35.0	12.0	9.0
27/12/2009	3,516	68	9.50	56	18	30	9	16	18	4.2	8.0	1	2	49	9.00	0.15	0.10	3.20	36,000	120	7.5	0.30	4.49	3.045		92.6	66.0	48.0	41.0	31.0	10.0	8.0
27/12/2009	3,354	58	9.55	52	18	37	12	16	19	4.0	8.6	1	2	49	9.00	0.10	0.08	2.90	33,000	160	7.5	0.30	5.35	4.149		92	73.0	55.0	46.0	35.0	12.0	9.0
27/12/2009	3,522	48	9.55	60	18	31	10	15	18	4.3	9.0	1	2	49	9.00	0.15	0.10	3.00	35,000	160	7.5	0.36	5.19	3.978		92	67.0	49.0	42.0	31.0	10.0	8.0
28/12/2009	3,522		9.65	58	19	37	12	18	21	4.5	9.0	1	2	49	9.50	0.20	0.15	3.10	35,000	180	7.5	0.25	5.19	3.229		92	75.0	56.0	47.0	36.0	13.0	11.0
28/12/2009	3,522	48	9.50	60	20	37	13	19	22	4.3	9.4	1	2	49	9.50	0.25	0.20	2.80	35,000	160	7.5	0.30	5.19	4.352		92	77.0	57.0	48.0	37.0	14.0	12.0
28/12/2009	3,522	35	9.55	53	19	36	12	17	20	4.6	9.7	1	2	49	9.50	0.20	0.20	2.90	35,000	160	7.5	0.30	5.19	3.978		92	74.0	55.0	46.0	34.0	12.0	10.0
29/12/2009	3,522		9.70	61	19	38	12	16	18	4.5	8.0	1	2	49	9.00	0.10	0.10	3.00	33,000	180	7.5	0.30	5.35	3.025		92	76.0	57.0	47.0	36.0	13.0	11.0
29/12/2009	3,522		9.65	63	19	37	12	16	18	4.6	9.9	1	2	49	9.50	0.10	0.15	2.80	34,000	160	7.5	0.30	4.76	2.299		92.5	75.0	56.0	46.0	33.0	12.0	10.0
30/12/2009	3,522		9.30	60	18	27	6	11	13	4.8	9.8	1	2	49	9.50	0.30	0.20	2.70	35,000	200	7.5	0.25	4.16	3.817		93	63.0	45.0	38.0	28.0	9.0	7.0
30/12/2009	3,522		9.45	61	20	43	12	16	19	4.8	10.0	1	2	49	9.00	0.25	0.25	2.90	36,000	200	7.5	0.25	5.11	4.64		92	83.0	63.0	54.0	41.0	13.0	11.0
31/12/2009	3,522		9.40	65	18	32	8	14	17	4.6	9.4	1	2	49	9.00	0.20	0.10	2.50	36,000	240	10.0	0.25	4.08	2.981		93	68.0	50.0	40.0	30.0	11.0	9.0
31/12/2009	3,522		9.40	66	18	33	9	13	16	4.6	9.6	1	2	49	9.00	0.25	0.10	2.60	35,000	240	7.5	0.25	4.16	3.068		93	69.0	51.0	41.0	31.0	11.0	9.0
01/01/2010	3,522		9.40	61	19	24	6	9	11	4.6	9.0	1	2	49	9.00	0.20	0.10	2.40	36,000	240	7.5	0.20	3.04	0.947		94	62.0	43.0	35.0	26.0	8.0	7.0
01/01/2010	3,522		9.40	63	19	25	7	10	12	4.6	9.0	1	2	49	9.00	0.20	0.10	2.50	35,000	240	7.5	0.25	3.13	1.036		94	63.0	44.0	36.0	26.0	9.0	7.0
02/01/2010	3,522		9.40	60	19	23	7	9	11	4.6	9.2	1	2	49	9.00	0.20	0.20	2.50	35,000	200	7.5	0.20	3.13	1.036		94	61.0	42.0	35.0	26.0	8.0	7.0
02/01/2010	3,522		9.45	60	18	25	7	11	14	4.3	9.0	1	2	49	9.00	0.20	0.20	2.50	36,000	160	7.5	0.25	3.04	0.573		94	61.0	43.0	35.0	26.0	9.0	8.0
02/01/2010	3,522		9.40	59	18	26	8	12	15	4.4	9.0	1	2	49	9.50	0.20	0.20	2.30	36,000	160	7.5	0.20	3.04	0.947		94	62.0	44.0	36.0	26.0	9.0	8.0
02/01/2010	3,522		9.40	61	18	25	7	11	14	4.2	8.8	1	2	49	9.50	0.20	0.20	2.40	36,000	160	7.5	0.20	3.04	0.947		94	61.0	43.0	34.0	25.0	9.0	8.0
03/01/2010	3,522		9.35	61	18	25	7	11	14	4.2	8.8	1	2	49	9.50	0.20	0.20	2.50	35,000	160	7.5	0.20	3.13	1.41		94	61.0	43.0	34.0	25.0	9.0	8.0
03/01/2010	3,522		9.40	61	19	24	7	11	13	4.3	9.0	1	2	49	9.50	0.20	0.20	2.30	35,000	200	7.5	0.25	3.13	1.036		94	62.0	43.0	35.0	26.0	9.0	7.0
03/01/2010	3,522		9.40	60	19	25	8	12	15	4.3	8.9	1	2	49	9.50	0.20	0.25	2.40	35,000	200	7.5	0.25	3.13	1.036		94	63.0	44.0	36.0	26.0	10.0	8.0
04/01/2010	3,522		9.40	60	19	23	7	10	12	4.4	9.0	1	2	49	9.00	0.20	0.15	2.20	35,000	160	7.5	0.20	3.13	1.036		94	61.0	42.0	34.0	25.0	8.0	7.0
04/01/2010	3,522		9.40	59	19	22	7	10	12	4.4	8.9	1	2	49	9.00	0.20	1.50	2.30	35,000	160	7.5	0.20	3.13	1.036		94	60.0	41.0	33.0	24.0	7.0	6.0
05/01/2010	3,522		9.40	63	17	30	7	11	13	4.3	9.2	1	2	49	9.00	0.20	0.15	2.20	35,000	160	7.5	0.20	3.13	1.036		94	64.0	47.0	36.0	26.0	9.0	8.0

Baroid Fluid Services

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness			% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l	ppb Eq.	% by vol	Corr Solid	LGS	NAP Base	Water						
05/01/2010	3,522		9.40	61	17	30	7	11	13	4.3	9.8	1	2	49	9.00	0.20	0.20	2.30	35,000	160	7.5	0.20	3.13	1.036		94	64.0	47.0	36.0	26.0	9.0	8.0
06/01/2010	3,522		9.40	61	16	30	6	9	11	4.4	9.0	1	2	49	9.00	0.20	0.15	2.20	35,000	200	7.5	0.20	3.13	1.036		94	62.0	46.0	35.0	27.0	9.0	7.0
06/01/2010	3,522		9.40	58	16	31	7	10	12	4.5	9.4	1	2	49	9.00	0.20	0.20	1.90	35,000	200	7.5	0.20	3.13	1.036		94	63.0	47.0	36.0	28.0	10.0	8.0
07/01/2010	3,522		9.40	56	17	24	7	11	13	5.2	9.4	1	2	49	10.00	0.30	0.20	2.60	35,000	640	7.5	0.20	3.13	1.036		94	58.0	41.0	33.0	25.0	8.0	6.0
07/01/2010	3,522		9.40	55	16	23	6	9	11	5.2	9.3	1	2	49	10.00	0.30	0.20	2.50	35,000	600	7.5	0.20	3.64	2.052		93.5	55.0	39.0	32.0	23.0	6.0	5.0
07/01/2010	3,522		9.40	55	17	24	7	11	13	5.1	10.3	1	2	49	10.00	0.30	0.25	2.40	34,000	640	7.5	0.30	3.21	1.124		94	58.0	41.0	33.0	25.0	8.0	7.0
07/01/2010	3,522		9.40	58	17	26	8	12	14	4.8	10.1	1	2	49	9.50	0.25	0.20	2.60	35,000	400	7.5	0.30	3.13	1.036		94	60.0	43.0	35.0	27.0	10.0	8.0
08/01/2010	1,970		9.40	55	17	26	8	12	14	4.5	10.1	1	2	49	9.50	0.20	0.20	2.30	36,000	360	7.5	0.30	3.04	0.947		94	60.0	43.0	35.0	27.0	10.0	8.0
08/01/2010	1,970		9.40	49	13	16	8	11	13	4.5	9.0	1	2	49	10.50	2.40	2.10	7.20	36,000	800	7.5	0.20	3.04	0.947		94	42.0	29.0	24.0	17.0	8.0	7.0
09/01/2010	1,970		9.40	50	13	17	7	9	12	5.5	10.5	1	2	49	10.50	2.20	2.40	7.80	36,000	720	7.5	0.25	3.04	0.947		94	43.0	30.0	24.0	17.0	8.0	7.0
09/01/2010	1,970		9.40	51	16	21	7	9	11	5.5	11.0	1	2	49	11.00	3.20	3.50	8.30	35,500	900	7.5	0.25	3.09	0.992		94	53.0	37.0	30.0	20.0	8.0	7.0
10/01/2010	1,970	41	9.40	50	17	27	9	12	15	5.5	10.5	1	2	49	11.00	3.50	3.20	7.50	36,000	960	7.5	0.25	3.04	0.947		94	61.0	44.0	36.0	26.0	8.0	7.0
10/01/2010	1,970	42	9.40	52	16	25	8	12	14	5.5	10.0	1	2	49	11.00	4.00	3.50	7.20	36,000	900	7.5	0.20	3.04	0.947		94	57.0	41.0	33.0	23.0	8.0	7.0
11/01/2010	1,965		9.40	53	17	24	8	12	15	5.5	11.0	1	2	49	11.00	3.70	3.50	7.30	36,000	880	7.5	0.20	3.04	0.947		94	58.0	41.0	34.0	25.0	8.0	7.0
11/01/2010	1,970		9.40	53	16	25	7	11	14	5.5	10.5	1	2	49	11.00	4.00	3.40	7.80	35,500	900	7.5	0.25	3.09	0.992		94	57.0	41.0	33.0	23.0	8.0	7.0
12/01/2010	1,965		9.40	52	17	24	8	11	13	5.5	10.8	1	2	49	11.00	3.60	3.40	7.30	36,000	880	7.5	0.20	3.04	0.947		94	58.0	41.0	34.0	24.0	8.0	7.0
12/01/2010	1,965		9.40	54	18	30	9	14	16	4.8	9.0	1	2	49	11.00	4.20	3.60	7.40	35,500	900	7.5	0.20	3.09	0.992		94	66.0	48.0	40.0	29.0	9.0	8.0
13/01/2010	1,965		9.40	52	19	29	9	13	16	5.0	10.5	1	2	49	11.00	4.20	3.80	7.40	36,000	900	7.5	0.25	3.04	0.947		94	67.0	48.0	41.0	30.0	9.0	8.0
13/01/2010	1,965		9.40	50	21	34	10	15	18	4.8	9.5	1	2	49	11.00	4.10	3.60	7.30	35,500	880	7.5	0.20	3.09	0.992		94	76.0	55.0	46.0	33.0	11.0	9.0
14/01/2010	1,965		9.40	56	21	38	10	14	18	5.0	9.8	1	2	49	11.00	4.30	2.80	6.20	36,000	860	7.5	0.20	3.04	0.947		94	80.0	59.0	48.0	35.0	11.0	9.0
14/01/2010	1,965	44	9.40	52	21	37	10	15	18	4.8	9.5	1	2	49	10.50	4.40	2.40	5.90	35,000	840	7.5	0.20	3.13	1.036		94	79.0	58.0	48.0	36.0	12.0	9.0
14/01/2010	1,965		9.40	52	23	31	10	14	17	4.8	9.8	1	2	49	10.50	4.50	2.20	5.60	36,000	840	7.5	0.20	3.04	0.947		94	77.0	54.0	46.0	32.0	11.0	9.0
15/01/2010	1,965		9.40	55	20	34	10	15	18	4.8	9.5	1	2	49	10.50	4.50	1.40	4.60	36,000	840	7.5	0.20	3.04	0.947		94	74.0	54.0	44.0	33.0	11.0	9.0
15/01/2010	1,965		9.40	55	21	36	10	15	19	4.7	9.5	1	2	49	10.50	4.40	1.20	4.30	36,000	880	7.5	0.20	3.04	0.947		94	78.0	57.0	47.0	34.0	11.0	9.0
16/01/2010	1,965		9.40	56	21	31	9	13	17	4.8	9.5	1	2	49	10.50	4.40	0.80	4.20	35,500	880	7.5	0.20	3.09	0.992		94	73.0	52.0	43.0	32.0	10.0	8.0
16/01/2010	1,965		9.40	56	20	34	10	14	17	4.8	10.0	1	2	49	10.50	4.30	0.75	4.25	35,000	900	7.5	0.20	3.13	1.036		94	74.0	54.0	44.0	33.0	10.0	9.0
17/01/2010	1,965	37	9.40	52	21	36	10	14	17	4.7	9.0	1	2	49	10.50	4.50	0.80	4.30	36,000	880	7.5	0.20	3.04	0.947		94	78.0	57.0	47.0	36.0	11.0	9.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
17/01/2010	1,965		9.40	54	20	34	10	14	17	4.8	9.5	1	2	49	10.50	4.30	0.75	4.20	35,500	880	7.5	0.20	3.19	1.195		93.9	74.0	54.0	44.0	33.0	11.0	9.0
18/01/2010	1,965		9.40	56	20	34	10	15	17	4.8	9.5	1	2	49	10.50	4.20	0.70	4.30	35,500	880	7.5	0.20	3.09	0.992		94	74.0	54.0	44.0	34.0	11.0	9.0
18/01/2010	1,965		9.40	57	21	31	9	13	16	4.8	9.5	1	2	49	10.50	4.30	0.75	4.35	35,500	880	7.5	0.20	3.09	0.992		94	73.0	52.0	43.0	32.0	10.0	8.0
19/01/2010	1,970	45	9.40	51	22	29	8	12	16	4.7	9.5	1	2	49	11.50	6.30	1.40	5.20	36,000	1,200	7.5	0.20	3.04	0.947		94	73.0	51.0	40.0	27.0	9.0	7.0
19/01/2010	1,970		9.40	55	21	36	9	14	17	4.8	9.5	1	2	49	11.50	6.50	1.50	5.40	35,000	1,240	7.5	0.20	3.13	1.036		94	78.0	57.0	47.0	36.0	9.0	8.0
19/01/2010	1,964		9.40	56	22	30	9	13	16	4.6	9.8	1	2	49	11.50	6.20	1.30	5.30	36,000	1,280	7.5	0.25	3.04	0.947		94	74.0	52.0	41.0	27.0	9.0	8.0
19/01/2010	1,964		9.40	56	22	30	9	13	16	4.6	9.7	1	2	49	11.50	6.30	1.30	5.40	36,000	1,240	7.5	2.50	3.04	0.947		94	74.0	52.0	41.0	27.0	9.0	8.0
Interval # 05										**From Date**				**19/01/2010**						**Top of Interval**			**1,964.0**	**m**							
Max. Hole Size / Bit Size 8.50 / 8.50 in										**To Date**				**18/02/2010**						**Bottom of Interval**			**3,482.0**	**m**							
19/01/2010	1,970	45	9.40	51	22	29	8	12	16	4.7	9.5	1	2	49	11.50	6.30	1.40	5.20	36,000	1,200	7.5	0.20	3.04	0.947		94	73.0	51.0	40.0	27.0	9.0	7.0
19/01/2010	1,970		9.40	55	21	36	9	14	17	4.8	9.5	1	2	49	11.50	6.50	1.50	5.40	35,000	1,240	7.5	0.20	3.13	1.036		94	78.0	57.0	47.0	36.0	9.0	8.0
19/01/2010	1,964		9.40	56	22	30	9	13	16	4.6	9.8	1	2	49	11.50	6.20	1.30	5.30	36,000	1,280	7.5	0.25	3.04	0.947		94	74.0	52.0	41.0	27.0	9.0	8.0
19/01/2010	1,964		9.40	56	22	30	9	13	16	4.6	9.7	1	2	49	11.50	6.30	1.30	5.40	36,000	1,240	7.5	2.50	3.04	0.947		94	74.0	52.0	41.0	27.0	9.0	8.0
20/01/2010	1,991	37	9.30	57	18	33	10	13	17	4.5	9.3	1	2	49	11.50	5.80	1.40	5.20	36,000	1,200	5.0	0.25	3.15	1.9		93.9	69.0	51.0	41.0	31.0	9.0	7.0
20/01/2010	1,995	47	9.30	57	22	17	8	13	16	4.4	9.5	1	2	49	11.50	6.30	1.50	5.90	35,500	1,200	5.0	0.25	3.29	2.147		93.8	61.0	39.0	30.0	20.0	9.0	7.0
20/01/2010	2,021	48	9.30	68	21	36	10	16	19	4.3	8.5	1	2	49	9.50	1.60	0.60	3.50	36,000	360	5.0	0.25	3.25	2.103		93.8	78.0	57.0	47.0	35.0	11.0	9.0
20/01/2010	2,043	48	9.30	66	21	36	11	17	20	4.3	8.8	1	2	49	9.50	0.80	0.40	2.60	36,000	280	5.0	0.25	3.56	2.713		93.5	78.0	57.0	47.0	35.0	11.0	9.0
21/01/2010	2,102	47	9.30	68	21	37	11	16	19	4.4	9.3	1	2	49	9.50	0.40	0.25	2.20	36,000	240	5.0	0.25	3.56	2.713		93.5	79.0	58.0	48.0	36.0	12.0	10.0
21/01/2010	2,112	52	9.35	65	18	31	8	13	17	4.4	9.0	1	2	49	9.50	1.40	0.60	2.85	37,000	360	5.0	0.20	3.48	2.25		93.5	67.0	49.0	43.0	31.0	9.0	7.0
21/01/2010	2,112		9.35	67	18	30	8	13	16	4.4	8.8	1	2	49	9.50	1.60	0.75	3.00	36,000	380	5.0	0.25	3.46	2.135		93.6	66.0	48.0	40.0	29.0	9.0	7.0
21/01/2010	2,112		9.35	58	18	31	9	14	17	4.4	9.1	1	2	49	9.50	1.50	0.70	2.80	36,000	340	5.0	0.25	3.56	2.339		93.5	67.0	49.0	41.0	30.0	10.0	8.0
22/01/2010	2,112		9.35	61	18	31	9	14	17	4.4	9.1	1	2	49	9.50	1.60	0.75	2.90	36,000	340	5.0	0.25	3.04	1.322		94	67.0	49.0	41.0	30.0	10.0	8.0
22/01/2010	2,112	45	9.40	65	18	28	8	13	16	4.3	8.0	1	2	49	9.50	2.10	0.80	2.20	36,500	360	5.0	0.20	3.52	1.92		93.5	64.0	46.0	39.0	29.0	9.0	7.0
22/01/2010	2,195	49	9.40	55	18	29	8	12	15	4.4	8.5	1	2	49	9.50	2.00	0.70	2.45	35,500	320	5.0	0.20	3.6	2.008		93.5	65.0	47.0	40.0	29.0	9.0	7.0
22/01/2010	2,344	53	9.35	66	18	30	9	13	16	4.3	8.8	1	2	49	9.50	1.80	0.65	2.35	36,000	280	5.0	0.15	3.04	1.322		94	66.0	48.0	41.0	30.0	10.0	8.0
23/01/2010	2,419	58	9.40	68	20	29	9	14	17	4.4	8.9	1	2	49	9.50	1.30	0.55	2.20	36,000	280	5.0	0.20	3.56	1.964		93.5	69.0	49.0	42.0	31.0	11.0	9.0
23/01/2010	2,482	52	9.40	65	18	33	8	13	17	4.3	8.5	1	2	49	9.50	1.80	0.60	2.40	37,000	360	5.0	0.20	3.37	1.672		93.6	69.0	51.0	43.0	31.0	9.0	7.0

Baroid Fluid Services

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness			% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l	ppb Eq.	% by vol	Corr Solid	LGS	NAP Base	Water						
23/01/2010	2,547	52	9.40	58	19	30	9	13	15	4.4	9.0	1	2	49	9.50	2.30	0.75	2.40	37,000	320	7.5	0.25	3.37	1.672		93.6	68.0	49.0	41.0	30.0	9.0	8.0
23/01/2010	2,642	68	9.35	66	19	34	12	16	21	4.4	9.1	1	2	49	9.50	1.90	0.60	2.10	37,000	280	10.0	0.25	2.96	1.233		94	72.0	53.0	45.0	32.0	10.0	8.0
24/01/2010	2,809	58	9.40	64	20	36	10	14	17	4.1	7.8	1	2	49	9.00	0.75	0.35	2.80	37,000	360	7.5	0.25	3.58	2.079		93.4	76.0	56.0	47.0	34.0	11.0	9.0
24/01/2010	2,871	60	9.40	59	21	37	10	14	19	4.2	8.0	1	2	49	9.00	0.60	0.20	3.20	36,500	320	7.5	0.25	3.62	2.123		93.4	79.0	58.0	48.0	36.0	11.0	9.0
24/01/2010	2,769	57	9.35	66	20	36	10	14	17	4.4	9.0	1	2	49	9.50	0.55	0.18	2.90	36,000	320	10.0	0.25	3.04	1.322		94	76.0	56.0	47.0	34.0	10.0	8.0
24/01/2010	2,928	64	9.35	65	21	39	12	15	18	4.4	9.1	1	2	49	9.00	0.55	0.90	2.90	36,000	320	10.0	0.25	3.04	1.322		94	81.0	60.0	50.0	38.0	12.0	10.0
25/01/2010	3,014	57	9.35	66	21	36	10	14	17	4.3	8.8	1	2	49	9.50	1.40	0.25	2.30	36,500	320	7.5	0.25	3	1.278		94	78.0	57.0	37.0	33.0	10.0	9.0
25/01/2010	3,062	62	9.35	64	20	39	10	14	17	4.2	8.0	1	2	49	9.00	1.40	0.35	3.20	37,000	320	7.5	0.20	3.48	2.25		93.5	79.0	59.0	49.0	37.0	11.0	9.0
25/01/2010	3,121	65	9.40	65	20	38	10	15	18	4.1	7.5	1	2	49	9.00	1.60	0.45	2.90	37,000	280	7.5	0.20	3.79	2.486		93.2	78.0	58.0	47.0	34.0	11.0	9.0
25/01/2010	3,158		9.35	56	19	40	10	13	15	4.3	8.8	1	2	49	9.00	1.50	0.35	2.80	36,500	240	10.0	0.25	3	1.278		94	78.0	59.0	47.0	34.0	10.0	9.0
26/01/2010	3,158		9.35	56	22	34	10	14	17	4.4	8.9	1	2	49	9.00	1.40	0.30	2.90	37,000	240	10.0	0.20	2.96	1.233		94	78.0	56.0	47.0	31.0	10.0	8.0
26/01/2010	3,158		9.40	67	20	36	10	15	17	4.2	8.0	1	2	49	9.00	1.30	0.45	3.10	37,000	280	7.5	0.20	3.68	2.283		93.3	76.0	56.0	47.0	33.0	11.0	9.0
26/01/2010	3,158		9.35	66	19	35	9	13	16	4.3	8.5	1	2	49	9.00	1.10	0.30	3.20	37,000	240	7.5	0.20	3.48	2.25		93.5	73.0	54.0	44.0	32.0	10.0	8.0
26/01/2010	3,158		9.30	57	19	34	9	13	16	4.4	9.1	1	2	49	9.00	1.00	0.29	3.30	37,000	240	10.0	0.20	2.96	1.607		94	72.0	53.0	43.0	31.0	10.0	8.0
27/01/2010	3,158		9.30	56	18	37	10	14	17	4.4	9.1	1	2	49	9.00	1.00	0.30	3.20	37,000	240	7.5	0.20	2.96	1.607		94	73.0	55.0	44.0	33.0	10.0	8.0
27/01/2010	3,171	64	9.40	63	20	38	11	15	18	4.2	7.5	1	2	49	9.00	0.95	0.30	3.30	37,500	240	7.5	0.20	3.54	2.035		93.4	78.0	58.0	47.0	37.0	12.0	10.0
27/01/2010	3,194	66	9.40	62	19	37	10	16	19	4.1	6.5	1	2	49	9.00	0.80	0.15	3.20	37,500	280	7.5	0.20	3.43	1.831		93.5	75.0	56.0	47.0	35.0	12.0	9.0
27/01/2010	3,195		9.30	58	19	36	10	14	17	4.3	8.9	1	2	49	9.50	0.70	1.20	3.10	37,000	240	10.0	0.20	2.96	1.607		94	74.0	55.0	46.0	34.0	10.0	8.0
28/01/2010	3,195		9.35	56	19	37	10	14	17	4.3	8.8	1	2	49	9.50	0.70	1.00	3.10	37,000	240	10.0	0.20	2.96	1.233		94	75.0	56.0	47.0	35.0	11.0	9.0
28/01/2010	3,195		9.35	57	18	33	9	13	15	4.2	7.5	1	2	49	9.00	0.95	0.30	2.80	37,500	320	5.0	0.15	3.23	1.799		93.7	69.0	51.0	43.0	32.0	9.0	8.0
28/01/2010	3,200	54	9.35	64	17	30	9	13	16	4.3	7.8	1	2	49	9.00	0.65	0.15	3.10	37,500	360	5.0	0.15	3.33	2.002		93.6	64.0	47.0	39.0	29.0	9.0	8.0
28/01/2010	3,213		9.35	58	17	31	10	14	17	4.4	8.9	1	2	49	9.00	0.70	0.20	3.30	38,000	320	5.0	0.25	2.88	1.143		94	65.0	48.0	40.0	30.0	10.0	8.0
29/01/2010	3,213		9.30	59	17	30	9	13	16	4.4	8.9	1	2	49	9.00	0.60	0.45	2.90	37,000	280	5.0	0.20	2.96	1.607		94	64.0	47.0	39.0	29.0	10.0	8.0
29/01/2010	3,213		9.35	62	15	24	9	12	15	4.3	7.8	1	2	49	9.00	0.55	0.25	3.40	37,500	320	5.0	0.15	3.43	2.206		93.5	54.0	39.0	33.0	25.0	9.0	8.0
29/01/2010	3,213		9.35	60	15	23	8	13	15	4.4	8.0	1	2	49	9.00	0.95	0.40	3.25	38,000	320	5.0	0.10	3.39	2.161		93.5	53.0	38.0	33.0	24.0	9.0	7.0
29/01/2010	3,213		9.40	62	15	25	10	15	17	4.3	8.9	1	2	49	9.50	0.80	0.28	2.90	38,000	280	5.0	0.15	2.88	0.769		94	55.0	40.0	35.0	26.0	11.0	9.0
30/01/2010	3,284		9.40	64	20	32	9	14	17	4.4	8.2	1	2	49	9.00	0.95	0.35	3.30	39,000	280	7.5	0.20	3.52	2.104		93.3	72.0	52.0	43.0	33.0	11.0	8.0

Baroid Fluid Services

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
30/01/2010	3,284		9.40	62	18	30	9	13	16	4.4	8.0	1	2	49	9.00	0.85	0.25	3.50	39,000	360	7.5	0.15	3.52	2.104		93.3	66.0	48.0	39.0	30.0	10.0	8.0
30/01/2010	3,256	68	9.35	66	20	34	11	14	17	4.4	8.9	1	2	49	9.50	0.60	0.28	3.10	38,000	240	10.0	0.20	2.88	1.143		94	74.0	54.0	45.0	33.0	10.0	8.0
30/01/2010	3,284		9.35	58	18	33	10	14	17	4.4	8.9	1	2	49	9.50	0.85	0.24	3.30	38,500	320	10.0	0.20	2.83	1.099		94	69.0	51.0	43.0	31.0	10.0	8.0
31/01/2010	3,283		9.40	75	18	33	10	14	17	4.4	8.9	1	2	49	9.00	0.65	0.26	3.30	38,000	240	10.0	0.20	3.91	2.804		93	69.0	51.0	43.0	31.0	10.0	8.0
31/01/2010	3,293	56	9.40	69	19	34	10	14	18	4.3	7.5	1	2	49	9.00	0.55	0.25	3.40	38,500	280	7.5	0.20	3.66	2.353		93.2	72.0	53.0	42.0	31.0	10.0	9.0
31/01/2010	3,293		9.35	67	18	33	9	13	17	4.4	8.0	1	2	49	9.00	0.45	0.15	2.85	38,500	240	7.5	0.15	3.35	2.116		93.5	69.0	51.0	41.0	32.0	10.0	8.0
31/01/2010	3,298		9.35	65	18	34	10	13	16	4.4	8.6	1	2	49	9.00	0.50	0.25	3.00	38,000	240	10.0	0.20	3.39	2.161		93.5	70.0	52.0	42.0	33.0	10.0	8.0
01/02/2010	3,298		9.40	55	18	34	9	13	15	4.4	9.0	1	2	49	9.00	0.45	0.24	2.90	38,000	240	10.0	0.20	3.91	2.804		93	70.0	52.0	42.0	33.0	10.0	8.0
01/02/2010	3,298		9.35	67	15	24	9	13	16	4.3	7.7	1	2	49	9.00	0.55	0.15	3.35	38,500	360	7.5	0.15	3.35	2.116		93.5	54.0	39.0	33.0	27.0	9.0	8.0
01/02/2010	3,309		9.40	69	19	35	10	14	17	4.4	8.0	1	2	49	9.00	0.85	0.20	3.40	38,500	200	7.5	0.15	3.76	2.556		93.1	73.0	54.0	45.0	34.0	11.0	9.0
01/02/2010	3,309		9.40	68	19	34	10	14	17	4.4	9.0	1	2	49	9.00	0.75	0.20	3.10	38,000	240	10.0	0.20	3.91	2.804		93	72.0	53.0	44.0	33.0	10.0	8.0
02/02/2010	3,309		9.40	66	19	35	10	14	17	4.4	9.0	1	2	121	9.00	0.80	0.21	3.20	38,000	240	10.0	0.20	3.91	2.804		93	73.0	54.0	45.0	34.0	11.0	9.0
02/02/2010	3,309		9.40	71	16	28	9	13	17	4.3	7.8	1	2	121	9.00	0.70	0.20	3.15	38,000	200	7.5	0.15	3.7	2.397		93.2	60.0	44.0	37.0	28.0	9.0	8.0
02/02/2010	3,309		9.40	73	18	28	9	14	18	4.4	8.2	1	2	121	9.00	0.55	0.15	3.35	38,000	240	7.5	0.20	3.5	1.99		93.4	64.0	46.0	39.0	28.0	10.0	8.0
02/02/2010	3,317	68	9.40	68	15	30	11	13	17	4.4	8.6	1	2	121	9.00	0.60	0.17	3.10	37,500	280	10.0	0.20	3.95	2.849		93	60.0	45.0	38.0	29.0	11.0	9.0
03/02/2010	3,364	69	9.40	67	15	29	11	14	18	4.3	8.1	1	2	121	9.00	0.65	0.22	2.90	37,500	280	10.0	0.20	3.95	2.849		93	59.0	44.0	38.0	29.0	10.0	8.0
03/02/2010	3,408	69	9.40	57	19	36	10	15	19	4.3	7.2	1	2	121	9.00	0.45	0.15	3.25	38,500	200	7.5	0.15	3.66	2.353		93.2	74.0	55.0	46.0	34.0	11.0	8.0
03/02/2010	3,479	69	9.35	57	20	36	10	14	19	4.2	6.8	1	2	121	9.00	0.65	0.20	3.30	37,500	160	7.5	0.20	3.43	2.206		93.5	76.0	56.0	47.0	35.0	11.0	9.0
03/02/2010	3,482		9.30	59	20	35	10	14	19	4.3	7.5	1	2	121	9.00	0.60	0.21	3.40	38,000	200	10.0	0.25	3.91	3.553		93	75.0	55.0	46.0	34.0	10.0	8.0
04/02/2010	3,482		9.30	57	20	35	10	14	19	4.3	7.2	1	2	121	9.00	0.60	0.23	3.00	38,000	200	5.0	0.25	3.91	3.553		93	75.0	55.0	46.0	34.0	10.0	8.0
04/02/2010	3,482		9.30	63	18	38	10	14	17	4.3	6.8	1	2	121	9.00	0.60	0.20	3.25	38,000	120	5.0	0.15	3.19	2.129		93.7	74.0	56.0	45.0	33.0	10.0	9.0
04/02/2010	3,482		9.30	65	18	33	9	13	16	4.3	7.0	1	2	121	9.00	0.55	0.15	3.45	38,000	80	5.0	0.15	3.19	2.129		93.7	69.0	51.0	42.0	30.0	10.0	8.0
04/02/2010	3,482		9.30	63	18	34	10	14	17	4.3	7.3	1	2	121	9.00	0.60	0.18	3.30	38,000	120	5.0	0.20	3.91	3.553		93	70.0	52.0	43.0	31.0	10.0	8.0
05/02/2010	3,482		9.30	62	18	35	10	14	17	4.3	7.2	1	2	121	9.00	0.60	0.18	3.20	38,000	120	5.0	0.20	2.88	1.518		94	71.0	53.0	44.0	31.0	10.0	8.0
05/02/2010	3,482		9.30	66	18	28	9	13	16	4.2	6.6	1	2	121	9.00	0.60	0.20	2.95	38,500	160	5.0	0.20	3.14	2.084		93.7	64.0	46.0	37.0	29.0	9.0	8.0
05/02/2010	3,482		9.30	68	18	33	10	14	18	4.2	6.8	1	2	121	9.00	0.45	0.15	3.05	38,500	120	5.0	0.20	3.14	2.084		93.7	69.0	51.0	42.0	33.0	10.0	9.0
05/02/2010	3,482		9.30	66	19	32	10	14	19	4.3	7.0	1	2	121	9.00	0.40	0.20	3.00	38,000	120	5.0	0.25	2.88	1.518		94	70.0	51.0	42.0	33.0	10.0	8.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness			% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l	ppb Eq.	% by vol	Corr Solid	LGS	NAP Base	Water						
06/02/2010	3,482		9.30	69	15	27	9	13	15	4.3	6.8	1	2	121	9.50	1.45	0.45	3.55	38,000	160	5.0	0.15	3.39	2.536		93.5	57.0	42.0	36.0	27.0	9.0	8.0
06/02/2010	3,482		9.30	70	16	26	9	13	16	4.2	7.0	1	2	121	9.50	1.60	0.45	3.30	38,500	160	5.0	0.15	3.14	2.084		93.7	58.0	42.0	37.0	29.0	10.0	8.0
06/02/2010	3,482		9.30	72	16	27	9	13	15	4.3	7.0	1	2	121	9.50	1.50	0.45	3.00	38,000	160	5.0	0.20	3.39	2.536		93.5	59.0	43.0	38.0	30.0	10.0	8.0
07/02/2010	3,482		9.30	71	15	26	9	12	15	4.3	7.0	1	2	121	9.00	0.85	0.25	3.15	38,500	120	5.0	0.15	3.04	1.88		93.8	56.0	41.0	35.0	26.0	9.0	8.0
07/02/2010	3,482		9.30	74	16	25	9	13	16	4.4	7.2	1	2	121	9.00	0.70	0.20	2.90	38,500	160	5.0	0.15	3.04	1.88		93.8	57.0	41.0	36.0	27.0	9.0	8.0
08/02/2010	3,482		9.30	70	16	27	9	13	15	4.3	7.1	1	2	121	9.50	0.60	0.20	3.00	38,000	160	5.0	0.20	3.08	1.925		93.8	59.0	43.0	35.0	28.0	10.0	8.0
08/02/2010	3,482		9.30	72	15	27	9	13	17	4.3	6.8	1	2	121	9.50	1.55	0.35	3.15	38,500	120	5.0	0.15	3.04	1.88		93.8	57.0	42.0	36.0	27.0	9.0	8.0
08/02/2010	3,482		9.30	75	15	28	9	13	18	4.4	7.2	1	2	121	9.50	0.95	0.25	3.05	38,500	160	5.0	0.15	3.04	1.88		93.8	58.0	43.0	36.0	28.0	9.0	8.0
08/02/2010	3,482		9.30	77	15	29	10	14	19	4.4	7.8	1	2	121	9.50	1.00	0.20	2.90	38,000	160	5.0	0.20	3.39	2.536		93.5	59.0	44.0	37.0	29.0	10.0	8.0
09/02/2010	3,482		9.30	77	14	31	10	14	19	4.4	7.2	1	2	121	9.50	0.45	0.25	2.90	38,000	160	5.0	0.20	3.39	2.536		93.5	59.0	45.0	38.0	29.0	10.0	8.0
09/02/2010	3,482		9.30	77	15	25	8	12	16	4.3	7.0	1	2	121	9.50	0.45	0.15	3.35	38,500	80	5.0	0.15	3.04	1.88		93.8	55.0	40.0	34.0	26.0	9.0	7.0
09/02/2010	3,482		9.30	79	15	24	9	12	15	4.4	7.2	1	2	121	9.00	0.35	0.10	3.30	38,500	120	5.0	0.15	3.04	1.88		93.8	54.0	39.0	33.0	26.0	9.0	8.0
09/02/2010	3,482		9.30	78	15	25	10	14	18	4.4	7.1	1	2	121	9.50	0.40	0.10	3.00	38,000	160	5.0	0.20	3.39	2.536		93.5	55.0	40.0	34.0	27.0	10.0	8.0
10/02/2010	3,482		9.30	78	15	23	8	12	15	4.3	7.2	1	2	121	9.00	0.35	0.10	3.35	38,500	80	5.0	0.15	3.04	1.88		93.8	53.0	38.0	32.0	24.0	9.0	7.0
10/02/2010	3,482	38	9.35	75	17	31	10	14	18	4.3	7.0	1	2	121	8.50	0.15	0.05	3.15	38,500	120	5.0	0.15	3.35	2.116		93.5	65.0	48.0	40.0	31.0	11.0	8.0
10/02/2010	3,482	48	9.35	77	18	38	11	15	21	4.4	7.5	1	2	121	8.50	0.20	0.05	3.34	38,000	240	5.0	0.15	3.39	2.161		93.5	74.0	56.0	48.0	37.0	12.0	10.0
10/02/2010	3,482		9.30	69	18	37	11	15	21	4.4	7.7	1	2	121	8.50	0.20	0.10	3.55	38,000	280	5.0	0.20	2.88	1.518		94	73.0	55.0	47.0	36.0	11.0	9.0
11/02/2010	3,482		9.30	77	18	39	11	15	21	4.4	7.7	1	2	121	8.50	0.20	0.90	3.40	38,000	280	5.0	0.20	2.88	1.518		94	75.0	57.0	49.0	38.0	11.0	9.0
11/02/2010	3,482		9.30	72	16	33	11	14	17	4.4	7.2	1	2	121	8.50	0.25	0.10	3.20	38,500	240	5.0	0.20	3.04	1.88		93.8	65.0	49.0	40.0	31.0	10.0	8.0
11/02/2010	3,482		9.35	70	16	28	8	12	14	4.5	8.0	1	2	121	8.50	0.20	0.10	2.80	40,000	320	5.0	0.20	3.22	1.981		93.5	60.0	44.0	37.0	28.0	10.0	8.0
11/02/2010	3,482	68	9.40	65	16	29	9	13	15	4.5	7.7	1	2	121	8.50	0.25	0.10	3.40	39,000	280	5.0	0.20	2.79	0.679		94	61.0	45.0	38.0	29.0	10.0	8.0
12/02/2010	3,482		9.40	60	15	30	9	13	17	4.5	7.8	1	2	121	8.50	0.10	0.20	3.45	39,000	240	5.0	0.20	3.31	1.697		93.5	60.0	45.0	38.0	30.0	10.0	8.0
12/02/2010	3,482		9.30	65	17	28	8	12	15	4.5	7.6	1	2	121	8.50	0.20	0.15	2.70	37,000	280	5.0	0.20	3.48	2.625		93.5	62.0	45.0	37.0	27.0	9.0	8.0
12/02/2010	3,482		9.30	70	17	29	8	12	15	4.5	7.8	1	2	121	8.50	0.20	0.15	2.80	37,000	280	5.0	0.20	3.48	2.625		93.5	63.0	46.0	37.0	27.0	10.0	8.0
12/02/2010	3,482		9.30	71	17	30	9	13	17	4.5	7.8	1	2	121	8.50	0.25	0.20	2.70	38,000	240	5.0	0.20	3.39	2.536		93.5	64.0	47.0	38.0	27.0	10.0	8.0
13/02/2010	3,482		9.30	70	18	28	7	11	14	4.5	7.8	1	2	121	8.50	0.10	0.15	2.70	37,000	280	5.0	0.20	3.48	2.625		93.5	64.0	46.0	37.0	27.0	9.0	8.0
13/02/2010	3,482		9.30	71	18	27	7	11	14	4.5	7.5	1	2	121	8.50	1.20	0.16	2.80	37,500	280	5.0	0.20	3.43	2.58		93.5	63.0	45.0	36.0	26.0	9.0	8.0

Operator	**ADA DRILLING**
Well Name	**Rockhopper-1**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Fluid Property Recap : Water-Based Fluid

Date	Depth	FL Temp	Density	Funn Visc	Rheology 49 Deg C					Filtration					Filtrate Analysis						MBT	Sand	Retort Analysis				Rheometer Dial Readings					
					PV	lbs/100 ft2				API	HTHP	Cake API	Cake HTHP	Temp	pH	Pm	Pf	Mf	Cl	Total Hardness	ppb Eq.	% by vol	% by vol				600	300	200	100	6	3
	m	Deg C	ppg	sec/qt	cP	YP	10S	10M	30M	ml/30 min	ml/30 min	32nd in		Deg C		ml	ml	ml	mg/l	mg/l			Corr Solid	LGS	NAP Base	Water						
14/02/2010	3,482		9.30	68	17	29	7	11	13	4.5	7.6	1	2	121	8.50	0.20	0.15	2.70	37,000	280	5.0	0.20	3.48	2.625		93.5	63.0	46.0	37.0	27.0	9.0	8.0
14/02/2010	3,482		9.30	73	17	30	8	12	14	4.5	7.6	1	2	121	8.50	0.15	0.15	2.70	37,500	280	5.0	0.20	3.43	2.58		93.5	64.0	47.0	38.0	27.0	9.0	8.0
15/02/2010	3,482		9.30	70	17	29	7	10	13	4.5	7.8	1	2	121	8.50	0.15	0.10	2.80	37,000	280	5.0	0.20	3.48	2.625		93.5	63.0	46.0	37.0	27.0	9.0	7.0
15/02/2010	3,482		9.30	70	17	30	8	11	14	4.5	8.0	1	2	121	8.50	0.15	0.15	2.70	37,500	280	5.0	0.20	3.43	2.58		93.5	64.0	47.0	38.0	28.0	9.0	7.0
16/02/2010	3,482		9.50	65	17	26	8	11	13	5.1	8.2	1	2	121	10.00	0.20	0.20	3.10	34,500	720	5.0	0.20	4.51	2.973		92.7	60.0	43.0	35.0	24.0	9.0	7.0
16/02/2010	3,482		9.40	66	18	24	7	10	12	5.5	8.4	1	2	121	10.00	0.20	0.20	2.90	35,000	880	5.0	0.10	4.16	3.068		93	60.0	42.0	35.0	26.0	9.0	7.0
17/02/2010	3,482		9.40	65	17	26	7	10	12	5.8	9.2	1	2	121	10.00	0.20	0.20	3.00	35,000	1,000	5.0	0.10	3.64	2.052		93.5	60.0	43.0	34.0	24.0	8.0	6.0
17/02/2010	3,482		9.40	67	18	25	7	10	12	6.2	10.2	1	2	121	10.00	0.20	0.20	3.10	35,000	920	5.0	0.10	3.64	2.052		93.5	61.0	43.0	35.0	24.0	9.0	7.0
18/02/2010	0		9.40	65	18	25	7	10	12	6.2	10.2	1	2	121	10.00	0.20	0.20	3.10	35,000	920	5.0	0.10	3.64	2.052		93.5	61.0	43.0	35.0	24.0	9.0	7.0

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
012	10/12/2009	5:37	1,233	Gel, 10 seconds	lbs/100 ft2	5	Low	8	14
012	10/12/2009	8:30	1,292	KCl %	#N/A	#N/A	High	#N/A	#N/A
012	10/12/2009	18:00	1,435	KCl %	#N/A	#N/A	High	#N/A	#N/A
012	10/12/2009	18:00	1,435	Gel, 10 seconds	lbs/100 ft2	7	Low	8	14
013	11/12/2009	10:40	1,811	KCl %	#N/A	#N/A	High	#N/A	#N/A
013	11/12/2009	16:00	1,886	KCl %	#N/A	#N/A	High	#N/A	#N/A
014	12/12/2009	4:00	1,960	KCl %	#N/A	#N/A	High	#N/A	#N/A
040	07/01/2010	4:20	3,522	pH	-	10.00	High	8.50	9.50
040	07/01/2010	9:00	3,522	pH	-	10.00	High	8.50	9.50
040	07/01/2010	16:00	3,522	pH	-	10.00	High	8.50	9.50
041	08/01/2010	17:00	1,970	pH	-	10.50	High	8.50	9.50
053	20/01/2010	3:00	1,991	KCl %	#N/A	#N/A	Low	#N/A	#N/A
053	20/01/2010	3:00	1,991	pH	-	11.50	High	8.50	9.50
053	20/01/2010	7:40	1,995	KCl %	#N/A	#N/A	Low	#N/A	#N/A
053	20/01/2010	7:40	1,995	pH	-	11.50	High	8.50	9.50
053	20/01/2010	15:20	2,021	KCl %	#N/A	#N/A	Low	#N/A	#N/A
053	20/01/2010	21:30	2,043	KCl %	#N/A	#N/A	Low	#N/A	#N/A
054	21/01/2010	3:50	2,102	KCl %	#N/A	#N/A	Low	#N/A	#N/A
054	21/01/2010	21:40	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
054	21/01/2010	14:00	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
054	21/01/2010	8:20	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
055	22/01/2010	3:00	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
055	22/01/2010	7:45	2,112	KCl %	#N/A	#N/A	Low	#N/A	#N/A
055	22/01/2010	14:15	2,195	KCl %	#N/A	#N/A	Low	#N/A	#N/A
055	22/01/2010	21:25	2,344	KCl %	#N/A	#N/A	Low	#N/A	#N/A
056	23/01/2010	4:35	2,419	KCl %	#N/A	#N/A	Low	#N/A	#N/A
056	23/01/2010	8:40	2,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
056	23/01/2010	13:45	2,547	KCl %	#N/A	#N/A	Low	#N/A	#N/A
056	23/01/2010	20:35	2,642	KCl %	#N/A	#N/A	Low	#N/A	#N/A

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
057	24/01/2010	4:00	2,769	KCl %	#N/A	#N/A	Low	#N/A	#N/A
057	24/01/2010	10:00	2,809	KCl %	#N/A	#N/A	Low	#N/A	#N/A
057	24/01/2010	13:45	2,871	KCl %	#N/A	#N/A	Low	#N/A	#N/A
057	24/01/2010	20:30	2,928	KCl %	#N/A	#N/A	Low	#N/A	#N/A
058	25/01/2010	4:00	3,014	KCl %	#N/A	#N/A	Low	#N/A	#N/A
058	25/01/2010	8:15	3,062	KCl %	#N/A	#N/A	Low	#N/A	#N/A
058	25/01/2010	13:30	3,121	KCl %	#N/A	#N/A	Low	#N/A	#N/A
058	25/01/2010	20:05	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
059	26/01/2010	15:00	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
059	26/01/2010	22:40	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
059	26/01/2010	3:00	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
059	26/01/2010	10:00	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
060	27/01/2010	3:00	3,158	KCl %	#N/A	#N/A	Low	#N/A	#N/A
060	27/01/2010	7:00	3,171	KCl %	#N/A	#N/A	Low	#N/A	#N/A
060	27/01/2010	13:10	3,194	KCl %	#N/A	#N/A	Low	#N/A	#N/A
060	27/01/2010	21:40	3,195	KCl %	#N/A	#N/A	Low	#N/A	#N/A
061	28/01/2010	3:30	3,195	KCl %	#N/A	#N/A	Low	#N/A	#N/A
061	28/01/2010	9:40	3,195	KCl %	#N/A	#N/A	Low	#N/A	#N/A
061	28/01/2010	14:45	3,200	KCl %	#N/A	#N/A	Low	#N/A	#N/A
062	29/01/2010	7:50	3,213	KCl %	#N/A	#N/A	Low	#N/A	#N/A
062	29/01/2010	3:00	3,213	KCl %	#N/A	#N/A	Low	#N/A	#N/A
062	29/01/2010	15:00	3,213	KCl %	#N/A	#N/A	Low	#N/A	#N/A
063	30/01/2010	9:30	3,284	KCl %	#N/A	#N/A	Low	#N/A	#N/A
063	30/01/2010	13:45	3,284	KCl %	#N/A	#N/A	Low	#N/A	#N/A
064	31/01/2010	7:30	3,293	KCl %	#N/A	#N/A	Low	#N/A	#N/A
064	31/01/2010	14:00	3,293	KCl %	#N/A	#N/A	Low	#N/A	#N/A
065	01/02/2010	8:00	3,298	KCl %	#N/A	#N/A	Low	#N/A	#N/A
065	01/02/2010	14:00	3,309	KCl %	#N/A	#N/A	Low	#N/A	#N/A
066	02/02/2010	13:00	3,309	KCl %	#N/A	#N/A	Low	#N/A	#N/A

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
066	02/02/2010	9:00	3,309	KCl %	#N/A	#N/A	Low	#N/A	#N/A
066	02/02/2010	17:30	3,317	KCl %	#N/A	#N/A	Low	#N/A	#N/A
067	03/02/2010	1:15	3,364	KCl %	#N/A	#N/A	Low	#N/A	#N/A
067	03/02/2010	13:30	3,479	KCl %	#N/A	#N/A	Low	#N/A	#N/A
067	03/02/2010	19:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
068	04/02/2010	4:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
068	04/02/2010	22:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
069	05/02/2010	9:45	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
069	05/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
069	05/02/2010	3:45	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
069	05/02/2010	21:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
070	06/02/2010	8:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
070	06/02/2010	20:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
070	06/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
071	07/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
071	07/02/2010	9:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
072	08/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
072	08/02/2010	2:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
072	08/02/2010	22:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
072	08/02/2010	8:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
073	09/02/2010	21:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
073	09/02/2010	9:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
073	09/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
074	10/02/2010	16:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
074	10/02/2010	12:15	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
074	10/02/2010	22:40	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
074	10/02/2010	3:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
075	11/02/2010	3:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
075	11/02/2010	9:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
075	11/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
075	11/02/2010	22:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
076	12/02/2010	9:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
076	12/02/2010	2:45	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
076	12/02/2010	22:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
076	12/02/2010	14:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
077	13/02/2010	8:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
077	13/02/2010	21:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
078	14/02/2010	9:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
078	14/02/2010	21:30	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
079	15/02/2010	10:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
079	15/02/2010	21:20	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
080	16/02/2010	20:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
080	16/02/2010	8:00	3,482	KCl %	#N/A	#N/A	Low	#N/A	#N/A
080	16/02/2010	8:00	3,482	pH	-	10.00	High	8.50	9.50
080	16/02/2010	20:00	3,482	pH	-	10.00	High	8.50	9.50
081	17/02/2010	9:00	3,482	pH	-	10.00	High	8.50	9.50
081	17/02/2010	16:00	3,482	pH	-	10.00	High	8.50	9.50
11A	09/12/2009	18:10	971	KCl %	#N/A	#N/A	High	#N/A	#N/A
11A	09/12/2009	18:10	971	Gel, 10 seconds	lbs/100 ft2	4	Low	8	14
11A	09/12/2009	18:10	971	pH	-	10.00	High	8.50	9.50
11A	09/12/2009	20:45	1,009	KCl %	#N/A	#N/A	High	#N/A	#N/A
11A	09/12/2009	20:45	1,009	Gel, 10 seconds	lbs/100 ft2	5	Low	8	14
11A	09/12/2009	20:45	1,009	pH	-	10.00	High	8.50	9.50
42	09/01/2010	8:00	1,970	pH	-	10.50	High	8.50	9.50
42	09/01/2010	20:00	1,970	pH	-	11.00	High	8.50	9.50
43	10/01/2010	7:00	1,970	pH	-	11.00	High	8.50	9.50
43	10/01/2010	22:30	1,970	pH	-	11.00	High	8.50	9.50
44	11/01/2010	8:00	1,965	pH	-	11.00	High	8.50	9.50

Company	ADA DRILLING
Well Name	Rockhopper-1
Contractor	MAERSK
Rig Name	Kantan IV
Unit System	ADA Drilling

Fluid Program Exception Report

Report No	Date	Time	Depth m	Property Name	Unit System	Actual Value	Exception	Program Min	Program Max
44	11/01/2010	20:00	1,970	pH	-	11.00	High	8.50	9.50
45	12/01/2010	8:00	1,965	pH	-	11.00	High	8.50	9.50
45	12/01/2010	18:00	1,965	pH	-	11.00	High	8.50	9.50
46	13/01/2010	8:00	1,965	pH	-	11.00	High	8.50	9.50
46	13/01/2010	17:00	1,965	pH	-	11.00	High	8.50	9.50
47	14/01/2010	18:00	1,965	pH	-	10.50	High	8.50	9.50
47	14/01/2010	13:40	1,965	pH	-	10.50	High	8.50	9.50
47	14/01/2010	7:45	1,965	pH	-	11.00	High	8.50	9.50
48	15/01/2010	7:30	1,965	pH	-	10.50	High	8.50	9.50
48	15/01/2010	16:00	1,965	pH	-	10.50	High	8.50	9.50
49	16/01/2010	17:45	1,965	pH	-	10.50	High	8.50	9.50
49	16/01/2010	7:45	1,965	pH	-	10.50	High	8.50	9.50
50	17/01/2010	8:00	1,965	pH	-	10.50	High	8.50	9.50
50	17/01/2010	17:30	1,965	pH	-	10.50	High	8.50	9.50
51	18/01/2010	8:00	1,965	pH	-	10.50	High	8.50	9.50
51	18/01/2010	17:45	1,965	pH	-	10.50	High	8.50	9.50
52A	19/01/2010	15:50	1,970	pH	-	11.50	High	8.50	9.50
52A	19/01/2010	6:00	1,970	pH	-	11.50	High	8.50	9.50

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**01**		**From Date**	**001**	**Top of Interval**	**100.0**	**m**
Max. Hole Size / Bit Size	**36.000 / 36.000**	**in**	**To Date**	**003**	**Bottom of Interval**	**158.0**	**m**

For Report # 001 On 29/11/2009	**Operation at Depth 100.0 m**
Rig Activity	Tow to location from Trefoil-1 to Rockhopper-1, arrive on location at 0546hrs. Anchor handling. Ballast Rig. Cross tension Anchors.
Activity	TRIPPING
Fluid Treatment	Kantan IV towed to location from Trefoil to Rockhopper as of 0546hrs Begin preparing PHB mud for the 36" hole.
For Report # 002 On 30/11/2009	**Operation at Depth 117.0 m**
Rig Activity	Cont. to cross tension anchor. M/U 18 3/4" WHRT assembly & laid out same. M/U 5" HWDP & racked back in derrick. Held JSA. P/U 18 3/4" wellhead & set in rotary. P/U WHRT, installed cement wiper plugs, M/U to 18 3/4" wellhead & laid out f/ drill floor. P/U 26" X 36" BHA assembly, RIH to 94 m. RIH & tag bottom at 100.3 m. Pulled up 10 m. Broke circulation & function tested Anderdrift tool. 10 pulses counted 0.5 deg. Spud in Rockhopper-1. Drill 36" hole f/ 100.3 m to 117 m. Started drilling w/ using PHG for first 5 m. Pumped 50 bbl hi-vis every single & spotted Hi Vis around BHA on connections.
Activity	Drilling
Fluid Treatment	Mixed 540 bbl PHB mud. R'ced 880 bbl KCl Polymer/Gel mud f/ Fosna. Which was converted to 10 ppg Kill mud. R'ced chemicals f/ Fosna/Scimitar. Weight indicator at Bentonite surge tank = ok. Weight indicator at Barite surge tank = failed. Note: The 5MT Betonite received represents a correction that is consistent with an adjustment made by KanTanIV control room
For Report # 003 On 01/12/2009	**Operation at Depth 158.0 m**
Rig Activity	Drilled 26" x 36" hole f/ 117 m to 150 m. Pumping 50 bbl PBG hi-vis every single & spotted PBG hi-vis around BHA on connections. Saver sub backed out on connection. POOH to 110 m, troubleshoot. RIH to 150 m, drill ahead f/ 150 m to 158 m, 36" hole to 157 m. Pump 100 bbl Guar gum pill followed by 330 bbl 8.8 ppg PHG mud. POOH to surface, no drag. Rig up to run 30" conductor. RIH w/ 30" conductor on HWDP to 157 m, no drag. Rig up surface lines, circulate casing contents, pumped 265 bbl 15.9 ppg class G cement slurry. WOC.
Activity	Wait on cement
Fluid Treatment	Cont top up PHB Hivis. Prepare mud for next interval. Displaced hole w/ 330 bbl PHB mud. Cleaned Pit 4 for Cementer, Mica used for cementing. Received bulk chemicals off the Far Fosna. Daily Mud Mixed: 256.6 bbl Total Mud Mixed for Interval: 796.7 bbl

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**02**		**From Date**	**004**	**Top of Interval**	**158.0**	**m**
Max. Hole Size / Bit Size	**36.000 / 26.000**	**in**	**To Date**	**009**	**Bottom of Interval**	**966.0**	**m**

For Report # 004 On 02/12/2009	**Operation at Depth 330.0 m**
Rig Activity	WOC. Slack off to 175, cmt holding, release tool 4.5 right hand turns. L/O cmt assy, POOH. L/O running tool & SLM. L/O 26 x 36 assy. P/U & M/U 17.5" Drilling assy, attach bridle to BHA & secure to guidelines. Stab into well w/ ROV guidance. Cont RIH M/U TDS washed down f/ 131m, tagged cmt @ w/ 5K. Drill cmt & shoe f/ 147 m to 157 m. Drill 17.5" hole f/ 158 m to 330 m.
Activity	Drilling 17.5" Interval
Fluid Treatment	Cont. mixing PBG in Pit 1 & transferring over to active Pit 4 when needed. 19 MT Bentonite was used according to Control Room figures. Daily Mud Mixed: 1010 bbl Total Mud Mixed for 17.5" Interval: 1010 bbl Daily Hi Vis usage: 551 bbl
For Report # 005 On 03/12/2009	**Operation at Depth 823.0 m**
Rig Activity	Cont. drilling 17.5" interval f/ 330 to 425 m. Changed out HPU filter on Top Drive. Cont. drilling f/ 425 to 823 m
Activity	Drilling 17.5" Interval
Fluid Treatment	Lime & Caustic used to flocculate & thicken PHG. Inventory correction on Bentonite as per KT4 control room. Cont. to top up PHB Hi Vis. Under instruction from Company Men, built displacement fluid in Pill Pit 158 bbl & Pit 2 353 bbl of 8.8 ppg Fluid. In order to achieve this 340 bbl of 10 ppg Kill was to be dumped in total from Pill Pit & Pit 2. Previous Daily Mud Mixed 1010 bbl Daily Mud Mixed: 1600 bbl Total Mud Mixed for 17.5" Interval: 2610 bbl Daily Fluid Lose 1840 bbl
For Report # 006 On 04/12/2009	**Operation at Depth 966.0 m**
Rig Activity	Cont. drill 17.5" f/ 823 - 966 m, tide corrected, survey @ TD & pumped 80 bbl hi-vis. POOH 6 std, tight spots f/ 909 - 841 m, max over pull 30k wiped tight spots clean. RIH & wash to bottom f/ 941, no fill. Circ 100 bbl hi-vis, followed by 1.25 x hole vol hi-vis. POOH to csg shoe @ 157 m, max over pull 20K. L/O 17.5" stab & bit. Racked BHA in derrick, removed Halliburton probe f/ NMHOC. M/U jet sub to std HWDP. RIH w/ jet sub o/ 102. Jetting 1150 psi @ 1555 hrs, POOH, L/O jet sub. M/U cmt head, HTBT f/ rigging up & running 13 3/8' csg. R/U up PCS, Pick up shoe jt, check, float jt, check OK, run 13 3/8" per program.
Activity	Run 13 3/8" casing
Fluid Treatment	Mixed & displaced 1200 bbl of 8.8 Pad mud to hole. Top up 8.8 ppg Pad mud. Cleaned Pits 1,3 & 4 for KCl brine, acquired permit to clean pits & organised sack room for next section. Prepare to B/L 2 x pallets Guar Gum & 1 x pallet Lime. Crew busy due to csg & cmt jobs. Previous Daily Mud Mixed 2610 bbl Daily Mud Mixed: 1740 bbl Total Mud Mixed for 17.5" Interval: 4350 bbl Daily Fluid used 1740 bbl

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**02**		**From Date**	**004**	**Top of Interval**	**158.0**	**m**
Max. Hole Size / Bit Size	**36.000 / 26.000**	**in**	**To Date**	**009**	**Bottom of Interval**	**966.0**	**m**

For Report # 007 On 05/12/2009	**Operation at Depth 966.0 m**
Rig Activity	Run 13 3/8" csg f/ 24 - 68 m, WOW. Run csg f/ 68 - 123 m stabbing into 30". R/U PCS spider & slips, cont run csg f/ 123 - 845 m filling each jt. P/U 18 3/4" wellhead & cont RIH. R/D PCS spider,slips,tong & equipment. Cont RIH w/ csg on landing string. M/U cmt std & cmt hose, cont RIH - 961 m & land out 18 3/4" w/ head w/ 50K. Down then o'pull - 400K. Then slacked off to landing wt 190K. R/U Halliburton control panel & lines to cmt head & HTBT. Cmt as per program. Displace w/ rig pumps 3286/3286 & bump plug 912/650 psi 60 spm. Press test csg t/ 2500 psi. Remove Halliburton control line, cmt hose & release running tool 175K, 4.5 right turns.
Activity	Rig up and rig down
Fluid Treatment	Pits cleaned & received 430 bbl KCl brine from Scimitar. Guar Gum & Lime backloaded. 8 MT Bentonite charged as it had settled further as per control room. Daily Mud mixed: 0 bbl Total Mud mixed: 4350 bbl Total Mud Used: 475 bbl Total Sea water used to displace For CMT Job 400.8 bbl
For Report # 008 On 06/12/2009	**Operation at Depth 966.0 m**
Rig Activity	POOH running tool. L/O running tool. SLM landing string, L/O cmt head. L/O 17.5" BHA. Remove all un needed tools, subs, boxes etc f/ rig floor. Unable to disconnect BOP f/ test stump. Attempt 65 o'pull, no success. Break out double of marine riser, fill void above stump w/ water. Apply press in stages against SR's. BOP free @ 400 psi.
Activity	Ready to run BOP.
Fluid Treatment	Mixing KCl Polymer Fluid in progress. All Chemicals will be charged off at the beginning of 12.25" interval. Backload 76 sxs Guar Gum, 42 sxs Lime to Far Fosna. Dress shaker screens 3x20 (Top)/4x50 (btm).
For Report # 009 On 07/12/2009	**Operation at Depth 966.0 m**
Rig Activity	Cont pre run checks for BOP, Repair yellow pod hose, Running BOP on riser. HTBT. Wait on helicopter. P/U & M/U slip Jt. Cont running BOP on riser. Wait on Helicopter. P/U & M/U landing Jt to slip Jt w/ kill lines co-flexip hoses. HTBT, press test choke & kill lines via cmt unit 250 psi f/ 5 mins, 5000 psi f/ 10 mins, Ok. Installed pod lines saddles. Installed MRT wires to slip Jt, Skid rig over well. Attempt to land BOP on well head.
Activity	Attempt to Land BOP on Well Head.
Fluid Treatment	Cont to mix KCl/PHPA mud w/ 1 ppb PHPA. Sand Traps were filled w/ sea water & flushed clean. Transferred 435 bbl f/ pit 4 to sand traps & lines, & cont to mix KCl-polymer fluid in pit 4. Sheared mud w/ 1 ppb PHPA via shearing hopper. All fluid tests will be provided once KCL- Polymer fluid has time to shear properly. Will charge off all chemical used for mixing at the start of 12.25" Interval. All four shakers have been dressed w/ 20 API/ 20 Mesh on the Scalper Deck & 50 API/ 84 mesh screens on the Primary Deck. Sack room cleaned & re-organised.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**03**		**From Date**	**010**	**Top of Interval**	**966.0**	**m**
Max. Hole Size / Bit Size	**17.50 / 17.50**	**in**	**To Date**	**019**	**Bottom of Interval**	**1,972.0**	**m**

For Report # 010 On 08/12/2009	**Operation at Depth 966.0 m**
Rig Activity	Land BOP & conf latch w/ 50 K O' pull. Test well head conductor via C & K lines 1000 psi, Ok. Scope out slip Jt & install diverter. Rig down riser hand gear. RIH test plug. Test H4 conn 5 K, 10 mins Ok. Test LMRP cxn against UAP, no go. POOH, test plug, redress same. RIH & attempt re test LMRP cxn against UAP. POOH & L/O test plug, reposition in mast. R/U & test surf lines 250/ 5, 5 K 5 mins Ok. Rig down test assy. Install diverter insert packer. Function test same. P/U & M/U 5" DP f/ deck 54 Jts POOH & rack back same. P/U, M/U & LD 9 5/8" csg hanger as per Dril Quip eng'r. Install cmt plugs as per Halco cmt'r. P/U & M/U 12.25" BHA f/ 0 - 23 m.
Activity	Make up 12.25" BHA
Fluid Treatment	Cont to shear KCl-/PHPA mud in pits. Test results due to virgin/unused fluid. 224 bbl of Hi-vis left over from 17 1/2" section will be used as sweeps.
For Report # 11A On 09/12/2009	**Operation at Depth 1,060.0 m**
Rig Activity	Cont P/U directional BHA. Down link MWD & scribe motor. Cont run BHA out derrick & shallow test @ 40 K down, 65 K total BHA wt. Ran BHA on 5" D/P, coming off deck & f/ derrick - 923 m. H/U geolograph lines, wash f/ 927 - 946 m & tag cmt. Drill out shoe track f/ 946 - 961 m then displace w/ KCL- PHPA 9 ppg fluid, wash past shoe x 3 & clean out rat hole - 966 m. Drill f/ 966 - 971 m. 2 x CBU. R/B std & R/U LOT assy. HTBT proceed w/ LOT as per program - 1400 psi 9 ppg & circ through K & C lines via C mani. Took C line friction loss. Drill f/ 971 - 1060m.
Activity	Drilling 12.25" Interval
Fluid Treatment	Displaced hole w/ 611 bbl 9.0 ppg KCl- PHPA fluid. Dumped over board 17 bbl when drilled through cmt. 116 bbl adjustment according to control room. Continued mixing in Active to maintain properties. Continued mixing in Pits 2 & 3 to maintain volume.
For Report # 012 On 10/12/2009	**Operation at Depth 1,587.0 m**
Rig Activity	Cont to Drill 12.25" interval f/ 1060 - 1427 m. Circ & condition mud. Cont to drill 12.25" interval 1427 - 1587 m midnight depth. **Continued Treatments** Tried screening up other shakers, however was using to much fluid. Receive chemicals. Some crates are inaccessible & their chemicals will be entered following inspection. Adjust bulk volume to reflect Barge report details.
Activity	Drilling 12.25" Interval.
Fluid Treatment	Cont Mixing in Pits 2,3& 4. Pit 2 having the largest pit volume is now our active. Add BARAZAN D PLUS directly to active to increase low end rheology, Bicarb to control Hardness, CLAYSEAL PLUS to maintain concentration as per program. Cont to build reserve volume & bleed into active to maintain properties & volume. Run centrifuge to control solids. Change out damaged API 50 mesh shaker screens & replace w/ API 60 mesh followed by API 100 mesh once rheology allowed.
For Report # 013 On 11/12/2009	**Operation at Depth 1,940.0 m**
Rig Activity	Drill 12.25" hole f/ 1587 - 1811 m, take SCR's & CLF's. Slide f/ 1869 - 1887, cont drill f/ 1887 - 1898 m. Remove broken DSC LP air line f/ Derrick. Slide f/ 1898 - 1905 m. Flow Check 20 bbl gain, well stable. Slide f/ 1905 - 1926 m. Replace DSC LP air line to DSC, secured to hose bundle in derrick then displace C & K line w/ fresh 9.4 ppg mud. Cont slide f/ 1926 - 1940 m.
Activity	Dilling 12.25" Interval.
Fluid Treatment	Add Barite to active to increase mud weight as per ADA instruction. Add Caustic Soda/Potash to maintain pH. Add ALDACIDE G prior to tripping to inhibit bacterial growth. Add Oxygon corrosion inhibitor as per program.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**03**		**From Date**	**010**	**Top of Interval**	**966.0**	**m**
Max. Hole Size / Bit Size	**17.50 / 17.50**	**in**	**To Date**	**019**	**Bottom of Interval**	**1,972.0**	**m**

	Continue to build reserve volume & bleed into active to maintain properties. Change lower screens on all shakers to API 100 & 80 mesh as a consequence of mud thinning w/ increasing temperature. Receive chemicals/Brine into inventory.
For Report # 014 On 12/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Slide f/ 1940 - 1955 m. Top sat down on DP L/O single bending 2 x singles & bent 5" DP. Circ, wiped stand & washed back to bottom @ 1955 m. Slide f/ 1955 - 1972 m TD. Circ well clean w/ 9.5 ppg Fluid. Flow check & POOH. HTBT, Down load MWD & rack back. Rig up cmt assy & w/bsng tools. Clean rig floor, R/P drilling bails & elevators. R/U 9 5/8" csg equipment. P/U shoe & check same ok, RIH w/ 9 5/8" csg.
Activity	Run 9 5/8" CSG
Fluid Treatment	Add OXYGON corrosion inhibitor & ALDACIDE G bacteriacide prior to POOH. Add BARAZAN D PLUS to active to maintain rheology. Continue to build pre-mix in reserve pits. Whilst Circ, increased MW to 9.5 ppg all round. Pumped 31 bbl of 11.5 ppg Slug at TD. Barite correction to inventory made to ensure consistency with control room figures. Conduct full chemical inventory. Inspect & change out damaged shaker screens. Callibrate mud balances. Asked Geo Services to calibrate pit equipment.
For Report # 015 On 13/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Cont RIH w/ 9 5/8" csg f/ 24 - 1864 m. R/D csg elevators & fill tool. M/U 9 5/8" csg hanger & RIH on LNDG string - 1945 m. Take 60 K below - M/U TD & wash dn w/ 150 gpm + 250 psi. R/U & P/U cmt head assy, M/U cmt hose. Cont wash dn 9 5/8" csg w/ 150 gpm + 250 psi, then 200 gpm + 300 psi f/ 1957 - 1964 m. HTBT, pump 10 bbl s/w ahead then tested surface lines - 4500 psi f/ 10 mins - Ok. Followed by 50 bbl s/w. Dropped ball & sheared out btm plug, pumped lead slurry 215 Sx's "G" cmt @ 12.5 ppg w/ 63 bbl mix fluid, followed by tail slurry of 223 Sx's "G" cmt @ 15.8 ppg in 28 bbl mix fluid.
Activity	CMT job for 9 5/8" CSG
Fluid Treatment	Build Hi-vis in pill pit w/ Gel only. Take returns/ Displacement into Pit 1, 230 bbl of 9.5 ppg, KCl- PHPA Fluid, f/ cmt job. Chase cmt w/ rig pumps, re line Pit 2 as active, suction & return. Add caustic to active & reserve volume to maintain pH.
For Report # 016 On 14/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Haliburton mixed & pumped 47 bbl 15.8 ppg G cement slurry. Released dart & sheared top plug w/ 2200 psi. Displaced cement w/ 20 bbl of SW. Plug bumped w/ 500 psi above FCP. Pressure tested CSG to 4000 psi. Set pack off in wellhead & pressure tested to 5000 psi against LPR. Released 9 5/8" casing RT w/ 65 klbs overpull. Pulled RT clear of BOP w/ difficalty. Required circulation to pull RT above BOP. Made up WB on WBRT & RIH. Jetted wellhead. Set wearbushing & POOH w/ RT. L/O same. RIH w/ jet sub, jetted BOP pumping 90 bbl Hi Vis Displaced riser to Seawater. POOH. Rigged up to pull LMRP. Installed diverter RT.
Activity	Laying out Diverter
Fluid Treatment	Treat active & reserve volume w/ caustic to maintain pH. Increase in mud weight in active pit attributable to incorporation of slug & mud cooling.
For Report # 017 On 15/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	L/O diverter. Made up landing joint to slip joint. Collapsed slip joint inner barrel & bolted to slip joint outer barrel. Unlatched LMRP connector (unlatched at 03:35). Picked up LMRP clear of BOP guide posts. Slacked off on guidelines & winched rig 15 m port forward. Removed MRT lines, choke & kill goosenecks f/ slip joint. L/O landing joint, slip joint, riser pup & bouyancy joints. Pulled LMRP into moonpool on

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**03**		**From Date**	**010**	**Top of Interval**	**966.0**	**m**
Max. Hole Size / Bit Size	**17.50 / 17.50**	**in**	**To Date**	**019**	**Bottom of Interval**	**1,972.0**	**m**

	riser double & landed on transporter. Disconnected riser double. Skidded LMRP to starboard setback. Changed out Upper Annular Element in LMRP.
Activity	Change Upper Annular Element in LMRP
Fluid Treatment	Add ALDACIDE G to surface volume to inhibit bacterial degradation. Add Caustic to maintain pH. Callibrate mud balances.
For Report # 018 On 16/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Installed new element in upper annular. Skidded LMRP to transporter & installed pod lines to LMRP. Installed Test joint & Adjust test stump Ht. Press test Upper annular. Skid LMRP to well centre. M/Up a double of riser to LMRP. Run LMRP on a double slick joints, 1x bouyant jnt, 1x pup jnt. Slip jnt. Free up MRT tension ring. P/Up landing joint & run. M/Up C&K lines to slip joint & connect MRT wires. Position rig over well head. Lower & latch LMRP to BOPs.
Activity	Lower LMRP
Fluid Treatment	Add caustic potash to surface pits to maintain pH. Prepare 40 bbl Hi-vis gel to act as spacer when displacing riser f/ seawater to KCl/Polymer fluid. Maintain all mud lab testing equipment.
For Report # 019 On 17/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Stroked out Slipjoint. Disconnected & laid out Landing Joint. P/U Diverter & installed same. Changed out damaged Lock Down Dog Inserts. Laid down Diverter R/Tool. Rigged down Riser Running equipment & rigged up 5" Pipe Handling equipment. M/Up BOP Test Tool. RIH & Test Upper Annular & Connector. Test C&K Lines. POOH & Displace Riser & C&K lines to 9.5 ppg mud. Cont to POOH to surface & lay down BOP Test Tool. R/Up & Press/Test Std/Pipe Manifold, GeoSpan Unit & T/Drive. Changed Out Saver Sub. P/Up 15 jnts of 5" D.P f/ deck & racked in the Derrick. P/Up & M/U Directional BHA.
Activity	Make up BHA
Fluid Treatment	Pump Hi-vis spacer ahead of KCl/Polymer mud whilst displacing riser from seawater to avoid contamination. Add EZ-MUD (PHPA) to reserve volume & pump through shear hopper for extended period.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

For Report # 020 On 18/12/2009	**Operation at Depth 1,972.0 m**
Rig Activity	Perform Shallow Water Test On MWD Tools. Held PJSM. Picked up 5" DP f/ Deck & RIH to 1657 m. Cont RIH w/ Stands f/ Derrick f/ 1657 m - 1917 m. Wash & Ream f/1917 m to top of Cmt at 1938 m. Tag w/ 5k down. Attempt to Drill out Shoe track f/ 1938 m - 1940 m. Pump Slug & Rig down Geoservice & MWD Geolograph Lines. Attempt to install Power Slips. Slips jammed on D/Pipe. Removeed Power Slips. Secured Compensator & Top Drive hoses due to Hoses hanging up in the Derrick. Cont POOH f/ 1940 m to 211 m. POOH w/ BHA & Rack In Derrick. L/D 1x Stab & Float Sub. Halliburton MWD Removed Radio Active Sources & download MWD tools.
Activity	Tripping
Fluid Treatment	On circulating bottom's up add ALDACIDE G bacteriacide. Build & shear pre-mix volume in reserve pits. Run only shakers 1-3 to promote more efficient cuttings transport due to lower flow rate. Run centrifuge to control solids & condition mud. Prepare slug for POOH.
For Report # 021 On 19/12/2009	**Operation at Depth 2,019.0 m**
Rig Activity	M/U 8-1/2" GT-1 mill tooth bit. Set bent sub on PDM to 1.15 deg & scribed MWD. Picked up stabiliser & float sub + 3x 6-3/4" drill collars f/ deck. RIH w/ BHA f/ Derrick to 216 m. Shallow test MWD tools. Cont. to RIH to 1922 m. Wash & ream f/ 1922 m to 1940 m. Drill out show track f/ 1940 m to 1965 m. Ream though float & shoe 3x. Drill 8 1/2" hole f/ 1972 m to 1977 m. Circ hole clean & perform LOT w/ 9.4 ppg mud EMW = 14.6 ppg. Drill f/ 1977 m to 1981 m. Slide f/ 1981 m to 1994 m. Cont. drill f/ 1994 to 2019 m. Take surveys, CBU. Pump slug & POOH f/ 2019 m to 700 m.
Activity	Tripping
Fluid Treatment	Add ALDACIDE G to inhibit bacterial growth. Add DEXTRID LTE to promote low filtration. Add Circal 60/16 sized calcium carbonate bridging agent to replenish that lost through solids control equipment. Allow pH to drop to low end of target (8.5) in anticipation of pH increase through drilling out cement. Add Soda ash to active to treat out hardness following drilling cement. Prepare slug for POOH. Bleed reserve volume into active to maintain volume & properties.
For Report # 022 On 20/12/2009	**Operation at Depth 2,023.0 m**
Rig Activity	Continued to POOH f/ 700 m to surface. L/O MWD tools. Pick up BHA & RIH to 210 m. Shallow test tools. RIH f/ 210 m to 1252 m. Slip & cut drill line. Cont. RIH f/ 1252 m to 1972 m. Ream & relog new hole f/ 1972 m to 2019 m. Drilled 8 1/2" hole f/ 2019 m to 2023 m. Pumped slug & POOH to surface.
Activity	Tripping
Fluid Treatment	Add soda ash to control hardness. Add caustic potash to maintain pH. Add PAC-LE to control filtration. Shaker screen maintenance - changed out damaged with previously used screens. Prepare slug for POOH.
For Report # 023 On 21/12/2009	**Operation at Depth 2,230.0 m**
Rig Activity	P/U GeoPilot f/ deck. Install PDC Bit RR#6 & RIH. Halliburton uploaded MWD tools & installed Radio Active Sources. RIH w/ 8 1/2" BHA to 210 m. Shallow test MWD tools. Cont. RIH to 1981 m. Wash & ream f/ 1981 m to 2023 m. Drill 8 1/2" hole f/ 2023 m to

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

	2230 m.
Activity	Drilling 8 1/2" hole
Fluid Treatment	Add BARAZAN D PLUS to maintain low end rheology. Add PAC-LE & DEXTRID LTE to ensure tight filtration. Caustic potash addition to maintain pH. Maintain PHPA concentration through EZ-MUD addition. Add CLAYSEAL PLUS to compensate for depletion through drilling. Run centrifuge to control solids. Add Circal 60/16 sized bridging agent to compensate for loses f/ solids control equipment. *Note LGS concentration includes 5 ppb Calcium Carbonate Bridging agents.
For Report # 024 On 22/12/2009	**Operation at Depth 2,550.0 m**
Rig Activity	Cont. to drill 8-1/2" hole f/ 2230 m to 2550 m w/ angle build to 31° inclination. Drilling parameters: 561gpm / 112 spm / 2025 psi. WOB 5 to 15 klbs. Torque 15 to 24 klbs-ft ROP 5 to 30 m/hr
Activity	Drilling 8 1/2" hole
Fluid Treatment	Add PAC-LE & DEXTRID LTE to ensure tight filtration. Caustic potash addition to maintain pH. Soda Ash added to help lower hardness. Run centrifuge to control solids. Add Circal 60/16 sized bridging agent to compensate for losses f/ solids control equipment. Add CLAYSEAL PLUS & EZ-MUD to maintain concentration. ALDACDIE G addition to control bacterial growth. Bleed water to active to offset evaporation loss. Start tapering KCl% down to 6% as per ADA Instruction. *Note LGS concentration includes 5 ppb Calcium Carbonate Bridging agents.
For Report # 025 On 23/12/2009	**Operation at Depth 2,753.0 m**
Rig Activity	Cont. to drill 8-1/2" hole f/ 2550 m to 2753 m as per directional driller. Top up oil Top Drive gearbox 25 LTRS. Add 3 LTRS of PHPA in pipe circ 2 X btms up FLC. POOH f/ 2753 - 2520 m preform wiper trip, mat O/P 40 K.
Activity	Wiper Trip 8.5" Interval
Fluid Treatment	Build pre-mix volume & bleed into active to maintain properties & volume. New premixes containing lower KCl percentage as per ADA Instruction. Add EZ-MUD & CLAYEAL PLUS to compensate for depletion whilst drilling. Maintain tight filtration through PAC-LE & DEXTRID LTE addition. Bleed water into active to compensate for evaporation loss. Maintain pH w/ caustic potash addition. Run centrifuges to control solids. Add ALDACIDE G to treat Fluid system & OXYGON for corrosion prevention.
For Report # 026 On 24/12/2009	**Operation at Depth 2,865.0 m**
Rig Activity	Cont POOH f/ 2520-2303 m tight spot (TS) - 2297m.Worked pipe TS f/ 2303-2265 m. Cont POOH f/ 2265-2175 m tight. Pump out of hole f/ 2175- 2145 m. Worked pipe @ TS fired jars w/ 420 K- 220 K jar up x 3 as / Co Man instruction - 420 K + 70 K. O/P stuck worked pipe between 420 - 430 K. W/R - 2129 m, POOH - 1946 m, CBU up & shakers clean. Service TDS/Dolly. Check for TDS faults. RIH f/ 1946 - 2539 m. Take 30 K W/R f/ 2539 - 2753 m. Drill 8.5" interval f/ 2753 - 2865 m.
Activity	Drilling 8.5" Interval
Fluid Treatment	Pump Radiagreen EME Lubrication Pill at 2145 m as per ADA Instruction. Add Radiagreen EME to active at a concentration of 1% vol to reduce torque, as requested by Co Man. Dress lower deck of shakers w/ API 120 TECHMESH Screens. Run centrifuges & bleed in premix to reduce mud weight as per ADA Instruction.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval		**04**			**From Date**	**020**	**Top of Interval**	**1,972.0 m**
Max. Hole Size / Bit Size		**8.50 / 8.50**		**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0 m**
					Bleed in water to active to offset evaporation. Receive Chemicals & screens. Perform inventory check. Calibrate mud balances. Continued to maintain fluid properties. Transfer premix f/ Pit 4 into Pit 2.			
For Report	**# 027**	**On**	**25/12/2009**		**Operation at Depth**		**3,180.0 m**	
Rig Activity					Drilling 8.5" Interval f/ 2865 - 3180 m			
Activity					Drilling 8.5" Interval			
Fluid Treatment					Add Circal 60/16, sized Calcium Carbonate bridging agent, to compensate for losses f/ solids control equipment. This will promote low filtration with thin filter cake formation. Compliment Circal 60/16 addition w/ PAC-LE. Add Caustic Potash to maintain pH. Add HEC-10 to maintain programmed rheolgy. Maintain shaker screens for optimum solids control. One centrifuge down. Continue to Bleed over from pit 3 into Active pit 2.			
For Report	**# 028**	**On**	**26/12/2009**		**Operation at Depth**		**3,312.0 m**	
Rig Activity					Drilling f/ 3180 - 3199 m. Failure to TDS oil pump - CBU. POOH work TS 3199 - 2895 m. Change coupling, Lub TDS & greased wash pipe. RIH no TS. RIH connect up Geolograph, establish parameters. Drill 8.5" interval f/ 3199 - 3312 m.			
Activity					Drilling 8.5" Interval			
Fluid Treatment					Cont to Transfer premix volume f/ Pit 3 into active Pit 2, Cont to maintain Fluid properties: KOH for pH to 9.5, Circal 60/16 for Cal Carb concentration, PAC LE & DEXTRID for API properties, Soda Ash for hardness, & EZ MUD & CLAYSEAL PLUS for inhibition. *Note - 0900hrs mud check shows high rheology due to incorporation of Hi-vis sweep into fluid system. Will Mix BAROFILT sweep upon Co Man approval.			
For Report	**# 029**	**On**	**27/12/2009**		**Operation at Depth**		**3,522.0 m**	
Rig Activity					CBU 120 spm, 600 gpm 2700 psi. Pumped 30 bbl low Wt 9.3 ppg, low rheology sweep chased by 30 bbl high Wt 10 ppg, high rheology sweep circ until shakers were clean. F/C, POOH f/ 3522 - 3100 m. RIH f/ 3100 - 3522 m prepare to pump 2nd lot of sweeps.			
Activity					Prepare to Pump Sweeps			
Fluid Treatment					Phase in addition of N-DRIL HT PLUS filtration control agent in response to increasing BHT. Maintain volume & properties through addition of premix. Maintain water addition at 2.5 bbl/hr to offset losses f/ evaporation. Add caustic potash for pH control. Add Circal 60/16 Calcium Carbonate bridging agent to offset depletion f/ solids control. Build further pre-mix on TD extension. Run centrifuges to control solids. Maintain shaker screens & change out as necessary. Pump 30 bbl low Wt, low rheology sweep chased by 30 bbl High Wt x 2, High reology sweep x 2. Made 55 bbl 10.6 ppg Slug, yet to pump			
For Report	**# 030**	**On**	**28/12/2009**		**Operation at Depth**		**3,522.0 m**	
Rig Activity					Circ H/C @ 120 spm 600 gpm 2700 psi, pumped low Wt 9.3 ppg/ rheology -high Wt/ rheology Vis Pills. Circ hole clean. F/C, POOH f/ 3522 - 211 m. POOH BHA f/ 211 - 40 m, removed MWD sources. Down load MWD tools. Cont POOH Hall BHA's L/O same. R/U Schlb elec logs. M/U Schlb tool & calibrate same. Installed sources to tools. RIH w/ CMR-HNGS-PEX-HRLA- SP Schlb tools @ 2000 m/hr. Log down, RIH to bottom & Log up.			
Activity					Wire Line Logging 8.5" interval			
Fluid Treatment					Conduct full inventory. Checked Mud Balances & conducted a Mud Lab Inventory. *Note mud in active pit shows an increase in rheology & weight due to incorporation of viscous/weighted sweeps. Also additonal volume in pit came f/ sand traps. We used a wieldon pump to trans volume f/ sand traps over shakers to filter fines out and lined up volume to Pit 3. Treated pits 2 and 3 w/ ALDACIDE G & KOH to maintain properties. Cont to make Premix in Pit 1. Will leave Pit 4 clean & empty. Received			

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**
			114 MT of Barite, 20 Drums Radiagreen EME, & Shaker Screens.				
For Report	**# 031**	**On**	**29/12/2009**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Process log data. RIH t/ 3480 m, POOH logging t/ 2800 m, cont t/ POOH. Remove sources f/ tools. L/O Schlb tools for run 1. P/U tools for run 2. Calibrate, RIH w/ MDT Schlb tools @ 2000 m/hr. Test Zones @ 2875 m 1900 hrs. Log f/ 3145 m - 3010 m, stuck - free w/ 9 K above - POOH. Tools @ Surf - R/D.				
Activity			Rig Down Wire Line Tools				
Fluid Treatment			Maintain pH & Bacteria, by adding KOH & ALDACIDE G. Clean & organize sack room.				
For Report	**# 032**	**On**	**30/12/2009**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Cont R/D Wire Line. HTBT M/U BHA & RIH - 97m. Test BOP & function test BOP. RIH w/ 5" DP f/ 97 - 1944 m CSG shoe. TDS Service. Cont RIH w/ 5" DP 1944 - 3418 m work TS 2427, 2482, 2510 2545 & 2550. Wash ream hole f 3418 m, 550 gpm 2550 psi, 50 rpm. 5 - 10 TRQ, tag btm @ 3522 m w/ 10 K. Circ 530 gpm - 2300 psi, recip string while lowering Fluid Wt - 9.4 ppg.				
Activity			Circ/Lowering Mud Wt.				
Fluid Treatment			Cont to mix additional 250 bbl for volume. Blended unweighted premix to lower active MW to 9.4 ppg circulating. Ran both centrifuges to lower MW to 9.4 ppg.				
For Report	**# 033**	**On**	**31/12/2009**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Circ hole clean w/ 600 gpm - 2700 psi. F/C - POOH f/ 3522 - 3245 m pump 30 bbl, 10.5 ppg slug. POOH f/ 1944 - 180 m. F/C -ok, POOH w/ BHA f/ 180 - Surface, rack back same. M/U Schlub MDT tools K calibrate. HTBT for Schlub wire line. RIH w/ MDT tools @ 2000 m/hr. Start Logging ops - cont RIH 3425 m & correlate. Log out to 3306 m				
Activity			Logging 8.5" Interval				
Fluid Treatment			Conditioned & treated the active mud in Pit 2 with fluid loss reducer. API FL lowered to 4.6 mls w/ 1 ppb PAC LE and 0.5 ppb N-Dril HT plus. MW was lowered to 9.4 ppg w/ premix from Pit 1.Checked & patched screens at shakers. Conducted inventory check. Calibrate Mud Balances				
For Report	**# 034**	**On**	**01/01/2010**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Cont to log out f/ 3306 - 3330 m doing sampling for pressure & flow. RIH to 3349 m & cont sampling. Correlating. Pressure testing & sampling f/ 3349 - 3236 m.				
Activity			8.5" Wire Line Logs				
Fluid Treatment			Transferred Fluid f/ pit 2 to pit 4. Repairing leaks in the mixing lines into Pit 2. No Additions of chemicals.				
For Report	**# 035**	**On**	**02/01/2010**	**Operation at Depth**	**3,522.0 m**		
Rig Activity			Cont press testing & sampling @ 3226 m. Work tight hole 3224 m. POOH to shoe @ 1965 m wire line wiper trip. RIH to 3060 m hung up. POOH to surface. HTBT L/O wire line tools & handling equipment. HTBT M/U BHA & RIH - 180 m. Shallow test Hall tools 600 pgm - 850 psi. Cont RIH f/ 180 - 1037 m slip & cut 100 ft drill line & service TDS. Cont RIH f/ 1037 - 2150 m Wash & Ream f/ 2150 - 3522 m 550 gpm 1850 - 1950 psi 60 rpm 3 K. Circ & condition hole.				
Activity			Cir & Condition Mud 8.5' Interval				
Fluid Treatment			Fixed & welded the leaks in mixing lines into pit 2. Hydro tested same. Transferred active mud f/ Pit 4 to Pit 2 (as active). Mixed pumpable 30 bbl of Hi-Weight pill @ 10.0 ppg f/ active mud. Mixed pumpable 15 bbl of Slug @ 10.5 ppg f/ active mud. Cont to tighten active mud system for fluid loss while circ & cond hole. Added in fresh premix to maintain MW @ 9.4 ppg. Ran centrifuges. MW in 9.35 - 9.4				

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

	+ ppg. MW out - 9.3 - 9.6 ppg. MWt out reading of 9.3 was low Wt pill bottoms up. Maintain consistant MWt in 9.35 ppg & out 9.4 figures consistant w/ both shaker house & pit room MWt reports.
For Report # 036 On 03/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Pump 30 bbl 9.0 ppg low Wt & 30 bbl 10 ppg high Wt pills. Circ Shakers clean as per Co Man & Mud Eng'rs instruction. F/C ok, pump 25 bbl 10.5 ppg slug, POOH f/ 3522 - shoe 1964 m. F/C ok, cont POOH f/ 1964 - 180 m. F/C ok, cont POOH f/ 180 - surface. HTBT, R/U Schlub wireline. M/U MDT tools RIH & calibrate same 3000 m/hr - 3250 m. Correlate & log f/ 3207 - 3132 m.
Activity	Wireline MDT logs 8.5" Interval
Fluid Treatment	R'ced mud chemicals f/ Far Fosna. Arranged sack store & shaker screens store.
For Report # 037 On 04/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Cont logging f/ 3132 - 2549 m. POOH f/ 2549 - surface. L/O MDT tools. R/U seismic tools. HTBT, RIH w/ seismic tools @ 1100 m/hr. Correlate passes. RIH f/ 2224 - 2430 m unable to pass. POOH - M/U extra Wt to tools, change tools & M/U tools. RIH w/ tools @ 1100 m/hr @ 2150 m correlating up to 9 5/8" csg depth 1964 m. RIH hang up @ 2760 m - working tools up & down cont RIH -2555m. Check shots between 2555 - 280 m. POOH to surface. HTBT - L/O seismic tools.
Activity	L/O Seismic Tools
Fluid Treatment	Cont to arrange chemicals in sack store. Cont to arrange new & used screens in store. Housekeeping in the mud lab. Checked pit & shaker areas w/ crew, instructed them on housekeeping.
For Report # 038 On 05/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Cont L/O seismic tools. P/U MSCT tools, rebuild head for MSCT run & test. RIH - 3360 m, correlate samples f/ 3360 - 3290 m & 3290 - 3270 m. Cont to correlate & sample f/ 3270 - 2900 m. POOH w/ Schulb tools to surface @ 2500 m/hr & L/O tools. M/U Schlub FMI sonic scanner tools. Found fraid strands of cable, cut 100 m & re terminate same. RIH w/ FMI sonic tools - 3380 m. Repeat pass 3320 - 3380 m, Log out f/ 3380 - 2550 m.
Activity	Log 8.5" Interval w/ FMI Tools
Fluid Treatment	Housekeeping in the mud lab. Cont putting used screens into boxes & leave store tidy. Over see shaker house miantenance. No treatments required to active system.
For Report # 039 On 06/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Cont log out f/ 2550 - 600 m. POOH, L/O tools. R/U & P/U 2 7/8" eqp. P/U & RIH w/ same for cmt job. R/D 2 7/8" & R/U 5" eqp. RIH on 5" DP - 1932 m for cmt job. Test ESDS & Service TD & rollers. Cont RIH to 3493 m, wash & CBU. Pump Hi-vis 12 bbl 9.4, disp w/ 205 bbl - 1722 stks. POOH - 3465 m & R/U cmt head - 10 bbl & test line. Pump cmt plug 1A & disp w/ cmt unit 183 bbl. Break off cmt head & POOH - 3310 m & R/U cmt head. Pump 10 bbl & test line. Pump plug 1B & disp w/ 174 bbl. Break off cmt head & POOH - 3156 m, R/U cmt head. Circ w/ pumps wait on cmt'r for pre-mix @ 40 spm - 340 psi.
Activity	Plug and Abandonment 8.5"
Fluid Treatment	Mixed 45 bbl 9.4 ppg H-vis in slug pit. Maintained balance MW @ 9.4 ppg while circulating. Ran 2 centrifuges & streamed in premix to control MW. MW in 9.4 ppg. MW out 9.4 - 9.4+ ppg. Plug 1A No trace of cmt found whilst circing. MWt 9.4 & pH 9 stable. Plug 1B No trace of cmt found both MWt & pH stable.
For Report # 040 On 07/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Pump plug 1B & disp w/ cmt unit 174 bbl, break off cmt head, POOH - 2973 m slow. Pump Hi-vis pill 12 bbl & disp w/ 173 bbl. POOH - 2925 m R/U cmt head flush lines.

Operations Log Recap

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

	Pump plug 2 & disp w/ cmt unit 152 bbl R/D cmt head. POOH 2482 m slow. Circ btms up WOC, POOH - 2250 m & R/B cmt head. Rig floor maintenance. RIH & wash f/ 2713 - 2723 m TOC. POOH - 406 m (wet) clean rig floor. P/U single, spot 12 bbl Hi-vis @ 2118m. Pull 2 stds, P/U single, cmt TBT. Pump spacer, test lines 1000 psi. cmt pre program, disp 103 bbl. L/O cmt asy, POOH - 1968 m. Pump 11 ppg 15 bbl slug. POOH f 1968 - 168 m. M/U BHA & RIH.
Activity	M/U BHA & Start to RIH
Fluid Treatment	Properties changed due to slight traces of cmt returns to active. Plug # 3 - Mud return 9.4 ppg. No cement return. Mixed & pumped 11 ppg slug. Cont to treat mud for 8 1/2" ST-1. Volume in sandtrap was transferred out & mud treated. Sand traps have been flushed & cleaned w/ sea water to remove traces of cmt. Shakers & screens prepared for next interval. Mud treated for hardness, pH & API filtrate. All Treatments & new mud mixed wil be charged off in the sidetrack interval. M/U BAROLIFT Pill 20 bbl pumpable as per 8.5" side track SID. 344.3 bbl of KCl-mud left below cmt plugs @ 1970 m.
For Report # 041 On 08/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Shallow test Halliburton Tools. RIH from 207 m to 1960 m. Service TDS. Wash to 2005 m, CBU. Cont to wash down to 2121m, CBU. Flow check, static. POOH. Clean out MWD. Pick up 17 joints of 2 7/8" tubing w/ mule shoe. RIH to 2168 m on drill pipe. CBU. Spot 25 bbl Hi-vis pill on bottom. Pull back to 2067 m & cement as per program. Rig down cement head & POOH to 1874 m. CBU. Continue to POOH wet.
Activity	POOH following cement job
Fluid Treatment	Re-arrange sack room & conduct full inventory of all sack & liquid products. In response to current & future operations these have been charged off to ensure correct inventory reporting. Whilst circulating bottom's up prior to cementing, further treat active fluid w/ citric acid & sodium bicarbonate to control pH and & hardness respectively. Prepare 25 bbl pumpable Hi-viscosity pill for sitting below suspension plug.
For Report # 42 On 09/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Continue to POOH. Rig up 2 7/8" handling equipment. Clean rig floor & prepare to RIH w/ 81/2" mill tooth bit. RIH to 1318 m. POOH due to pressure increase when pumping/filling pipe. RIH 3 1/2" mule shoe. POOH plugged mule shoe. RIH on 5" DP. Wash down f/ 1880 m to top of cement at 1985 m. CBU. Flowcheck, POOH. Start to pick up 2 7/8" tubing,
Activity	Tripping
Fluid Treatment	Whilst circulating bottom's up following tagging cement further treat active fluid w/ sodium bicarbonate to control hardness & citric acid to lower pH. Add HEC to maintain rheology. Add ALDACIDE G to inhibit bacterial growth.
For Report # 43 On 10/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	RIH to 1982 m. Rig up cement head & CBU. Pump 5 bbl spacer. Test line & diplace f/ cement unit. Rig down cement head & POOH to 1817 m. Ciculate 1.5 x bottom's up. POOH to 1788 m. Cut & slip drill line. Service top drive & continue POOH. L/O 2 7/8" tubing. RIH 9 stands contaminated 5 inch drill pipe & layout same. RIH to 1817 m, circulate 1.5 x bottom's up. Wash down f/ 1817 m to 1896 m & tag cement.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

Activity	circulate
Fluid Treatment	Whilst circulating, condition active fluid w/ addition of HEC to increase low end rheology following cement contamination. Circulate active pit to ensure full release of polymer additions. Treat active volume w/ OXYGON corrosion inhibitor as per program. Treat surface volume w/ ALDACIDE G bacteriacide.
For Report # 44 On 11/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	CBU. Divert unconditioned mud. Flow check, static. Break down cement head. Service top drive. Continue w/ rig maintenance. RIH w/ 5" drill pipe to 1880 m.
Activity	RIH
Fluid Treatment	Monitor bottom's up following tagging cement. Divert fluid accordingly. Whilst circulating, add BARAZAN D PLUS to maintain rheology. Pump out sandtraps to reserve pits to allow agitation & treatment. Clean out shakers, flowline & sandtraps.
For Report # 45 On 12/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Rig service: work on compensator, grease standpipe & choke manifold, top drive RPM, shift t-drive transmission. Circulate & condition mud. Continue w/ rig service.
Activity	Rig Service
Fluid Treatment	Whilst circulating, condition mud w/ addition of BARAZAN D PLUS to increase low end rheology as per program. DEXTRID LTE & PAC LE addition to ensure tight filtration. Add water whilst circulating to offset loss f/ evaporation & to ensure hydration of polymer additions. ALDACIDE G addition to active fluid to inhibit bacterial growth. Mud lab maintenance.
For Report # 46 On 13/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Rig servive: compensator manifold, change 2 airlines on shakers, bolt check on derrick. Prepare to change out drilling line spool. Circulate & condition mud. Coninue w/ rig service: work on mud pumps.
Activity	Rig Service
Fluid Treatment	Whilst circulating add PAC LE & DEXTRID LTE to lower filtration. Add water to offset evaporation & ensure hydration of polymers. Inspect shaker screens & change out w/ previously used as necessary. Change out valves in mixing line to pits. Conduct full audit on all lab equipment & reagents.
For Report # 47 On 14/01/2010	**Operation at Depth 3,522.0 m**

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

Rig Activity	Continue rig service: racking arm modifications, mud pumps, spot drilling line shaft in spool. Circulate & condition mud.
Activity	Rig Service
Fluid Treatment	Whilst circulating add ALDACIDE G to inhibit bacterial growth. 1340 hrs mud check is f/ a bottom's up sample taken to ascertain any deterioration in mud properties following circa 24hrs under static downhole conditions - none detected, fluid stable, slight drop in pH only. Continue to by-pass sandtraps so as to ensure maximum treatable surface volume. Add water whilst circulating to offset loss f/ evaporation & to ensure fluid system properly hydrated. Receive Barite.

For Report	**# 48**	**On**	**15/01/2010**	**Operation at Depth**	**3,522.0 m**

Rig Activity	Work on drawworks. Pull old and new drill line through to rig floor. Clean ends for snake to be installed. Continue PM's. Circulate mud & POOH. Replace airline brackets, port derrick leg. Pressure test surface equipment. Prepare to install new drill line.
Activity	Rig Service
Fluid Treatment	Circulate mud. Bleed in water whilst circulating to offset evaporation loss. Maintain properties of pre-mix w/ addition of caustic potash, PAC-LE & BARAZAN D PLUS. Note: the addition of premium products CLAYSEAL PLUS & EZ-MUD (PHPA) will be made just prior to kicking off sidetrack. Cunduct full screen inventory.

For Report	**# 49**	**On**	**16/01/2010**	**Operation at Depth**	**3,522.0 m**

Rig Activity	Remove wraps f/ deadman anchor, remove crown-o-matic ready for slipping drill line. Grease & service TDS travelling blocks, dolly rollers. Hold tool box talk. Pull new drill line onto drum. Remove used drill line f/ drawworks. Restore floor to drilling mode. Continue working on cranes.
Activity	Rig Service
Fluid Treatment	No circulation due to rig activity. Treat reserve volume w/ DEXTRID LTE & BARAZAN D PLUS to maintain tight filtration & programmed rheology respectively. Conduct inventory of all sack products.

For Report	**# 50**	**On**	**17/01/2010**	**Operation at Depth**	**3,522.0 m**

Rig Activity	Install bails-elevators. Change out burst hose on iron roughneck. RIH 5" drill pipe to 1880 m, circulate. POOH. Rig up and test upper IBOP. RIH BHA & check free of cement. Continue work on cranes.
Activity	Rig Service
Fluid Treatment	Circulate mud. Add DEXTRID LTE to maintain low filtration. Add water whilst circulating to offset evaporation loss & maintain hydration of polymers. Conduct inventory on all liquid products.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**04**		**From Date**	**020**	**Top of Interval**	**1,972.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**52A**	**Bottom of Interval**	**3,522.0**	**m**

	Maintain screens.
For Report # 51 On 18/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Complete maintenance & housekeeping. Make up BOP test tool, RIH & flush wellhead. Pressure test as per program. POOH, lay out test tool, install diverter element. Service crown, top drive & dolly track. Make up 8.5" PDC bit & slick BHA to 198 m. RIH to 1880 m. Check parameters & tag cement at 1896 m
Activity	Tag cement
Fluid Treatment	Add ALDACIDE G to surface volume to inhibit bacterial growth. Re-arrange sack room. Make up new premix. Additions to be charged at the start of the sidetrack section. Dress shakers for maximum solids control efficiency for drilling out cement.
For Report # 52A On 19/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Drill out cement.
Activity	Rig Service
Fluid Treatment	Whilst drilling out cement continue w/ short system (sandtraps by-passed) to minimise the volume of fluid contaminated w/ cement. Add water whilst circulating to offset loss f/ evaporaton. Complete making up further premix volume - to be charged off against ST-1. Note: Calcium carbonate bridging agents, which are stripped out by SCE, will be added upon kicking off sidetrack. This will reduce API Filtrate loss. Awaiting arrival of citric acid & sodium bicarbonate to treat pH & hardness respectively.

Operations Log Recap

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

For Report # 52A On 19/01/2010	**Operation at Depth 3,522.0 m**
Rig Activity	Drill out cement.
Activity	Rig Service
Fluid Treatment	Whilst drilling out cement continue w/ short system (sandtraps by-passed) to minimise the volume of fluid contaminated w/ cement. Add water whilst circulating to offset loss f/ evaporaton. Complete making up further premix volume - to be charged off against ST-1. Note: Calcium carbonate bridging agents, which are stripped out by SCE, will be added upon kicking off sidetrack. This will reduce API Filtrate loss. Awaiting arrival of citric acid & sodium bicarbonate to treat pH & hardness respectively.
For Report # 052B On 19/01/2010	**Operation at Depth 1,964.0 m**
Rig Activity	M/U HUGHES A841A9GT5 Bit, scribe motor, installed probes & cont to RIH w/ BHA - 216 m. Shallow test Sperry tools @ 120 spm - 600 gpm - 1400 psi. Cont RIH f/ 216 m on 5" DP - 795 m fill pipe @ 30 spm 280 psi 220 stks, cont RIH f/ 795 - 1373 m fill pipe @ 30 spm 280psi 265 stks cont RIH on 5" DP f/ 1373 - 1964 m.
Activity	Cont RIH 5" DP
Fluid Treatment	First Mud Report for Rockhopper 1 ST-1 Carry over 1713.9 bbl of fluid from previous fluid set to new fluid set 8 1/2" ST-1 KCl/Polymer. Noticed A decrease in volume in Pill Pit, all master valves checked, continuing to problem solve. Cont to use short system as agreed w/ Co Men until KCl- PHPA fluid treated. Chemicals & screens to arrive tomorrow.
For Report # 053 On 20/01/2010	**Operation at Depth 2,065.0 m**
Rig Activity	Break circ- CBU. Drill f/ 1970 - 1990 m. Drill directional hole f/ 1990 - 2065 m, as / DD's instruction.
Activity	Drilling 8.5" ST-1 Interval
Fluid Treatment	Reduce pH w/ citric acid. Reduce Hardness w/ sodium bicarbonate. Add BARAZAN D PLUS to maintain programmed low end rheology. Add EZ-MUD to maintain PHPA concentration. *Note, LGS concentration includes 5 ppb Calcium Carbonate bridging agents. Change out scalping screens on shakers 2,3 & 4 to API 40 mesh to promote more efficient solids control & increase lower deck lifespan. Prepare BAROLIFT sweep as per program. Maintained properties in pit 3. Conducted a chemical & mud lab inventory.
For Report # 054 On 21/01/2010	**Operation at Depth 2,112.0 m**
Rig Activity	Cont Drill 8.5" ST-1 interval f/ 2065 - 2112 m. Circ, pump 15 bbl BAROLIFT Pill as per program. POOH f/ 2096 - 1951 m pump 10.8 ppg Slug as per Co Man request, POOH to surface. MWD installed sources & test tools, cont RIH w/ GEOPILOT assy. Test @ 244 m failed. POOH remove source, change Jt. RIH plug in, install sources.
Activity	RIH w/ GEOPILOT 8.5' ST-1
Fluid Treatment	Pump BAROLIFT sweep at 2112 m. No increase in cuttings visible. Prepare & pump slug for POOH. Add ALDACIDE G Bacteriacide prior to POOH. Add OXYGON corroion inhibitor as per program. Incorporate all 5 sandtraps into active system. Maintain properties of premix. Identify leak in mixing line & patch as necessary. Calibrated Mud Balances. Checked shaker screens & repaired where necessary. All shaker screens are now in mesh size as opposed to API standard as

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

	requested by Co Man. Receive PAC-LE.
For Report # 055 On 22/01/2010	**Operation at Depth 2,368.0 m**
Rig Activity	RIH f/ 38 - 1845 m filling every 20 stds. Wash 1945 - 1970 m breaking in GEOPILOT as per DD' instruction. Logging 1970 - 2112 m @ 60 m/hr. Take SCR's, downlink, break in bit pattern & drill 8.5" ST-1 hole f/ 2112 - 2368 m MD. Ream f/ 2331 - 2350 m 30/40 & drag w/ pipe rotation, 5 K w/out rotation.
Activity	Drilling 8.5" ST-1 Interval
Fluid Treatment	Add EZ-MUD to maintain PHPA concentration. Add sodium bicarbonate to control hardness. Build further premix volume & bleed into active to maintain properties & volume. Run centrifuge to control solids. Change out damaged screens as necessary & patch older screens. Continue to maintain properties in active system.
For Report # 056 On 23/01/2010	**Operation at Depth 2,706.0 m**
Rig Activity	Cont Drill 8.5" ST-1 f/ 2368 - 2706 m MD & 2635.3 TVD.
Activity	Drilling 8.5" ST-1 Interval
Fluid Treatment	Add Radiagreen EME at a concentration of 0.5% vol to reduce torque. Maintain PHPA concentration w/ addition of EZ-MUD. Build pre-mix & bleed into active to maintain properties & volume. Pump BAROLIFT sweep - minimal increase in cuttings seen at shakers. Add Sodium Bicarbonate to reduce hardness.
For Report # 057 On 24/01/2010	**Operation at Depth 2,973.0 m**
Rig Activity	Cont drill 8.5" ST-1 hole f/ 2706 - 2856 m. Pump 20 bbl BAROLIFT Pill @ 2784 m & pump out. Cont drill f/ 2856 - 2926 m. R/B std f/ 2926 - 2897 m. C/O saver sub & disks in TDS. Wash f/ 2897 - 2926 m, Cont drill f/ 2926 - 2973 m pump 17 bbl BAROLIFT pill @ 2926, well clean. Max gas 13.9 %, background 3 %.
Activity	Drilling 8.5" ST-1 Interval
Fluid Treatment	Add Radiagreen EME to maintain 0.5% vol concentration in active. Maintain PHPA concentration w/ the addition of EZ-MUD. Control hardness w/ additon of soda ash. Maintain pH w/ addition of caustic potash. Add OXYGON corrosion inhibitor as per program. Build pre-mix volume pit 1& bleed into active to maintain properties & volume. Continue to Build new Volume pit 3. Pumped a 17 bbl BAROLIFT pill at 2100 hrs on 3 rig pumps & boosted riser. Pill came over @ 2146 hrs slight increase in cuttings load. Continued to run on 3 rig pumps (BOOST) for 11 mins, until 2157 hrs.
For Report # 058 On 25/01/2010	**Operation at Depth 3,158.0 m**
Rig Activity	Cont drill 8.5" ST-1 f/ 2973 - 3158 m. Pump 15 bbl BAROLIFT pill & circ same out of hole, while boosting riser w/ 3 M/P. Halliburton MWD attempted to reset down load tool, neg. F/C, static. POOH f/ 3158 - 2492 wet, pumping & back reaming all 30 K over tight spots. 0000 hrs POOH depth, 2492 MD - 2451 TVD.
Activity	POOH 8.5" ST-1 Interval
Fluid Treatment	Add Circal Y & Circal 60/16 sized Calcium Carbonate bridging agents to compensate for used fluid f/ solids control equipment & maintain tight filtration. Add Soda ash to

Operations Log Recap

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

	reduce hardness. Add Caustic Potash to maintain pH. Build premix & bleed into active to maintain volume/properties. Add Radiagreen EME to active to maintain 0.5%vol concentration. Pump 15 bbl BAROLIFT sweep at 3157 m. Minimal increase in solids observed. Centrifuge 2 had leaking hoses & was shut down early for repairs. Cont to maintain shaker screens.
For Report # 059 On 26/01/2010	**Operation at Depth 3,158.0 m**
Rig Activity	Cont POOH 8.5 BHA " ST-1 f/ 2492 m - surface. P/U & M/U bit, GEOpilot, MWD tools & upload. RIH - 239 m. Shallow test tools, 600 gpm_400 psi. Test Good. Cont RIH f/ 239 - 2525 MD_2478 TVD.
Activity	RIH 8.5" ST-1 Interval
Fluid Treatment	Cont to maintain properties in active pit 2. Start premix in pit 1. 317 bbl of brine brought into leg f/ boat. used two 15 bbl 9.3 ppg BAROLIFT pills & 19 bbl 11.3 ppg KCl- PHPA slug. Conducted a full chem inventory. Maintained screens at shakers & patched repairable screens.
For Report # 060 On 27/01/2010	**Operation at Depth 3,195.0 m**
Rig Activity	RIH f/ 2525 - 3158 m. Establish parameters f/ MWD tools & re-Log 3140 - 3156 m. Cont drill 8.5" ST-1 hole f/ 3156 - 3195 m. Circ & boost riser w/ 3 M/P. POOH f/ 3195 - 1965 m, max 10 K over pull, F/C OK. Cont POOH f/ 1965 - Surface. Remove sources & down load tools.
Activity	Down Load MWD Tools.
Fluid Treatment	Increased Radiagreen EME concentration to 1% per active volume. Bled over mix into active system for volume. Built new KCL- PHPA premix in pit 1. Centrifuging sandtraps to condition mud. Maintained all shakers, screens & repaired screens to increase longevity. Maintained properties in active system. Added Barite to inventory to have coresponding figures w/ Control Room.
For Report # 061 On 28/01/2010	**Operation at Depth 3,213.0 m**
Rig Activity	P/U & M/U Core bit, core bbls & RIH - 3182 m on 5" DP. Wash f/ 3182 - 3196 m & take SCR's. L/O single, drop ball & establish parameters. Ball landed w/ 120 psi. Cut core f/ 3196 - 3213 m. Torque went flat, no penetration. F/C_static pump slug, Cont POOH w/ cores f/ 1935 - 1087 m.
Activity	POOH 8.5" Core Interval
Fluid Treatment	Treated active KCl- PHPA system to maintain fluid properties. Prepared new KCl-PHPA premix in pit 4. Continued to maintain shaker screens& change out as required. Continued to run centrifuges to assist in solids control.Conducted a Chem/Bulk inventory.
For Report # 062 On 29/01/2010	**Operation at Depth 3,234.0 m**
Rig Activity	Cont POOH core barrel f/ 1087 - 370 m & F/C_ static. Cont POOH f/ 370 - 32 m. HTBT check gas level_ok, remove inner core barrel. Service TDS & travelling equipment. HTBT P/U 8.5" BHA M/U BHA. Upload tools & install R/A source. RIH w/ BHA - 215 m. Shallow test & down link tools_ok. Cont RIH f/ 215 - 3132 m. Break circ, take SCR's, wash f/ 3123 - 3161 m, Log w/ Sperry f/ 3175 - 3213 m. Drill f/ 3213 - 3234 m as / DD instruction.
Activity	Drill 8.5" ST-1 Interval
Fluid Treatment	Valve repaired on Red mix line. Add Radiagreen directly to active to maintain 1% vol concentration. Cont to maintain PHPA concentration by adding EZ MUD. Cont to maintain fluid loss properties by adding PAC LE & N-DRILL HT PLUS. Continue to maintain properties in both premixes, pits 1 & 4. Centrifuge to control solids in drilling fluid & maintain MWt. Transferring volume across f/ pit 1 to maintain volume in active, pit 2. Change out shaker screens to maximise solids control continue to patch screens where necessary.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

For Report # 063 On 30/01/2010	**Operation at Depth 3,283.0 m**
Rig Activity	Drill 8.5" f/ 3234 - 3283 m. Circ btms up while boosting riser w/ 3 MP. POOH f/ 3283 - shoe. Service TDS. Cont POOH f/ 1965 - surface. L/O Halliburton sources & down load, R/B same & clean floor. HTBT, ran outter barrel f/ derrick 7 P/U inner bbl f/ deck. Secure premier cg control hoses to prevent damage after wind shift. RIH core bbls on BHA f/ 32 - 1125 m.
Activity	POOH 8.5" interval
Fluid Treatment	Continue running centrifuges to maintain solids content as low as possible. Add KOH to maintain pH level. Change out shaker screens to maintain optimal solids control, repaired screens where necessary. Altered bulk figures to be in line w/ Control Room figures/volumes.
For Report # 064 On 31/01/2010	**Operation at Depth 3,298.0 m**
Rig Activity	RIH f/ 1125 - 3236 m. Wash f/ 3236 - 3283 m. Space out, P/U pup, L/O single, drop ball & seat same. Core f/ 3283 - 3298 m, torque went flat. No penetration. Circ 15 min, pull back 1 std L/O pup. F/C_static. Pump slug, POOH f/ 3236 - surface.
Activity	POOH 8.5" 2 nd core Interval.
Fluid Treatment	Maintained properties in active system. Continued to centrifuge to maintain solids & MWt. Maintained screens to assist in solids control. Calibrated mud balances. Maintained chemical inventory.
For Report # 065 On 01/02/2010	**Operation at Depth 3,309.0 m**
Rig Activity	Cont L/O core singles. P/U new inner core barrel. RIH 32 - 547 m. Cut & slip drill line. Cont RIH f/ 547 - 3236 m. M/U TDS was down f/ 3236 - 3298.5 m space out & drop ball. Establish parameters & cut core # 3 f/ 3289.5 - 3309 m. P/U record depth, circ & boost riser. P/B f/ 3309 - 3256 m, F/C_static. Pump slug. Cont POOH f/ 3256 - 316 m.
Activity	POOH w/ Core Head & BBLS # 3.
Fluid Treatment	Cont to centrifuge sand traps & active pit 2 in order to maintain solids content. Cont to maintain volume & properties in active.
For Report # 066 On 02/02/2010	**Operation at Depth 3,357.0 m**
Rig Activity	Cont pull out 374 - 32 m w/ C/bbls. L/O C/bbls inner & outer. Run GeoPilot std f/ derrick & M/U bit. P/U HOC, BAT & ACAL. Down load sperry tools & install sources. RIH w/ 8.5" BHA - 160 m. L/O drilling jar & replace w/ Low Ha jars, cont RIH - 221 m. Shallow test MWD tools. Cont RIH f/ 221 - 1658 m, filling pipe every 20 std's. Cont RIH w/ 8.5" drilling assy - 9 5/8" shoe @ 1965 m. Break circ, space out. Function test BOP - ok, F/C_static, take SCR's. Cont RIH - 3260 m. Log, ream f/ 3260 - 3309 m. Cont drill 8.5" ST-1 interval f/ 3309 -3357 m.
Activity	Drilling 8.5" ST-1 Interval.
Fluid Treatment	Add Radiagreen EME to increase concentration to 1% /Volume. Added Circal 60/16 & Circal Y to maintain concentration of bridging agents in both active & premixes to assist in preventing fluid loss. Cont to maintain properties as per program. Prepared premix in pit 1. Maintain fluid volume in active via transfers. Cont to maintain & repair shaker screens as required. Mud filtrate, mud cake & drilling fluid provided to Geologist & MWD's. Off loaded chemical f/ Far Fosna & entered into inventory.
For Report # 067 On 03/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Drill 8.5" ST-1 f/ 3357 - 3482 m. Circ, F/C_static. Pump 20 bbl BAROLIFT pill, circ shakers clean. F/C_static. POOH f/ 3482 - 3309 m. RIH f/ 3309 - 3482 m. CIrc hole clean while reciprocating pipe. F/C for 15 mins_static. P/B - 3300 m. Pump 16 bbl, 11.1 ppg slug. POOH - 9 5/8" csg shoe 1965 m.
Activity	POOH 8.5" ST-1 Interval

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

Fluid Treatment	Maintained properties in active. Made premix in pit 4. Continue to run centrifuges to prevent solids build in fluid. Change out & repair shaker screens as required. Conducted a full screen & chem inventory for back load. Provided Geologist & SLB w/ filtrate, mud cake & mud samples. Had small issue w/ barite hopper. Charged off all bulks both Brine & Barite, so figure correlate w/ Control Room figures.
For Report # 068 On 04/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	F/C_static. Service TDS. Cont POOH 1965 - 375 m, F/C_static pull BHA - 212 m. Remove Sperry R/A sources & shut down tools. L/O 8.5" stab, Float Stab, A CAL, HOC, Bat Sonic, PWD, CTN, ALD tab, B/O bit, L/O DGR & EWR, RLL Stab, NM Flex Jt, & GEOPILOT. HTBT R/U - wireline & P/U CMR tools. Log down - 4380 m. Log Up f/ 3480 - 195 m. Process data - RIH f/ 1965 - 3135 m. Correlate & tune tools. RIH f/ 3135 - 3330 m. Log up repeat. Log up main.
Activity	CMR Wire Line Logs ST-1
Fluid Treatment	Continue to Maintain KCl- PHPA properties. Begin to load Chem into containers, for back load. Cont to conduct inventories. Inventories will be adjusted once chem/containers are on the boat.
For Report # 069 On 05/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Cont W/L log # 1 - 3480.5 m. POOH - surface. SLB remove R/A sources & tools. SLB M/U tool head & tools for run # 2. L/O logging tools. RIH w/ SLB MDT string # 2 - 2135 m. Drop off test. Take pressure points between 2135 - 3320 m. Tool String = XPT, GR, ECRD,LEHQT.
Activity	MDT Wire Line Logs ST-1
Fluid Treatment	Continue to maintain properties a per program. Transfer KCL- PHPA reserve fluid into active to maintain volume & MWt. Mi Swaco centrifuge hand performed PM's on equipment. Continue to check chem & backload onto Far Fosna.
For Report # 070 On 06/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Cont - log # 2 taking pressure points f/ 3320 - 2135.5 m. Correlate tools @ 3303 m string # 2 = XPT, GR, ECRD & LEHQT. POOH w/ string # 2 & R/D same. SLB R/U & test string # 3 Quick Silver Probe MDT. RIH - 1965 m Enter O/H - difficulties getting down 2 K over. Correlate tools. Drop off test. Start sampling @ 2941 m. Correlate & POOH - 2772 m & start sampling. RIH - 3435 m start sampling @ 3409 - 2415 m.
Activity	Wireline Run 3 Quick Silver Probe MDT
Fluid Treatment	Received KOH off Far Fosna & maintained pH of fluid in Pit 3 & 4. Continued maintaining properties in Active pit 2 as/ program. Begin to clean empty Pit 1 w/ sea water, after transferring remaining KCl- PHPA volume over to active. Cont to maintain volume in active using Pits 3 & 4. Changed shaker 1,3 & 4 to 140 mesh screens. Shaker 2 has 100 mesh on btms.
For Report # 071 On 07/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Cont SLB W/L Quick Silver Probe MDT run 3, f/ 3410 - 3183.2 m sampling.
Activity	W/L QUICK SILVER PROBE MDT Run 3.
Fluid Treatment	175 bbl Sea Water used to clean pit 1 treated to sea. Cont to maintain KCl-PHPA properties.
For Report # 072 On 08/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	SLB W/L Cont run 3 f/ 3183 - 3109 m. POOH run 3 - surface. L/O tools. Test & M/U FMI - OSI tools for Run 4. RIH - 1965 m. Log down f/ 1965 - 3375 m. Log up f/ 3365 - 1965 m shoe. POOH w/ FMI - OSI W/L run 4 - surface.
Activity	POOH Run 4 FMI-OSI Wireline

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

Fluid Treatment	Whilst boosting riser add potassium hydroxide(KOH) to maintain pH & soda ash to reduce hardness. Conduct full used screen inventory.
For Report # 073 On 09/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	HTBT R/D FMI string 4. Slb W/L R/U Seismic string 5. Guns in water on stbd crane. SLB W/L RIH w/ Seismic string 5 - 3370 m. Log out 3370 - 1600 m. POOH - surface. L/O seismic string 5 tools. M/U MSCT string 6 tools. RIH MSCT logging string 6 - 3420 m, correlate. Core 3420 - 3316 m, correlate log. Core f/ 3300 - 3137 m core # 26. SLB W/L under tension. Attempt to wok loose.
Activity	SLB W/L Under Tension.
Fluid Treatment	6 ALDACIDE G added to inventory came off Far Fosna. Cont maintain properties fluid to targets.
For Report # 074 On 10/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	SLB held tension on W/L & attempt to free. Attach "t" bars to W/L & TDS & pull. W/L shear pin broke free @ 10 K O/P. POOH W/ SLB W/L, R/D SLB. P/U o'shot assy & M/U to std # 1. Service TDS. TOFS- dropped object survey TDS. RIH w/ fishing assy - 1965 m. Estab circ & increased 700 gpm, 140 spm, 1630 psi. Cont RIH f/ 1965 - 3110 m. Circ & condition mud, take SCR's. Reduce stks, lower O/S fish, engage fish. Shut down pump, P/U O/S 3117 m, confirm fish engaged. F/C pump slug & POOH - shoe. F/C_static. Service TDS. Cont POOH w/ fishing assy - 954 m.
Activity	POOH W/ Fishing Assy
Fluid Treatment	On circulating @ shoe add potassium hydroxide to maintain pH. Change out lower deck screens to coarser mesh to avoid stripping out calcium carbonate bridging agents. Divert bottom's up return to empty pit for treatment. Replace volume with in-spec surface fluid. Add soda ash to reduce hardness. Add ALDACIDE G to inhibit bacterial growth. Prepare slug.
For Report # 075 On 11/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Cont POOH w/ fish assy f/ 954 - surface. F/C_static prior - pulling pipe through BHA.SLB L/O fish (100%), L/O o' shot & fish assy. Run BHA f/ derrick, P/U stab, bit sub, 8.5" bit, 1 stg stb - 89 m. Jet WH w/ bit f/ 89 - 174 m. M/U BHA test assy & RIH . L/O in WH @ 95 m w/ 40K under. HTBT, BOP test / Maersk precedures. Unseat BOP test tool, POOH - 174 m, L/O assy & install diverter packer. RIH f/ 174 - 1965 m. Estab circ @ shoe, cont RIH f/ 1965 - 3470 m. Circ btms up f/ 3150 - 3470 & worked tight spots, up & down.
Activity	Wash & Ream.
Fluid Treatment	Prepared 8.8 ppg Lo-Weight and 10.3 ppg Hi Weight pills as per prog. Prepared 10.3 ppg slug. Conditioned & Maintained active system w/ bridging agents & PAC LE. Treated active mud w/ KOH for alkalinity. Diverted heavy contaminated mud w/ CO2 into pit 1. Maintain active mud weight at 9.3 ppg w/ premix from pit 4. Radiagreen - 1.4 %
For Report # 076 On 12/02/2010	**Operation at Depth 3,482.0 m**
Rig Activity	Wash & ream f/ 3470 - 3482 m.Circ btms up. Pump 20 bbl Low Wt 8.9 ppg pill, followed by High Wt 10.3 ppg pill. Cont circ 2 x btms up until Mud Eng'rs instruction. F/C_static. POOH to surface. HTBT, R/U w/ WL Dual Packer. M/U WL Dual Packer run # 7. RIH - 3400 m. Tight hole @ 2740 & 2793 m. Correlate, POOH - 3302. Tight @ 3396 - 3350 m. Sample @ 3302 (2nd Station) RIH - 3340 m. Log up f/ 3340 3294.2 m. Sample @ 3294.2 m (2nd Station).
Activity	SLB W/L Dual Packer Run # 7
Fluid Treatment	Moved chemicals into containers wait on back load. Packing mud lab equipment in progress. Conditioned & treated contaminated mud f/ hole. Maintained properties in active pit 2. Prepared unused shaker screens for back load.

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

For Report	**# 077**	**On**	**13/02/2010**	**Operation at Depth**	**3,482.0 m**
Rig Activity				Cont Sample @ 3294.2 m (3rd station). Correlate up - 3230 m, positioned f/ @ 3214.4 m & sample. Stuck @ 3214.4 m, work free turning packer on & off. POOH - 3205 m correlate & sample station 5 @ 3205 m. POOH - 3110 m & sample station 6. RIH - 3140 m & sample station 7.	
Activity				SLB W/L Dual Packer Run # 7	
Fluid Treatment				General packing & housekeeping at mud lab. Transferred unused shaker screens into container OPC 437 for backload. Radiagreen conc. @ 1.42%.	
For Report	**# 078**	**On**	**14/02/2010**	**Operation at Depth**	**3,482.0 m**
Rig Activity				Cancelled station # 8 @ 3312.8 m. Correlated up f/ 3140 m. Sampling @ station # 9, 3184.6 m. POOH - 3083 m & pressure test @ station # 10. RIH - 3172 m & pressure test @ station # 11 - 3172 m. RIH - 3331 m & pressure test station # 12. POOH - 3312 m. Correlate & pressure test station # 13.	
Activity				POOH w/ W/L Dual Packer Run # 7	
Fluid Treatment				General housekeeping & packing in mud lab. Radiagreen concentration = 1.4%. Prepared 9.3 ppg, 55 bbl Hi-vis BARAZAN D PLUS in slug, for P&A job.	
For Report	**# 079**	**On**	**15/02/2010**	**Operation at Depth**	**3,482.0 m**
Rig Activity				Cont - pressure test station # 13 @ 3312 m. POOH w/ SLB tool string, L/O & R/D W/L. Slip & cut drlg line. R/U 2 7/8" handling equipment & RIH - 168 m. RIH 5" DP f/ 168 - 1961 m. Service TDS. Cont RIH f/ 1961 - 3482 m & tag btm. Circ & condition mud. HTBT, M/U cmt assy. Proceed w/ cmt plug # 1A / program. R/D cmt assy. POOH f/ 3482 - 3322 m. Pump plug 1B. Circ 1.5 btms up, treated out 33 bbl of cont mud. HTBT, R/U cmt line & press Test_ ok. Mix & pump 195 Sx "G" class cmt w/ 24 bbl H2O @ 15.8 ppg. Displace w/ drillwater. Check flow back + 1.5 bbl. POOH f/ 3322 - 3162 m, circ btms up. treated out 19 bbl of cont mud. Test lines & set plug # 1C / program.	
Activity				P & A Set Plug # 1C	
Fluid Treatment				Mixed 55 bbl Hi-vis @ 9.5 ppg FV 198 sec/qt. Circ & Conditioned mud balance at 9.5 ppg. Plug 1A Diverted & treated out , 73.1 bbl contaminated mud/DW/traces of cement @ 9.35 ppg. Started placing non essential, packed lab equipment on pallet ready for back load.	
For Report	**# 080**	**On**	**16/02/2010**	**Operation at Depth**	**3,482.0 m**
Rig Activity				Halliburton cementing pumped cement plugs 1B, 1C, 2 as per P & A program. Excess DP were laid down. TOC was tagged @ 2768m. 25 bbl h-ivis was pumped & diplaced @ 2115 m. Cement plug # 3 was pumped & displaced as per program. Excess DP was laid down.	
Activity				P & A	
Fluid Treatment				Plug 1b - Diverted 19 bbl contaminated mud w/ traces of cmt. Plug 1c - Diverted 10.5 bbl contaminated mud w/ traces of cmt. Plug 2 - Diverted 9 bbl contaminated mud w/ traces of cmt. Mixed 60 bbl 10.6 ppg Slug. Plug 3 - Diverted 21 bbl contaminated mud/Drill water @ 9.2 ppg - traces of cmt. Cement in hole - 187.2 bbl Mud properties not in specs due to cement contamination & no treatment. Mud engineering cost for Kosta ends 16 Feb 2010.	
For Report	**# 081**	**On**	**17/02/2010**	**Operation at Depth**	**3,482.0 m**

Operations Log Recap

Well Name	**Rockhopper-1**
Operator	**ADA DRILLING**
Contractor	**MAERSK**
Rig No	**Kantan IV**
Unit System	**ADA Drilling**

Interval	**05**		**From Date**	**52A**	**Top of Interval**	**1,964.0**	**m**
Max. Hole Size / Bit Size	**8.50 / 8.50**	**in**	**To Date**	**081**	**Bottom of Interval**	**3,482.0**	**m**

Rig Activity	WOC. P/ tested csg - failed. RIH & tagged TOC @ 1978 m. Circ. M/U cement head & pumped 19 bbl cmt plug # 3A. POOH to 1701 m & circ. WOC. P/Test csg to 2000 psi/15 min - ok. POOH & laid down DP. Retrieved wear bushing.
Activity	P & A
Fluid Treatment	Plug 3A - Mud return @ 9.3 ppg. No cement return. Cement in hole - 216.2 bbl Mud properties not in spec due to cement contamination & no treatment. Chemicals backload to Far Scimitar. Shaker screens backload to Far Scimitar. Mud lab equipment backload to Far Scimitar. 6 bags damaged Circal 60/16 - inventory correction.

Well Name	Rockhopper-1
Operator	ADA DRILLING
Contractor	MAERSK
Rig No	Kantan IV
Unit System	ADA Drilling

Deviation Actual

Survey Date	MD m	TVD m	Angle	Direction	Horiz Displ. m
03/12/2009	327	327	0.34	316.4	0.3
03/12/2009	356	356	0.16	310.1	0.3
03/12/2009	415	415	0.43	334.6	0.6
03/12/2009	502	502	0.26	356.6	1.1
03/12/2009	559	559	0.33	356.6	1.4
03/12/2009	646	646	0.22	77.0	1.6
03/12/2009	733	733	0.10	264.5	1.7
04/12/2009	819	819	0.13	204.1	1.6
04/12/2009	907	907	0.22	337.4	1.6
04/12/2009	957	957	0.15	112.4	1.7
11/12/2009	1,529	1,529	0.61	56.9	1.3
13/12/2009	1,972	1,972	0.67	57.7	1.2
20/12/2009	2,007	2,007	4.80	20.7	7.1
22/12/2009	2,105	2,104	12.80	14.6	11.8
22/12/2009	2,250	2,240	26.59	5.7	18.8
23/12/2009	2,367	2,340	36.34	359.9	23.5
23/12/2009	2,511	2,450	42.92	354.4	16.4
23/12/2009	2,741	2,617	43.47	355.9	3.0
24/12/2009	2,828	2,681	42.00	355.8	
25/12/2009	3,175	2,934	42.94	355.9	
26/12/2009	3,290	3,019	42.18	356.0	
27/12/2009	3,522	3,132	41.35	357.9	
23/01/2010	2,685	2,608	36.05	179.7	1.2
24/01/2010	2,945	2,819	35.81	174.8	422.2
28/01/2010	3,185	3,016	35.70	178.5	559.2
29/01/2010	3,203	3,031	35.56	178.7	569.7
02/02/2010	3,325	3,130	36.06	178.6	640.5
04/02/2010	3,467	3,245	35.47	179.3	723.6

DAILY MUD REPORTS

Baroid Fluid Services

Report No 001

Daily Drilling Fluid Report

Date 29/11/2009		**Depth** 0.0 m	
Spud Date 30/11/2009		**Rig Activity** TRIPPING	
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m) OD	ID	Length	in Casing m OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	in							Model			
Make/Type								Bore in			
Jets								Strokes in			
TFA	sq-in							Eff(%)			
Jets Velocity	ft/sec							bbl/strk			
Jet Impact Force	lbf							SPM			
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m							Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg							Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program
Source							
Time							
Depth	m						
FL Temp	Deg C						
Density @ Deg C	ppg						
FV @ Deg C	sec/qt						
PV @ Deg C	cP						
YP	lbs/100 ft2						
GELS	lbs/100 ft2						
600/300							
200/100							
6/3							
API Filt	ml/30 min						
HTHP @ Deg C	ml/30 min						
Cake API/HTHP	32nd in						
Corr Solid	% by Vol						
NAP/Water	% by Vol						
Sand	% by vol						
MBT	ppb Eq.						
pH @ Deg C							
ALK Mud	Pm						
ALK Filt	Pf/Mf						
Chlorides	mg/l						
Tot. Hardness	mg/l						
LGS/HGS	% by Vol						
LGS/HGS	ppb						
ASG	SG						
Additional Properties							

Fluid Treatments

Fluid Type

Kantan IV towed to location from Trefoil to Rockhopper as of 0546hrs

Begin preparing PHB mud for the 36" hole.

Rig Activity

Tow to location from Trefoil-1 to Rockhopper-1, arrive on location at 0546hrs. Anchor handling. Ballast Rig. Cross tension Anchors.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can		8		8	
Amodrill 1235	1 bbl bulk		19.400		19.400	
BARA-DEFOAM W300	25 l can		8		8	
BARAZAN D PLUS	25 kg bag		35		35	
barite	1 tons bulk		116.400		116.400	
BAROLIFT	15 lb box		16		16	
BARO-SEAL FINE	40 lb bag		40		40	
BARO-SEAL MEDIUM	40 lb bag		70		70	
bentonite	1000 kg bulk		46.000		46.000	
Circal 60/16	25 kg bag		149		149	
Circal Y	25 kg bag		91		91	
citric acid	25 kg bag		38		38	
CLAYSEAL PLUS	55 gal drum		46		46	
CON DET	5 gal can		32		32	
DEXTRID LTE	25 kg sack		126		126	
EZ SPOT	55 gal drum		5		5	
EZ-MUD	25 kg pail		121		121	
Generic mesh 24 (API 20)	1 each box		12		12	
guar gum	25 kg bag		100		100	
mica	25 kg bag		38		38	
N-DRIL HT PLUS	50 lb bag		105		105	
Omyacarb 5	25 kg bag		6		6	
OXYGON	50 lb can		33		33	
PAC-L	25 kg bag		87		87	
potassium chloride	1000 kg bag		33		33	
potassium hydroxide	20 kg pail		12		12	
sapp	25 kg bag		18		18	

Solids Control Equipment				Time	
Shaker	Screens	Hrs		Drilling	
VSM-300				Circulating	
VSM-300				Trips	
VSM-300				Rig	
VSM-300				Surveys	
				Fishing	
				Run Casing	
				Coring	
				Reaming	
Hydrocyclone	Cones	Screens	Hrs	Testing	
				Logging	
				Dir Work	
				Repair	
				Other	23.0
Centrifuge	Speed	Feed Rate	Hrs	Total	23.0
518	4,000	80.00		Rotating	
518	4,000	80.00		ROP	
				Dil Rate	0.00

Fluid Volume Breakdown

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Change		Other		Downhole	
Total Vol		Total		Total Losses	

Fluid Types	Vol bbl

Deviation Information

Survey MD	m
Survey TVD	m
Angle	Deg
Direction	
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A0.00	Total Cumulative Cost	$A3,080.00

Baroid Representatives	James Munford	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 002

Daily Drilling Fluid Report

Date 30/11/2009		Depth 117.0 m	
Spud Date 30/11/2009		Rig Activity Drilling	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	26.000	in
Make/Type	SMITH/CR1	
Jets	2x20|4x18	
TFA	1.608	sq-in
Jets Velocity	75	ft/sec
Jet Impact Force	128.3	lbf
Bit HHSI	0.02	hhp/in2
Press Drop @ Bit	44	psi
Bit Depth	117.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit	8.82	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	3.000	51.2
Drill Collar	8.250	2.875	65.8
Open Hole	36.000		16.7

in Casing m

OD	Set	MD

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	75	0	0
gpm|bbl/min	376 | 8.96		
Total GPM	376	AV, Riser	Circ Press psi 250
Total Circ Time	13	AV min DP 7.3	Tot Pres Loss 174
BU Time , min	7	AV max DC 7.5	Press Drop DP 63
Total Strokes	980	BU Strokes 492	Press Drop An 0

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #1	Pit #1					
Time		14:00	18:00					
Depth	m	100	100					
FL Temp	Deg C							
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25				8.50	9.00
FV @ Deg C	sec/qt	132 @ 25	130 @ 25					
PV @ Deg C	cP	14 @ 49	15 @ 49					
YP	lbs/100 ft2	56	55					
GELS	lbs/100 ft2	25/47/60	25/47/60					
600/300		84.0/70.0	85.0/70.0					
200/100		60.0/56.0	60.0/55.0					
6/3		35.0/30.0	34.0/29.0					
API Filt	ml/30 min							
HTHP @ Deg C	ml/30 min							
Cake API/HTHP	32nd in							
Corr Solid	% by Vol							
NAP/Water	% by Vol	-/95.0	-/95.0					
Sand	% by vol							
MBT	ppb Eq.	27.0	27.0					
pH @ Deg C		9.00 @ 25	9.00 @ 25					
ALK Mud	Pm							
ALK Filt	Pf/Mf							
Chlorides	mg/l	1,000	1,000					
Tot. Hardness	mg/l	240	240					
LGS/HGS	% by Vol							
LGS/HGS	ppb							
ASG	SG							

Additional Properties

Fluid Treatments

Fluid Type Seawater

Mixed 540 bbl PHB mud.
R'ced 880 bbl KCl Polymer/Gel mud f/ Fosna.
Which was converted to 10 ppg Kill mud.

R'ced chemicals f/ Fosna/Scimitar.

Weight indicator at Bentonite surge tank = ok.
Weight indicator at Barite surge tank = failed.
Note: The 5MT Betonite received represents a correction that is consistent with an adjustment made by KanTanIV control room

Rig Activity

Cont. to cross tension anchor. M/U 18 3/4" WHRT assembly & laid out same. M/U 5" HWDP & racked back in derrick. Held JSA. P/U 18 3/4" wellhead & set in rotary. P/U WHRT, installed cement wiper plugs, M/U to 18 3/4" wellhead & laid out f/ drill floor. P/U 26" X 36" BHA assembly, RIH to 94 m. RIH & tag bottom at 100.3 m. Pulled up 10 m. Broke circulation & function tested Anderdrift tool. 10 pulses counted 0.5 deg. Spud in Rockhopper-1. Drill 36" hole f/ 100.3 m to 117 m. Started drilling w/ using PHG for first 5 m. Pumped 50 bbl hi-vis every single & spotted Hi Vis around BHA on connections.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	116.400		37.150	79.250	$A27,141.05
guar gum	25 kg bag	100	50	22	128	$A1,952.50
caustic soda	25 kg can		32	3	29	$A162.84
soda ash	25 kg bag	22		2	20	$A60.84
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	8			8	
BARAZAN D PLUS	25 kg bag	35	40		75	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	46.000	5.000		51.000	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	38			38	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
lime	25 kg bag		89		89	
mica	25 kg bag	38			38	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Daily Products Cost	$A29,317.23	Total Daily Cost	$A32,397.23
Cumulative Products Cost	$A29,317.23	Total Cumulative Cost	$A35,477.23

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	1.0
Circulating	0.5
Trips	17.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	5.0
Total	24.0
Rotating	1.0
ROP	383.9
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus	58.8	Base		Fluid Dumped	
Pipe Cap	3.2	Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	62.0	Sea Water	123.6	Evaporation	
Total Circ	117.0	Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Change	123.6	Other		Downhole	
Total Vol	117.0	Total	123.6	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	1439.0

Deviation Information

Survey MD	m
Survey TVD	m
Angle	Deg
Direction	
Horiz Displ.	m

Baroid Representatives	James Munford	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 003

Daily Drilling Fluid Report

Date 01/12/2009		Depth 158.0 m	
Spud Date 30/11/2009		Rig Activity Wait on cement	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in							Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type								Bore in	6.500	6.500	6.500
Jets								Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM	AV, Riser	Circ Press psi	
Bit Depth	m	Open Hole	36.000	57.7				Total Circ Time	AV min DP	Tot Pres Loss	
ECD @ Csg Shoe	ppg							BU Time , min	AV max DC	Press Drop DP	
ECD @ Bit	ppg							Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets		Program	
Source		Pit #1	Pit #1						
Time		9:00	23:00						
Depth	m	158	158						
FL Temp	Deg C								
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25					8.50	9.00
FV @ Deg C	sec/qt	124 @ 25	122 @ 25						
PV @ Deg C	cP	11 @ 49	12 @ 49						
YP	lbs/100 ft2	59	58						
GELS	lbs/100 ft2	25/40/51	26/39/47						
600/300		81.0/70.0	82.0/70.0						
200/100		60.0/55.0	60.0/52.0						
6/3		33.0/25.0	35.0/26.0						
API Filt	ml/30 min								
HTHP @ Deg C	ml/30 min								
Cake API/HTHP	32nd in								
Corr Solid	% by Vol								
NAP/Water	% by Vol	-/95.0	-/95.0						
Sand	% by vol								
MBT	ppb Eq.	27.0	27.0						
pH @ Deg C		9.00 @ 25	9.00 @ 25						
ALK Mud	Pm								
ALK Filt	Pf/Mf								
Chlorides	mg/l	1,000	1,000						
Tot. Hardness	mg/l	200	200						
LGS/HGS	% by Vol								
LGS/HGS	ppb								
ASG	SG								
Additional Properties									

Fluid Treatments

Fluid Type Seawater

Cont top up PHB Hivis. Prepare mud for next interval.
Displaced hole w/ 330 bbl PHB mud.

Cleaned Pit 4 for Cementer, Mica used for cementing.

Received bulk chemicals off the Far Fosna.

Daily Mud Mixed: 256.6 bbl
Total Mud Mixed for Interval: 796.7 bbl

Rig Activity

Drilled 26" x 36" hole f/ 117 m to 150 m. Pumping 50 bbl PBG hi-vis every single & spotted PBG hi-vis around BHA on connections. Saver sub backed out on connection. POOH to 110 m, troubleshoot. RIH to 150 m, drill ahead f/ 150 m to 158 m, 36" hole to 157 m. Pump 100 bbl Guar gum pill followed by 330 bbl 8.8 ppg PHG mud. POOH to surface, no drag. Rig up to run 30" conductor. RIH w/ 30" conductor on HWDP to 157 m, no drag. Rig up surface lines, circulate casing contents, pumped 265 bbl 15.9 ppg class G cement slurry. WOC.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
guar gum	25 kg bag	128		5	123	$A443.75
caustic soda	25 kg can	29		5	24	$A271.40
soda ash	25 kg bag	20		6	14	$A182.52
mica	25 kg bag	38		2	36	$A84.84
lime	25 kg bag	89		5	84	$A83.10
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	8			8	
BARAZAN D PLUS	25 kg bag	75	80		155	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	51.000	43.500		94.500	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	38			38	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Solids Control Equipment			
Shaker	Screens		Hrs
VSM-300			
VSM-300			
VSM-300			
VSM-300			
Hydrocyclone	Cones	Screens	Hrs
Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time	
Drilling	3.0
Circulating	2.0
Trips	2.5
Rig	3.5
Surveys	
Fishing	
Run Casing	10.0
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	3.0
Total	24.0
Rotating	3.0
ROP	44.8
Dil Rate	0.00

Fluid Volume Breakdown Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	238.3	Sea Water	77.2	Evaporation	
Total Circ	55.0	Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	117.0	Chemicals		Total Surface	
Net Change	169.7	Other	92.5	Downhole	
Total Vol	293.3	Total	169.7	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	1141.0

Deviation Information		
Survey MD		m
Survey TVD		m
Angle		Deg
Direction		
Horiz Displ.		m

Daily Products Cost	$A1,065.61	Total Daily Cost	$A4,145.61
Cumulative Products Cost	$A30,382.84	Total Cumulative Cost	$A39,622.84
Baroid Representatives	James Munford	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 004

Daily Drilling Fluid Report

Date 02/12/2009		Depth 330.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 17.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	17.500	in
Make/Type	SMITH/SMITH	
Jets	3x22|1x16	
TFA	1.310	sq-in
Jets Velocity	244	ft/sec
Jet Impact Force	1108.7	lbf
Bit HHSI	1.13	hhp/in2
Press Drop @ Bit	467	psi
Bit Depth	330.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit	8.97	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	3.000	217.3
Drill Collar	8.250	2.875	112.7
Open Hole	36.000		57.7
Open Hole	17.500		172.0

in Casing m

OD	Set	MD

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	66	66	67
gpm|bbl/min	331 | 7.88	331 | 7.88	336 | 8.00
Total GPM	998	AV, Riser	Circ Press psi 1661
Total Circ Time	18	AV min DP 19.2	Tot Pres Loss 1369
BU Time , min	16	AV max DC 102.7	Press Drop DP 645
Total Strokes	3,652	BU Strokes 3,115	Press Drop An 9

Properties		Hyd 1	2	3	4	Targets	Program
Source		Pit #1	Pit #1				
Time		9:00	19:30				
Depth	m	158	270				
FL Temp	Deg C						
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25				8.50 9.00
FV @ Deg C	sec/qt	130 @ 25	127 @ 25				
PV @ Deg C	cP	12 @ 49	11 @ 49				
YP	lbs/100 ft2	61	60				
GELS	lbs/100 ft2	30/43/55	29/42/54				
600/300		85.0/73.0	82.0/71.0				
200/100		63.0/55.0	61.0/53.0				
6/3		37.0/28.0	36.0/27.0				
API Filt	ml/30 min						
HTHP @ Deg C	ml/30 min						
Cake API/HTHP	32nd in						
Corr Solid	% by Vol						
NAP/Water	% by Vol	-/95.0	-/96.0				
Sand	% by vol						
MBT	ppb Eq.	27.5	30.0				
pH @ Deg C		9.00 @ 25	9.00 @ 25				8.50 9.50
ALK Mud	Pm						
ALK Filt	Pf/Mf						
Chlorides	mg/l	1,000	1,000				
Tot. Hardness	mg/l	240	240				400
LGS/HGS	% by Vol						
LGS/HGS	ppb						
ASG	SG						
Additional Properties							

Fluid Treatments

Fluid Type Seawater

Cont. mixing PBG in Pit 1 & transferring over to active Pit 4 when needed.

19 MT Bentonite was used according to Control Room figures.

Daily Mud Mixed: 1010 bbl
Total Mud Mixed for 17.5" Interval: 1010 bbl

Daily Hi Vis usage: 551 bbl

Rig Activity

WOC. Slack off to 175, cmt holding, release tool 4.5 right hand turns. L/O cmt assy, POOH. L/O running tool & SLM. L/O 26 x 36 assy. P/U & M/U 17.5" Drilling assy, attach bridle to BHA & secure to guidelines. Stab into well w/ ROV guidance. Cont RIH M/U TDS washed down f/ 131m, tagged cmt @ w/ 5K. Drill cmt & shoe f/ 147 m to 157 m. Drill 17.5" hole f/ 158 m to 330 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
bentonite	1000 kg bulk	94.500		19.000	75.500	$A14,465.65
guar gum	25 kg bag	123		35	88	$A3,106.25
BARAZAN D PLUS	25 kg bag	155		5	150	$A1,076.70
caustic soda	25 kg can	24		7	17	$A379.96
citric acid	25 kg bag	38		3	35	$A228.60
soda ash	25 kg bag	14		7	7	$A212.94
lime	25 kg bag	84		12	72	$A199.44
BARA-DEFOAM W300	25 l can	8		1	7	$A125.82
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	8.5
Circulating	
Trips	1.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	14.5
Total	24.0
Rotating	8.5
ROP	66.4
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus	372.0	Base		Fluid Dumped	
Pipe Cap	9.2	Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	381.2	Sea Water	114.5	Evaporation	
Total Circ	436.2	Whole Mud	0.1	Trips	
Reserve		Barite		Other	-24.9
Prev Vol	293.3	Chemicals	53.3	Total Surface	
Net Change	143.0	Other		Downhole	
Total Vol	436.2	Total	167.9	Total Losses	-24.9

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	1338.0

Deviation Information

Survey MD	327.4 m
Survey TVD	327.4 m
Angle	0.34 Deg
Direction	316
Horiz Displ.	0.3 m

Daily Products Cost	$A19,795.36	Total Daily Cost	$A22,875.36
Cumulative Products Cost	$A50,178.20	Total Cumulative Cost	$A62,498.20

Baroid Representatives	Kosta Georgiou	Jay Wan	
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Baroid Fluid Services

Report No 005

Daily Drilling Fluid Report

Date	03/12/2009	**Depth**	823.0 m
Spud Date	30/11/2009	**Rig Activity**	Drilling 17.5" Interval

Operator	ADA DRILLING	**Report For**	Mike Lanzer / Kevin Monkhouse
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Brian Meechan / Geoff Chapman
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	17.500	in
Make/Type	SMITH/SMITH	
Jets	3x22|1x16	
TFA	1.310	sq-in
Jets Velocity	245	ft/sec
Jet Impact Force	1119.9	lbf
Bit HHSI	1.15	hhp/in2
Press Drop @ Bit	472	psi
Bit Depth	823.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit	9.00	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	3.000	710.3
Drill Collar	8.250	2.875	112.7
Open Hole	36.000		57.7
Open Hole	17.500		665.0

in Casing m

OD	Set	MD

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	66	67	67
gpm|bbl/min	331 | 7.88	336 | 8.00	336 | 8.00

Total GPM	1,003	AV, Riser	Circ Press psi 1933
Total Circ Time	37	AV min DP 19.3	Tot Pres Loss 2309
BU Time , min	34	AV max DC 103.2	Press Drop DP 1559
Total Strokes	7,456	BU Strokes 6,800	Press Drop An 29

Properties		Hyd 1	2	3	4	Targets	Program
Source		Pit #1	Pit #1	Pit #1	Pit #1		
Time		5:30	16:00	21:31	10:30		
Depth	m	430	708	800	570		
FL Temp	Deg C						
Density @ Deg C	ppg	8.80 @ 25	8.90 @ 25	8.80 @ 25	8.90 @ 25		8.50 9.00
FV @ Deg C	sec/qt	128 @ 25	125 @ 25	126 @ 25	122 @ 25		
PV @ Deg C	cP	12 @ 49	10 @ 49	12 @ 49	14 @ 49		
YP	lbs/100 ft2	61	45	60	50		
GELS	lbs/100 ft2	30/43/55	21/37/50	29/42/54	30/43/55		
600/300		85.0/73.0	65.0/55.0	84.0/72.0	78.0/64.0		
200/100		63.0/55.0	49.0/43.0	62.0/54.0	54.0/47.0		
6/3		37.0/28.0	20.0/18.0	37.0/27.0	30.0/25.0		
API Filt	ml/30 min						
HTHP @ Deg C	ml/30 min						
Cake API/HTHP	32nd in						
Corr Solid	% by Vol						
NAP/Water	% by Vol	-/96.0	-/95.0	-/96.0	-/95.0		
Sand	% by vol						
MBT	ppb Eq.	30.0	30.0	30.0	30.0		
pH @ Deg C		9.00 @ 25	9.00	9.00 @ 25	9.00 @ 25		8.50 9.50
ALK Mud	Pm						
ALK Filt	Pf/Mf						
Chlorides	mg/l	1,000	1,000	1,100	1,200		
Tot. Hardness	mg/l	240	120	240	200		400
LGS/HGS	% by Vol						
LGS/HGS	ppb						
ASG	SG						
Additional Properties							

Fluid Treatments

Fluid Type Seawater

Lime & Caustic used to flocculate & thicken PHG. Inventory correction on Bentonite as per KT4 control room. Cont. to top up PHB Hi Vis.

Under instruction from Company Men, built displacement fluid in Pill Pit 158 bbl & Pit 2 353 bbl of 8.8 ppg Fluid. In order to achieve this 340 bbl of 10 ppg Kill was to be dumped in total from Pill Pit & Pit 2.

Previous Daily Mud Mixed 1010 bbl
Daily Mud Mixed: 1600 bbl
Total Mud Mixed for 17.5" Interval: 2610 bbl
Daily Fluid Lose 1840 bbl

Rig Activity

Cont. drilling 17.5" interval f/ 330 to 425 m.
Changed out HPU filter on Top Drive. Cont. drilling f/ 425 to 823 m

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
bentonite	1000 kg bulk	75.500		13.000	41.000	$A9,897.55
BARAZAN D PLUS	25 kg bag	150		6	144	$A1,292.04
guar gum	25 kg bag	88		10	78	$A887.50
caustic soda	25 kg can	17		6	11	$A325.68
lime	25 kg bag	72		14	58	$A232.68
soda ash	25 kg bag	7		4	3	$A121.68
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	35			35	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Daily Products Cost	$A12,757.13	Total Daily Cost	$A15,837.13
Cumulative Products Cost	$A62,935.33	Total Cumulative Cost	$A78,335.33

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	23.5
Circulating	
Trips	
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	23.5
ROP	68.8
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus	812.1	Base		Fluid Dumped	
Pipe Cap	23.4	Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	835.5	Sea Water	418.6	Evaporation	
Total Circ	890.5	Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	436.2	Chemicals	35.9	Total Surface	
Net Change	546.9	Other	92.5	Downhole	
Total Vol	890.5	Total	546.9	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	1338.0

Deviation Information

Survey MD	819.3 m
Survey TVD	819.3 m
Angle	0.13 Deg
Direction	204
Horiz Displ.	1.6 m

Baroid Representatives Kosta Georgiou Jay Wan
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Baroid Fluid Services

Report No 006

Daily Drilling Fluid Report

Date 04/12/2009		Depth 966.0 m	
Spud Date 30/11/2009		Rig Activity Run 13 3/8" casing	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	in
Make/Type	
Jets	
TFA	sq-in
Jets Velocity	ft/sec
Jet Impact Force	lbf
Bit HHSI	hhp/in2
Press Drop @ Bit	psi
Bit Depth	m
ECD @ Csg Shoe	ppg
ECD @ Bit	ppg

Drill String (in) / (m)

	OD	ID	Length
Open Hole	36.000		1.0
Open Hole	17.500		808.0

in Casing m

OD	Set	MD

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM	AV, Riser	Circ Press psi
Total Circ Time	AV min DP	Tot Pres Loss
BU Time , min	AV max DC	Press Drop DP
Total Strokes	BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pill Pit					
Time		12:00	21:30					
Depth	m	966	966					
FL Temp	Deg C							
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25				8.50	9.00
FV @ Deg C	sec/qt	65 @ 25	62 @ 25					
PV @ Deg C	cP	12 @ 49	12 @ 49					
YP	lbs/100 ft2	36	37					
GELS	lbs/100 ft2	10/17/21	10/17/21					
600/300		60.0/48.0	61.0/49.0					
200/100		42.0/35.0	43.0/36.0					
6/3		17.0/15.0	17.0/15.0					
API Filt	ml/30 min	7.2	7.4					
HTHP @ Deg C	ml/30 min							
Cake API/HTHP	32nd in							
Corr Solid	% by Vol							
NAP/Water	% by Vol	-/95.0	-/96.0					
Sand	% by vol							
MBT	ppb Eq.	15.0	15.0					
pH @ Deg C		9.00 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm							
ALK Filt	Pf/Mf							
Chlorides	mg/l	1,500	1,400					
Tot. Hardness	mg/l	240	240					400
LGS/HGS	% by Vol							
LGS/HGS	ppb							
ASG	SG							

Additional Properties

Fluid Treatments

Fluid Type Seawater

Mixed & displaced 1200 bbl of 8.8 Pad mud to hole. Top up 8.8 ppg Pad mud.
Cleaned Pits 1,3 & 4 for KCl brine, acquired permit to clean pits & organised sack room for next section. Prepare to B/L 2 x pallets Guar Gum & 1 x pallet Lime. Crew busy due to csg & cmt jobs.
Previous Daily Mud Mixed 2610 bbl
Daily Mud Mixed: 1740 bbl
Total Mud Mixed for 17.5" Interval: 4350 bbl
Daily Fluid used 1740 bbl

Rig Activity

Cont. drill 17.5" f/ 823 - 966 m, tide corrected, survey @ TD & pumped 80 bbl hi-vis. POOH 6 std, tight spots f/ 909 - 841 m, max over pull 30k wiped tight spots clean. RIH & wash to bottom f/ 941, no fill. Circ 100 bbl hi-vis, followed by 1.25 x hole vol hi-vis. POOH to csg shoe @ 157 m, max over pull 20K. L/O 17.5" stab & bit. Racked BHA in derrick, removed Halliburton probe f/ NMHOC. M/U jet sub to std HWDP. RIH w/ jet sub o/ 102. Jetting 1150 psi @ 1555 hrs, POOH, L/O jet sub. M/U cmt head, HTBT f/ rigging up & running 13 3/8' csg. R/U up PCS, Pick up shoe jt, check, float jt, check OK, run 13 3/8" per program.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	144		12	132	$A2,584.08
lime	25 kg bag	58		16	42	$A265.92
citric acid	25 kg bag	35		3	32	$A228.60
guar gum	25 kg bag	78		2	76	$A177.50
soda ash	25 kg bag	3		3		$A91.26
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	41.000			41.000	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	

Daily Products Cost	$A3,347.36	Total Daily Cost	$A6,427.36
Cumulative Products Cost	$A66,282.69	Total Cumulative Cost	$A84,762.69

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	9.0
Circulating	1.0
Trips	8.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	5.5
Total	24.0
Rotating	9.0
ROP	52.1
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	55.0	Dewatering		SCE	
Total Hole	792.8	Sea Water	246.3	Evaporation	
Total Circ	55.0	Whole Mud		Trips	
Reserve	54.9	Barite		Other	-141.6
Prev Vol	890.5	Chemicals		Total Surface	
Net Change	104.7	Other		Downhole	
Total Vol	902.7	Total	246.3	Total Losses	-141.6

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	581.0

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Baroid Representatives Kosta Georgiou Jay Wan
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Baroid Fluid Services

Report No 007

Daily Drilling Fluid Report

Date 05/12/2009		Depth 966.0 m	
Spud Date 30/11/2009		Rig Activity Rig up and rig down	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bit Size	in				30.000	@	158.0	Bore in	6.500	6.500	6.500
Make/Type					13.375	@	961.0	Strokes in	12.000	12.000	12.000
Jets								Eff(%)	97	97	97
TFA	sq-in							bbl/strk	0.119	0.119	0.119
Jets Velocity	ft/sec							SPM	0	0	0
Jet Impact Force	lbf							gpm|bbl/min			
Bit HHSI	hhp/in2										
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Open Hole	17.500	5.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg							Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2							Fluid Type Seawater
Time		9:00	21:10							Pits cleaned & received 430 bbl KCl brine from Scimitar.
Depth	m	966	966							Guar Gum & Lime backloaded.
FL Temp	Deg C									8 MT Bentonite charged as it had settled further as per control room.
Density @ Deg C	ppg	8.80 @ 25	8.80 @ 25					8.50	9.00	
FV @ Deg C	sec/qt	60 @ 25	58 @ 25							Daily Mud mixed: 0 bbl
PV @ Deg C	cP	12 @ 49	12 @ 49							Total Mud mixed: 4350 bbl
YP	lbs/100 ft2	36	36							
GELS	lbs/100 ft2	10/16/20	10/16/20							Total Mud Used: 475 bbl
600/300		60.0/48.0	60.0/48.0							Total Sea water used to displace For CMT Job 400.8 bbl
200/100		40.0/35.0	40.0/35.0							
6/3		16.0/15.0	16.0/14.0							
API Filt	ml/30 min	7.4	7.6							
HTHP @ Deg C	ml/30 min									
Cake API/HTHP	32nd in									
Corr Solid	% by Vol									
NAP/Water	% by Vol	-/95.0	-/96.0							
Sand	% by vol									
MBT	ppb Eq.	15.0	15.0							
pH @ Deg C		9.50 @ 25	9.00 @ 25					8.50	9.50	
ALK Mud	Pm									
ALK Filt	Pf/Mf									
Chlorides	mg/l	1,500	1,400							
Tot. Hardness	mg/l	240	240						400	
LGS/HGS	% by Vol									
LGS/HGS	ppb									
ASG	SG									
Additional Properties										

Rig Activity

Run 13 3/8" csg f/ 24 - 68 m, WOW. Run csg f/ 68 - 123 m stabbing into 30". R/U PCS spider & slips, cont run csg f/ 123 - 845 m filling each jt. P/U 18 3/4" wellhead & cont RIH. R/D PCS spider,slips,tong & equipment. Cont RIH w/ csg on landing string. M/U cmt std & cmt hose, cont RIH - 961 m & land out 18 3/4" w/ head w/ 50K. Down then o'pull - 400K. Then slacked off to landing wt 190K. R/U Halliburton control panel & lines to cmt head & HTBT. Cmt as per program. Displace w/ rig pumps 3286/3286 & bump plug 912/650 psi 60 spm. Press test csg t/ 2500 psi. Remove Halliburton control line, cmt hose & release running tool 175K, 4.5 right turns.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
bentonite	1000 kg bulk	41.000		8.000	33.000	$A6,090.80
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	132			132	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
guar gum	25 kg bag	76			76	
lime	25 kg bag	42			42	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	
potassium chloride	1000 kg bag	33			33	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	14.5
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	9.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole	423.2	Sea Water	234.5	Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	-875.8
Prev Vol	902.7	Chemicals	20.1	Total Surface	
Net Change	-621.2	Other		Downhole	
Total Vol	423.2	Total	254.6	Total Losses	-875.8

Fluid Types	Vol bbl

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Daily Products Cost	$A6,090.80	Total Daily Cost	$A9,170.80
Cumulative Products Cost	$A72,373.49	Total Cumulative Cost	$A93,933.49

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 008

Daily Drilling Fluid Report

Date 06/12/2009	**Depth** 966.0 m		
Spud Date 30/11/2009	**Rig Activity** Ready to run BOP.		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bit Size	in				30.000	@	158.0	Bore in	6.500	6.500	6.500
Make/Type					13.375	@	961.0	Strokes in	12.000	12.000	12.000
Jets								Eff(%)	97	97	97
TFA	sq-in							bbl/strk	0.119	0.119	0.119
Jets Velocity	ft/sec							SPM	0	0	0
Jet Impact Force	lbf							gpm|bbl/min			
Bit HHSI	hhp/in2										
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Open Hole	17.500	5.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg							Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pill Pit	Pit #2					
Time		12:00	20:45					
Depth	m	966	966					
FL Temp	Deg C							
Density @ Deg C	ppg	9.00 @ 25	9.00 @ 25				8.50	9.00
FV @ Deg C	sec/qt	80 @ 25	80 @ 25					
PV @ Deg C	cP	14 @ 49	14 @ 49					
YP	lbs/100 ft2	44	44					
GELS	lbs/100 ft2	13/18/25	13/18/25					
600/300		72.0/58.0	72.0/58.0					
200/100		48.0/35.0	48.0/35.0					
6/3		17.0/15.0	18.0/-					
API Filt	ml/30 min	7.6	7.6					
HTHP @ Deg C	ml/30 min							
Cake API/HTHP	32nd in							
Corr Solid	% by Vol							
NAP/Water	% by Vol	-/95.0	-/96.0					
Sand	% by vol							
MBT	ppb Eq.	15.0	15.0					
pH @ Deg C		9.00 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm							
ALK Filt	Pf/Mf							
Chlorides	mg/l	1,500	1,300					
Tot. Hardness	mg/l	320	280					400
LGS/HGS	% by Vol							
LGS/HGS	ppb							
ASG	SG							
Additional Properties								

Fluid Treatments

Fluid Type Seawater

Mixing KCl Polymer Fluid in progress. All Chemicals will be charged off at the beginning of 12.25" interval.
Backload 76 sxs Guar Gum, 42 sxs Lime to Far Fosna.
Dress shaker screens 3x20 (Top)/4x50 (btm).

Rig Activity

POOH running tool. L/O running tool. SLM landing string, L/O cmt head. L/O 17.5" BHA. Remove all un needed tools, subs, boxes etc f/ rig floor. Unable to disconnect BOP f/ test stump. Attempt 65 o'pull, no success. Break out double of marine riser, fill void above stump w/ water. Apply press in stages against SR's. BOP free @ 400 psi.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	132			132	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	33.000			33.000	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
guar gum	25 kg bag	76				
lime	25 kg bag	42				
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	
potassium chloride	1000 kg bag	33			33	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.0
Total	1.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole	423.2	Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	423.2	Chemicals		Total Surface	-166.3
Net Change	-166.3	Other		Downhole	
Total Vol	423.2	Total		Total Losses	-166.3

Fluid Types Vol bbl

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A72,373.49	Total Cumulative Cost	$A97,013.49
Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 009

Daily Drilling Fluid Report

Date 07/12/2009		Depth 966.0 m	
Spud Date 30/11/2009		Rig Activity Attempt to Land BOP on Well Head.	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	966.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Open Hole	17.500		5.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM	AV, Riser	Circ Press psi
Total Circ Time	AV min DP	Tot Pres Loss
BU Time , min	AV max DC	Press Drop DP
Total Strokes	BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program
Source							
Time							
Depth	m						
FL Temp	Deg C						
Density @ Deg C	ppg						
FV @ Deg C	sec/qt						
PV @ Deg C	cP						
YP	lbs/100 ft2						
GELS	lbs/100 ft2						
600/300							
200/100							
6/3							
API Filt	ml/30 min						
HTHP @ Deg C	ml/30 min						
Cake API/HTHP	32nd in						
Corr Solid	% by Vol						
NAP/Water	% by Vol						
Sand	% by vol						
MBT	ppb Eq.						
pH @ Deg C							
ALK Mud	Pm						
ALK Filt	Pf/Mf						
Chlorides	mg/l						
Tot. Hardness	mg/l						
LGS/HGS	% by Vol						
LGS/HGS	ppb						
ASG	SG						
Additional Properties							

Fluid Treatments

Fluid Type Seawater

Cont to mix KCl/PHPA mud w/ 1 ppb PHPA. Sand Traps were filled w/ sea water & flushed clean. Transferred 435 bbl f/ pit 4 to sand traps & lines, & cont to mix KCl- polymer fluid in pit 4. Sheared mud w/ 1 ppb PHPA via shearing hopper. All fluid tests will be provided once KCL-Polymer fluid has time to shear properly. Will charge off all chemical used for mixing at the start of 12.25" Interval. All four shakers have been dressed w/ 20 API/ 20 Mesh on the Scalper Deck & 50 API/ 84 mesh screens on the Primary Deck. Sack room cleaned & re-organised.

Rig Activity

Cont pre run checks for BOP, Repair yellow pod hose, Running BOP on riser. HTBT. Wait on helicopter. P/U & M/U slip Jt. Cont running BOP on riser. Wait on Helicopter. P/U & M/U landing Jt to slip Jt w/ kill lines co-flexip hoses. HTBT, press test choke & kill lines via cmt unit 250 psi f/ 5 mins, 5000 psi f/ 10 mins, Ok. Installed pod lines saddles. Installed MRT wires to slip Jt, Skid rig over well. Attempt to land BOP on well head.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	132			132	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	33.000			33.000	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	
potassium chloride	1000 kg bag	33	17		50	
potassium hydroxide	20 kg pail	44			44	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	5.0
Other	19.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole	423.2	Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	
Prev Vol	423.2	Chemicals		Total Surface	-166.3
Net Change	-166.3	Other		Downhole	
Total Vol	423.2	Total		Total Losses	-166.3

Fluid Types Vol bbl

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A72,373.49	Total Cumulative Cost	$A100,093.49

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 010

Daily Drilling Fluid Report

Date 08/12/2009		Depth 966.0 m	
Spud Date 30/11/2009		Rig Activity Make up 12.25" BHA	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets								Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	0.000					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	17.500	5.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg							Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #3	Pit #4					
Time		10:00	20:00					
Depth	m	966	966					
FL Temp	Deg C							
Density @ Deg C	ppg	9.00 @ 25	8.90 @ 25				8.50	9.00
FV @ Deg C	sec/qt	51 @ 25	49 @ 25					
PV @ Deg C	cP	10 @ 49	10 @ 49					
YP	lbs/100 ft2	13	13					
GELS	lbs/100 ft2	4/6/8	4/6/8					
600/300		33.0/23.0	33.0/23.0					
200/100		18.0/13.0	16.0/12.0					
6/3		4.0/3.0	4.0/3.0					
API Filt	ml/30 min	7.2	7.4					
HTHP @ Deg C	ml/30 min	10.0	10.4					
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	1.1	0.6					
NAP/Water	% by Vol	-/95.5	-/96.0					
Sand	% by vol							
MBT	ppb Eq.	2.5	9.0					
pH @ Deg C		9.50 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm	0.30	0.20					
ALK Filt	Pf/Mf	0.25/1.10	0.25/1.10					
Chlorides	mg/l	41,000	40,000					
Tot. Hardness	mg/l	280	280					400
LGS/HGS	% by Vol	0.4/0.6	0.3/0.4					
LGS/HGS	ppb	3.97/9.31	2.35/5.58					
ASG	SG	3.548	3.551					
Additional Properties								
KCl %	-	8.20	8.00					

Fluid Treatments

Fluid Type Seawater

Cont to shear KCl-/PHPA mud in pits. Test results due to virgin/unused fluid.

224 bbl of Hi-vis left over from 17 1/2" section will be used as sweeps.

Rig Activity

Land BOP & conf latch w/ 50 K O' pull. Test well head conductor via C & K lines 1000 psi, Ok. Scope out slip Jt & install diverter. Rig down riser hand gear. RIH test plug. Test H4 conn 5 K, 10 mins Ok. Test LMRP cxn against UAP, no go. POOH, test plug, redress same. RIH & attempt re test LMRP cxn against UAP. POOH & L/O test plug, reposition in mast. R/U & test surf lines 250/ 5, 5 K 5 mins Ok. Rig down test assy. Install diverter insert packer. Function test same. P/U & M/U 5" DP f/ deck 54 Jts POOH & rack back same. P/U, M/U & LD 9 5/8" csg hanger as per Dril Quip eng'r. Install cmt plugs as per Halco cmt'r. P/U & M/U 12.25" BHA f/ 0 - 23 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	132			132	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	33.000			33.000	
caustic soda	25 kg can	11			11	
Circal 60/16	25 kg bag	149			149	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	121			121	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
PAC-L	25 kg bag	87			87	
potassium chloride	1000 kg bag	50			50	
potassium hydroxide	20 kg pail	44			44	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 84	
VSM-300	20 84	
VSM-300	20 84	
VSM-300	20 84	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	24.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — Seawater

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole		Sea Water	414.8	Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	-61.4
Prev Vol	423.2	Chemicals		Total Surface	
Net Change	353.4	Other		Downhole	
Total Vol		Total	414.8	Total Losses	-61.4

Fluid Types — Vol bbl

Deviation Information

Survey MD	956.7	m
Survey TVD	956.7	m
Angle	0.15	Deg
Direction	112	
Horiz Displ.	1.7	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A72,373.49	Total Cumulative Cost	$A103,173.49
Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 11A

Daily Drilling Fluid Report

Date 09/12/2009	Depth 1,060.0 m		
Spud Date 30/11/2009	Rig Activity Drilling 12.25" Interval		
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	12.250 in
Make/Type	REED/RSR616M
Jets	6x15
TFA	1.035 sq-in
Jets Velocity	264 ft/sec
Jet Impact Force	1047.4 lbf
Bit HHSI	2.36 hhp/in2
Press Drop @ Bit	559 psi
Bit Depth	1,060.0 m
ECD @ Csg Shoe	9.09 ppg
ECD @ Bit	9.09 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	807.3
Drill Pipe	5.000	3.000	141.2
Drill Collar	8.063	2.875	111.5
Riser	19.750		100.0
Open Hole	17.500		99.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	85	85	0
gpm|bbl/min	426 10.15	426 10.15	
Total GPM	853	AV, Riser 57.3	Circ Press psi 1570
Total Circ Time	64	AV min DP 164.0	Tot Pres Loss 1910
BU Time , min	26	AV max DC 239.0	Press Drop DP 999
Total Strokes	10,900	BU Strokes 4,495	Press Drop An 15

Properties		1	2	Hyd 3	4	Targets				Program	
Source		Pit #4	Pit #4	Pit #3							
Time		11:00	18:10	20:45							
Depth	m	966	971	1,009							
FL Temp	Deg C		22	25							
Density @ Deg C	ppg	9.00 @ 18	9.00 @ 19	9.00 @ 25						8.80	9.50
FV @ Deg C	sec/qt	47 @ 18	43 @ 19	42							
PV @ Deg C	cP	9 @ 49	10 @ 49	10 @ 49							
YP	lbs/100 ft2	15	15	16							
GELS	lbs/100 ft2	4/6/9	4/6/9	5/7/11		X	*	*		8/-/-	14/-/-
600/300		33.0/24.0	35.0/25.0	36.0/26.0							
200/100		15.0/12.0	16.0/13.0	17.0/13.0							
6/3		5.0/4.0	5.0/4.0	6.0/5.0							
API Filt	ml/30 min	7.0	6.8	7.0		X	X	X			6.0
HTHP @ Deg C	ml/30 min	12.2	12.5 @ 120	12.4 @ 120							15.0
Cake API/HTHP	32nd in	1/2	1/2	1/2							
Corr Solid	% by Vol	1.5	1.6	1.6							
NAP/Water	% by Vol	-/95.0	-/95.0	-/95.0							
Sand	% by vol	0.10	0.10	0.10							1.0
MBT	ppb Eq.	6.0	6.0	5.0							25.0
pH @ Deg C		9.50 @ 25	10.00 @ 25	10.00 @ 25			X	X		8.50	9.50
ALK Mud	Pm	0.30	0.50	0.40							
ALK Filt	Pf/Mf	0.30/0.80	0.30/0.90	0.35/1.20							
Chlorides	mg/l	42,000	41,000	41,000							47,000
Tot. Hardness	mg/l	240	400	280							400
LGS/HGS	% by Vol	1.4/0.1	1.5/0.1	1.5/0.1							
LGS/HGS	ppb	12.41/2.03	13.26/1.94	13.26/1.94							
ASG	SG	2.747	2.733	2.733							
Additional Properties											
KCl %	-	8.20	8.20	8.80		X	X	X		6.00	8.00

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Displaced hole w/ 611 bbl 9.0 ppg KCl- PHPA fluid. Dumped over board 17 bbl when drilled through cmt. 116 bbl adjustment according to control room.
Continued mixing in Active to maintain properties. Continued mixing in Pits 2 & 3 to maintain volume.

Rig Activity

Cont P/U directional BHA. Down link MWD & scribe motor. Cont run BHA out derrick & shallow test @ 40 K down, 65 K total BHA wt. Ran BHA on 5" D/P, coming off deck & f/ derrick - 923 m. H/U geolograph lines, wash f/ 927 - 946 m & tag cmt. Drill out shoe track f/ 946 - 961 m then displace w/ KCL- PHPA 9 ppg fluid, wash past shoe x 3 & clean out rat hole - 966 m. Drill f/ 966 971 m. 2 x CBU. R/B std & R/U LOT assy. HTBT proceed w/ LOT as per program - 1400 psi 9 ppg & circ through K & C lines via C mani. Took C line friction loss. Drill f/ 971 - 1060m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	50		17	33	$A25,219.84
BARAZAN D PLUS	25 kg bag	132		34	98	$A7,321.56
EZ-MUD	25 kg pail	121		64	57	$A6,079.36
DEXTRID LTE	25 kg sack	126		94	32	$A4,980.12
PAC-L	25 kg bag	87		15	72	$A2,404.80
potassium hydroxide	20 kg pail	44		8	36	$A1,056.88
sodium bicarbonate	25 kg bag	38		25	13	$A706.25
Circal 60/16	25 kg bag	149		15	134	$A190.20
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	79.250			79.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	33.000			33.000	
caustic soda	25 kg can	11			11	
Circal Y	25 kg bag	91			91	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	46			46	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50 50	12.0
VSM-300	20 20 20 50 50 50 50	12.0
VSM-300	20 20 20 50 50 50 50	12.0
VSM-300	20 20 20 50 50 50 50	1.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	10.0
Circulating	0.5
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	13.5
Total	24.0
Rotating	10.0
ROP	30.8
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	536.9	Base		Fluid Dumped	
Pipe Cap	53.0	Drill Water	818.0	Transferred	
Active Pits	712.0	Dewatering		SCE	-132.0
Total Hole	589.9	Sea Water		Evaporation	-3.0
Total Circ	1301.9	Whole Mud	820.0	Trips	
Reserve	414.0	Barite		Other	-33.0
Prev Vol		Chemicals	81.5	Total Surface	
Net Change	1715.8	Other	164.3	Downhole	
Total Vol	1715.9	Total	1883.8	Total Losses	-168.0

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	75.0
Seawater	15.0

Deviation Information

Survey MD	956.7 m
Survey TVD	956.7 m
Angle	0.15 Deg
Direction	112
Horiz Displ.	1.7 m

Daily Products Cost	$A47,959.01	Total Daily Cost	$A51,039.01
Cumulative Products Cost	$A120,332.50	Total Cumulative Cost	$A154,212.50

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 012

Daily Drilling Fluid Report

Date 10/12/2009	**Depth** 1,587.0 m		
Spud Date 30/11/2009	**Rig Activity** Drilling 12.25" Interval.		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	12.250	in
Make/Type	REED/RSR616M	
Jets	6x15	
TFA	1.035	sq-in
Jets Velocity	295	ft/sec
Jet Impact Force	1322.9	lbf
Bit HHSI	3.33	hhp/in2
Press Drop @ Bit	706	psi
Bit Depth	1,587.0	m
ECD @ Csg Shoe	9.25	ppg
ECD @ Bit	9.28	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,334.3
Drill Pipe	5.000	3.000	141.2
Drill Collar	8.063	2.875	111.5
Riser	19.750		100.0
Open Hole	12.250		626.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	63	64	63
gpm|bbl/min	316 | 7.52	321 | 7.64	316 | 7.52
Total GPM	953	AV, Riser 64.0	Circ Press psi 2065
Total Circ Time	70	AV min DP 183.3	Tot Pres Loss 2377
BU Time , min	31	AV max DC 274.6	Press Drop DP 1305
Total Strokes	13,250	BU Strokes 5,823	Press Drop An 47

Properties		1	2	3	Hyd 4	Targets			Program	
Source		Pit #2	Flow Line	Pit #2	Pit #2					
Time		5:37	8:30	18:00	21:05					
Depth	m	1,233	1,292	1,435	1,515					
FL Temp	Deg C	30	33	28	31					
Density @ Deg C	ppg	9.00 @ 30	9.25 @ 27	9.30 @ 32	9.10 @ 33				8.80	9.50
FV @ Deg C	sec/qt	46 @ 30	57 @ 27	63 @ 30	61 @ 33					
PV @ Deg C	cP	10 @ 49	11 @ 49	11 @ 49	12 @ 49					
YP	lbs/100 ft2	9	20	22	25					
GELS	lbs/100 ft2	5/6/7	8/11/14	7/9/12	8/10/14	X		*	8/-/-	14/-/-
600/300		29.0/19.0	42.0/31.0	44.0/33.0	49.0/37.0					
200/100		17.0/13.0	24.0/18.0	25.0/19.0	29.0/22.0					
6/3		5.0/4.0	8.0/7.0	8.0/7.0	9.0/7.0					
API Filt	ml/30 min	6.7	5.8	5.5	5.8	X				6.0
HTHP @ Deg C	ml/30 min	12.0 @ 120	12.5 @ 120	9.5 @ 120	11.2 @ 120					15.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2					
Corr Solid	% by Vol	1.7	3.3	3.5	2.9					
NAP/Water	% by Vol	-/95.0	-/93.5	-/93.3	-/94.0					
Sand	% by vol	0.10	0.25	0.25	0.40					1.0
MBT	ppb Eq.	5.0	11.5	9.0	10.0					25.0
pH @ Deg C		9.50 @ 25	9.00 @ 25	9.00 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm	0.50	0.30	0.20	0.30					
ALK Filt	Pf/Mf	0.35/1.20	0.25/1.10	0.15/0.85	0.25/1.20					
Chlorides	mg/l	40,000	39,000	39,000	38,000					47,000
Tot. Hardness	mg/l	280	220	200	200					400
LGS/HGS	% by Vol	1.5/0.1	2.8/0.5	2.9/0.7	3.0/-0.1					
LGS/HGS	ppb	14.10/1.85	25.70/7.19	26.00/9.75	27.48/-2.05					
ASG	SG	2.720	2.836	2.901	2.522					
Additional Properties										
KCl %	-	8.00	8.20	8.20	8.00		X	X	6.00	8.00

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Cont Mixing in Pits 2,3& 4. Pit 2 having the largest pit volume is now our active. Add BARAZAN D PLUS directly to active to increase low end rheology, Bicarb to control Hardness, CLAYSEAL PLUS to maintain concentration as per program. Cont to build reserve volume & bleed into active to maintain properties & volume. Run centrifuge to control solids. Change out damaged API 50 mesh shaker screens & replace w/ API 60 mesh followed by API 100 mesh once rheology allowed.

Rig Activity

Cont to Drill 12.25" interval f/ 1060 - 1427 m. Circ & condition mud. Cont to drill 12.25" interval 1427 - 1587 m midnight depth.

Continued Treatments

Tried screening up other shakers, however was using to much fluid. Receive chemicals. Some crates are inaccessible & their chemicals will be entered following inspection. Adjust bulk volume to reflect Barge report details.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	33	24	57		$A84,560.64
CLAYSEAL PLUS	55 gal drum	46		33	13	$A49,815.81
barite	1 tons bulk	79.250		15.000	64.250	$A10,958.70
bentonite	1000 kg bulk	33.000		10.000	23.000	$A7,613.50
Techmesh 110 (API 60)	1 each box	24		12	12	$A6,415.20
BARAZAN D PLUS	25 kg bag	98		17	81	$A3,660.78
EZ-MUD	25 kg pail	57		30	27	$A2,849.70
DEXTRID LTE	25 kg sack	32		32		$A1,695.36
Techmesh 84 (API 50)	1 each box	8		3	5	$A1,603.80
PAC-L	25 kg bag	72		10	62	$A1,603.20
potassium hydroxide	20 kg pail	36		6	30	$A792.66
Circal 60/16	25 kg bag	134		51	83	$A646.68
Circal Y	25 kg bag	91		16	75	$A430.56
sodium bicarbonate	25 kg bag	13		13		$A367.25
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
caustic soda	25 kg can	11			11	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	

Daily Products Cost	$A173,013.84	Total Daily Cost	$A176,093.84
Cumulative Products Cost	$A293,346.34	Total Cumulative Cost	$A330,306.34

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	24.0
VSM-300	20 20 20 60 60 60 60	24.0
VSM-300	20 20 20 60 60 60 60	24.0
VSM-300	20 20 20 60 60 60 60	20.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	5.0
518	4,000	80.00	5.0

Time

Drilling	21.5
Circulating	2.5
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	21.5
ROP	80.4
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	695.5	Base		Fluid Dumped	
Pipe Cap	83.0	Drill Water	28.0	Transferred	
Active Pits	804.0	Dewatering		SCE	-185.0
Total Hole	778.6	Sea Water		Evaporation	-8.0
Total Circ	1582.6	Whole Mud		Trips	
Reserve	230.0	Barite	22.5	Other	-26.0
Prev Vol	1715.9	Chemicals	265.1	Total Surface	
Net Change	96.5	Other		Downhole	
Total Vol	1812.6	Total	315.5	Total Losses	-219.0

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	75.0
Seawater	45.0

Deviation Information

Survey MD	1,529.4 m
Survey TVD	1,529.4 m
Angle	0.61 Deg
Direction	57
Horiz Displ.	1.3 m

Baroid Representatives Kosta Georgiou Mike Lawrance

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Baroid Fluid Services

Report No 013

Daily Drilling Fluid Report

Date 11/12/2009	**Depth** 1,940.0 m		
Spud Date 30/11/2009	**Rig Activity** Dilling 12.25" Interval.		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	12.250	in
Make/Type	REED/RSR616M	
Jets	6x15	
TFA	1.035	sq-in
Jets Velocity	295	ft/sec
Jet Impact Force	1352.0	lbf
Bit HHSI	3.40	hhp/in2
Press Drop @ Bit	721	psi
Bit Depth	1,940.0	m
ECD @ Csg Shoe	9.47	ppg
ECD @ Bit	9.50	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,687.3
Drill Pipe	5.000	3.000	141.2
Drill Collar	8.063	2.875	111.5
Riser	19.750		100.0
Open Hole	12.250		979.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600		
Bore in	6.500	6.500	6.500		
Strokes in	12.000	12.000	12.000		
Eff(%)	97	97	97		
bbl/strk	0.119	0.119	0.119		
SPM	66	63	61		
gpm|bbl/min	331 | 7.88	316 | 7.52	306 | 7.29		
Total GPM	953	AV, Riser	64.0	Circ Press psi	1630
Total Circ Time	53	AV min DP	183.3	Tot Pres Loss	2562
BU Time , min	37	AV max DC	274.6	Press Drop DP	1468
Total Strokes	10,106	BU Strokes	6,990	Press Drop An	66

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Flow Line						
Time		3:55	10:40	16:00	20:10						
Depth	m	1,685	1,811	1,886	1,909						
FL Temp	Deg C	40	43	44	51						
Density @ Deg C	ppg	9.20 @ 35	9.40 @ 28	9.40 @ 31	9.30 @ 51					8.80	9.50
FV @ Deg C	sec/qt	63 @ 33	57 @ 28	57 @ 31	60 @ 51						
PV @ Deg C	cP	12 @ 49	15 @ 49	14 @ 49	13 @ 49						
YP	lbs/100 ft2	27	22	24	27						
GELS	lbs/100 ft2	9/14/17	9/13/16	10/15/18	10/15/18					8/-/-	14/-/-
600/300		51.0/39.0	52.0/37.0	52.0/38.0	53.0/40.0						
200/100		32.0/24.0	32.0/24.0	31.0/24.0	33.0/25.0						
6/3		9.0/6.0	9.0/8.0	10.0/9.0	10.0/8.0						
API Filt	ml/30 min	5.7	4.8	4.5	5.7						6.0
HTHP @ Deg C	ml/30 min	11.6 @ 120	10.5 @ 120	10.5 @ 120	11.4 @ 120						15.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	2.9	3.7	3.7	2.6						
NAP/Water	% by Vol	-/94.0	-/93.0	-/93.0	-/94.0						
Sand	% by vol	0.35	0.25	0.25	0.35						1.0
MBT	ppb Eq.	10.0	9.5	10.0	15.0						25.0
pH @ Deg C		9.00 @ 25	9.50 @ 25	9.00 @ 25	9.50 @ 25					8.50	9.50
ALK Mud	Pm	0.35	0.40	0.30	0.35						
ALK Filt	Pf/Mf	0.35/1.20	0.30/1.10	0.25/0.95	0.30/1.25						
Chlorides	mg/l	38,000	41,000	40,000	41,000						47,000
Tot. Hardness	mg/l	200	180	160	200						400
LGS/HGS	% by Vol	2.3/0.6	2.5/1.1	2.6/1.1	1.2/1.4						
LGS/HGS	ppb	20.66/8.97	23.11/16.53	23.93/16.44	11.36/20.26						
ASG	SG	2.939	3.091	3.077	3.440						
Additional Properties											
KCl %	-	8.00	8.40	8.20	8.00		X	X		6.00	8.00

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Add Barite to active to increase mud weight as per ADA instruction.
Add Caustic Soda/Potash to maintain pH. Add ALDACIDE G prior to tripping to inhibit bacterial growth. Add Oxygon corrosion inhibitor as per program.
Continue to build reserve volume & bleed into active to maintain properties. Change lower screens on all shakers to API 100 & 80 mesh as a consequence of mud thinning w/ increasing temperature.
Receive chemicals/Brine into inventory.

Rig Activity

Drill 12.25" hole f/ 1587 - 1811 m, take SCR's & CLF's. Slide f/ 1869 - 1887, cont drill f/ 1887 - 1898 m. Remove broken DSC LP air line f/ Derrick. Slide f/ 1898 - 1905 m. Flow Check 20 bbl gain, well stable. Slide f/ 1905 - 1926 m. Replace DSC LP air line to DSC, secured to hose bundle in derrick then displace C & K line w/ fresh 9.4 ppg mud. Cont slide f/ 1926 - 1940 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	13	48	12	49	$A18,114.84
potassium chloride	1000 kg bag		30	4	26	$A5,934.08
PAC-L	25 kg bag	62	80	16	126	$A2,565.12
BARAZAN D PLUS	25 kg bag	81	40	6	115	$A1,292.04
potassium hydroxide	20 kg pail	30	32	9	53	$A1,188.99
DEXTRID LTE	25 kg sack		180	20	160	$A1,059.60
Circal 60/16	25 kg bag	83	319	40	362	$A507.20
ALDACIDE G	25 kg can	8		2	6	$A346.18
caustic soda	25 kg can	11		5	6	$A271.40
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	64.250			64.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	23.000			23.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	27	192		219	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	24.0
VSM-300	20 20 20 100 100 100 100	24.0
VSM-300	20 20 20 80 80 80 80	24.0
VSM-300	20 20 20 80 80 80 80	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	8.0
518	4,000	80.00	8.0

Time

Drilling	20.5
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	3.5
Total	24.0
Rotating	20.5
ROP	56.5
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	834.8	Base		Fluid Dumped	
Pipe Cap	103.2	Drill Water	250.0	Transferred	
Active Pits	269.0	Dewatering		SCE	-63.1
Total Hole	938.0	Sea Water		Evaporation	-3.0
Total Circ	1207.0	Whole Mud	88.0	Trips	
Reserve	910.0	Barite		Other	-4.0
Prev Vol	1812.6	Chemicals	36.4	Total Surface	
Net Change	304.3	Other		Downhole	
Total Vol	2117.0	Total	374.4	Total Losses	-70.1

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	120.0

Deviation Information

Survey MD	1,529.4	m
Survey TVD	1,529.4	m
Angle	0.61	Deg
Direction	57	
Horiz Displ.	1.3	m

Daily Products Cost	$A31,279.45	Total Daily Cost	$A34,359.45
Cumulative Products Cost	$A324,625.79	Total Cumulative Cost	$A364,665.79

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 014

Daily Drilling Fluid Report

Date 12/12/2009	**Depth** 1,972.0 m		
Spud Date 30/11/2009	**Rig Activity** Run 9 5/8" CSG		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets								Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	9.50 ppg	Open Hole	12.250	1,011.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		17.50	Total Strokes		BU Strokes	Press Drop An

Properties		1	Hyd 2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2						**Fluid Type** 12 1/4" KCl/Polymer
Time		13:00	21:00	4:00						Add OXYGON corrosion inhibitor & ALDACIDE G bacteriacide prior to POOH. Add BARAZAN D PLUS to active to maintain rheology. Continue to build pre-mix in reserve pits. Whilst Circ, increased MW to 9.5 ppg all round. Pumped 31 bbl of 11.5 ppg Slug at TD. Barite correction to inventory made to ensure consistency with control room figures. Conduct full chemical inventory. Inspect & change out damaged shaker screens. Callibrate mud balances. Asked Geo Services to calibrate pit equipment.
Depth	m	1,972	1,972	1,960						
FL Temp	Deg C	45	25	51						
Density @ Deg C	ppg	9.50 @ 32	9.50 @ 25	9.40 @ 35				9.00	10.00	
FV @ Deg C	sec/qt	56 @ 32	51 @ 25	61 @ 35						
PV @ Deg C	cP	18 @ 49	18 @ 49	19 @ 49						
YP	lbs/100 ft2	21	22	20						
GELS	lbs/100 ft2	10/15/18	11/16/19	10/15/18						
600/300		57.0/39.0	58.0/40.0	58.0/39.0						
200/100		35.0/27.0	36.0/28.0	35.0/26.0						
6/3		11.0/9.0	11.0/9.0	10.0/8.0						
API Filt	ml/30 min	5.0	5.6	5.4		X	X		5.0	
HTHP @ Deg C	ml/30 min	9.5 @ 120	11.7 @ 120	10.9 @ 120					13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2						
Corr Solid	% by Vol	3.9	3.6	4.0						
NAP/Water	% by Vol	-/92.8	-/93.0	-/92.5						
Sand	% by vol	0.25	0.30	0.30					1.0	
MBT	ppb Eq.	10.0	15.0	15.0					25.0	
pH @ Deg C		9.50 @ 25	9.00 @ 25	9.50 @ 25				8.50	9.50	
ALK Mud	Pm	0.35	0.35	0.30						
ALK Filt	Pf/Mf	0.25/1.10	0.30/1.25	0.30/1.30						
Chlorides	mg/l	41,000	42,000	43,000						
Tot. Hardness	mg/l	160	200	200					400	
LGS/HGS	% by Vol	2.2/1.7	1.7/1.9	3.4/0.6						
LGS/HGS	ppb	20.00/24.60	15.45/27.64	30.75/9.33						
ASG	SG	3.292	3.441	2.853						
Additional Properties										**Rig Activity**
KCl %	-	8.20	8.30	8.30						Slide f/ 1940 - 1955 m. Top sat down on DP L/O single bending 2 x singles & bent 5" DP. Circ, wiped stand & washed back to bottom @ 1955 m. Slide f/ 1955 - 1972 m TD. Circ well clean w/ 9.5 ppg Fluid. Flow check & POOH. HTBT, Down load MWD & rack back. Rig up cmt assy & w/bsng tools. Clean rig floor, R/P drilling bails & elevators. R/U 9 5/8" csg equipment. P/U shoe & check same ok, RIH w/ 9 5/8" csg.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Techmesh 175 (API 100)	1 each box	7		5	2	$A2,799.80
BARAZAN D PLUS	25 kg bag	115		12	103	$A2,584.08
PAC-L	25 kg bag	126		7	119	$A1,122.24
Techmesh 84 (API 50)	1 each box	5		2	3	$A1,069.20
Circal 60/16	25 kg bag	362		60	302	$A760.80
Techmesh 140 (API 80)	1 each box	16		1	15	$A559.96
ALDACIDE G	25 kg can	6		1	5	$A173.09
caustic soda	25 kg can	6		1	5	$A54.28
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	64.250	44.000		108.250	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	23.000			23.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	219			219	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	33			33	

Solids Control Equipment				Time	
Shaker	Screens	Hrs		Drilling	
VSM-300	20 20 20 100 100 100 100	10.0		Circulating	3.5
VSM-300	20 20 20 100 100 100 100	10.0		Trips	7.0
VSM-300	20 20 20 80 80 80 80	10.0		Rig	
VSM-300	20 20 20 80 80 80 80	10.0		Surveys	
				Fishing	
				Run Casing	
				Coring	
				Reaming	
Hydrocyclone	Cones	Screens	Hrs	Testing	
				Logging	
				Dir Work	
				Repair	
				Other	13.5
Centrifuge	Speed	Feed Rate	Hrs	Total	24.0
518	4,000	80.00		Rotating	
518	4,000	80.00		ROP	
				Dil Rate	0.00

Fluid Volume Breakdown		12 1/4" KCl/Polymer			
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	245.6	Transferred	
Active Pits	277.0	Dewatering		SCE	-45.0
Total Hole	1026.2	Sea Water		Evaporation	-5.0
Total Circ	277.0	Whole Mud		Trips	-8.0
Reserve	1007.0	Barite		Other	
Prev Vol	2117.0	Chemicals	5.6	Total Surface	
Net Change	193.2	Other		Downhole	
Total Vol	2310.2	Total	251.2	Total Losses	-58.0

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	185.0

Deviation Information		
Survey MD	1,972.0	m
Survey TVD	1,971.9	m
Angle	0.67	Deg
Direction	58	
Horiz Displ.	1.2	m

Daily Products Cost	$A9,123.45	Total Daily Cost	$A12,203.45
Cumulative Products Cost	$A333,749.24	Total Cumulative Cost	$A376,869.24

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 015

Daily Drilling Fluid Report

Date 13/12/2009	**Depth** 1,972.0 m		
Spud Date 30/11/2009	**Rig Activity** CMT job for 9 5/8" CSG		
Operator ADA DRILLING	**Report For** Mike Lanzer / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,972.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	12.250		7.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		10:00	20:30					
Depth	m	1,972	1,972					
FL Temp	Deg C		25					
Density @ Deg C	ppg	9.50 @ 21	9.50 @ 25				9.00	10.00
FV @ Deg C	sec/qt	61 @ 21	59 @ 25					
PV @ Deg C	cP	19 @ 49	18 @ 49					
YP	lbs/100 ft2	19	22					
GELS	lbs/100 ft2	10/14/18	10/13/17					
600/300		57.0/38.0	58.0/40.0					
200/100		33.0/25.0	35.0/26.0					
6/3		10.0/9.0	10.0/8.0					
API Filt	ml/30 min	4.8	5.1			X		5.0
HTHP @ Deg C	ml/30 min	11.5 @ 120	11.3 @ 120					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.7	3.6					
NAP/Water	% by Vol	-/93.0	-/93.0					
Sand	% by vol	0.25	0.35					1.0
MBT	ppb Eq.	10.0	15.0					25.0
pH @ Deg C		9.50 @ 25	9.00 @ 25				8.50	9.50
ALK Mud	Pm	0.35	0.35					
ALK Filt	Pf/Mf	0.25/1.10	0.30/1.25					
Chlorides	mg/l	40,000	42,000					
Tot. Hardness	mg/l	200	200					400
LGS/HGS	% by Vol	1.9/1.9	1.7/1.9					
LGS/HGS	ppb	17.10/27.46	15.45/27.64					
ASG	SG	3.398	3.441					
Additional Properties								
KCl %	-	8.10	8.30					

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Build Hi-vis in pill pit w/ Gel only. Take returns/ Displacement into Pit 1, 230 bbl of 9.5 ppg, KCl-PHPA Fluid, f/ cmt job. Chase cmt w/ rig pumps, re line Pit 2 as active, suction & return. Add caustic to active & reserve volume to maintain pH.

Rig Activity

Cont RIH w/ 9 5/8" csg f/ 24 - 1864 m. R/D csg elevators & fill tool. M/U 9 5/8" csg hanger & RIH on LNDG string - 1945 m. Take 60 K below - M/U TD & wash dn w/ 150 gpm + 250 psi. R/U & P/U cmt head assy, M/U cmt hose. Cont wash dn 9 5/8" csg w/ 150 gpm + 250 psi, then 200 gpm + 300 psi f/ 1957 - 1964 m. HTBT, pump 10 bbl s/w ahead then tested surface lines - 4500 psi f/ 10 mins - Ok. Followed by 50 bbl s/w. Dropped ball & sheared out btm plug, pumped lead slurry 215 Sx's "G" cmt @ 12.5 ppg w/ 63 bbl mix fluid, followed by tail slurry of 223 Sx's "G" cmt @ 15.8 ppg in 28 bbl mix fluid.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	108.250		15.250	93.000	$A11,141.35
potassium chloride	1000 kg bag	26		2	24	$A2,967.04
bentonite	1000 kg bulk	23.000		3.000	20.000	$A2,284.05
OXYGON	50 lb can	33		3	30	$A1,716.09
BARAZAN D PLUS	25 kg bag	103		7	96	$A1,507.38
caustic soda	25 kg can	5		3	2	$A162.84
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	219			219	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
PAC-L	25 kg bag	119			119	
potassium hydroxide	20 kg pail	53			53	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	11.0
VSM-300	20 20 20 100 100 100 100	11.0
VSM-300	20 20 20 80 80 80 80	11.0
VSM-300	20 20 20 80 80 80 80	11.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	17.5
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	6.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	433.0	Dewatering		SCE	-36.5
Total Hole	600.7	Sea Water		Evaporation	
Total Circ	433.0	Whole Mud		Trips	
Reserve	1209.0	Barite	22.9	Other	-69.0
Prev Vol	2310.2	Chemicals	15.2	Total Surface	
Net Change	-67.5	Other		Downhole	
Total Vol	2242.7	Total	38.0	Total Losses	-105.5

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	183.0

Deviation Information

Survey MD	1,972.0	m
Survey TVD	1,971.9	m
Angle	0.67	Deg
Direction	58	
Horiz Displ.	1.2	m

Daily Products Cost	$A19,778.75	Total Daily Cost	$A22,858.75
Cumulative Products Cost	$A353,527.98	Total Cumulative Cost	$A399,727.98

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 016

Daily Drilling Fluid Report

Date 14/12/2009		Depth 1,972.0 m	
Spud Date 30/11/2009		Rig Activity Laying out Diverter	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	1,972.0 m							Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		17.50	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program		Fluid Treatments
Source		Pit #2	Pit #2						Fluid Type 12 1/4" KCl/Polymer
Time		11:00	22:00						Treat active & reserve volume w/ caustic to maintain pH.
Depth	m	1,972	1,972						
FL Temp	Deg C								Increase in mud weight in active pit attributable to incorporation of slug & mud cooling.
Density @ Deg C	ppg	9.65 @ 24	9.65 @ 25				9.00	10.00	
FV @ Deg C	sec/qt	69 @ 24	70 @ 25						
PV @ Deg C	cP	13 @ 49	11 @ 49						
YP	lbs/100 ft2	27	27						
GELS	lbs/100 ft2	10/15/19	10/15/18						
600/300		53.0/40.0	49.0/38.0						
200/100		33.0/25.0	32.0/24.0						
6/3		10.0/9.0	10.0/8.0						
API Filt	ml/30 min	4.8	5.2			X		5.0	
HTHP @ Deg C	ml/30 min	11.5 @ 120	11.5 @ 120					13.0	
Cake API/HTHP	32nd in	1/2	1/2						
Corr Solid	% by Vol	4.7	3.9						
NAP/Water	% by Vol	-/92.0	-/92.5						
Sand	% by vol	0.25	0.25					1.0	
MBT	ppb Eq.	10.0	8.0					25.0	
pH @ Deg C		9.50 @ 25	9.00 @ 25				8.50	9.50	
ALK Mud	Pm	0.30	0.30						
ALK Filt	Pf/Mf	0.20/1.30	0.30/2.00						
Chlorides	mg/l	41,000	44,000						
Tot. Hardness	mg/l	240	240					400	
LGS/HGS	% by Vol	2.7/2.0	1.4/2.5						
LGS/HGS	ppb	24.62/29.33	12.85/36.99						
ASG	SG	3.279	3.625						
Additional Properties									
KCl %	-	8.10	8.00						

Rig Activity

Haliburton mixed & pumped 47 bbl 15.8 ppg G cement slurry. Released dart & sheared top plug w/ 2200 psi. Displaced cement w/ 20 bbl of SW. Plug bumped w/ 500 psi above FCP. Pressure tested CSG to 4000 psi. Set pack off in wellhead & pressure tested to 5000 psi against LPR. Released 9 5/8" casing RT w/ 65 klbs overpull. Pulled RT clear of BOP w/ difficalty. Required circulation to pull RT above BOP. Made up WB on WBRT & RIH. Jetted wellhead. Set wearbushing & POOH w/ RT. L/O same. RIH w/ jet sub, jetted BOP pumping 90 bbl Hi Vis Displaced riser to Seawater. POOH. Rigged up to pull LMRP. Installed diverter RT.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	96		5	91	$A1,076.70
caustic soda	25 kg can	2		1	1	$A54.28
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	20.000			20.000	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	219			219	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	30			30	
PAC-L	25 kg bag	119			119	
potassium chloride	1000 kg bag	24			24	
potassium hydroxide	20 kg pail	53			53	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	4.0
VSM-300	20 20 20 100 100 100 100	4.0
VSM-300	20 20 20 80 80 80 80	4.0
VSM-300	20 20 20 80 80 80 80	4.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	1.0
Trips	6.5
Rig	
Surveys	
Fishing	
Run Casing	15.0
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	800.0	Dewatering		SCE	-3.0
Total Hole	473.0	Sea Water		Evaporation	
Total Circ	800.0	Whole Mud		Trips	
Reserve	890.0	Barite		Other	
Prev Vol	2242.7	Chemicals	0.6	Total Surface	-77.3
Net Change	-79.7	Other		Downhole	
Total Vol	2163.0	Total	0.6	Total Losses	-80.3

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	50.0

Deviation Information

Survey MD	1,972.0 m
Survey TVD	1,971.9 m
Angle	0.67 Deg
Direction	58
Horiz Displ.	1.2 m

Daily Products Cost	$A1,130.98	Total Daily Cost	$A4,210.98
Cumulative Products Cost	$A354,658.96	Total Cumulative Cost	$A403,938.96

Baroid Representatives	Mike Lawrance	James Munford	
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Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 017

Daily Drilling Fluid Report

Date 15/12/2009		Depth 1,972.0 m	
Spud Date 30/11/2009		Rig Activity Change Upper Annular Element in LMRP	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m) OD ID Length	in Casing m OD Set MD	Circulation/Hydraulics Data			
Bit Size	in		30.000 @ 158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type			13.375 @ 961.0	Bore in	6.500	6.500	6.500
Jets			9.625 @ 1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in			Eff(%)	97	97	97
Jets Velocity	ft/sec			bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf			SPM	0	0	0
Bit HHSI	hhp/in2			gpm|bbl/min			
Press Drop @ Bit	psi			Total GPM	AV, Riser	Circ Press psi	
Bit Depth 1,972.0	m			Total Circ Time	AV min DP	Tot Pres Loss	
ECD @ Csg Shoe	ppg			BU Time , min	AV max DC	Press Drop DP	
ECD @ Bit	ppg		Leak Off ppg 17.50	Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		10:00	22:00					
Depth	m	1,972	1,972					
FL Temp	Deg C							
Density @ Deg C	ppg	9.65 @ 20	9.65 @ 20				9.00	10.00
FV @ Deg C	sec/qt	71 @ 20	70 @ 20					
PV @ Deg C	cP	13 @ 49	11 @ 49					
YP	lbs/100 ft2	26	28					
GELS	lbs/100 ft2	10/15/19	10/15/18					
600/300		52.0/39.0	50.0/39.0					
200/100		33.0/24.0	32.0/24.0					
6/3		10.0/9.0	10.0/8.0					
API Filt	ml/30 min	5.5	5.3			X X		5.0
HTHP @ Deg C	ml/30 min	10.5 @ 120	10.5 @ 120					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	4.3	4.2					
NAP/Water	% by Vol	-/92.5	-/92.5					
Sand	% by vol	0.25	0.25					1.0
MBT	ppb Eq.	8.0	8.0					25.0
pH @ Deg C		9.50 @ 25	9.50 @ 25				8.50	9.50
ALK Mud	Pm	0.30	0.30					
ALK Filt	Pf/Mf	0.20/1.65	0.30/1.90					
Chlorides	mg/l	40,000	41,000					
Tot. Hardness	mg/l	240	240					400
LGS/HGS	% by Vol	1.8/2.5	1.7/2.5					
LGS/HGS	ppb	16.15/36.62	15.33/36.71					
ASG	SG	3.534	3.555					
Additional Properties								
KCl %	-	8.00	8.00					

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Add ALDACIDE G to surface volume to inhibit bacterial degradation.

Add Caustic to maintain pH.

Callibrate mud balances.

Rig Activity

L/O diverter. Made up landing joint to slip joint. Collapsed slip joint inner barrel & bolted to slip joint outer barrel. Unlatched LMRP connector (unlatched at 03:35). Picked up LMRP clear of BOP guide posts. Slacked off on guidelines & winched rig 15 m port forward. Removed MRT lines, choke & kill goosenecks f/ slip joint. L/O landing joint, slip joint, riser pup & bouyancy joints. Pulled LMRP into moonpool on riser double & landed on transporter. Disconnected riser double. Skidded LMRP to starboard setback. Changed out Upper Annular Element in LMRP.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
OXYGON	50 lb can	30		3	27	$A1,716.09
BARAZAN D PLUS	25 kg bag	91		5	86	$A1,076.70
EZ-MUD	25 kg pail	219		5	214	$A474.95
ALDACIDE G	25 kg can	5		1	4	$A173.09
caustic soda	25 kg can	1		1		$A54.28
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	20.000			20.000	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
PAC-L	25 kg bag	119			119	
potassium chloride	1000 kg bag	24			24	
potassium hydroxide	20 kg pail	53			53	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	24.0
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	800.0	Dewatering		SCE	
Total Hole	473.0	Sea Water		Evaporation	
Total Circ	800.0	Whole Mud		Trips	
Reserve	891.8	Barite		Other	
Prev Vol	2163.0	Chemicals	1.8	Total Surface	
Net Change	1.8	Other		Downhole	
Total Vol	2164.8	Total	1.8	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	50.0

Deviation Information

Survey MD	1,972.0 m
Survey TVD	1,971.9 m
Angle	0.67 Deg
Direction	58
Horiz Displ.	1.2 m

Daily Products Cost	$A3,495.11	Total Daily Cost	$A6,575.11
Cumulative Products Cost	$A358,154.07	Total Cumulative Cost	$A410,514.07

Baroid Representatives Mike Lawrance James Munford

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Baroid Fluid Services

Report No 018

Daily Drilling Fluid Report

Date 16/12/2009		Depth 1,972.0 m	
Spud Date 30/11/2009		Rig Activity Lower LMRP	
Operator ADA DRILLING	Report For Mike Lanzer / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth 1,972.0	m							Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		17.50	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program		Fluid Treatments
Source		Pit #2	Pit #2						Fluid Type 12 1/4" KCl/Polymer
Time		11:30	23:00						Add caustic potash to surface pits to maintain pH.
Depth	m	1,972	1,972						
FL Temp	Deg C								Prepare 40 bbl Hi-vis gel to act as spacer when displacing riser f/ seawater to KCl/Polymer fluid.
Density @ Deg C	ppg	9.65	9.65 @ 20				9.00	10.00	
FV @ Deg C	sec/qt	69 @ 21	70 @ 20						Maintain all mud lab testing equipment.
PV @ Deg C	cP	13 @ 49	13 @ 49						
YP	lbs/100 ft2	25	26						
GELS	lbs/100 ft2	9/14/18	10/15/18						
600/300		51.0/38.0	52.0/39.0						
200/100		32.0/24.0	33.0/24.0						
6/3		10.0/8.0	10.0/8.0						
API Filt	ml/30 min	5.0	5.2			X		5.0	
HTHP @ Deg C	ml/30 min	9.5 @ 120	10.3 @ 120					13.0	
Cake API/HTHP	32nd in	1/2	1/2						
Corr Solid	% by Vol	4.2	4.2						
NAP/Water	% by Vol	-/92.5	-/92.4						
Sand	% by vol	0.20	0.10					1.0	
MBT	ppb Eq.	7.5	8.0					25.0	
pH @ Deg C		9.50 @ 25	9.50 @ 25				8.50	9.50	
ALK Mud	Pm	0.30	0.30						
ALK Filt	Pf/Mf	0.35/2.10	0.30/2.00						
Chlorides	mg/l	41,000	42,000						
Tot. Hardness	mg/l	240	240					400	
LGS/HGS	% by Vol	1.7/2.5	1.8/2.4						
LGS/HGS	ppb	15.33/36.71	16.37/35.33						
ASG	SG	3.555	3.515						
Additional Properties									
KCl %	-	8.10	8.00						

Rig Activity

Installed new element in upper annular. Skidded LMRP to transporter & installed pod lines to LMRP. Installed Test joint & Adjust test stump Ht. Press test Upper annular. Skid LMRP to well centre. M/Up a double of riser to LMRP. Run LMRP on a double slick joints, 1x bouyant jnt, 1x pup jnt. Slip jnt. Free up MRT tension ring. P/Up landing joint & run. M/Up C&K lines to slip joint & connect MRT wires. Position rig over well head. Lower & latch LMRP to BOPs.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
OXYGON	50 lb can	27		2	25	$A1,144.06
BARAZAN D PLUS	25 kg bag	86		3	83	$A646.02
EZ-MUD	25 kg pail	214		4	210	$A379.96
potassium hydroxide	20 kg pail	53		1	52	$A132.11
ALDACIDE G	25 kg can	4			4	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	20.000			20.000	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
PAC-L	25 kg bag	119			119	
potassium chloride	1000 kg bag	24			24	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment				Time	
Shaker	Screens	Hrs		Drilling	
VSM-300				Circulating	
VSM-300				Trips	
VSM-300				Rig	
VSM-300				Surveys	
				Fishing	
				Run Casing	
				Coring	
				Reaming	
Hydrocyclone	Cones	Screens	Hrs	Testing	
				Logging	
				Dir Work	
				Repair	24.0
				Other	
Centrifuge	Speed	Feed Rate	Hrs	Total	24.0
518	4,000	80.00		Rotating	
518	4,000	80.00		ROP	
				Dil Rate	0.00

Fluid Volume Breakdown		12 1/4" KCl/Polymer			
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	800.0	Dewatering		SCE	
Total Hole	473.0	Sea Water		Evaporation	
Total Circ	800.0	Whole Mud		Trips	
Reserve	893.0	Barite		Other	
Prev Vol	2164.8	Chemicals	1.2	Total Surface	
Net Change	1.2	Other		Downhole	
Total Vol	2166.0	Total	1.2	Total Losses	

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	50.0

Deviation Information		
Survey MD	1,972.0	m
Survey TVD	1,971.9	m
Angle	0.67	Deg
Direction	58	
Horiz Displ.	1.2	m

Daily Products Cost	$A2,302.15	Total Daily Cost	$A5,382.15
Cumulative Products Cost	$A360,456.22	Total Cumulative Cost	$A415,896.22

Baroid Representatives	Mike Lawrance	James Munford	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 019

Daily Drilling Fluid Report

Date 17/12/2009	**Depth** 1,972.0 m		
Spud Date 30/11/2009	**Rig Activity** Make up BHA		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg							BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		17.50	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		10:30	23:00					
Depth	m	1,972	1,972					
FL Temp	Deg C							
Density @ Deg C	ppg	9.65 @ 19	9.65 @ 20				9.00	10.00
FV @ Deg C	sec/qt	72 @ 19	69 @ 20					
PV @ Deg C	cP	14 @ 49	13 @ 49					
YP	lbs/100 ft2	24	25					
GELS	lbs/100 ft2	9/14/18	10/15/18					
600/300		52.0/38.0	51.0/38.0					
200/100		32.0/24.0	32.0/24.0					
6/3		9.0/8.0	10.0/8.0					
API Filt	ml/30 min	4.5	4.8					5.0
HTHP @ Deg C	ml/30 min	9.5 @ 120	10.0 @ 120					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	4.8	4.4					
NAP/Water	% by Vol	-/92.0	-/92.2					
Sand	% by vol	0.20	0.10					1.0
MBT	ppb Eq.	7.0	8.0					25.0
pH @ Deg C		9.00 @ 25	9.50 @ 25				8.50	9.50
ALK Mud	Pm	0.30	0.30					
ALK Filt	Pf/Mf	0.25/2.20	0.30/2.10					
Chlorides	mg/l	40,000	42,000					
Tot. Hardness	mg/l	260	240					400
LGS/HGS	% by Vol	2.8/2.0	2.2/2.2					
LGS/HGS	ppb	25.43/29.24	20.08/32.37					
ASG	SG	3.265	3.399					
Additional Properties								
KCl %	-	8.10	8.10					

Fluid Treatments

Fluid Type 12 1/4" KCl/Polymer

Pump Hi-vis spacer ahead of KCl/Polymer mud whilst displacing riser from seawater to avoid contamination.

Add EZ-MUD (PHPA) to reserve volume & pump through shear hopper for extended period.

Rig Activity

Stroked out Slipjoint. Disconnected & laid out Landing Joint. P/U Diverter & installed same. Changed out damaged Lock Down Dog Inserts. Laid down Diverter R/Tool. Rigged down Riser Running equipment & rigged up 5" Pipe Handling equipment. M/Up BOP Test Tool. RIH & Test Upper Annular & Connector. Test C&K Lines. POOH & Displace Riser & C&K lines to 9.5 ppg mud. Cont to POOH to surface & lay down BOP Test Tool. R/Up & Press/Test Std/Pipe Manifold, GeoSpan Unit & T/Drive. Changed Out Saver Sub. P/Up 15 jnts of 5" D.P f/ deck & racked in the Derrick. P/Up & M/U Directional BHA.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
EZ-MUD	25 kg pail	210		18	192	$A1,709.82
BARAZAN D PLUS	25 kg bag	83		6	77	$A1,292.04
bentonite	1000 kg bulk	20.000		1.000	19.000	$A761.35
ALDACIDE G	25 kg can	4			4	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
Circal 60/16	25 kg bag	302			302	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	49			49	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	160			160	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
Omyacarb 5	25 kg bag	6			6	
OXYGON	50 lb can	25			25	
PAC-L	25 kg bag	119			119	
potassium chloride	1000 kg bag	24			24	
potassium hydroxide	20 kg pail	52			52	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	6.5
Logging	
Dir Work	1.5
Repair	10.0
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 12 1/4" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	599.0	Dewatering		SCE	
Total Hole	597.4	Sea Water		Evaporation	
Total Circ	599.0	Whole Mud		Trips	
Reserve	945.0	Barite		Other	
Prev Vol	2166.0	Chemicals	3.3	Total Surface	-28.0
Net Change	-24.7	Other		Downhole	
Total Vol	2141.4	Total	3.3	Total Losses	-28.0

Fluid Types

	Vol bbl
Hi-Vis PHB/Guar sweeps	30.0

Deviation Information

Survey MD	1,972.0 m
Survey TVD	1,971.9 m
Angle	0.67 Deg
Direction	58
Horiz Displ.	1.2 m

Daily Products Cost	$A3,763.21	Total Daily Cost	$A6,843.21
Cumulative Products Cost	$A364,219.43	Total Cumulative Cost	$A422,739.43

Baroid Representatives	Mike Lawrance	James Munford	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 020

Daily Drilling Fluid Report

Date 18/12/2009		Depth 1,972.0 m	
Spud Date 30/11/2009		Rig Activity Tripping	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	250.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	38.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0

in Casing m

	OD	Set	MD
	30.000	@	158.0
	13.375	@	961.0
	9.625	@	1,965.0

Leak Off ppg 17.50

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2				
Time		10:00	16:30	20:00				
Depth	m	1,972	1,972	1,972				
FL Temp	Deg C	33	37					
Density @ Deg C	ppg	9.60 @ 26	9.55 @ 32	9.55 @ 37			9.00	10.00
FV @ Deg C	sec/qt	63 @ 26	55 @ 32	54 @ 37				
PV @ Deg C	cP	11 @ 49	11 @ 49	10 @ 49				
YP	lbs/100 ft2	25	21	21				
GELS	lbs/100 ft2	9/15/17	9/15/18	10/15/18				
600/300		47.0/36.0	43.0/32.0	41.0/31.0				
200/100		31.0/24.0	27.0/21.0	26.0/20.0				
6/3		9.0/8.0	9.0/8.0	9.0/7.0				
API Filt	ml/30 min	4.5	4.5	5.4		X		5.0
HTHP @ Deg C	ml/30 min	10.0 @ 49	9.0 @ 49	10.2 @ 49				13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2				
Corr Solid	% by Vol	4.2	4.1	3.9				
NAP/Water	% by Vol	-/92.5	-/92.7	-/92.7				
Sand	% by vol	0.20	0.15	0.15				1.0
MBT	ppb Eq.	6.5	5.5	7.5				25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22			8.50	9.50
ALK Mud	Pm	0.25	0.15	0.20				
ALK Filt	Pf/Mf	0.15/2.40	0.10/2.30	0.20/2.40				
Chlorides	mg/l	40,500	40,000	42,000				
Tot. Hardness	mg/l	280	280	280				400
LGS/HGS	% by Vol	2.1/2.1	2.1/1.9	1.9/2.0				
LGS/HGS	ppb	19.15/31.15	19.26/28.55	17.62/28.73				
ASG	SG	3.403	3.366	3.404				
Additional Properties								
KCl %	-	8.00	8.00	8.00				

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

On circulating bottom's up add ALDACIDE G bacteriacide.
Build & shear pre-mix volume in reserve pits.
Run only shakers 1-3 to promote more efficient cuttings transport due to lower flow rate. Run centrifuge to control solids & condition mud.
Prepare slug for POOH.

Rig Activity

Perform Shallow Water Test On MWD Tools. Held PJSM. Picked up 5" DP f/ Deck & RIH to 1657 m. Cont RIH w/ Stands f/ Derrick f/ 1657 m - 1917 m. Wash & Ream f/1917 m to top of Cmt at 1938 m. Tag w/ 5k down. Attempt to Drill out Shoe track f/ 1938 m - 1940 m. Pump Slug & Rig down Geoservice & MWD Geolograph Lines. Attempt to install Power Slips. Slips jammed on D/Pipe. Removeed Power Slips. Secured Compensator & Top Drive hoses due to Hoses hanging up in the Derrick. Cont POOH f/ 1940 m to 211 m. POOH w/ BHA & Rack In Derrick. L/D 1x Stab & Float Sub. Halliburton MWD Removed Radio Active Sources & download MWD tools.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	49		6	43	$A9,057.42
BARAZAN D PLUS	25 kg bag	77		17	60	$A3,660.78
EZ-MUD	25 kg pail	192		22	170	$A2,089.78
DEXTRID LTE	25 kg sack	160		31	129	$A1,642.38
PAC-L	25 kg bag	119		6	113	$A961.92
ALDACIDE G	25 kg can	4		1	3	$A173.09
Circal 60/16	25 kg bag	302		13	289	$A164.84
potassium hydroxide	20 kg pail	52		1	51	$A132.11
Omyacarb 5	25 kg bag	6		6		$A103.86
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	25			25	
potassium chloride	1000 kg bag	24			24	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	10.0
VSM-300	20 20 20 100 100 100 100	10.0
VSM-300	20 20 20 80 80 80 80	10.0
VSM-300	20 20 20 80 80 80 80	1.5

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	8.0
518	4,000	80.00	8.0

Time

Drilling	
Circulating	
Trips	11.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	10.5
Testing	
Logging	
Dir Work	1.0
Repair	0.5
Other	1.0
Total	24.0
Rotating	10.5
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	128.4	Base		Fluid Dumped	
Pipe Cap	8.1	Drill Water		Transferred	
Active Pits	799.0	Dewatering		SCE	-54.0
Total Hole	571.5	Sea Water		Evaporation	
Total Circ	935.5	Whole Mud	2141.4	Trips	
Reserve	735.0	Barite		Other	
Prev Vol		Chemicals	18.0	Total Surface	
Net Change	2105.5	Other		Downhole	
Total Vol	2105.5	Total	2159.4	Total Losses	-54.0

Fluid Types

	Vol bbl
Hi-Vis PHB/Guar sweeps	30.0

Deviation Information

Survey MD	1,972.0 m
Survey TVD	1,971.9 m
Angle	0.67 Deg
Direction	58
Horiz Displ.	1.2 m

Daily Products Cost	$A17,986.18	Total Daily Cost	$A21,066.18
Cumulative Products Cost	$A382,205.61	Total Cumulative Cost	$A443,805.61

Baroid Representatives	Mike Lawrance	James Munford	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 021

Daily Drilling Fluid Report

Date 19/12/2009		Depth 2,019.0 m	
Spud Date 30/11/2009		Rig Activity Tripping	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	700.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	488.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		54.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties

		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2				
Time		9:00	16:20	21:30				
Depth	m	1,972	1,981	2,019				
FL Temp	Deg C		33	44				
Density @ Deg C	ppg	9.60 @ 27	9.55 @ 29	9.55 @ 40			9.00	10.00
FV @ Deg C	sec/qt	68 @ 27	64 @ 29	49 @ 35				
PV @ Deg C	cP	11 @ 49	12 @ 49	11 @ 49				
YP	lbs/100 ft2	20	19	22				
GELS	lbs/100 ft2	9/13/16	9/15/19	9/15/18				
600/300		42.0/31.0	43.0/31.0	44.0/33.0				
200/100		26.0/20.0	27.0/20.0	28.0/21.0				
6/3		9.0/8.0	9.0/8.0	9.0/7.0				
API Filt	ml/30 min	4.8	4.5	5.4		X		5.0
HTHP @ Deg C	ml/30 min	11.0 @ 49	9.5 @ 49	10.6 @ 49				13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2				
Corr Solid	% by Vol	4.1	4.1	4.0				
NAP/Water	% by Vol	-/92.6	-/92.7	-/92.7				
Sand	% by vol	0.15	0.15	0.15				1.0
MBT	ppb Eq.	5.5	6.0	7.0				25.0
pH @ Deg C		8.50 @ 22	9.50 @ 22	9.50 @ 22			8.50	9.50
ALK Mud	Pm	0.05	0.25	0.30				
ALK Filt	Pf/Mf	0.05/2.60	0.20/2.40	0.25/2.40				
Chlorides	mg/l	40,500	40,000	41,000				
Tot. Hardness	mg/l	300	240	260				400
LGS/HGS	% by Vol	1.9/2.2	2.1/1.9	2.0/1.9				
LGS/HGS	ppb	17.30/32.63	19.26/28.55	18.44/28.64				
ASG	SG	3.462	3.366	3.384				

Additional Properties

KCl %	-	8.10	8.00	8.00				

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add ALDACIDE G to inhibit bacterial growth.
Add DEXTRID LTE to promote low filtration.
Add Circal 60/16 sized calcium carbonate bridging agent to replenish that lost through solids control equipment.
Allow pH to drop to low end of target (8.5) in anticipation of pH increase through drilling out cement.
Add Soda ash to active to treat out hardness following drilling cement.
Prepare slug for POOH.
Bleed reserve volume into active to maintain volume & properties.

Rig Activity

M/U 8-1/2" GT-1 mill tooth bit. Set bent sub on PDM to 1.15 deg & scribed MWD. Picked up stabiliser & float sub + 3x 6-3/4" drill collars f/ deck. RIH w/ BHA f/ Derrick to 216 m. Shallow test MWD tools. Cont. to RIH to 1922 m. Wash & ream f/ 1922 m to 1940 m. Drill out show track f/ 1940 m to 1965 m. Ream though float & shoe 3x. Drill 8 1/2" hole f/ 1972 m to 1977 m. Circ hole clean & perform LOT w/ 9.4 ppg mud EMW = 14.6 ppg. Drill f/ 1977 m to 1981 m. Slide f/ 1981 m to 1994 m. Cont. drill f/ 1994 to 2019 m. Take surveys, CBU. Pump slug & POOH f/ 2019 m to 700 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
EZ-MUD	25 kg pail	170		10	160	$A949.90
DEXTRID LTE	25 kg sack	129		11	118	$A582.78
Circal 60/16	25 kg bag	289		15	274	$A190.20
ALDACIDE G	25 kg can	3		1	2	$A173.09
soda ash	25 kg bag		48	4	44	$A121.68
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	60			60	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	43			43	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	25			25	
PAC-L	25 kg bag	113			113	
potassium chloride	1000 kg bag	24			24	
potassium hydroxide	20 kg pail	51			51	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	13.0
VSM-300	20 20 20 100 100 100 100	13.0
VSM-300	20 20 20 80 80 80 80	13.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	3.5
Circulating	1.5
Trips	11.0
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	2.0
Testing	
Logging	
Dir Work	3.5
Repair	
Other	2.0
Total	24.0
Rotating	5.5
ROP	22.0
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	204.9	Base		Fluid Dumped	
Pipe Cap	33.7	Drill Water		Transferred	
Active Pits	719.0	Dewatering		SCE	-124.5
Total Hole	571.9	Sea Water		Evaporation	-11.0
Total Circ	957.6	Whole Mud		Trips	
Reserve	645.0	Barite		Other	-38.0
Prev Vol	2105.5	Chemicals	3.9	Total Surface	
Net Change	-169.6	Other		Downhole	
Total Vol	1935.9	Total	3.9	Total Losses	-173.5

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	30.0

Deviation Information

Survey MD	2,006.9	m
Survey TVD	2,006.8	m
Angle	4.8	Deg
Direction	21	
Horiz Displ.	7.1	m

Daily Products Cost	$A2,017.65	Total Daily Cost	$A5,097.65
Cumulative Products Cost	$A384,223.26	Total Cumulative Cost	$A448,903.26

Baroid Representatives Mike Lawrance James Munford
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Baroid Fluid Services

Report No 022

Daily Drilling Fluid Report

Date 20/12/2009	**Depth** 2,023.0 m		
Spud Date 30/11/2009	**Rig Activity** Tripping		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in								
Make/Type							30.000	@	158.0
Jets							13.375	@	961.0
TFA	sq-in						9.625	@	1,965.0
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	m	Riser	19.750		100.0				
ECD @ Csg Shoe	ppg	Open Hole	8.500		58.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets	Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2					**Fluid Type** 8 1/2" KCl/Polymer
Time		10:00	17:30	22:00					Add soda ash to control hardness.
Depth	m	2,019	2,023	2,023					Add caustic potash to maintain pH.
FL Temp	Deg C								Add PAC-LE to control filtration.
Density @ Deg C	ppg	9.60 @ 31	9.60 @ 34	9.60 @ 28			9.00	10.00	
FV @ Deg C	sec/qt	58 @ 31	53 @ 34	52 @ 28					Shaker screen maintenance - changed out
PV @ Deg C	cP	11 @ 49	12 @ 49	11 @ 49					damaged with previously used screens.
YP	lbs/100 ft2	22	20	22					
GELS	lbs/100 ft2	10/16/19	9/15/18	10/14/18					Prepare slug for POOH.
600/300		44.0/33.0	44.0/32.0	44.0/33.0					
200/100		28.0/20.0	27.0/21.0	28.0/21.0					
6/3		9.0/8.0	9.0/8.0	9.0/8.0					
API Filt	ml/30 min	4.5	4.5	4.9				5.0	
HTHP @ Deg C	ml/30 min	10.5 @ 49	10.0 @ 49	10.3 @ 49				13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2					
Corr Solid	% by Vol	4.2	4.2	4.0					
NAP/Water	% by Vol	-/92.5	-/92.6	-/92.7					
Sand	% by vol	0.20	0.20	0.20				1.0	
MBT	ppb Eq.	6.0	5.5	7.0				25.0	
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.50 @ 22			8.50	9.50	
ALK Mud	Pm	0.10	0.20	0.30					
ALK Filt	Pf/Mf	0.05/2.30	0.15/2.50	0.20/2.30					
Chlorides	mg/l	40,500	40,000	41,000					
Tot. Hardness	mg/l	260	220	220				400	
LGS/HGS	% by Vol	2.1/2.1	1.9/2.2	1.6/2.3					
LGS/HGS	ppb	19.15/31.15	17.70/32.59	15.03/34.15					
ASG	SG	3.403	3.452	3.535					
Additional Properties									
KCl %	-	8.10	8.00	8.00					

Rig Activity

Continued to POOH f/ 700 m to surface. L/O MWD tools. Pick up BHA & RIH to 210 m. Shallow test tools. RIH f/ 210 m to 1252 m. Slip & cut drill line. Cont. RIH f/ 1252 m to 1972 m. Ream & relog new hole f/ 1972 m to 2019 m. Drilled 8 1/2" hole f/ 2019 m to 2023 m. Pumped slug & POOH to surface.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	113		3	110	$A480.96
potassium hydroxide	20 kg pail	51		3	48	$A396.33
soda ash	25 kg bag	44		8	36	$A243.36
ALDACIDE G	25 kg can	2			2	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	60			60	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	274			274	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	43			43	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	118			118	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	160			160	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	25			25	
potassium chloride	1000 kg bag	24			24	
sapp	25 kg bag	18			18	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment			
Shaker	Screens	Hrs	
VSM-300	20 20 20 100 100 100 100	5.0	
VSM-300	20 20 20 100 100 100 100	5.0	
VSM-300	20 20 20 80 80 80 80	5.0	
VSM-300	20 20 20 80 80 80 80		
Hydrocyclone	Cones	Screens	Hrs
Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time	
Drilling	2.0
Circulating	
Trips	14.5
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	3.5
Repair	
Other	3.5
Total	24.0
Rotating	2.0
ROP	2.4
Dil Rate	0.00

Fluid Volume Breakdown	8 1/2" KCl/Polymer				
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	729.0	Dewatering		SCE	-7.3
Total Hole	610.7	Sea Water		Evaporation	
Total Circ	729.0	Whole Mud		Trips	
Reserve	590.0	Barite		Other	
Prev Vol	1935.9	Chemicals	1.0	Total Surface	
Net Change	-6.3	Other		Downhole	
Total Vol	1929.7	Total	1.0	Total Losses	-7.3

Fluid Types	Vol bbl
Hi-Vis PHB/Guar sweeps	30.0

Deviation Information		
Survey MD	2,006.9	m
Survey TVD	2,006.8	m
Angle	4.8	Deg
Direction	21	
Horiz Displ.	7.1	m

Daily Products Cost	$A1,120.65	Total Daily Cost	$A4,200.65
Cumulative Products Cost	$A385,343.91	Total Cumulative Cost	$A453,103.91

Baroid Representatives	Mike Lawrance	James Munford	
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Baroid Fluid Services

Report No 023

Daily Drilling Fluid Report

Date 21/12/2009		Depth 2,230.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8 1/2" hole	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	SECURITY DBS/FMS3653
Jets	6x14
TFA	0.902 sq-in
Jets Velocity	194 ft/sec
Jet Impact Force	524.3 lbf
Bit HHSI	1.80 hhp/in2
Press Drop @ Bit	321 psi
Bit Depth	2,230.0 m
ECD @ Csg Shoe	10.05 ppg
ECD @ Bit	23.63 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,018.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		265.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	54	55	0
gpm|bbl/min	271 | 6.45	276 | 6.57	
Total GPM	547	AV, Riser	36.7
Total Circ Time	94	AV min DP	245.5
BU Time , min	35	AV max DC	3200.3
Total Strokes	10,245	BU Strokes	3,841
Circ Press psi	1710		
Tot Pres Loss	6455		
Press Drop DP	652		
Press Drop An	5357		

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		9:05	13:30	16:00	21:30			
Depth	m	2,027	2,060	2,100	2,182			
FL Temp	Deg C	37	43	47	51			
Density @ Deg C	ppg	9.65 @ 29	9.55 @ 37	9.55 @ 40	9.55 @ 44		9.00	10.00
FV @ Deg C	sec/qt	50 @ 29	53 @ 37	52 @ 40	51 @ 44			
PV @ Deg C	cP	12 @ 49	14 @ 49	14 @ 49	13 @ 49			
YP	lbs/100 ft2	26	24	25	26			
GELS	lbs/100 ft2	10/14/17	9/15/19	9/15/18	10/16/19			
600/300		50.0/38.0	52.0/38.0	53.0/39.0	52.0/39.0			
200/100		31.0/24.0	32.0/24.0	33.0/26.0	33.0/25.0			
6/3		10.0/8.0	10.0/8.0	10.0/8.0	10.0/8.0			
API Filt	ml/30 min	4.2	4.5	4.5	4.8			5.0
HTHP @ Deg C	ml/30 min	8.5 @ 49	9.5 @ 49	9.0 @ 49	9.5 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.0	4.3	4.5	4.4			
NAP/Water	% by Vol	-/92.7	-/92.5	-/92.3	-/92.3			
Sand	% by vol	0.20	0.25	0.25	0.20			1.0
MBT	ppb Eq.	5.5	6.0	6.0	7.5			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	0.15	0.10	0.15	0.20			
ALK Filt	Pf/Mf	0.10/2.20	0.05/2.50	0.10/2.30	0.10/2.20			
Chlorides	mg/l	41,000	40,000	40,000	41,000			
Tot. Hardness	mg/l	200	180	180	200			400
LGS/HGS	% by Vol	1.3/2.7	2.5/1.7	2.9/1.5	2.8/1.5			
LGS/HGS	ppb	11.62/39.66	22.97/25.60	26.69/22.65	25.87/22.73			
ASG	SG	3.686	3.253	3.151	3.164			
Additional Properties								
KCl %	-	8.20	8.00	8.00	8.00			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add BARAZAN D PLUS to maintain low end rheology. Add PAC-LE & DEXTRID LTE to ensure tight filtration. Caustic potash addition to maintain pH.
Maintain PHPA concentration through EZ-MUD addition.
Add CLAYSEAL PLUS to compensate for depletion through drilling.
Run centrifuge to control solids.
Add Circal 60/16 sized bridging agent to compensate for loses f/ solids control equipment.
*Note LGS concentration includes 5 ppb Calcium Carbonate Bridging agents.

Rig Activity

P/U GeoPilot f/ deck. Install PDC Bit RR#6 & RIH. Halliburton uploaded MWD tools & installed Radio Active Sources. RIH w/ 8 1/2" BHA to 210 m. Shallow test MWD tools. Cont. RIH to 1981 m. Wash & ream f/ 1981 m to 2023 m. Drill 8 1/2" hole f/ 2023 m to 2230 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	43		4	39	$A6,038.28
potassium chloride	1000 kg bag	24		2	22	$A2,967.04
PAC-L	25 kg bag	110		12	98	$A1,923.84
BARAZAN D PLUS	25 kg bag	60	40	6	94	$A1,292.04
EZ-MUD	25 kg pail	160		11	149	$A1,044.89
potassium hydroxide	20 kg pail	48		7	41	$A924.77
DEXTRID LTE	25 kg sack	118		17	101	$A900.66
Circal 60/16	25 kg bag	274		20	254	$A253.60
soda ash	25 kg bag	36		4	32	$A121.68
ALDACIDE G	25 kg can	2	32		34	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag		32		32	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	25			25	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 100 100 100 100	17.0
VSM-300	20 20 20 100 100 100 100	17.0
VSM-300	20 20 20 80 80 80 80	1.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	16.0
518	4,000	80.00	16.0

Time

Drilling	15.5
Circulating	0.5
Trips	5.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	0.5
Testing	0.5
Logging	
Dir Work	1.5
Repair	
Other	
Total	24.0
Rotating	16.0
ROP	39.9
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	458.8	Base		Fluid Dumped	
Pipe Cap	120.9	Drill Water	75.0	Transferred	
Active Pits	644.0	Dewatering		SCE	-161.4
Total Hole	579.7	Sea Water		Evaporation	-18.0
Total Circ	1223.7	Whole Mud	80.0	Trips	
Reserve	675.0	Barite		Other	-12.0
Prev Vol	1929.7	Chemicals	18.8	Total Surface	
Net Change	-17.7	Other		Downhole	
Total Vol	1898.7	Total	173.8	Total Losses	-191.4

Fluid Types Vol bbl

Deviation Information

Survey MD	2,104.9 m
Survey TVD	2,103.7 m
Angle	12.8 Deg
Direction	15
Horiz Displ.	11.8 m

Daily Products Cost	$A15,466.80	Total Daily Cost	$A18,546.80
Cumulative Products Cost	$A400,810.71	Total Cumulative Cost	$A471,650.71

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Baroid Fluid Services

Report No 024

Daily Drilling Fluid Report

Date	22/12/2009	**Depth**	2,550.0 m
Spud Date	30/11/2009	**Rig Activity**	Drilling 8 1/2" hole

Operator	ADA DRILLING	**Report For**	Mike Lanzer / Paul Leathem
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Stig Sundgaard / Ole Andreasen
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity	199	ft/sec
Jet Impact Force	553.5	lbf
Bit HHSI	1.96	hhp/in2
Press Drop @ Bit	339	psi
Bit Depth	2,550.0	m
ECD @ Csg Shoe	10.11	ppg
ECD @ Bit	22.80	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,338.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		585.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	56	56	0
gpm|bbl/min	281 | 6.69	281 | 6.69	
Total GPM	562	AV, Riser	37.7
Total Circ Time	96	AV min DP	252.3
BU Time , min	38	AV max DC	3288.4
Total Strokes	10,749	BU Strokes	4,234
Circ Press psi	2025		
Tot Pres Loss	6767		
Press Drop DP	761		
Press Drop An	5538		

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		4:00	10:00	16:30	21:30			
Depth	m	2,296	2,369	2,449	2,509			
FL Temp	Deg C	57	58	59	59			
Density @ Deg C	ppg	9.55 @ 44	9.60 @ 45	9.55 @ 47	9.55 @ 45		9.00	10.00
FV @ Deg C	sec/qt	51 @ 44	50 @ 45	52 @ 47	49 @ 45			
PV @ Deg C	cP	15 @ 49	15 @ 49	14 @ 49	14 @ 49			
YP	lbs/100 ft2	30	27	31	29			
GELS	lbs/100 ft2	13/18/22	10/15/20	11/17/21	10/18/21			
600/300		60.0/45.0	57.0/42.0	59.0/45.0	57.0/43.0			
200/100		39.0/29.0	36.0/27.0	38.0/28.0	36.0/28.0			
6/3		12.0/9.0	10.0/8.0	10.0/8.0	11.0/8.0			
API Filt	ml/30 min	4.5	4.7	4.2	4.3			5.0
HTHP @ Deg C	ml/30 min	10.0 @ 49	9.8 @ 49	9.0 @ 49	9.4 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.5	4.9	4.5	4.9			
NAP/Water	% by Vol	-/92.3	-/92.0	-/92.4	-/92.0			
Sand	% by vol	0.20	0.25	0.25	0.30			1.0
MBT	ppb Eq.	7.5	9.0	7.0	7.5			25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.00 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.30	0.20	0.30	0.30			
ALK Filt	Pf/Mf	0.20/2.40	0.15/2.50	0.20/2.45	0.20/2.40			
Chlorides	mg/l	40,000	39,000	38,000	38,000			
Tot. Hardness	mg/l	240	220	180	180			400
LGS/HGS	% by Vol	2.9/1.5	3.3/1.6	2.9/1.6	3.7/1.2			
LGS/HGS	ppb	26.69/22.65	29.65/23.65	26.45/23.96	33.87/18.05			
ASG	SG	3.151	3.129	3.175	2.997			
Additional Properties								
KCl %	-	8.00	7.90	7.60	7.20			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add PAC-LE & DEXTRID LTE to ensure tight filtration. Caustic potash addition to maintain pH. Soda Ash added to help lower hardness.
Run centrifuge to control solids. Add Circal 60/16 sized bridging agent to compensate for losses f/ solids control equipment.
Add CLAYSEAL PLUS & EZ-MUD to maintain concentration. ALDACDIE G addition to control bacterial growth.
Bleed water to active to offset evaporation loss.
Start tapering KCl% down to 6% as per ADA Instruction.
*Note LGS concentration includes 5 ppb Calcium Carbonate Bridging agents.

Rig Activity

Cont. to drill 8-1/2" hole f/ 2230 m to 2550 m w/ angle build to 31° inclination.
Drilling parameters:
561gpm / 112 spm / 2025 psi.
WOB 5 to 15 klbs.
Torque 15 to 24 klbs-ft
ROP 5 to 30 m/hr

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	39		8	31	$A12,076.56
potassium chloride	1000 kg bag	22		6	16	$A8,901.12
EZ-MUD	25 kg pail	149		25	124	$A2,374.75
OXYGON	50 lb can	25		3	22	$A1,716.09
PAC-L	25 kg bag	98		8	90	$A1,282.56
DEXTRID LTE	25 kg sack	101		24	77	$A1,271.52
Techmesh 175 (API 100)	1 each box	2		2		$A1,119.92
potassium hydroxide	20 kg pail	41		7	34	$A924.77
BARAZAN D PLUS	25 kg bag	94		2	92	$A430.68
ALDACIDE G	25 kg can	34		2	32	$A346.18
Circal 60/16	25 kg bag	254		20	234	$A253.60
soda ash	25 kg bag	32		4	28	$A121.68
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	32			32	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80 80	24.0
VSM-300	20 20 20 100 100 100 100	24.0
VSM-300	20 20 20 80 80 80 80	3.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	24.0

Time

Drilling	24.0
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	24.0
ROP	43.7
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	505.7	Base		Fluid Dumped	
Pipe Cap	139.1	Drill Water	100.0	Transferred	
Active Pits	639.0	Dewatering		SCE	-117.2
Total Hole	644.8	Sea Water		Evaporation	
Total Circ	1283.8	Whole Mud	100.0	Trips	
Reserve	717.0	Barite		Other	-20.0
Prev Vol	1898.7	Chemicals	39.4	Total Surface	
Net Change	102.2	Other		Downhole	
Total Vol	2000.8	Total	239.4	Total Losses	-137.2

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	2,511.3	m
Survey TVD	2,449.5	m
Angle	42.92	Deg
Direction	354	
Horiz Displ.	16.4	m

Daily Products Cost	$A30,819.43	Total Daily Cost	$A33,899.43
Cumulative Products Cost	$A431,630.14	Total Cumulative Cost	$A505,550.14

Baroid Representatives	Mike Lawrance	James Munford	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 025

Daily Drilling Fluid Report

Date	23/12/2009	**Depth**	2,753.0 m
Spud Date	30/11/2009	**Rig Activity**	Wiper Trip 8.5" Interval

Operator	ADA DRILLING	**Report For**	Mike Lanzer / Paul Leathem
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Stig Sundgaard / Ole Andreasen
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity	206	ft/sec
Jet Impact Force	596.9	lbf
Bit HHSI	2.19	hhp/in2
Press Drop @ Bit	365	psi
Bit Depth	2,753.0	m
ECD @ Csg Shoe	10.20	ppg
ECD @ Bit	23.41	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,541.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		788.0

in Casing m

	OD	Set	MD
	30.000	@	158.0
	13.375	@	961.0
	9.625	@	1,965.0
Leak Off ppg			14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	56	0
gpm|bbl/min	301 | 7.17	281 | 6.69	|
Total GPM	582	AV, Riser	39.1
Total Circ Time	103	AV min DP	261.3
BU Time , min	39	AV max DC	3405.8
Total Strokes	11,924	BU Strokes	4,483
Circ Press psi	2175		
Tot Pres Loss	7922		
Press Drop DP	922		
Press Drop An	6486		

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Flow Line			
Time		3:30	10:20	16:25	21:52			
Depth	m	2,585	2,639	2,712	2,753			
FL Temp	Deg C	60	61	62	58			
Density @ Deg C	ppg	9.60 @ 53	9.60 @ 51	9.60 @ 53	9.60 @ 58		9.00	10.00
FV @ Deg C	sec/qt	61 @ 53	55 @ 51	52 @ 53	50 @ 58			
PV @ Deg C	cP	18 @ 49	17 @ 49	17 @ 49	17 @ 49			
YP	lbs/100 ft2	34	32	31	31			
GELS	lbs/100 ft2	13/20/30	10/14/23	10/15/19	10/15/19			
600/300		70.0/52.0	66.0/49.0	65.0/48.0	65.0/48.0			
200/100		43.0/32.0	41.0/30.0	40.0/30.0	40.0/30.0			
6/3		13.0/10.0	10.0/8.0	10.0/9.0	10.0/8.0			
API Filt	ml/30 min	5.0	4.5	4.6	4.7			5.0
HTHP @ Deg C	ml/30 min	10.0 @ 49	9.0 @ 49	9.5 @ 49	9.6 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	5.4	4.9	5.0	5.2			
NAP/Water	% by Vol	-/91.5	-/92.0	-/92.0	-/92.0			
Sand	% by vol	0.30	0.30	0.25	0.30			1.0
MBT	ppb Eq.	7.5	8.0	8.0	10.0			25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.40	0.30	0.30	0.35			
ALK Filt	Pf/Mf	0.30/2.60	0.25/2.50	0.30/2.70	0.35/2.70			
Chlorides	mg/l	39,000	38,500	37,000	35,000			
Tot. Hardness	mg/l	140	180	180	180			400
LGS/HGS	% by Vol	4.3/1.1	3.3/1.6	3.4/1.6	3.6/1.6			
LGS/HGS	ppb	38.93/16.27	30.05/23.61	31.25/23.49	32.84/23.35			
ASG	SG	2.929	3.123	3.108	3.089			
Additional Properties								
KCl %	-	7.30	7.20	6.90	6.70			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Build pre-mix volume & bleed into active to maintain properties & volume. New premixes containing lower KCl percentage as per ADA Instruction. Add EZ-MUD & CLAYEAL PLUS to compensate for depletion whilst drilling. Maintain tight filtration through PAC-LE & DEXTRID LTE addition. Bleed water into active to compensate for evaporation loss.
Maintain pH w/ caustic potash addition. Run centrifuges to control solids. Add ALDACIDE G to treat Fluid system & OXYGON for corrosion prevention.

Rig Activity

Cont. to drill 8-1/2" hole f/ 2550 m to 2753 m as per directional driller. Top up oil Top Drive gearbox 25 LTRS. Add 3 LTRS of PHPA in pipe circ 2 X btms up FLC. POOH f/ 2753 - 2520 m preform wiper trip, mat O/P 40 K.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	16		8	8	$A11,868.16
CLAYSEAL PLUS	55 gal drum	31		7	24	$A10,566.99
PAC-L	25 kg bag	90		20	70	$A3,206.40
DEXTRID LTE	25 kg sack	77		41	36	$A2,172.18
EZ-MUD	25 kg pail	124		22	102	$A2,089.78
OXYGON	50 lb can	22		3	19	$A1,716.09
potassium hydroxide	20 kg pail	34		7	27	$A924.77
ALDACIDE G	25 kg can	32		5	27	$A865.45
Circal 60/16	25 kg bag	234		25	209	$A317.00
soda ash	25 kg bag	28		5	23	$A152.10
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	32		2	30	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80 80	2.0
VSM-300	20 20 20 80 80 80 100	24.0
VSM-300	20 20 20 80 80 80 80	24.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	20.0
518	4,000	80.00	20.0

Time

Drilling	20.5
Circulating	
Trips	1.5
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.5
Total	24.0
Rotating	20.5
ROP	32.5
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	535.4	Base		Fluid Dumped	
Pipe Cap	150.7	Drill Water	200.0	Transferred	
Active Pits	738.0	Dewatering		SCE	-141.0
Total Hole	686.1	Sea Water		Evaporation	-36.5
Total Circ	1424.1	Whole Mud	200.0	Trips	-9.0
Reserve	827.0	Barite		Other	-11.0
Prev Vol	2000.8	Chemicals	47.8	Total Surface	
Net Change	250.3	Other		Downhole	
Total Vol	2251.1	Total	447.8	Total Losses	-197.5

Fluid Types — Vol bbl

Deviation Information

Survey MD	2,741.0	m
Survey TVD	2,617.0	m
Angle	43.47	Deg
Direction	356	
Horiz Displ.	3.0	m

Daily Products Cost	$A33,878.92	Total Daily Cost	$A36,958.92
Cumulative Products Cost	$A465,509.06	Total Cumulative Cost	$A542,509.06

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 026

Daily Drilling Fluid Report

Date 24/12/2009	**Depth** 2,865.0 m		
Spud Date 30/11/2009	**Rig Activity** Drilling 8.5" Interval		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity	212	ft/sec
Jet Impact Force	624.9	lbf
Bit HHSI	2.35	hhp/in2
Press Drop @ Bit	382	psi
Bit Depth	2,865.0	m
ECD @ Csg Shoe	10.16	ppg
ECD @ Bit	22.63	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,653.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		900.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	72	47	0
gpm|bbl/min	361 | 8.60	236 | 5.61	
Total GPM	597	AV, Riser	40.1
Total Circ Time	95	AV min DP	268.0
BU Time , min	39	AV max DC	3493.9
Total Strokes	11,319	BU Strokes	4,620
Circ Press psi	2328		
Tot Pres Loss	7883		
Press Drop DP	957		
Press Drop An	6396		

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		12:00	17:05	3:00	20:23			
Depth	m	2,753	2,783	2,753	2,819			
FL Temp	Deg C		61	55	53			
Density @ Deg C	ppg	9.65 @ 37	9.50 @ 42	9.60 @ 40	9.55 @ 49		9.00	10.00
FV @ Deg C	sec/qt	62 @ 37	56 @ 42	55 @ 40	52 @ 49			
PV @ Deg C	cP	17 @ 49	15 @ 49	17 @ 49	16 @ 49			
YP	lbs/100 ft2	31	32	32	31			
GELS	lbs/100 ft2	10/16/22	9/15/20	11/16/19	10/16/19			
600/300		65.0/48.0	62.0/47.0	66.0/49.0	63.0/47.0			
200/100		41.0/29.0	39.0/30.0	41.0/31.0	39.0/30.0			
6/3		10.0/9.0	9.0/8.0	11.0/9.0	10.0/8.0			
API Filt	ml/30 min	4.5	4.2	4.8	4.4			5.0
HTHP @ Deg C	ml/30 min	10.0 @ 49	8.5 @ 49	9.6 @ 49	9.1 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.8	4.2	5.2	4.1			
NAP/Water	% by Vol	-/92.1	-/92.8	-/92.0	-/93.0			
Sand	% by vol	0.25	0.25	0.30	0.30			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.00 @ 22	9.50 @ 22	9.00 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.15	0.40	0.35	0.35			
ALK Filt	Pf/Mf	0.10/2.70	0.60/3.20	0.35/2.80	0.40/3.10			
Chlorides	mg/l	38,000	37,000	35,000	36,000			
Tot. Hardness	mg/l	220	120	180	160			400
LGS/HGS	% by Vol	2.8/2.1	2.6/1.6	3.6/1.6	1.9/2.2			
LGS/HGS	ppb	25.19/30.56	23.25/24.27	32.84/23.35	16.93/32.66			
ASG	SG	3.286	3.228	3.089	3.471			
Additional Properties								
KCl %	-	6.90	6.90	6.70	6.70			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Pump Radiagreen EME Lubrication Pill at 2145 m as per ADA Instruction. Add Radiagreen EME to active at a concentration of 1% vol to reduce torque, as requested by Co Man. Dress lower deck of shakers w/ API 120 TECHMESH Screens. Run centrifuges & bleed in premix to reduce mud weight as per ADA Instruction. Bleed in water to active to offset evaporation. Receive Chemicals & screens. Perform inventory check. Calibrate mud balances. Continued to maintain fluid properties.
Transfer premix f/ Pit 4 into Pit 2.

Rig Activity

Cont POOH f/ 2520-2303 m tight spot (TS) - 2297m.Worked pipe TS f/ 2303-2265 m. Cont POOH f/ 2265-2175 m tight. Pump out of hole f/ 2175- 2145 m. Worked pipe @ TS fired jars w/ 420 K- 220 K jar up x 3 as / Co Man instruction - 420 K + 70 K. O/P stuck worked pipe between 420 - 430 K. W/R - 2129 m, POOH - 1946 m, CBU up & shakers clean. Service TDS/Dolly. Check for TDS faults. RIH f/ 1946 - 2539 m. Take 30 K W/R f/ 2539 - 2753 m. Drill 8.5" interval f/ 2753 - 2865 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Radiagreen EME-Salt	175 kg drum		20	15	5	$A33,149.70
CLAYSEAL PLUS	55 gal drum	24	24	4	44	$A6,038.28
Techmesh 210 (API 120)	1 each box		20	8	12	$A4,683.20
PAC-L	25 kg bag	70		5	65	$A801.60
ALDACIDE G	25 kg can	27		3	24	$A519.27
EZ-MUD	25 kg pail	102		3	99	$A284.97
potassium hydroxide	20 kg pail	27	18	1	44	$A132.11
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	209			209	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	36			36	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	30			30	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	19			19	
potassium chloride	1000 kg bag	8			8	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	9.0
518	4,000	80.00	9.0

Time

Drilling	9.5
Circulating	
Trips	4.5
Rig	1.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	8.5
Total	24.0
Rotating	9.5
ROP	38.7
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	551.8	Base		Fluid Dumped	
Pipe Cap	157.1	Drill Water	15.0	Transferred	
Active Pits	643.0	Dewatering		SCE	-161.0
Total Hole	708.9	Sea Water		Evaporation	-35.0
Total Circ	1351.9	Whole Mud	20.2	Trips	-5.0
Reserve	700.0	Barite		Other	-40.0
Prev Vol	2251.1	Chemicals	6.7	Total Surface	
Net Change	-199.1	Other		Downhole	
Total Vol	2051.9	Total	41.9	Total Losses	-241.0

Fluid Types Vol bbl

Deviation Information

Survey MD	2,828.0	m
Survey TVD	2,681.0	m
Angle	42	Deg
Direction	356	
Horiz Displ.		m

Daily Products Cost	$A45,609.13	Total Daily Cost	$A48,689.13
Cumulative Products Cost	$A511,118.19	Total Cumulative Cost	$A591,198.19

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 027

Daily Drilling Fluid Report

Date 25/12/2009		Depth 3,180.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	SECURITY DBS/FMS3653
Jets	6x14
TFA	0.902 sq-in
Jets Velocity	214 ft/sec
Jet Impact Force	632.1 lbf
Bit HHSI	2.39 hhp/in2
Press Drop @ Bit	387 psi
Bit Depth	3,180.0 m
ECD @ Csg Shoe	10.14 ppg
ECD @ Bit	21.64 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,968.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		1,215.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	61	59	0
gpm|bbl/min	306 | 7.29	296 | 7.05	
Total GPM	602	AV, Riser 40.4	Circ Press psi 2500
Total Circ Time	101	AV min DP 270.3	Tot Pres Loss 8195
BU Time , min	42	AV max DC 3523.3	Press Drop DP 1072
Total Strokes	12,141	BU Strokes 5,007	Press Drop An 6585

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Flow Line	Pit #2	Pit #2	Pit #2			
Time		8:10	16:10	3:30	20:00			
Depth	m	2,974	3,079	2,905	3,128			
FL Temp	Deg C	64	64	63	57			
Density @ Deg C	ppg	9.50 @ 52	9.50 @ 51	9.55 @ 49	9.50 @ 49		9.00	10.00
FV @ Deg C	sec/qt	56 @ 52	53 @ 51	48 @ 49	51 @ 59			
PV @ Deg C	cP	16 @ 49	17 @ 49	16 @ 49	17 @ 49			
YP	lbs/100 ft2	29	34	31	33			
GELS	lbs/100 ft2	9/15/20	10/15/19	10/16/19	11/16/19			
600/300		61.0/45.0	68.0/51.0	63.0/47.0	67.0/50.0			
200/100		37.0/27.0	42.0/31.0	39.0/30.0	42.0/31.0			
6/3		9.0/8.0	11.0/9.0	10.0/8.0	10.0/8.0			
API Filt	ml/30 min	4.5	4.5	4.3	4.6			5.0
HTHP @ Deg C	ml/30 min	9.0 @ 49	9.0 @ 49	9.8 @ 49	9.4 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.2	4.5	4.3	4.2			
NAP/Water	% by Vol	-/92.8	-/92.7	-/92.8	-/93.0			
Sand	% by vol	0.25	0.25	0.30	0.30			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	0.30	0.15	0.30	0.20			
ALK Filt	Pf/Mf	0.25/3.00	0.10/3.20	0.30/1.90	0.15/3.30			
Chlorides	mg/l	37,000	35,000	36,000	35,000			
Tot. Hardness	mg/l	160	180	160	180			400
LGS/HGS	% by Vol	2.6/1.6	2.9/1.5	2.3/2.0	2.3/1.8			
LGS/HGS	ppb	23.25/24.27	26.69/22.65	20.63/29.71	21.14/27.07			
ASG	SG	3.228	3.151	3.354	3.308			
Additional Properties								
KCl %	-	6.50	6.70	6.60	6.70			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add Circal 60/16, sized Calcium Carbonate bridging agent, to compensate for losses f/ solids control equipment. This will promote low filtration with thin filter cake formation. Compliment Circal 60/16 addition w/ PAC-LE. Add Caustic Potash to maintain pH. Add HEC-10 to maintain programmed rheolgy. Maintain shaker screens for optimum solids control. One centrifuge down. Continue to Bleed over from pit 3 into Active pit 2.

Rig Activity

Drilling 8.5" Interval f/ 2865 - 3180 m

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	44		4	40	$A6,038.28
Techmesh 210 (API 120)	1 each box	12		4	8	$A2,341.60
EZ-MUD	25 kg pail	99		17	82	$A1,614.83
PAC-L	25 kg bag	65		9	56	$A1,442.88
potassium hydroxide	20 kg pail	44		9	35	$A1,188.99
Circal 60/16	25 kg bag	209		65	144	$A824.20
DEXTRID LTE	25 kg sack	36		4	32	$A211.92
soda ash	25 kg bag	23		5	18	$A152.10
ALDACIDE G	25 kg can	24			24	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	30		6	24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	19			19	
potassium chloride	1000 kg bag	8			8	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	

Time

Drilling	24.0
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	24.0
ROP	43.1
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	598.0	Base		Fluid Dumped	
Pipe Cap	175.1	Drill Water		Transferred	
Active Pits	677.0	Dewatering		SCE	-127.0
Total Hole	773.1	Sea Water		Evaporation	-13.5
Total Circ	1450.1	Whole Mud		Trips	
Reserve	463.0	Barite		Other	-13.0
Prev Vol	2051.9	Chemicals	14.6	Total Surface	
Net Change	-138.9	Other		Downhole	
Total Vol	1913.1	Total	14.6	Total Losses	-153.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,175.0 m
Survey TVD	2,934.0 m
Angle	42.94 Deg
Direction	356
Horiz Displ.	m

Daily Products Cost	$A13,814.80	Total Daily Cost	$A16,894.80
Cumulative Products Cost	$A524,932.99	Total Cumulative Cost	$A608,092.99

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Baroid Fluid Services

Report No 028

Daily Drilling Fluid Report

Date 26/12/2009		Depth 3,312.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	6x14	
TFA	0.902	sq-in
Jets Velocity	214	ft/sec
Jet Impact Force	632.1	lbf
Bit HHSI	2.39	hhp/in2
Press Drop @ Bit	387	psi
Bit Depth	3,312.0	m
ECD @ Csg Shoe	10.15	ppg
ECD @ Bit	23.08	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,100.9
Drill Pipe	5.000	3.000	113.3
Drill Collar	8.250	2.875	97.9
Riser	19.750		100.0
Open Hole	8.500		1,347.0

in Casing m

	Set	MD
30.000 @		158.0
13.375 @		961.0
9.625 @		1,965.0
Leak Off ppg		14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	0	60
gpm|bbl/min	301 | 7.17		301 | 7.17
Total GPM	602	AV, Riser 40.4	Circ Press psi 2590
Total Circ Time	100	AV min DP 270.3	Tot Pres Loss 8675
BU Time , min	43	AV max DC 3523.3	Press Drop DP 1134
Total Strokes	12,048	BU Strokes 5,169	Press Drop An 6996

Properties

		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		1:55	9:00	17:00	22:00			
Depth	m	3,199	3,199	3,238	3,296			
FL Temp	Deg C	52		62	58			
Density @ Deg C	ppg	9.55 @ 49	9.60 @ 47	9.50 @ 42	9.50 @ 49		9.00	10.00
FV @ Deg C	sec/qt	53 @ 49	57 @ 47	57 @ 42	52 @ 49			
PV @ Deg C	cP	17 @ 49	20 @ 49	18 @ 49	18 @ 49			
YP	lbs/100 ft2	33	41	31	32			
GELS	lbs/100 ft2	10/15/18	11/16/20	10/15/17	11/16/18			
600/300		67.0/50.0	81.0/61.0	67.0/49.0	68.0/50.0			
200/100		42.0/31.0	51.0/39.0	41.0/31.0	42.0/32.0			
6/3		10.0/8.0	13.0/10.0	10.0/9.0	11.0/9.0			
API Filt	ml/30 min	4.1	4.0	4.2	4.8			5.0
HTHP @ Deg C	ml/30 min	8.6 @ 49	8.5 @ 49	8.5 @ 49	9.7 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	4.2	4.7	4.3	5.4			
NAP/Water	% by Vol	-/93.0	-/92.6	-/93.0	-/92.0			
Sand	% by vol	0.25	0.25	0.25	0.20			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.50 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.20	0.10	0.20	0.20			
ALK Filt	Pf/Mf	0.20/3.00	0.05/3.20	0.15/3.10	0.20/3.20			
Chlorides	mg/l	35,000	34,000	33,000	32,000			
Tot. Hardness	mg/l	160	180	180	160			400
LGS/HGS	% by Vol	1.9/2.2	2.5/2.2	2.5/1.8	4.6/0.8			
LGS/HGS	ppb	17.72/32.59	22.51/32.13	22.72/26.94	41.99/12.14			
ASG	SG	3.452	3.351	3.277	2.843			
Additional Properties								
KCl %	-	6.60	6.80	6.50	6.30			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Cont to Transfer premix volume f/ Pit 3 into active Pit 2, Cont to maintain Fluid properties: KOH for pH to 9.5, Circal 60/16 for Cal Carb concentration, PAC LE & DEXTRID for API properties, Soda Ash for hardness, & EZ MUD & CLAYSEAL PLUS for inhibition. *Note - 0900hrs mud check shows high rheology due to incorporation of Hi-vis sweep into fluid system. Will Mix BAROFILT sweep upon Co Man approval.

Rig Activity

Drilling f/ 3180 - 3199 m. Failure to TDS oil pump - CBU. POOH work TS 3199 - 2895 m. Change coupling, Lub TDS & greased wash pipe. RIH no TS. RIH connect up Geolograph, establish parameters. Drill 8.5" interval f/ 3199 - 3312 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	40		4	36	$A6,038.28
Techmesh 210 (API 120)	1 each box	8		4	4	$A2,341.60
EZ-MUD	25 kg pail	82		10	72	$A949.90
PAC-L	25 kg bag	56		5	51	$A801.60
potassium hydroxide	20 kg pail	35		5	30	$A660.55
DEXTRID LTE	25 kg sack	32		9	23	$A476.82
Circal 60/16	25 kg bag	144		30	114	$A380.40
ALDACIDE G	25 kg can	24		1	23	$A173.09
soda ash	25 kg bag	18		4	14	$A121.68
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	105			105	
OXYGON	50 lb can	19			19	
potassium chloride	1000 kg bag	8			8	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	15.0

Time

Drilling	12.0
Circulating	
Trips	3.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	5.5
Other	3.0
Total	24.0
Rotating	12.0
ROP	36.1
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	617.4	Base		Fluid Dumped	
Pipe Cap	182.6	Drill Water	90.0	Transferred	
Active Pits	639.0	Dewatering		SCE	-95.0
Total Hole	799.9	Sea Water		Evaporation	-13.0
Total Circ	1438.9	Whole Mud		Trips	
Reserve	454.0	Barite		Other	-12.6
Prev Vol	1913.1	Chemicals	10.7	Total Surface	
Net Change	-19.9	Other		Downhole	
Total Vol	1892.9	Total	100.7	Total Losses	-120.6

Fluid Types Vol bbl

Deviation Information

Survey MD	3,290.0	m
Survey TVD	3,019.0	m
Angle	42.18	Deg
Direction	356	
Horiz Displ.		m

Daily Products Cost	$A11,943.92	Total Daily Cost	$A15,023.92
Cumulative Products Cost	$A536,876.91	Total Cumulative Cost	$A623,116.91

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 029

Daily Drilling Fluid Report

Date 27/12/2009		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Prepare to Pump Sweeps	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity	209	ft/sec
Jet Impact Force	619.7	lbf
Bit HHSI	2.30	hhp/in2
Press Drop @ Bit	372	psi
Bit Depth	3,522.0	m
ECD @ Csg Shoe	10.22	ppg
ECD @ Bit	10.45	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,310.1
Drill Pipe	5.000	3.750	141.6
Drill Collar	6.750	2.875	70.3
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0
Leak Off ppg		14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	0	60
gpm|bbl/min	301 | 7.17		301 | 7.17
Total GPM	602	AV, Riser 40.4	Circ Press psi 2350
Total Circ Time	116	AV min DP 270.3	Tot Pres Loss 2325
BU Time , min	46	AV max DC 552.8	Press Drop DP 1085
Total Strokes	13,945	BU Strokes 5,499	Press Drop An 517

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		3:00	7:50	17:00	22:00			
Depth	m	3,354	3,404	3,516	3,522			
FL Temp	Deg C	58	65	68	48			
Density @ Deg C	ppg	9.55 @ 49	9.50 @ 60	9.50 @ 58	9.55 @ 49		9.00	10.00
FV @ Deg C	sec/qt	52 @ 49	55 @ 60	56 @ 58	60 @ 49			
PV @ Deg C	cP	18 @ 49	18 @ 49	18 @ 49	18 @ 49			
YP	lbs/100 ft2	37	37	30	31			
GELS	lbs/100 ft2	12/16/19	12/16/19	9/16/18	10/15/18			
600/300		73.0/55.0	73.0/55.0	66.0/48.0	67.0/49.0			
200/100		46.0/35.0	46.0/35.0	41.0/31.0	42.0/31.0			
6/3		12.0/9.0	12.0/9.0	10.0/8.0	10.0/8.0			
API Filt	ml/30 min	4.0	4.0	4.2	4.3			5.0
HTHP @ Deg C	ml/30 min	8.6 @ 49	9.0 @ 49	8.0 @ 49	9.0 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	5.4	4.7	4.5	5.2			
NAP/Water	% by Vol	-/92.0	-/92.6	-/92.6	-/92.0			
Sand	% by vol	0.30	0.30	0.30	0.36			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	0.10	0.15	0.15	0.15			
ALK Filt	Pf/Mf	0.08/2.90	0.05/3.20	0.10/3.20	0.10/3.00			
Chlorides	mg/l	33,000	33,000	36,000	35,000			
Tot. Hardness	mg/l	160	140	120	160			400
LGS/HGS	% by Vol	4.1/1.2	3.3/1.4	3.0/1.4	4.0/1.2			
LGS/HGS	ppb	37.81/17.71	30.12/21.04	27.75/21.24	36.25/17.83			
ASG	SG	2.960	3.083	3.114	2.974			
Additional Properties								
KCl %	-	6.30	6.50	6.60	6.60			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Phase in addition of N-DRIL HT PLUS filtration control agent in response to increasing BHT. Maintain volume & properties through addition of premix. Maintain water addition at 2.5 bbl/hr to offset losses f/ evaporation. Add caustic potash for pH control. Add Circal 60/16 Calcium Carbonate bridging agent to offset depletion f/ solids control. Build further pre-mix on TD extension. Run centrifuges to control solids. Maintain shaker screens & change out as necessary. Pump 30 bbl low Wt, low rheology sweep chased by 30 bbl High Wt x 2, High reology sweep x 2. Made 55 bbl 10.6 ppg Slug, yet to pump

Rig Activity

CBU 120 spm, 600 gpm 2700 psi. Pumped 30 bbl low Wt 9.3 ppg, low rheology sweep chased by 30 bbl high Wt 10 ppg, high rheology sweep circ until shakers were clean. F/C, POOH f/ 3522 3100 m. RIH f/ 3100 - 3522 m prepare to pump 2nd lot of sweeps.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	36		4	32	$A6,038.28
Techmesh 210 (API 120)	1 each box	4		2	2	$A1,170.80
OXYGON	50 lb can	19		2	17	$A1,144.06
EZ-MUD	25 kg pail	72		8	64	$A759.92
N-DRIL HT PLUS	50 lb bag	105		5	100	$A744.25
potassium hydroxide	20 kg pail	30		5	25	$A660.55
PAC-L	25 kg bag	51		3	48	$A480.96
Circal 60/16	25 kg bag	114		18	96	$A228.24
ALDACIDE G	25 kg can	23		1	22	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	92			92	
barite	1 tons bulk	93.000			93.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	23			23	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	24		2	22	
mica	25 kg bag	36			36	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	5			5	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80 80	
VSM-300	20 20 20 210 210 210 210	20.0
VSM-300	20 20 20 210 210 210 210	20.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	18.0
518	4,000	80.00	18.0

Time

Drilling	19.0
Circulating	1.0
Trips	2.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.5
Total	24.0
Rotating	19.0
ROP	36.3
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	656.8	Base		Fluid Dumped	
Pipe Cap	196.7	Drill Water	300.0	Transferred	
Active Pits	812.0	Dewatering		SCE	-140.0
Total Hole	853.5	Sea Water		Evaporation	-60.0
Total Circ	1665.5	Whole Mud		Trips	-12.5
Reserve	312.0	Barite		Other	-12.0
Prev Vol	1892.9	Chemicals	9.3	Total Surface	
Net Change	84.8	Other		Downhole	
Total Vol	1977.5	Total	309.3	Total Losses	-224.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A11,400.15	Total Daily Cost	$A14,480.15
Cumulative Products Cost	$A548,277.06	Total Cumulative Cost	$A637,597.06

Baroid Representatives Kosta Georgiou Mike Lawrance

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Baroid Fluid Services

Report No 030

Daily Drilling Fluid Report

Date 28/12/2009	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Wire Line Logging 8.5" interval		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in						30.000	@	158.0
Make/Type							13.375	@	961.0
Jets							9.625	@	1,965.0
TFA	sq-in								
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	3,522.0 m	Riser	19.750		100.0				
ECD @ Csg Shoe	9.55 ppg	Open Hole	8.500		1,557.0				
ECD @ Bit	9.55 ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	Hyd 3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2				
Time		4:10	12:00	20:00				
Depth	m	3,522	3,522	3,522				
FL Temp	Deg C	48		35				
Density @ Deg C	ppg	9.50 @ 42	9.65 @ 42	9.55 @ 28			9.00	10.00
FV @ Deg C	sec/qt	60 @ 42	58 @ 42	53 @ 28				
PV @ Deg C	cP	20 @ 49	19 @ 49	19 @ 49				
YP	lbs/100 ft2	37	37	36				
GELS	lbs/100 ft2	13/19/22	12/18/21	12/17/20				
600/300		77.0/57.0	75.0/56.0	74.0/55.0				
200/100		48.0/37.0	47.0/36.0	46.0/34.0				
6/3		14.0/12.0	13.0/11.0	12.0/10.0				
API Filt	ml/30 min	4.3	4.5	4.6				5.0
HTHP @ Deg C	ml/30 min	9.4 @ 49	9.0 @ 49	9.7 @ 49				13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2				
Corr Solid	% by Vol	5.2	5.2	5.2				
NAP/Water	% by Vol	-/92.0	-/92.0	-/92.0				
Sand	% by vol	0.30	0.25	0.30				1.0
MBT	ppb Eq.	7.5	7.5	7.5				25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22			8.50	9.50
ALK Mud	Pm	0.25	0.20	0.20				
ALK Filt	Pf/Mf	0.20/2.80	0.15/3.10	0.20/2.90				
Chlorides	mg/l	35,000	35,000	35,000				
Tot. Hardness	mg/l	160	180	160				400
LGS/HGS	% by Vol	4.4/0.8	3.2/2.0	4.0/1.2				
LGS/HGS	ppb	39.66/12.32	29.42/28.86	36.25/17.83				
ASG	SG	2.858	3.204	2.974				
Additional Properties								
KCl %	-	6.40	6.40	6.40				

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Conduct full inventory. Checked Mud Balances & conducted a Mud Lab Inventory. *Note mud in active pit shows an increase in rheology & weight due to incorporation of viscous/weighted sweeps. Also additonal volume in pit came f/ sand traps. We used a wieldon pump to trans volume f/ sand traps over shakers to filter fines out and lined up volume to Pit 3. Treated pits 2 and 3 w/ ALDACIDE G & KOH to maintain properties. Cont to make Premix in Pit 1. Will leave Pit 4 clean & empty. Received 114 MT of Barite, 20 Drums Radiagreen EME, & Shaker Screens.

Rig Activity

Circ H/C @ 120 spm 600 gpm 2700 psi, pumped low Wt 9.3 ppg/ rheology -high Wt/ rheology Vis Pills. Circ hole clean. F/C, POOH f/ 3522 - 211 m. POOH BHA f/ 211 - 40 m, removed MWD sources. Down load MWD tools. Cont POOH Hall BHA's L/O same. R/U Schlb elec logs. M/U Schlb tool & calibrate same. Installed sources to tools. RIH w/ CMR-HNGS-PEX-HRLA- SP Schlb tools @ 2000 m/hr. Log down, RIH to bottom & Log up.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	32		6	26	$A9,057.42
barite	1 tons bulk	93.000	31.000	11.000	113.000	$A8,036.38
PAC-L	25 kg bag	48		22	26	$A3,527.04
EZ-MUD	25 kg pail	64		18	46	$A1,709.82
BARAZAN D PLUS	25 kg bag	92		6	86	$A1,292.04
ALDACIDE G	25 kg can	22		4	18	$A692.36
DEXTRID LTE	25 kg sack	23		12	11	$A635.76
potassium hydroxide	20 kg pail	25		4	21	$A528.44
Circal 60/16	25 kg bag	96		30	66	$A380.40
N-DRIL HT PLUS	50 lb bag	100		1	99	$A148.85
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
hec	25 kg bag	22			22	
mica	25 kg bag	36			36	
OXYGON	50 lb can	17			17	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	5	20		25	
sapp	25 kg bag	18			18	

Daily Products Cost	$A26,008.51	Total Daily Cost	$A29,088.51
Cumulative Products Cost	$A574,285.57	Total Cumulative Cost	$A666,685.57

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	2.0
VSM-300	20 20 20 210 210 210	8.0
VSM-300	20 20 20 210 210 210	8.0
VSM-300	20 20 20 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	3.5
Trips	10.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	9.0
Dir Work	
Repair	
Other	1.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	707.0	Dewatering		SCE	-42.0
Total Hole	955.9	Sea Water		Evaporation	-3.9
Total Circ	707.0	Whole Mud	222.5	Trips	-7.0
Reserve	514.0	Barite	16.5	Other	-4.0
Prev Vol	1977.5	Chemicals	17.3	Total Surface	
Net Change	199.4	Other		Downhole	
Total Vol	2176.9	Total	256.3	Total Losses	-56.9

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

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Baroid Fluid Services

Report No 031

Daily Drilling Fluid Report

Date 29/12/2009	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Rig Down Wire Line Tools		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in								
Make/Type							30.000	@	158.0
Jets							13.375	@	961.0
TFA	sq-in						9.625	@	1,965.0
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	m	Riser	19.750		100.0				
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,557.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		11:00	22:00					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.70 @ 40	9.65 @ 35				9.00	10.00
FV @ Deg C	sec/qt	61 @ 40	63 @ 35					
PV @ Deg C	cP	19 @ 49	19 @ 49					
YP	lbs/100 ft2	38	37					
GELS	lbs/100 ft2	12/16/18	12/16/18					
600/300		76.0/57.0	75.0/56.0					
200/100		47.0/36.0	46.0/33.0					
6/3		13.0/11.0	12.0/10.0					
API Filt	ml/30 min	4.5	4.6					5.0
HTHP @ Deg C	ml/30 min	8.0 @ 49	9.9 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	5.4	4.8					
NAP/Water	% by Vol	-/92.0	-/92.5					
Sand	% by vol	0.30	0.30					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.00 @ 22	9.50 @ 22				8.50	9.50
ALK Mud	Pm	0.10	0.10					
ALK Filt	Pf/Mf	0.10/3.00	0.15/2.80					
Chlorides	mg/l	33,000	34,000					
Tot. Hardness	mg/l	180	160					400
LGS/HGS	% by Vol	3.0/2.3	2.3/2.5					
LGS/HGS	ppb	27.57/34.24	20.95/36.17					
ASG	SG	3.295	3.427					
Additional Properties								
KCl %	-	6.70	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Maintain pH & Bacteria, by adding KOH & ALDACIDE G. Clean & organize sack room.

Rig Activity

Process log data. RIH t/ 3480 m, POOH logging t/ 2800 m, cont t/ POOH. Remove sources f/ tools. L/O Schlb tools for run 1. P/U tools for run 2. Calibrate, RIH w/ MDT Schlb tools @ 2000 m/hr. Test Zones @ 2875 m 1900 hrs. Log f/ 3145 m - 3010 m, stuck - free w/ 9 K above - POOH. Tools @ Surf - R/D.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	21		3	18	$A396.33
ALDACIDE G	25 kg can	18		2	16	$A346.18
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	113.000			113.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	66			66	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	26			26	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	11			11	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	46			46	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box		24		24	
hec	25 kg bag	22			22	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	99			99	
OXYGON	50 lb can	17			17	
PAC-L	25 kg bag	26			26	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	15.3
Dir Work	
Repair	
Other	2.8
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	697.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	697.0	Whole Mud		Trips	
Reserve	514.0	Barite		Other	
Prev Vol	2176.9	Chemicals	0.5	Total Surface	
Net Change	-10.1	Other		Downhole	-10.6
Total Vol	2166.9	Total	0.5	Total Losses	-10.6

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A742.51	Total Daily Cost	$A3,822.51
Cumulative Products Cost	$A575,028.08	Total Cumulative Cost	$A670,508.08

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Baroid Fluid Services

Report No 032

Daily Drilling Fluid Report

Date 30/12/2009		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Circ/Lowering Mud Wt.	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity	209	ft/sec
Jet Impact Force	616.5	lbf
Bit HHSI	2.29	hhp/in2
Press Drop @ Bit	370	psi
Bit Depth	3,522.0	m
ECD @ Csg Shoe	9.45	ppg
ECD @ Bit	9.45	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,310.1
Drill Pipe	5.000	3.750	141.6
Drill Collar	6.750	2.875	70.3
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	59	61	0
gpm|bbl/min	296 | 7.05	306 | 7.29	
Total GPM	602	AV, Riser 40.4	Circ Press psi 1700
Total Circ Time	80	AV min DP 270.3	Tot Pres Loss 370
BU Time , min	46	AV max DC 552.8	Press Drop DP
Total Strokes	9,599	BU Strokes 5,499	Press Drop An

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		14:30	22:20					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.30 @ 25	9.45 @ 25				9.00	10.00
FV @ Deg C	sec/qt	60 @ 25	61 @ 25					
PV @ Deg C	cP	18 @ 49	20 @ 49					
YP	lbs/100 ft2	27	43					
GELS	lbs/100 ft2	6/11/13	12/16/19					
600/300		63.0/45.0	83.0/63.0					
200/100		38.0/28.0	54.0/41.0					
6/3		9.0/7.0	13.0/11.0					
API Filt	ml/30 min	4.8	4.8					5.0
HTHP @ Deg C	ml/30 min	9.8 @ 49	10.0 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	4.2	5.1					
NAP/Water	% by Vol	-/93.0	-/92.0					
Sand	% by vol	0.25	0.25					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.30	0.25					
ALK Filt	Pf/Mf	0.20/2.70	0.25/2.90					
Chlorides	mg/l	35,000	36,000					
Tot. Hardness	mg/l	200	200					400
LGS/HGS	% by Vol	3.8/0.3	4.6/0.5					
LGS/HGS	ppb	34.79/5.02	42.28/6.88					
ASG	SG	2.731	2.746					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Cont to mix additional 250 bbl for volume. Blended unweighted premix to lower active MW to 9.4 ppg circulating. Ran both centrifuges to lower MW to 9.4 ppg.

Rig Activity

Cont R/D Wire Line. HTBT M/U BHA & RIH - 97m. Test BOP & function test BOP. RIH w/ 5" DP f/ 97 - 1944 m CSG shoe. TDS Service. Cont RIH w/ 5" DP 1944 - 3418 m work TS 2427, 2482, 2510 2545 & 2550. Wash ream hole f 3418 m, 550 gpm 2550 psi, 50 rpm. 5 - 10 TRQ, tag btm @ 3522 m w/ 10 K. Circ 530 gpm - 2300 psi, recip string while lowering Fluid Wt - 9.4 ppg.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	113.000		11.000	102.000	$A8,036.38
CLAYSEAL PLUS	55 gal drum	26		4	22	$A6,038.28
potassium chloride	1000 kg bag	8		4	4	$A5,934.08
PAC-L	25 kg bag	26		12	14	$A1,923.84
OXYGON	50 lb can	17		3	14	$A1,716.09
DEXTRID LTE	25 kg sack	11		11		$A582.78
EZ-MUD	25 kg pail	46		5	41	$A474.95
Circal 60/16	25 kg bag	66		12	54	$A152.16
potassium hydroxide	20 kg pail	18		1	17	$A132.11
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	22		2	20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	99			99	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 80 80 80	
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 210 210 210 210	24.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	18.0
518	4,000	80.00	18.0

Time

Drilling	
Circulating	6.5
Trips	
Rig	0.5
Surveys	
Fishing	
Run Casing	0.5
Coring	
Reaming	1.0
Testing	9.0
Logging	
Dir Work	
Repair	
Other	6.5
Total	24.0
Rotating	1.0
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	656.8	Base		Fluid Dumped	
Pipe Cap	196.7	Drill Water	32.0	Transferred	
Active Pits	293.0	Dewatering		SCE	-116.3
Total Hole	853.5	Sea Water		Evaporation	-27.0
Total Circ	1146.5	Whole Mud	100.0	Trips	-5.0
Reserve	1026.0	Barite	16.5	Other	-17.0
Prev Vol	2166.9	Chemicals	22.4	Total Surface	
Net Change	5.6	Other		Downhole	
Total Vol	2172.5	Total	170.9	Total Losses	-165.3

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A24,990.67	Total Daily Cost	$A28,070.67
Cumulative Products Cost	$A600,018.75	Total Cumulative Cost	$A698,578.75

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 033

Daily Drilling Fluid Report

Date 31/12/2009		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Logging 8.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		12:00	19:45					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25				9.00	10.00
FV @ Deg C	sec/qt	65 @ 25	66 @ 25					
PV @ Deg C	cP	18 @ 49	18 @ 49					
YP	lbs/100 ft2	32	33					
GELS	lbs/100 ft2	8/14/17	9/13/16					
600/300		68.0/50.0	69.0/51.0					
200/100		40.0/30.0	41.0/31.0					
6/3		11.0/9.0	11.0/9.0					
API Filt	ml/30 min	4.6	4.6					5.0
HTHP @ Deg C	ml/30 min	9.4 @ 49	9.6 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	4.1	4.2					
NAP/Water	% by Vol	-/93.0	-/93.0					
Sand	% by vol	0.25	0.25					1.0
MBT	ppb Eq.	10.0	7.5					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.20	0.25					
ALK Filt	Pf/Mf	0.10/2.50	0.10/2.60					
Chlorides	mg/l	36,000	35,000					
Tot. Hardness	mg/l	240	240					400
LGS/HGS	% by Vol	3.0/1.1	3.1/1.1					
LGS/HGS	ppb	27.17/16.12	27.96/16.05					
ASG	SG	3.030	3.019					
Additional Properties								
KCl %	-	6.30	6.40					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Conditioned & treated the active mud in Pit 2 with fluid loss reducer.
API FL lowered to 4.6 mls w/ 1 ppb PAC LE and 0.5 ppb N-Dril HT plus.
MW was lowered to 9.4 ppg w/ premix from Pit 1.Checked & patched screens at shakers.
Conducted inventory check. Calibrate Mud Balances

Rig Activity

Circ hole clean w/ 600 gpm - 2700 psi. F/C - POOH f/ 3522 - 3245 m pump 30 bbl, 10.5 ppg slug. POOH f/ 1944 - 180 m. F/C -ok, POOH w/ BHA f/ 180 - Surface, rack back same. M/U Schlub MDT tools K calibrate. HTBT for Schlub wire line. RIH w/ MDT tools @ 2000 m/hr. Start Logging ops - cont RIH 3425 m & correlate. Log out to 3306 m

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	14		10	4	$A1,603.20
N-DRIL HT PLUS	50 lb bag	99		4	95	$A595.40
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	54			54	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22			22	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41			41	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
OXYGON	50 lb can	14			14	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17			17	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	2.0
518	4,000	80.00	2.0

Time

Drilling	
Circulating	1.0
Trips	4.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	16.0
Dir Work	
Repair	
Other	2.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	61.9	Transferred	
Active Pits	715.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	715.0	Whole Mud		Trips	
Reserve	565.0	Barite		Other	
Prev Vol	2172.5	Chemicals	1.4	Total Surface	
Net Change	63.3	Other		Downhole	
Total Vol	2235.9	Total	63.3	Total Losses	

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A2,198.60	Total Daily Cost	$A5,278.60
Cumulative Products Cost	$A602,217.35	Total Cumulative Cost	$A703,857.35

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 034

Daily Drilling Fluid Report

Date 01/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity 8.5" Wire Line Logs	
Operator: ADA DRILLING	Report For: Mike Lanzer / Paul Leathem	Well Name: Rockhopper-1	
Contractor: MAERSK	Report For: Stig Sundgaard / Ole Andreasen	Rig Name: Kantan IV	Unit System: ADA Drilling
Country: Australia	State/Province/Region: Tasmania	Geographic Area/County: Bass Strait	Field or Block: T/18P

Bit Information

Bit Size	in
Make/Type	
Jets	
TFA	sq-in
Jets Velocity	ft/sec
Jet Impact Force	lbf
Bit HHSI	hhp/in2
Press Drop @ Bit	psi
Bit Depth	m
ECD @ Csg Shoe	ppg
ECD @ Bit	ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		11:00	20:40					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25				9.00	10.00
FV @ Deg C	sec/qt	61 @ 25	63 @ 25					
PV @ Deg C	cP	19 @ 49	19 @ 49					
YP	lbs/100 ft2	24	25					
GELS	lbs/100 ft2	6/9/11	7/10/12					
600/300		62.0/43.0	63.0/44.0					
200/100		35.0/26.0	36.0/26.0					
6/3		8.0/7.0	9.0/7.0					
API Filt	ml/30 min	4.6	4.6					5.0
HTHP @ Deg C	ml/30 min	9.0 @ 49	9.0 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.25					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.20	0.20					
ALK Filt	Pf/Mf	0.10/2.40	0.10/2.50					
Chlorides	mg/l	36,000	35,000					
Tot. Hardness	mg/l	240	240					400
LGS/HGS	% by Vol	0.9/2.1	1.0/2.1					
LGS/HGS	ppb	8.63/30.87	9.44/30.80					
ASG	SG	3.702	3.670					
Additional Properties								
KCl %	-	6.40	6.40					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Transferred Fluid f/ pit 2 to pit 4. Repairing leaks in the mixing lines into Pit 2. No Additions of chemicals.

Rig Activity

Cont to log out f/ 3306 - 3330 m doing sampling for pressure & flow. RIH to 3349 m & cont sampling. Correlating. Pressure testing & sampling f/ 3349 - 3236 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	54			54	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22			22	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41			41	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	95			95	
OXYGON	50 lb can	14			14	
PAC-L	25 kg bag	4			4	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17			17	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	707.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	707.0	Whole Mud		Trips	
Reserve	565.0	Barite		Other	
Prev Vol	2235.9	Chemicals		Total Surface	
Net Change	-8.0	Other		Downhole	-8.0
Total Vol	2227.9	Total		Total Losses	-8.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A602,217.35	Total Cumulative Cost	$A706,937.35

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 035

Daily Drilling Fluid Report

Date 02/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Cir & Condition Mud 8.5' Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HUGHES/A841A9GT5
Jets	3x20
TFA	0.920 sq-in
Jets Velocity	174 ft/sec
Jet Impact Force	425.8 lbf
Bit HHSI	1.32 hhp/in2
Press Drop @ Bit	256 psi
Bit Depth	3,522.0 m
ECD @ Csg Shoe	9.87 ppg
ECD @ Bit	9.98 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,310.1
Drill Pipe	5.000	3.750	141.6
Drill Collar	6.750	2.875	70.3
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	50	0	50
gpm|bbl/min	251 | 5.97		251 | 5.97
Total GPM	502	AV, Riser 33.7	Circ Press psi 2335
Total Circ Time	123	AV min DP 225.2	Tot Pres Loss 1615
BU Time , min	55	AV max DC 460.7	Press Drop DP 875
Total Strokes	12,329	BU Strokes 5,499	Press Drop An 347

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #4	Pit #2	Pit #2	Pit #2			
Time		10:00	17:00	21:00	23:00			
Depth	m	3,522	3,522	3,522	3,522			
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.45 @ 32	9.40 @ 37	9.40 @ 39		9.00	10.00
FV @ Deg C	sec/qt	60 @ 25	60 @ 32	59 @ 37	61 @ 39			
PV @ Deg C	cP	19 @ 49	18 @ 49	18 @ 49	18 @ 49			
YP	lbs/100 ft2	23	25	26	25			
GELS	lbs/100 ft2	7/9/11	7/11/14	8/12/15	7/11/14			
600/300		61.0/42.0	61.0/43.0	62.0/44.0	61.0/43.0			
200/100		35.0/26.0	35.0/26.0	36.0/26.0	34.0/25.0			
6/3		8.0/7.0	9.0/8.0	9.0/8.0	9.0/8.0			
API Filt	ml/30 min	4.6	4.3	4.4	4.2			5.0
HTHP @ Deg C	ml/30 min	9.2 @ 49	9.0 @ 49	9.0 @ 49	8.8 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	3.1	3.0	3.0	3.0			
NAP/Water	% by Vol	-/94.0	-/94.0	-/94.0	-/94.0			
Sand	% by vol	0.20	0.25	0.20	0.20			1.0
MBT	ppb Eq.	7.5	7.5	7.5	7.5			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.50 @ 22	9.50 @ 22		8.50	9.50
ALK Mud	Pm	0.20	0.20	0.20	0.20			
ALK Filt	Pf/Mf	0.20/2.50	0.20/2.50	0.20/2.30	0.20/2.40			
Chlorides	mg/l	35,000	36,000	36,000	36,000			
Tot. Hardness	mg/l	200	160	160	160			400
LGS/HGS	% by Vol	1.0/2.1	0.6/2.5	0.9/2.1	0.9/2.1			
LGS/HGS	ppb	9.44/30.80	5.22/36.38	8.63/30.87	8.63/30.87			
ASG	SG	3.670	3.899	3.702	3.702			
Additional Properties								
KCl %	-	6.40	6.30	6.30	6.30			

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Fixed & welded the leaks in mixing lines into pit 2. Hydro tested same.

Transferred active mud f/ Pit 4 to Pit 2 (as active). Mixed pumpable 30 bbl of Hi-Weight pill @ 10.0 ppg f/ active mud. Mixed pumpable 15 bbl of Slug @ 10.5 ppg f/ active mud. Cont to tighten active mud system for fluid loss while circ & cond hole. Added in fresh premix to maintain MW @ 9.4 ppg. Ran centrifuges. MW in 9.35 - 9.4 + ppg. MW out - 9.3 - 9.6 ppg. MWt out reading of 9.3 was low Wt pill bottoms up. Maintain consistant MWt in 9.35 ppg & out 9.4 figures consistant w/ both shaker house & pit room MWt reports.

Rig Activity

Cont press testing & sampling @ 3226 m. Work tight hole 3224 m. POOH to shoe @ 1965 m wire line wiper trip. RIH to 3060 m hung up. POOH to surface. HTBT L/O wire line tools & handling equipment. HTBT M/U BHA & RIH - 180 m. Shallow test Hall tools 600 pgm - 850 psi. Cont RIH f/ 180 - 1037 m slip & cut 100 ft drill line & service TDS. Cont RIH f/ 1037 - 2150 m Wash & Ream f/ 2150 - 3522 m 550 gpm 1850 - 1950 psi 60 rpm 3 K. Circ & condition hole.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
OXYGON	50 lb can	14		6	8	$A3,432.18
N-DRIL HT PLUS	50 lb bag	95		15	80	$A2,232.75
PAC-L	25 kg bag	4		4		$A641.28
Circal 60/16	25 kg bag	54		10	44	$A126.80
sodium bicarbonate	25 kg bag	48		2	46	$A56.50
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22			22	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41			41	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17			17	
Radiagreen EME-Salt	175 kg drum	25			25	

Daily Products Cost	$A6,489.51	Total Daily Cost	$A9,569.51
Cumulative Products Cost	$A608,706.86	Total Cumulative Cost	$A716,506.86

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	18.0
VSM-300	20 20 20 210 210 210 210	18.0
VSM-300	20 20 20 210 210 210 210	18.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	10.0
518	4,000	80.00	10.0

Time

Drilling	
Circulating	2.5
Trips	2.0
Rig	1.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	8.0
Testing	
Logging	7.5
Dir Work	
Repair	1.5
Other	1.0
Total	24.0
Rotating	8.0
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	656.8	Base		Fluid Dumped	
Pipe Cap	196.7	Drill Water		Transferred	
Active Pits	619.0	Dewatering		SCE	-69.5
Total Hole	853.5	Sea Water		Evaporation	-10.0
Total Circ	1472.5	Whole Mud		Trips	
Reserve	679.0	Barite		Other	
Prev Vol	2227.9	Chemicals	3.3	Total Surface	
Net Change	-76.2	Other		Downhole	
Total Vol	2151.5	Total	3.3	Total Losses	-79.5

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 036

Daily Drilling Fluid Report

Date 03/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Wireline MDT logs 8.5" Interval	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	Hyd 3	4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2				
Time		2:00	11:00	21:40				
Depth	m	3,522	3,522	3,522				
FL Temp	Deg C							
Density @ Deg C	ppg	9.35 @ 39	9.40 @ 30	9.40 @ 25			9.00	10.00
FV @ Deg C	sec/qt	61 @ 39	61 @ 30	60 @ 25				
PV @ Deg C	cP	18 @ 49	19 @ 49	19 @ 49				
YP	lbs/100 ft2	25	24	25				
GELS	lbs/100 ft2	7/11/14	7/11/13	8/12/15				
600/300		61.0/43.0	62.0/43.0	63.0/44.0				
200/100		34.0/25.0	35.0/26.0	36.0/26.0				
6/3		9.0/8.0	9.0/7.0	10.0/8.0				
API Filt	ml/30 min	4.2	4.3	4.3				5.0
HTHP @ Deg C	ml/30 min	8.8 @ 49	9.0 @ 49	8.9 @ 49				13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2				
Corr Solid	% by Vol	3.1	3.1	3.1				
NAP/Water	% by Vol	-/94.0	-/94.0	-/94.0				
Sand	% by vol	0.20	0.25	0.25				1.0
MBT	ppb Eq.	7.5	7.5	7.5				25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22			8.50	9.50
ALK Mud	Pm	0.20	0.20	0.20				
ALK Filt	Pf/Mf	0.20/2.50	0.20/2.30	0.25/2.40				
Chlorides	mg/l	35,000	35,000	35,000				
Tot. Hardness	mg/l	160	200	200				400
LGS/HGS	% by Vol	1.4/1.7	1.0/2.1	1.0/2.1				
LGS/HGS	ppb	12.85/25.29	9.44/30.80	9.44/30.80				
ASG	SG	3.479	3.670	3.670				
Additional Properties								
KCl %	-	6.30	6.30	6.30				

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

R'ced mud chemicals f/ Far Fosna. Arranged sack store & shaker screens store.

Rig Activity

Pump 30 bbl 9.0 ppg low Wt & 30 bbl 10 ppg high Wt pills. Circ Shakers clean as per Co Man & Mud Eng'rs instruction. F/C ok, pump 25 bbl 10.5 ppg slug, POOH f/ 3522 - shoe 1964 m. F/C ok, cont POOH f/ 1964 - 180 m. F/C ok, cont POOH f/ 180 - surface. HTBT, R/U Schlub wireline. M/U MDT tools RIH & calibrate same 3000 m/hr - 3250 m. Correlate & log f/ 3207 - 3132 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86			86	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	44			44	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22			22	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41			41	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17			17	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	4.0
VSM-300	20 20 20 210 210 210 210	4.0
VSM-300	20 20 20 210 210 210 210	4.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	6.0
518	4,000	80.00	6.0

Time

Drilling	
Circulating	2.0
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	15.0
Dir Work	
Repair	
Other	7.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	660.0	Dewatering		SCE	-38.0
Total Hole	955.9	Sea Water		Evaporation	-5.6
Total Circ	660.0	Whole Mud		Trips	
Reserve	492.0	Barite		Other	
Prev Vol	2151.5	Chemicals		Total Surface	
Net Change	-43.6	Other		Downhole	
Total Vol	2107.9	Total		Total Losses	-43.6

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A608,706.86	Total Cumulative Cost	$A719,586.86
Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 037

Daily Drilling Fluid Report

Date 04/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** L/O Seismic Tools		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	3,522.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		9:00	21:00					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25				9.00	10.00
FV @ Deg C	sec/qt	60 @ 25	59 @ 25					
PV @ Deg C	cP	19 @ 49	19 @ 49					
YP	lbs/100 ft2	23	22					
GELS	lbs/100 ft2	7/10/12	7/10/12					
600/300		61.0/42.0	60.0/41.0					
200/100		34.0/25.0	33.0/24.0					
6/3		8.0/7.0	7.0/6.0					
API Filt	ml/30 min	4.4	4.4					5.0
HTHP @ Deg C	ml/30 min	9.0 @ 49	8.9 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.1	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.20	0.20					
ALK Filt	Pf/Mf	0.15/2.20	1.50/2.30					
Chlorides	mg/l	35,000	35,000					
Tot. Hardness	mg/l	160	160					400
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1					
LGS/HGS	ppb	9.44/30.80	9.44/30.80					
ASG	SG	3.670	3.670					
Additional Properties								
KCl %	-	6.30	6.30					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Cont to arrange chemicals in sack store. Cont to arrange new & used screens in store. Housekeeping in the mud lab. Checked pit & shaker areas w/ crew, instructed them on housekeeping.

Rig Activity

Cont logging f/ 3132 - 2549 m. POOH f/ 2549 - surface. L/O MDT tools. R/U seismic tools. HTBT, RIH w/ seismic tools @ 1100 m/hr. Correlate passes. RIH f/ 2224 - 2430 m unable to pass. POOH - M/U extra Wt to tools, change tools & M/U tools. RIH w/ tools @ 1100 m/hr @ 2150 m correlating up to 9 5/8" csg depth 1964 m. RIH hang up @ 2760 m - working tools up & down cont RIH -2555m. Check shots between 2555 - 280 m. POOH to surface. HTBT - L/O seismic tools.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	86	40		126	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	44	195		239	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	22	32		54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack		152		152	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	41	96		137	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag		42		42	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	17	64		81	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	16.5
Dir Work	
Repair	
Other	1.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	637.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	637.0	Whole Mud		Trips	
Reserve	506.0	Barite		Other	-9.0
Prev Vol	2107.9	Chemicals		Total Surface	
Net Change	-9.0	Other		Downhole	
Total Vol	2098.9	Total		Total Losses	-9.0

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A608,706.86	Total Cumulative Cost	$A722,666.86

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 038

Daily Drilling Fluid Report

Date 05/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Log 8.5" Interval w/ FMI Tools		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard / Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	in									Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type							30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets							13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	sq-in						9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity	ft/sec									bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf									SPM	0	0	0
Bit HHSI	hhp/in2									gpm|bbl/min			
Press Drop @ Bit	psi									Total GPM		AV, Riser	Circ Press psi
Bit Depth	3,522.0 m	Riser	19.750		100.0					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,557.0					BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg					Leak Off ppg			14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2							**Fluid Type** 8 1/2" KCl/Polymer
Time		10:00	22:30							Housekeeping in the mud lab. Cont putting used screens into boxes & leave store tidy. Over see shaker house miantenance. No treatments required to active system.
Depth	m	3,522	3,522							
FL Temp	Deg C									
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25					9.00	10.00	
FV @ Deg C	sec/qt	63 @ 25	61 @ 25							
PV @ Deg C	cP	17 @ 49	17 @ 49							
YP	lbs/100 ft2	30	30							
GELS	lbs/100 ft2	7/11/13	7/11/13							
600/300		64.0/47.0	64.0/47.0							
200/100		36.0/26.0	36.0/26.0							
6/3		9.0/8.0	9.0/8.0							
API Filt	ml/30 min	4.3	4.3						5.0	
HTHP @ Deg C	ml/30 min	9.2 @ 49	9.8 @ 49						13.0	
Cake API/HTHP	32nd in	1/2	1/2							
Corr Solid	% by Vol	3.1	3.1							
NAP/Water	% by Vol	-/94.0	-/94.0							
Sand	% by vol	0.20	0.20						1.0	
MBT	ppb Eq.	7.5	7.5						25.0	
pH @ Deg C		9.00 @ 22	9.00 @ 22					8.50	9.50	
ALK Mud	Pm	0.20	0.20							
ALK Filt	Pf/Mf	0.15/2.20	0.20/2.30							
Chlorides	mg/l	35,000	35,000							
Tot. Hardness	mg/l	160	160						400	
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1							
LGS/HGS	ppb	9.44/30.80	9.44/30.80							
ASG	SG	3.670	3.670							
Additional Properties										
KCl %	-	6.30	6.30							

Rig Activity

Cont L/O seismic tools. P/U MSCT tools, rebuild head for MSCT run & test.
RIH - 3360 m, correlate samples f/ 3360 - 3290 m & 3290 - 3270 m. Cont to correlate & sample f/ 3270 - 2900 m. POOH w/ Schulb tools to surface @ 2500 m/hr & L/O tools. M/U Schlub FMI sonic scanner tools. Found fraid strands of cable, cut 100 m & re terminate same. RIH w/ FMI sonic tools - 3380 m. Repeat pass 3320 - 3380 m, Log out f/ 3380 - 2550 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	126			126	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	239			239	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	152			152	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	137			137	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20			20	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag	42			42	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	81			81	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	637.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	637.0	Whole Mud		Trips	
Reserve	506.0	Barite		Other	
Prev Vol	2098.9	Chemicals		Total Surface	
Net Change		Other		Downhole	
Total Vol	2098.9	Total		Total Losses	

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A608,706.86	Total Cumulative Cost	$A725,746.86
Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 039

Daily Drilling Fluid Report

Date 06/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Plug and Abandonment 8.5"	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	2.875	in
Make/Type	DUMMY/2 7/8 Open End	
Jets		
TFA	10.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	3,300.0	m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit	9.40	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	2.750	3,131.0
Drill Pipe	2.875	2.375	169.0
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	Hyd 2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		11:00	20:00					
Depth	m	3,522	3,522					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 30				9.00	10.00
FV @ Deg C	sec/qt	61 @ 25	58 @ 30					
PV @ Deg C	cP	16 @ 49	16 @ 49					
YP	lbs/100 ft2	30	31					
GELS	lbs/100 ft2	6/9/11	7/10/12					
600/300		62.0/46.0	63.0/47.0					
200/100		35.0/27.0	36.0/28.0					
6/3		9.0/7.0	10.0/8.0					
API Filt	ml/30 min	4.4	4.5					5.0
HTHP @ Deg C	ml/30 min	9.0 @ 49	9.4 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.1	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.20	0.20					
ALK Filt	Pf/Mf	0.15/2.20	0.20/1.90					
Chlorides	mg/l	35,000	35,000					
Tot. Hardness	mg/l	200	200					400
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1					
LGS/HGS	ppb	9.44/30.80	9.44/30.80					
ASG	SG	3.670	3.670					
Additional Properties								
KCl %	-	6.20	6.30					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Mixed 45 bbl 9.4 ppg H-vis in slug pit. Maintained balance MW @ 9.4 ppg while circulating. Ran 2 centrifuges & streamed in premix to control MW. MW in 9.4 ppg. MW out 9.4 - 9.4+ ppg. Plug 1A No trace of cmt found whilst circing. MWt 9.4 & pH 9 stable. Plug 1B No trace of cmt found both MWt & pH stable.

Rig Activity

Cont log out f/ 2550 - 600 m. POOH, L/O tools. R/U & P/U 2 7/8" eqp. P/U & RIH w/ same for cmt job. R/D 2 7/8" & R/U 5" eqp. RIH on 5" DP - 1932 m for cmt job. Test ESDS & Service TD & rollers. Cont RIH to 3493 m, wash & CBU. Pump Hi-vis 12 bbl 9.4, disp w/ 205 bbl - 1722 stks. POOH - 3465 m & R/U cmt head - 10 bbl & test line. Pump cmt plug 1A & disp w/ cmt unit 183 bbl. Break off cmt head & POOH - 3310 m & R/U cmt head. Pump 10 bbl & test line. Pump plug 1B & disp w/ 174 bbl. Break off cmt head & POOH - 3156 m, R/U cmt head. Circ w/ pumps wait on cmt'r for pre-mix @ 40 spm - 340 psi.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	126		2	124	$A430.68
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	239			239	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	32			32	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	152			152	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	137			137	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	20		4	16	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag	42			42	
potassium chloride	1000 kg bag	4			4	
potassium hydroxide	20 kg pail	81			81	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	
VSM-300	20 20 20 210 210 210 210	14.0
VSM-300	20 20 20 210 210 210 210	14.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	7.0
518	4,000	80.00	7.0

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	6.0
Dir Work	
Repair	1.5
Other	16.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	642.5	Base		Fluid Dumped	
Pipe Cap	78.5	Drill Water		Transferred	
Active Pits	752.0	Dewatering		SCE	-36.0
Total Hole	772.2	Sea Water		Evaporation	-7.0
Total Circ	1473.0	Whole Mud		Trips	-7.8
Reserve	522.0	Barite		Other	-2.5
Prev Vol	2098.9	Chemicals	0.6	Total Surface	
Net Change	-52.7	Other		Downhole	
Total Vol	2046.2	Total	0.6	Total Losses	-53.3

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A430.68	Total Daily Cost	$A3,510.68
Cumulative Products Cost	$A609,137.54	Total Cumulative Cost	$A729,257.54

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 040

Daily Drilling Fluid Report

Date 07/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity M/U BHA & Start to RIH	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	9.40 ppg	Open Hole	8.500	1,557.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	Hyd 4	Targets			Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2	Pit #2						Fluid Type 8 1/2" KCl/Polymer
Time		4:20	9:00	16:00	22:50						Properties changed due to slight traces of cmt returns to active.
Depth	m	3,522	3,522	3,522	3,522						Plug # 3 - Mud return 9.4 ppg. No cement return. Mixed & pumped 11 ppg slug. Cont to treat mud for 8 1/2" ST-1. Volume in sandtrap was transferred out & mud treated. Sand traps have been flushed & cleaned w/ sea water to remove traces of cmt. Shakers & screens prepared for next interval. Mud treated for hardness, pH & API filtrate. All Treatments & new mud mixed wil be charged off in the sidetrack interval. M/U BAROLIFT Pill 20 bbl pumpable as per 8.5" side track SID. 344.3 bbl of KCl- mud left below cmt plugs @ 1970 m.
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 30	9.40 @ 30	9.40 @ 35	9.40 @ 27				9.00	10.00	
FV @ Deg C	sec/qt	55 @ 30	56 @ 30	55 @ 35	58 @ 27						
PV @ Deg C	cP	17 @ 49	17 @ 49	16 @ 49	17 @ 49						
YP	lbs/100 ft2	24	24	23	26						
GELS	lbs/100 ft2	7/11/13	7/11/13	6/9/11	8/12/14						
600/300		58.0/41.0	58.0/41.0	55.0/39.0	60.0/43.0						
200/100		33.0/25.0	33.0/25.0	32.0/23.0	35.0/27.0						
6/3		8.0/7.0	8.0/6.0	6.0/5.0	10.0/8.0						
API Filt	ml/30 min	5.1	5.2	5.2	4.8	X	X	X		5.0	
HTHP @ Deg C	ml/30 min	10.3 @ 49	9.4 @ 49	9.3 @ 49	10.1 @ 49					13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.2	3.1	3.6	3.1						
NAP/Water	% by Vol	-/94.0	-/94.0	-/93.5	-/94.0						
Sand	% by vol	0.30	0.20	0.20	0.30					1.0	
MBT	ppb Eq.	7.5	7.5	7.5	7.5					25.0	
pH @ Deg C		10.00 @ 22	10.00 @ 22	10.00 @ 22	9.50 @ 22	X	X	X	8.50	9.50	
ALK Mud	Pm	0.30	0.30	0.30	0.25						
ALK Filt	Pf/Mf	0.25/2.40	0.20/2.60	0.20/2.50	0.20/2.60						
Chlorides	mg/l	34,000	35,000	35,000	35,000						
Tot. Hardness	mg/l	640	640	600	400	X	X	X		400	
LGS/HGS	% by Vol	1.1/2.1	1.0/2.1	2.1/1.6	1.0/2.1						
LGS/HGS	ppb	10.24/30.73	9.44/30.80	18.70/23.42	9.44/30.80						
ASG	SG	3.640	3.670	3.299	3.670						
Additional Properties											
KCl %	-	6.10	6.30	6.30	6.40						

Rig Activity

Pump plug 1B & disp w/ cmt unit 174 bbl, break off cmt head, POOH - 2973 m slow. Pump Hi-vis pill 12 bbl & disp w/ 173 bbl. POOH - 2925 m R/U cmt head flush lines. Pump plug 2 & disp w/ cmt unit 152 bbl R/D cmt head. POOH 2482 m slow. Circ btms up WOC, POOH - 2250 m & R/B cmt head. Rig floor maintenance. RIH & wash f/ 2713 - 2723 m TOC. POOH - 406 m (wet) clean rig floor. P/U single, spot 12 bbl Hi-vis @ 2118m. Pull 2 stds, P/U single, cmt TBT. Pump spacer, test lines 1000 psi. cmt pre program, disp 103 bbl. L/O cmt asy, POOH - 1968 m. Pump 11 ppg 15 bbl slug. POOH f 1968 - 168 m. M/U BHA & RIH.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
citric acid	25 kg bag	32		5	27	$A381.00
sodium bicarbonate	25 kg bag	46		3	43	$A84.75
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	124			124	
barite	1 tons bulk	102.000			102.000	
BAROLIFT	15 lb box	16			16	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	239			239	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	152			152	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	137			137	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	16			16	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	80			80	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag	42			42	
potassium chloride	1000 kg bag	4	15		19	
potassium hydroxide	20 kg pail	81			81	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	
VSM-300	20 20 20 210 210 210 210	20.0
VSM-300	20 20 20 210 210 210 210	20.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.5
Trips	7.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	14.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	359.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	359.0	Whole Mud	13.0	Trips	
Reserve	745.0	Barite		Other	
Prev Vol	2046.2	Chemicals	0.7	Total Surface	
Net Change	13.7	Other		Downhole	
Total Vol	2059.9	Total	13.7	Total Losses	

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A465.75	Total Daily Cost	$A3,545.75
Cumulative Products Cost	$A609,603.29	Total Cumulative Cost	$A732,803.29

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 041

Daily Drilling Fluid Report

Date 08/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity POOH following cement job	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,970.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		3:50	17:00					
Depth	m	1,970	1,970					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 27	9.40 @ 26				9.00	10.00
FV @ Deg C	sec/qt	55 @ 27	49 @ 26					
PV @ Deg C	cP	17 @ 49	13 @ 49					
YP	lbs/100 ft2	26	16					
GELS	lbs/100 ft2	8/12/14	8/11/13					
600/300		60.0/43.0	42.0/29.0					
200/100		35.0/27.0	24.0/17.0					
6/3		10.0/8.0	8.0/7.0					
API Filt	ml/30 min	4.5	4.5					5.0
HTHP @ Deg C	ml/30 min	10.1 @ 49	9.0 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.0					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.30	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		9.50 @ 22	10.50 @ 22			X	8.50	9.50
ALK Mud	Pm	0.20	2.40					
ALK Filt	Pf/Mf	0.20/2.30	2.10/7.20					
Chlorides	mg/l	36,000	36,000					
Tot. Hardness	mg/l	360	800			X		400
LGS/HGS	% by Vol	0.9/2.1	0.9/2.1					
LGS/HGS	ppb	8.63/30.87	8.63/30.87					
ASG	SG	3.702	3.702					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Re-arrange sack room & conduct full inventory of all sack & liquid products. In response to current & future operations these have been charged off to ensure correct inventory reporting.

Whilst circulating bottom's up prior to cementing, further treat active fluid w/ citric acid & sodium bicarbonate to control pH and & hardness respectively.

Prepare 25 bbl pumpable Hi-viscosity pill for sitting below suspension plug.

Rig Activity

Shallow test Halliburton Tools. RIH from 207 m to 1960 m. Service TDS. Wash to 2005 m, CBU. Cont to wash down to 2121m, CBU. Flow check, static. POOH. Clean out MWD. Pick up 17 joints of 2 7/8" tubing w/ mule shoe. RIH to 2168 m on drill pipe. CBU.
Spot 25 bbl Hi-vis pill on bottom. Pull back to 2067 m & cement as per program. Rig down cement head & POOH to 1874 m. CBU.
Continue to POOH wet.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
N-DRIL HT PLUS	50 lb bag	80		12	68	$A1,786.20
citric acid	25 kg bag	27		22	5	$A1,676.40
EZ-MUD	25 kg pail	137		17	120	$A1,614.83
PAC-L	25 kg bag	42		10	32	$A1,603.20
DEXTRID LTE	25 kg sack	152		26	126	$A1,377.48
potassium hydroxide	20 kg pail	81		9	72	$A1,188.99
sodium bicarbonate	25 kg bag	43		30	13	$A847.50
BARAZAN D PLUS	25 kg bag	124		2	122	$A430.68
BAROLIFT	15 lb box	16		1	15	$A318.02
Circal 60/16	25 kg bag	239		24	215	$A304.32
ALDACIDE G	25 kg can	16			16	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	102.000			102.000	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	16			16	
mica	25 kg bag	36			36	
OXYGON	50 lb can	8			8	
potassium chloride	1000 kg bag	19			19	

Daily Products Cost	$A11,147.62	Total Daily Cost	$A14,227.62
Cumulative Products Cost	$A620,750.91	Total Cumulative Cost	$A747,030.91

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	6.0
VSM-300	20 20 20 210 210 210 210	6.0
VSM-300	20 20 20 210 210 210 210	6.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	15.8
Rig	1.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	7.3
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	200.0	Transferred	
Active Pits	642.0	Dewatering		SCE	-3.1
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	642.0	Whole Mud	74.0	Trips	
Reserve	747.0	Barite		Other	
Prev Vol	2059.9	Chemicals	14.2	Total Surface	
Net Change	285.1	Other		Downhole	
Total Vol	2344.9	Total	288.2	Total Losses	-3.1

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives Kosta Georgiou Mike Lawrance
Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555
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Baroid Fluid Services

Report No 42

Daily Drilling Fluid Report

Date 09/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Tripping	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,970.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets				Program	
Source		Pit #2	Pit #2								
Time		20:00	8:00								
Depth	m	1,970	1,970								
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 30	9.40 @ 26							9.00	10.00
FV @ Deg C	sec/qt	51 @ 30	50 @ 24								
PV @ Deg C	cP	16 @ 49	13 @ 49								
YP	lbs/100 ft2	21	17								
GELS	lbs/100 ft2	7/9/11	7/9/12								
600/300		53.0/37.0	43.0/30.0								
200/100		30.0/20.0	24.0/17.0								
6/3		8.0/7.0	8.0/7.0								
API Filt	ml/30 min	5.5	5.5			X	X				5.0
HTHP @ Deg C	ml/30 min	11.0 @ 49	10.5 @ 49								13.0
Cake API/HTHP	32nd in	1/2	1/2								
Corr Solid	% by Vol	3.1	3.0								
NAP/Water	% by Vol	-/94.0	-/94.0								
Sand	% by vol	0.25	0.25								1.0
MBT	ppb Eq.	7.5	7.5								25.0
pH @ Deg C		11.00 @ 22	10.50 @ 22			X	X			8.50	9.50
ALK Mud	Pm	3.20	2.20								
ALK Filt	Pf/Mf	3.50/8.30	2.40/7.80								
Chlorides	mg/l	35,500	36,000								
Tot. Hardness	mg/l	900	720			X	X				400
LGS/HGS	% by Vol	1.0/2.1	0.9/2.1								
LGS/HGS	ppb	9.04/30.83	8.63/30.87								
ASG	SG	3.686	3.702								
Additional Properties											
KCl %	-	6.50	6.50								

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Whilst circulating bottom's up following tagging cement further treat active fluid w/ sodium bicarbonate to control hardness & citric acid to lower pH.

Add HEC to maintain rheology.

Add ALDACIDE G to inhibit bacterial growth.

Rig Activity

Continue to POOH. Rig up 2 7/8" handling equipment. Clean rig floor & prepare to RIH w/ 81/2" mill tooth bit. RIH to 1318 m. POOH due to pressure increase when pumping/filling pipe. RIH 3 1/2" mule shoe. POOH plugged mule shoe. RIH on 5" DP. Wash down f/ 1880 m to top of cement at 1985 m. CBU. Flowcheck, POOH. Start to pick up 2 7/8" tubing,

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	102.000		5.000	97.000	$A3,652.90
potassium chloride	1000 kg bag	19		1	18	$A1,483.52
citric acid	25 kg bag	5		5		$A381.00
sodium bicarbonate	25 kg bag	13		13		$A367.25
ALDACIDE G	25 kg can	16		1	15	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	122			122	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	16		5	11	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	8			8	
PAC-L	25 kg bag	32			32	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	3.0
VSM-300	20 20 20 210 210 210 210	3.0
VSM-300	20 20 20 210 210 210 210	3.0
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	21.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	3.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	729.0	Dewatering		SCE	-104.8
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	729.0	Whole Mud		Trips	
Reserve	568.0	Barite	7.5	Other	
Prev Vol	2344.9	Chemicals	5.3	Total Surface	
Net Change	-92.0	Other		Downhole	
Total Vol	2252.9	Total	12.8	Total Losses	-104.8

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A6,057.76	Total Daily Cost	$A7,597.76
Cumulative Products Cost	$A626,808.67	Total Cumulative Cost	$A754,628.67

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 43

Daily Drilling Fluid Report

Date 10/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity circulate	

Operator: ADA DRILLING	Report For: Bryan Houston / Kevin Monkhouse	Well Name: Rockhopper-1	
Contractor: MAERSK	Report For: Brian Meechan / Geoff Chapman	Rig Name: Kantan IV	Unit System: ADA Drilling
Country: Australia	State/Province/Region: Tasmania	Geographic Area/County: Bass Strait	Field or Block: T/18P

Bit Information

Bit Size	8.500	in
Make/Type	GEO/none	
Jets		
TFA	18.000	sq-in
Jets Velocity	11	ft/sec
Jet Impact Force	31.3	lbf
Bit HHSI	0.01	hhp/in2
Press Drop @ Bit	1	psi
Bit Depth	1,896.0	m
ECD @ Csg Shoe	9.86	ppg
ECD @ Bit	9.87	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,896.0
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	60	0
gpm|bbl/min	301 | 7.17	301 | 7.17	
Total GPM	602	AV, Riser 40.4	Circ Press psi 900
Total Circ Time	91	AV min DP 270.3	Tot Pres Loss 847
BU Time , min	29	AV max DC	Press Drop DP 520
Total Strokes	10,946	BU Strokes 3,537	Press Drop An 154

Properties		1	Hyd 2	3	4	Targets				Program	
Source		Flow Line	Pit #2								
Time		7:00	22:30								
Depth	m	1,970	1,970								
FL Temp	Deg C	41	42								
Density @ Deg C	ppg	9.40 @ 36	9.40 @ 33							9.00	10.00
FV @ Deg C	sec/qt	50 @ 36	52 @ 33								
PV @ Deg C	cP	17 @ 49	16 @ 49								
YP	lbs/100 ft2	27	25								
GELS	lbs/100 ft2	9/12/15	8/12/14								
600/300		61.0/44.0	57.0/41.0								
200/100		36.0/26.0	33.0/23.0								
6/3		8.0/7.0	8.0/7.0								
API Filt	ml/30 min	5.5	5.5			X	X				5.0
HTHP @ Deg C	ml/30 min	10.5 @ 49	10.0 @ 49								13.0
Cake API/HTHP	32nd in	1/2	1/2								
Corr Solid	% by Vol	3.0	3.0								
NAP/Water	% by Vol	-/94.0	-/94.0								
Sand	% by vol	0.25	0.20								1.0
MBT	ppb Eq.	7.5	7.5								25.0
pH @ Deg C		11.00 @ 22	11.00 @ 22			X	X			8.50	9.50
ALK Mud	Pm	3.50	4.00								
ALK Filt	Pf/Mf	3.20/7.50	3.50/7.20								
Chlorides	mg/l	36,000	36,000								
Tot. Hardness	mg/l	960	900			X	X				400
LGS/HGS	% by Vol	0.9/2.1	0.9/2.1								
LGS/HGS	ppb	8.63/30.87	8.63/30.87								
ASG	SG	3.702	3.702								
Additional Properties											
KCl %	-	6.50	6.50								

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Whilst circulating, condition active fluid w/ addition of HEC to increase low end rheology following cement contamination.

Circulate active pit to ensure full release of polymer additions.

Treat active volume w/ OXYGON corrosion inhibitor as per program.

Treat surface volume w/ ALDACIDE G bacteriacide.

Rig Activity

RIH to 1982 m. Rig up cement head & CBU. Pump 5 bbl spacer. Test line & diplace f/ cement unit. Rig down cement head & POOH to 1817 m. Ciculate 1.5 x bottom's up. POOH to 1788 m. Cut & slip drill line. Service top drive & continue POOH. L/O 2 7/8" tubing. RIH 9 stands contaminated 5 inch drill pipe & layout same. RIH to 1817 m, circulate 1.5 x bottom's up. Wash down f/ 1817 m to 1896 m & tag cement.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
OXYGON	50 lb can	8		1	7	$A572.03
ALDACIDE G	25 kg can	15		1	14	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	122			122	
barite	1 tons bulk	97.000			97.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
hec	25 kg bag	11		11		
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
PAC-L	25 kg bag	32			32	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	

Daily Products Cost	$A745.12	Total Daily Cost			$A2,285.12
Cumulative Products Cost	$A627,553.79	Total Cumulative Cost			$A756,913.79
Baroid Representatives	Mike Lawrance				
Office	90 Talinga Rd Melbourne		Telephone	61-03-9581-7555	
Warehouse	c/o of Esso Australia Ltd		Telephone	61-3-56-881-445	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	3.5
VSM-300	20 20 20 210 210 210 210	3.5
VSM-300	20 20 20 210 210 210 210	3.5
VSM-300	20 20 20 80 80 80 80	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	3.5
Trips	16.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	422.5	Base		Fluid Dumped	
Pipe Cap	108.8	Drill Water		Transferred	
Active Pits	776.0	Dewatering		SCE	-2.4
Total Hole	907.3	Sea Water		Evaporation	-0.6
Total Circ	1307.3	Whole Mud		Trips	
Reserve	568.0	Barite		Other	
Prev Vol	2252.9	Chemicals	1.5	Total Surface	
Net Change	-1.5	Other		Downhole	
Total Vol	2251.3	Total	1.5	Total Losses	-3.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

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Baroid Fluid Services

Report No 44

Daily Drilling Fluid Report

Date 11/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** RIH		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information			Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	8.500	in									Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type	GEO/none		Drill Pipe	5.000	4.276	1,880.0		30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets								13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	18.000	sq-in						9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity		ft/sec									bbl/strk	0.119	0.119	0.119
Jet Impact Force		lbf									SPM	0	0	0
Bit HHSI		hhp/in2									gpm|bbl/min			
Press Drop @ Bit		psi									Total GPM		AV, Riser	Circ Press psi
Bit Depth	1,880.0	m	Riser	19.750		100.0					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe		ppg	Open Hole	8.500		1,557.0					BU Time , min		AV max DC	Press Drop DP
ECD @ Bit		ppg					Leak Off ppg			14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2									**Fluid Type** 8 1/2" KCl/Polymer
Time		20:00	8:00									Monitor bottom's up following tagging cement.
Depth	m	1,970	1,965									Divert fluid accordingly.
FL Temp	Deg C											
Density @ Deg C	ppg	9.40 @ 32	9.40 @ 31							9.00	10.00	Whilst circulating, add BARAZAN D PLUS to
FV @ Deg C	sec/qt	53 @ 32	53 @ 31									maintain rheology.
PV @ Deg C	cP	16 @ 49	17 @ 49									
YP	lbs/100 ft2	25	24									Pump out sandtraps to reserve pits to allow
GELS	lbs/100 ft2	7/11/14	8/12/15									agitation & treatment.
600/300		57.0/41.0	58.0/41.0									
200/100		33.0/23.0	34.0/25.0									Clean out shakers, flowline & sandtraps.
6/3		8.0/7.0	8.0/7.0									
API Filt	ml/30 min	5.5	5.5			X	X				5.0	
HTHP @ Deg C	ml/30 min	10.5 @ 49	11.0 @ 49								13.0	
Cake API/HTHP	32nd in	1/2	1/2									
Corr Solid	% by Vol	3.1	3.0									
NAP/Water	% by Vol	-/94.0	-/94.0									
Sand	% by vol	0.25	0.20								1.0	**Rig Activity**
MBT	ppb Eq.	7.5	7.5								25.0	CBU. Divert unconditioned mud. Flow check,
pH @ Deg C		11.00 @ 22	11.00 @ 22			X	X			8.50	9.50	static. Break down cement head. Service top
ALK Mud	Pm	4.00	3.70									drive. Continue w/ rig maintenance. RIH w/ 5"
ALK Filt	Pf/Mf	3.40/7.80	3.50/7.30									drill pipe to 1880 m.
Chlorides	mg/l	35,500	36,000									
Tot. Hardness	mg/l	900	880			X	X				400	
LGS/HGS	% by Vol	1.0/2.1	0.9/2.1									
LGS/HGS	ppb	9.04/30.83	8.63/30.87									
ASG	SG	3.686	3.702									
Additional Properties												
KCl %	-	6.50	6.50									

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	122		3	119	$A646.02
ALDACIDE G	25 kg can	14			14	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	97.000			97.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	126			126	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	32			32	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment			
Shaker	Screens	Hrs	
VSM-300	20 20 20 210 210 210 210	1.0	
VSM-300	20 20 20 210 210 210 210	1.0	
VSM-300	20 20 20 210 210 210 210	1.0	
VSM-300	20 20 20 80 80 80 80	1.0	
Hydrocyclone	Cones	Screens	Hrs
Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time	
Drilling	
Circulating	1.0
Trips	8.0
Rig	15.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown	8 1/2" KCl/Polymer				
Active	bbl	Additions	bbl	Losses	bbl
Annulus	419.8	Base		Fluid Dumped	
Pipe Cap	107.9	Drill Water		Transferred	
Active Pits	327.2	Dewatering		SCE	-78.7
Total Hole	907.7	Sea Water		Evaporation	
Total Circ	854.8	Whole Mud		Trips	
Reserve	938.0	Barite		Other	
Prev Vol	2251.3	Chemicals	0.3	Total Surface	
Net Change	-78.4	Other		Downhole	
Total Vol	2172.9	Total	0.3	Total Losses	-78.7

Fluid Types	Vol bbl

Deviation Information		
Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A646.02	Total Daily Cost	$A2,186.02
Cumulative Products Cost	$A628,199.81	Total Cumulative Cost	$A759,099.81

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 45

Daily Drilling Fluid Report

Date 12/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Rig Service		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information			Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	8.500	in									Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type	GEO/none		Drill Pipe	5.000	4.276	1,880.0		30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets								13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	18.000	sq-in						9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity		ft/sec									bbl/strk	0.119	0.119	0.119
Jet Impact Force		lbf									SPM	0	0	0
Bit HHSI		hhp/in2									gpm|bbl/min			
Press Drop @ Bit		psi									Total GPM		AV, Riser	Circ Press psi
Bit Depth	1,880.0	m	Riser	19.750		100.0					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe		ppg	Open Hole	8.500		1,557.0					BU Time , min		AV max DC	Press Drop DP
ECD @ Bit		ppg					Leak Off ppg			14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2									**Fluid Type** 8 1/2" KCl/Polymer
Time		18:00	8:00									Whilst circulating, condition mud w/ addition of BARAZAN D PLUS to increase low end rheology as per program.
Depth	m	1,965	1,965									
FL Temp	Deg C											
Density @ Deg C	ppg	9.40 @ 35	9.40 @ 30							9.00	10.00	DEXTRID LTE & PAC LE addition to ensure tight filtration.
FV @ Deg C	sec/qt	54 @ 35	52 @ 30									
PV @ Deg C	cP	18 @ 49	17 @ 49									Add water whilst circulating to offset loss f/ evaporation & to ensure hydration of polymer additions.
YP	lbs/100 ft2	30	24									
GELS	lbs/100 ft2	9/14/16	8/11/13									
600/300		66.0/48.0	58.0/41.0									
200/100		40.0/29.0	34.0/24.0									
6/3		9.0/8.0	8.0/7.0									
API Filt	ml/30 min	4.8	5.5					X			5.0	ALDACIDE G addition to active fluid to inhibit bacterial growth.
HTHP @ Deg C	ml/30 min	9.0 @ 49	10.8 @ 49								13.0	
Cake API/HTHP	32nd in	1/2	1/2									Mud lab maintenance.
Corr Solid	% by Vol	3.1	3.0									
NAP/Water	% by Vol	-/94.0	-/94.0									**Rig Activity**
Sand	% by vol	0.20	0.20								1.0	Rig service: work on compensator, grease standpipe & choke manifold, top drive RPM, shift t-drive transmission.
MBT	ppb Eq.	7.5	7.5								25.0	
pH @ Deg C		11.00 @ 22	11.00 @ 22			X	X			8.50	9.50	Circulate & condition mud.
ALK Mud	Pm	4.20	3.60									Continue w/ rig service.
ALK Filt	Pf/Mf	3.60/7.40	3.40/7.30									
Chlorides	mg/l	35,500	36,000									
Tot. Hardness	mg/l	900	880			X	X				400	
LGS/HGS	% by Vol	1.0/2.1	0.9/2.1									
LGS/HGS	ppb	9.04/30.83	8.63/30.87									
ASG	SG	3.686	3.702									
Additional Properties												
KCl %	-	6.50	6.50									

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	119		6	113	$A1,292.04
PAC-L	25 kg bag	32		4	28	$A641.28
DEXTRID LTE	25 kg sack	126		8	118	$A423.84
ALDACIDE G	25 kg can	14		1	13	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	97.000			97.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Daily Products Cost	$A2,530.25	Total Daily Cost	$A4,070.25
Cumulative Products Cost	$A630,730.06	Total Cumulative Cost	$A763,170.06

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	
Rig	22.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	419.8	Base		Fluid Dumped	
Pipe Cap	107.9	Drill Water	5.0	Transferred	
Active Pits	327.2	Dewatering		SCE	-3.0
Total Hole	907.7	Sea Water		Evaporation	-5.0
Total Circ	854.8	Whole Mud	1.1	Trips	
Reserve	938.0	Barite		Other	
Prev Vol	2172.9	Chemicals	2.0	Total Surface	
Net Change	0.1	Other		Downhole	
Total Vol	2172.9	Total	8.1	Total Losses	-8.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 46

Daily Drilling Fluid Report

Date 13/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	GEO/none	
Jets		
TFA	18.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,880.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,880.0
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		8:00	17:00					
Depth	m	1,965	1,965					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 31	9.40 @ 34				9.00	10.00
FV @ Deg C	sec/qt	52 @ 31	50 @ 34					
PV @ Deg C	cP	19 @ 49	21 @ 49					
YP	lbs/100 ft2	29	34					
GELS	lbs/100 ft2	9/13/16	10/15/18					
600/300		67.0/48.0	76.0/55.0					
200/100		41.0/30.0	46.0/33.0					
6/3		9.0/8.0	11.0/9.0					
API Filt	ml/30 min	5.0	4.8					5.0
HTHP @ Deg C	ml/30 min	10.5 @ 49	9.5 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.25	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		11.00 @ 22	11.00 @ 22			X X	8.50	9.50
ALK Mud	Pm	4.20	4.10					
ALK Filt	Pf/Mf	3.80/7.40	3.60/7.30					
Chlorides	mg/l	36,000	35,500					
Tot. Hardness	mg/l	900	880			X X		400
LGS/HGS	% by Vol	0.9/2.1	1.0/2.1					
LGS/HGS	ppb	8.63/30.87	9.04/30.83					
ASG	SG	3.702	3.686					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Whilst circulating add PAC LE & DEXTRID LTE to lower filtration.
Add water to offset evaporation & ensure hydration of polymers.

Inspect shaker screens & change out w/ previously used as necessary.

Change out valves in mixing line to pits.

Conduct full audit on all lab equipment & reagents.

Rig Activity

Rig servive: compensator manifold, change 2 airlines on shakers, bolt check on derrick.
Prepare to change out drilling line spool.
Circulate & condition mud.
Coninue w/ rig service: work on mud pumps.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	28		2	26	$A320.64
DEXTRID LTE	25 kg sack	118		4	114	$A211.92
ALDACIDE G	25 kg can	13			13	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	113			113	
barite	1 tons bulk	97.000			97.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	
Rig	22.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	419.8	Base		Fluid Dumped	
Pipe Cap	107.9	Drill Water	4.0	Transferred	
Active Pits	327.2	Dewatering		SCE	-0.6
Total Hole	907.7	Sea Water		Evaporation	-4.0
Total Circ	854.8	Whole Mud		Trips	
Reserve	938.0	Barite		Other	
Prev Vol	2172.9	Chemicals	0.6	Total Surface	
Net Change	0.0	Other		Downhole	
Total Vol	2172.9	Total	4.6	Total Losses	-4.6

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A532.56	Total Daily Cost	$A2,072.56
Cumulative Products Cost	$A631,262.62	Total Cumulative Cost	$A765,242.62

Baroid Representatives Mike Lawrance

Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555
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Baroid Fluid Services

Report No 47

Daily Drilling Fluid Report

Date 14/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	GEO/none	
Jets		
TFA	18.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,880.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,880.0
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program		Fluid Treatments
Source		Pit #2	Flow Line	Pit #2					Fluid Type 8 1/2" KCl/Polymer
Time		7:45	13:40	18:00					Whilst circulating add ALDACIDE G to inhibit bacterial growth.
Depth	m	1,965	1,965	1,965					
FL Temp	Deg C		44						1340 hrs mud check is f/ a bottom's up sample taken to ascertain any deterioration in mud properties following circa 24hrs under static downhole conditions - none detected, fluid stable, slight drop in pH only.
Density @ Deg C	ppg	9.40 @ 26	9.40 @ 33	9.40 @ 34			9.00	10.00	
FV @ Deg C	sec/qt	56 @ 26	52 @ 33	52 @ 34					
PV @ Deg C	cP	21 @ 49	21 @ 49	23 @ 49					
YP	lbs/100 ft2	38	37	31					
GELS	lbs/100 ft2	10/14/18	10/15/18	10/14/17					
600/300		80.0/59.0	79.0/58.0	77.0/54.0					
200/100		48.0/35.0	48.0/36.0	46.0/32.0					
6/3		11.0/9.0	12.0/9.0	11.0/9.0					
API Filt	ml/30 min	5.0	4.8	4.8				5.0	Continue to by-pass sandtraps so as to ensure maximum treatable surface volume. Add water whilst circulating to offset loss f/ evaporation & to ensure fluid system properly hydrated. Receive Barite.
HTHP @ Deg C	ml/30 min	9.8 @ 49	9.5 @ 49	9.8 @ 49				13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2					
Corr Solid	% by Vol	3.0	3.1	3.0					
NAP/Water	% by Vol	-/94.0	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20	0.20				1.0	
MBT	ppb Eq.	7.5	7.5	7.5				25.0	
pH @ Deg C		11.00 @ 22	10.50 @ 22	10.50 @ 22		X X X	8.50	9.50	
ALK Mud	Pm	4.30	4.40	4.50					
ALK Filt	Pf/Mf	2.80/6.20	2.40/5.90	2.20/5.60					
Chlorides	mg/l	36,000	35,000	36,000					
Tot. Hardness	mg/l	860	840	840		X X X		400	
LGS/HGS	% by Vol	0.9/2.1	1.0/2.1	0.9/2.1					
LGS/HGS	ppb	8.63/30.87	9.44/30.80	8.63/30.87					
ASG	SG	3.702	3.670	3.702					
Additional Properties									**Rig Activity**
KCl %	-	6.50	6.40	6.50					Continue rig service: racking arm modifications, mud pumps, spot drilling line shaft in spool. Circulate & condition mud.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	13		1	12	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	113			113	
barite	1 tons bulk	97.000	50.000		147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	114			114	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	26			26	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	72			72	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	
Rig	22.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	419.8	Base		Fluid Dumped	
Pipe Cap	107.9	Drill Water	4.0	Transferred	
Active Pits	327.2	Dewatering		SCE	-0.1
Total Hole	907.7	Sea Water		Evaporation	-4.0
Total Circ	854.8	Whole Mud		Trips	
Reserve	938.0	Barite		Other	
Prev Vol	2172.9	Chemicals	0.1	Total Surface	
Net Change	0.0	Other		Downhole	
Total Vol	2172.9	Total	4.1	Total Losses	-4.1

Fluid Types | Vol bbl

Daily Products Cost	$A173.09	Total Daily Cost	$A1,713.09
Cumulative Products Cost	$A631,435.71	Total Cumulative Total Cost	$A766,955.71

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 48

Daily Drilling Fluid Report

Date 15/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	GEO/none	
Jets		
TFA	18.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	0.1	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	0.1
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		16:00	7:30					
Depth	m	1,965	1,965					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 30	9.40 @ 29				9.00	10.00
FV @ Deg C	sec/qt	55 @ 30	55 @ 29					
PV @ Deg C	cP	21 @ 49	20 @ 49					
YP	lbs/100 ft2	36	34					
GELS	lbs/100 ft2	10/15/19	10/15/18					
600/300		78.0/57.0	74.0/54.0					
200/100		47.0/34.0	44.0/33.0					
6/3		11.0/9.0	11.0/9.0					
API Filt	ml/30 min	4.7	4.8					5.0
HTHP @ Deg C	ml/30 min	9.5 @ 49	9.5 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.0					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		10.50 @ 22	10.50 @ 22			X X	8.50	9.50
ALK Mud	Pm	4.40	4.50					
ALK Filt	Pf/Mf	1.20/4.30	1.40/4.60					
Chlorides	mg/l	36,000	36,000					
Tot. Hardness	mg/l	880	840			X X		400
LGS/HGS	% by Vol	0.9/2.1	0.9/2.1					
LGS/HGS	ppb	8.63/30.87	8.63/30.87					
ASG	SG	3.702	3.702					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Circulate mud.
Bleed in water whilst circulating to offset evaporation loss.

Maintain properties of pre-mix w/ addition of caustic potash, PAC-LE & BARAZAN D PLUS.

Note: the addition of premium products CLAYSEAL PLUS & EZ-MUD (PHPA) will be made just prior to kicking off sidetrack.

Cunduct full screen inventory.

Rig Activity

Work on drawworks. Pull old and new drill line through to rig floor. Clean ends for snake to be installed. Continue PM's. Circulate mud & POOH. Replace airline brackets, port derrick leg. Pressure test surface equipment. Prepare to install new drill line.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	26		3	23	$A480.96
BARAZAN D PLUS	25 kg bag	113		1	112	$A215.34
potassium hydroxide	20 kg pail	72		1	71	$A132.11
ALDACIDE G	25 kg can	12			12	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	114			114	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
potassium chloride	1000 kg bag	18			18	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 210 210 210 210	2.0
VSM-300	20 20 20 80 80 80 80	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	4.0
Rig	18.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	0.1	Base		Fluid Dumped	
Pipe Cap	0.0	Drill Water	4.0	Transferred	
Active Pits	277.5	Dewatering		SCE	-39.0
Total Hole	955.9	Sea Water		Evaporation	-4.0
Total Circ	277.6	Whole Mud		Trips	-2.0
Reserve	899.0	Barite		Other	
Prev Vol	2172.9	Chemicals	0.5	Total Surface	
Net Change	-40.5	Other		Downhole	
Total Vol	2132.4	Total	4.5	Total Losses	-45.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Daily Products Cost	$A828.41	Total Daily Cost	$A2,368.41
Cumulative Products Cost	$A632,264.12	Total Cumulative Cost	$A769,324.12

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 49

Daily Drilling Fluid Report

Date 16/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500	1,557.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2							Fluid Type 8 1/2" KCl/Polymer
Time		7:45	17:45							No circulation due to rig activity.
Depth	m	1,965	1,965							
FL Temp	Deg C									Treat reserve volume w/ DEXTRID LTE &
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 24					9.00	10.00	BARAZAN D PLUS to maintain tight filtration &
FV @ Deg C	sec/qt	56 @ 25	56 @ 24							programmed rheology respectively.
PV @ Deg C	cP	21 @ 49	20 @ 49							
YP	lbs/100 ft2	31	34							Conduct inventory of all sack products.
GELS	lbs/100 ft2	9/13/17	10/14/17							
600/300		73.0/52.0	74.0/54.0							
200/100		43.0/32.0	44.0/33.0							
6/3		10.0/8.0	10.0/9.0							
API Filt	ml/30 min	4.8	4.8						5.0	
HTHP @ Deg C	ml/30 min	9.5 @ 49	10.0 @ 49						13.0	
Cake API/HTHP	32nd in	1/2	1/2							
Corr Solid	% by Vol	3.1	3.1							
NAP/Water	% by Vol	-/94.0	-/94.0							
Sand	% by vol	0.20	0.20						1.0	**Rig Activity**
MBT	ppb Eq.	7.5	7.5						25.0	Remove wraps f/ deadman anchor, remove
pH @ Deg C		10.50 @ 22	10.50 @ 22			X	X	8.50	9.50	crown-o-matic ready for slipping drill line. Grease
ALK Mud	Pm	4.40	4.30							& service TDS travelling blocks, dolly rollers.
ALK Filt	Pf/Mf	0.80/4.20	0.75/4.25							Hold tool box talk. Pull new drill line onto drum.
Chlorides	mg/l	35,500	35,000							Remove used drill line f/ drawworks. Restore
Tot. Hardness	mg/l	880	900			X	X		400	floor to drilling mode.
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1							Continue working on cranes.
LGS/HGS	ppb	9.04/30.83	9.44/30.80							
ASG	SG	3.686	3.670							
Additional Properties										
KCl %	-	6.50	6.40							

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	112		2	110	$A430.68
DEXTRID LTE	25 kg sack	114		6	108	$A317.88
ALDACIDE G	25 kg can	12			12	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	23			23	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment				Time	
Shaker	Screens		Hrs	Drilling	
VSM-300	20 20 20 210 210 210 210		0.0	Circulating	
VSM-300	20 20 20 210 210 210 210		0.0	Trips	
VSM-300	20 20 20 210 210 210 210		0.0	Rig	24.0
VSM-300	20 20 20 80 80 80 80		0.0	Surveys	
				Fishing	
				Run Casing	
				Coring	
				Reaming	
Hydrocyclone	Cones	Screens	Hrs	Testing	
				Logging	
				Dir Work	
				Repair	
				Other	
Centrifuge	Speed	Feed Rate	Hrs	Total	24.0
518	4,000	80.00		Rotating	
518	4,000	80.00		ROP	
				Dil Rate	0.00

Fluid Volume Breakdown		8 1/2" KCl/Polymer			
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	255.0	Dewatering		SCE	-5.3
Total Hole	955.9	Sea Water		Evaporation	
Total Circ	255.0	Whole Mud		Trips	-12.0
Reserve	905.0	Barite		Other	
Prev Vol	2132.4	Chemicals	0.8	Total Surface	
Net Change	-16.5	Other		Downhole	
Total Vol	2115.9	Total	0.8	Total Losses	-17.3

Fluid Types	Vol bbl

Deviation Information		
Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A748.56	Total Daily Cost	$A2,288.56
Cumulative Products Cost	$A633,012.68	Total Cumulative Cost	$A771,612.68

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 50

Daily Drilling Fluid Report

Date 17/01/2010		Depth 3,522.0 m	
Spud Date 30/11/2009		Rig Activity Rig Service	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth 1,965.0	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500	1,557.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Flow Line	Flow Line							Fluid Type 8 1/2" KCl/Polymer
Time		17:30	8:00							Circulate mud. Add DEXTRID LTE to maintain low filtration.
Depth	m	1,965	1,965							
FL Temp	Deg C		37							Add water whilst circulating to offset evaporation loss & maintain hydration of polymers.
Density @ Deg C	ppg	9.40 @ 28	9.40 @ 33					9.00	10.00	
FV @ Deg C	sec/qt	54 @ 28	52 @ 33							Conduct inventory on all liquid products.
PV @ Deg C	cP	20 @ 49	21 @ 49							
YP	lbs/100 ft2	34	36							Maintain screens.
GELS	lbs/100 ft2	10/14/17	10/14/17							
600/300		74.0/54.0	78.0/57.0							
200/100		44.0/33.0	47.0/36.0							
6/3		11.0/9.0	11.0/9.0							
API Filt	ml/30 min	4.8	4.7						5.0	
HTHP @ Deg C	ml/30 min	9.5 @ 49	9.0 @ 49						13.0	
Cake API/HTHP	32nd in	1/2	1/2							
Corr Solid	% by Vol	3.2	3.0							
NAP/Water	% by Vol	-/93.9	-/94.0							
Sand	% by vol	0.20	0.20						1.0	Rig Activity
MBT	ppb Eq.	7.5	7.5						25.0	Install bails-elevators. Change out burst hose on iron roughneck. RIH 5" drill pipe to 1880 m, circulate. POOH. Rig up and test upper IBOP. RIH BHA & check free of cement. Continue work on cranes.
pH @ Deg C		10.50 @ 22	10.50 @ 22			X	X	8.50	9.50	
ALK Mud	Pm	4.30	4.50							
ALK Filt	Pf/Mf	0.75/4.20	0.80/4.30							
Chlorides	mg/l	35,500	36,000							
Tot. Hardness	mg/l	880	880			X	X		400	
LGS/HGS	% by Vol	1.2/2.0	0.9/2.1							
LGS/HGS	ppb	10.89/29.36	8.63/30.87							
ASG	SG	3.600	3.702							
Additional Properties										
KCl %	-	6.50	6.50							

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
DEXTRID LTE	25 kg sack	108		4	104	$A211.92
ALDACIDE G	25 kg can	12			12	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	110			110	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	23			23	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Daily Products Cost	$A211.92	Total Daily Cost	$A1,751.92
Cumulative Products Cost	$A633,224.60	Total Cumulative Cost	$A773,364.60

Solids Control Equipment			
Shaker	Screens	Hrs	
VSM-300	20 20 20 210 210 210 210	2.0	
VSM-300	20 20 20 210 210 210 210	2.0	
VSM-300	20 20 20 210 210 210 210	2.0	
VSM-300	20 20 20 80 80 80 80	2.0	
Hydrocyclone	Cones	Screens	Hrs
Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time	
Drilling	
Circulating	2.0
Trips	7.0
Rig	15.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown	8 1/2" KCl/Polymer				
Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	4.0	Transferred	
Active Pits	255.0	Dewatering		SCE	
Total Hole	955.9	Sea Water		Evaporation	-4.4
Total Circ	255.0	Whole Mud		Trips	
Reserve	905.0	Barite		Other	
Prev Vol	2115.9	Chemicals	0.4	Total Surface	
Net Change	0.0	Other		Downhole	
Total Vol	2115.9	Total	4.4	Total Losses	-4.4

Fluid Types	Vol bbl

Deviation Information	
Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No **51**

Daily Drilling Fluid Report

Date 18/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Tag cement		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY/FM3755	
Jets	4x16	
TFA	0.785	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,896.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,697.8
Drill Pipe	5.000	3.000	141.6
Drill Collar	6.750	2.875	56.6
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		8:00	17:45					
Depth	m	1,965	1,965					
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 23	9.40 @ 22				9.00	10.00
FV @ Deg C	sec/qt	56 @ 23	57 @ 22					
PV @ Deg C	cP	20 @ 49	21 @ 49					
YP	lbs/100 ft2	34	31					
GELS	lbs/100 ft2	10/15/17	9/13/16					
600/300		74.0/54.0	73.0/52.0					
200/100		44.0/34.0	43.0/32.0					
6/3		11.0/9.0	10.0/8.0					
API Filt	ml/30 min	4.8	4.8					5.0
HTHP @ Deg C	ml/30 min	9.5 @ 49	9.5 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.1	3.1					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		10.50 @ 22	10.50 @ 22			X X	8.50	9.50
ALK Mud	Pm	4.20	4.30					
ALK Filt	Pf/Mf	0.70/4.30	0.75/4.35					
Chlorides	mg/l	35,500	35,500					
Tot. Hardness	mg/l	880	880			X X		400
LGS/HGS	% by Vol	1.0/2.1	1.0/2.1					
LGS/HGS	ppb	9.04/30.83	9.04/30.83					
ASG	SG	3.686	3.686					
Additional Properties								
KCl %	-	6.50	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Add ALDACIDE G to surface volume to inhibit bacterial growth.

Re-arrange sack room.

Make up new premix. Additions to be charged at the start of the sidetrack section.

Dress shakers for maximum solids control efficiency for drilling out cement.

Rig Activity

Complete maintenance & housekeeping. Make up BOP test tool, RIH & flush wellhead. Pressure test as per program. POOH, lay out test tool, install diverter element. Service crown, top drive & dolly track.
Make up 8.5" PDC bit & slick BHA to 198 m. RIH to 1880 m. Check parameters & tag cement at 1896 m

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	12		1	11	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	110			110	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	104			104	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	23			23	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14			14	
SOURSCAV	25 kg pail	32			32	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50	
VSM-300	20 20 20 210 210 210 210	0.5
VSM-300	20 20 20 175 175 175 175	0.5
VSM-300	20 20 20 175 175 175 175	0.5

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	3.0
Rig	21.0
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	417.8	Base		Fluid Dumped	
Pipe Cap	102.3	Drill Water		Transferred	
Active Pits	320.0	Dewatering		SCE	
Total Hole	896.1	Sea Water		Evaporation	
Total Circ	840.1	Whole Mud		Trips	
Reserve	899.9	Barite		Other	
Prev Vol	2115.9	Chemicals	0.1	Total Surface	
Net Change	0.1	Other		Downhole	
Total Vol	2116.0	Total	0.1	Total Losses	

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	3,522.0	m
Survey TVD	3,131.9	m
Angle	41.35	Deg
Direction	358	
Horiz Displ.		m

Daily Products Cost	$A173.09	Total Daily Cost	$A1,713.09
Cumulative Products Cost	$A633,397.69	Total Cumulative Cost	$A775,077.69

Baroid Representatives	Mike Lawrance		
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No **52A**

Daily Drilling Fluid Report

Date 19/01/2010	**Depth** 3,522.0 m		
Spud Date 30/11/2009	**Rig Activity** Rig Service		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	in
Make/Type	
Jets	
TFA	sq-in
Jets Velocity	ft/sec
Jet Impact Force	lbf
Bit HHSI	hhp/in2
Press Drop @ Bit	psi
Bit Depth	m
ECD @ Csg Shoe	ppg
ECD @ Bit	ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,557.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Flow Line					
Time		15:50	6:00					
Depth	m	1,970	1,970					
FL Temp	Deg C		45					
Density @ Deg C	ppg	9.40 @ 35	9.40 @ 36				9.00	10.00
FV @ Deg C	sec/qt	55 @ 35	51 @ 36					
PV @ Deg C	cP	21 @ 49	22 @ 49					
YP	lbs/100 ft2	36	29					
GELS	lbs/100 ft2	9/14/17	8/12/16					
600/300		78.0/57.0	73.0/51.0					
200/100		47.0/36.0	40.0/27.0					
6/3		9.0/8.0	9.0/7.0					
API Filt	ml/30 min	4.8	4.7					5.0
HTHP @ Deg C	ml/30 min	9.5 @ 49	9.5 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.1	3.0					
NAP/Water	% by Vol	-/94.0	-/94.0					
Sand	% by vol	0.20	0.20					1.0
MBT	ppb Eq.	7.5	7.5					25.0
pH @ Deg C		11.50 @ 22	11.50 @ 22			X X	8.50	9.50
ALK Mud	Pm	6.50	6.30					
ALK Filt	Pf/Mf	1.50/5.40	1.40/5.20					
Chlorides	mg/l	35,000	36,000					
Tot. Hardness	mg/l	1,240	1,200			X X		400
LGS/HGS	% by Vol	1.0/2.1	0.9/2.1					
LGS/HGS	ppb	9.44/30.80	8.63/30.87					
ASG	SG	3.670	3.702					
Additional Properties								
KCl %	-	6.40	6.50					

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Whilst drilling out cement continue w/ short system (sandtraps by-passed) to minimise the volume of fluid contaminated w/ cement.
Add water whilst circulating to offset loss f/ evaporaton.

Complete making up further premix volume - to be charged off against ST-1.
Note: Calcium carbonate bridging agents, which are stripped out by SCE, will be added upon kicking off sidetrack. This will reduce API Filtrate loss.
Awaiting arrival of citric acid & sodium bicarbonate to treat pH & hardness respectively.

Rig Activity

Drill out cement.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	11			11	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
BARAZAN D PLUS	25 kg bag	110			110	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	215			215	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	54			54	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	104			104	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	120			120	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	23			23	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	14		48	62	
SOURSCAV	25 kg pail	32			32	

Daily Products Cost	$A0.00	Total Daily Cost	$A1,540.00
Cumulative Products Cost	$A633,397.69	Total Cumulative Cost	$A776,617.69

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50	
VSM-300	20 20 20 210 210 210 210	6.0
VSM-300	20 20 20 175 175 175 175	6.0
VSM-300	20 20 20 175 175 175 175	6.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	6.0
Trips	6.0
Rig	5.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	17.5
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	2.0	Transferred	-0.1
Active Pits	226.5	Dewatering		SCE	-19.5
Total Hole	955.9	Sea Water		Evaporation	-6.0
Total Circ	226.5	Whole Mud		Trips	
Reserve	890.0	Barite		Other	-20.0
Prev Vol	2116.0	Chemicals		Total Surface	
Net Change	-43.6	Other		Downhole	
Total Vol	2072.4	Total	2.0	Total Losses	-45.6

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	3,522.0 m
Survey TVD	3,131.9 m
Angle	41.35 Deg
Direction	358
Horiz Displ.	m

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 052B

Daily Drilling Fluid Report

Date 19/01/2010		Depth 1,964.0 m	
Spud Date 30/11/2009		Rig Activity Cont RIH 5" DP	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,964.0	m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit	9.40	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,802.2
Drill Pipe	5.000	3.000	132.1
Drill Collar	6.750	2.875	29.6
Riser	19.750		100.0

in Casing m

	OD	Set	MD
	30.000	@	158.0
	13.375	@	961.0
	9.625	@	1,964.0
Leak Off ppg			14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties

		Hyd 1	2	3	4
Source		Pit #2	Pit #2		
Time		20:00	22:00		
Depth	m	1,964	1,964		
FL Temp	Deg C				
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 25		
FV @ Deg C	sec/qt	56 @ 35	56 @ 25		
PV @ Deg C	cP	22 @ 49	22 @ 49		
YP	lbs/100 ft2	30	30		
GELS	lbs/100 ft2	9/13/16	9/13/16		
600/300		74.0/52.0	74.0/52.0		
200/100		41.0/27.0	41.0/27.0		
6/3		9.0/8.0	9.0/8.0		
API Filt	ml/30 min	4.6	4.6		
HTHP @ Deg C	ml/30 min	9.8 @ 49	9.7 @ 49		
Cake API/HTHP	32nd in	1/2	1/2		
Corr Solid	% by Vol	3.0	3.0		
NAP/Water	% by Vol	-/94.0	-/94.0		
Sand	% by vol	0.25	2.50		
MBT	ppb Eq.	7.5	7.5		
pH @ Deg C		11.50 @ 22	11.50 @ 22		
ALK Mud	Pm	6.20	6.30		
ALK Filt	Pf/Mf	1.30/5.30	1.30/5.40		
Chlorides	mg/l	36,000	36,000		
Tot. Hardness	mg/l	1,280	1,240		
LGS/HGS	% by Vol	0.9/2.1	0.9/2.1		
LGS/HGS	ppb	8.63/30.87	8.63/30.87		
ASG	SG	3.702	3.702		
Additional Properties					
KCl %	-	6.50	6.50		

Targets | Program

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

First Mud Report for Rockhopper 1 ST-1

Carry over 1713.9 bbl of fluid from previous fluid set to new fluid set
8 1/2" ST-1 KCl/Polymer. Noticed A decrease in volume in Pill Pit, all master valves checked, continuing to problem solve. Cont to use short system as agreed w/ Co Men until KCl- PHPA fluid treated. Chemicals & screens to arrive tomorrow.

Rig Activity

M/U HUGHES A841A9GT5 Bit, scribe motor, installed probes & cont to RIH w/ BHA - 216 m. Shallow test Sperry tools @ 120 spm - 600 gpm - 1400 psi. Cont RIH f/ 216 m on 5" DP - 795 m fill pipe @ 30 spm 280 psi 220 stks, cont RIH f/ 795 1373 m fill pipe @ 30 spm 280psi 265 stks cont RIH on 5" DP f/ 1373 - 1964 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	54		4	50	$A6,038.28
Techmesh 175 (API 100)	1 each box	8		8		$A4,479.68
BARAZAN D PLUS	25 kg bag	110		6	104	$A1,292.04
Techmesh 210 (API 120)	1 each box	6		2	4	$A1,170.80
PAC-L	25 kg bag	23		6	17	$A961.92
EZ-MUD	25 kg pail	120		10	110	$A949.90
DEXTRID LTE	25 kg sack	104		12	92	$A635.76
Circal 60/16	25 kg bag	215		40	175	$A507.20
ALDACIDE G	25 kg can	11			11	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	15			15	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	24			24	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	68			68	
OXYGON	50 lb can	7			7	
potassium chloride	1000 kg bag	18			18	
potassium hydroxide	20 kg pail	71			71	
Radiagreen EME-Salt	175 kg drum	25			25	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50	2.0
VSM-300	20 20 20 210 210 210	5.0
VSM-300	20 20 20 175 175 175	5.0
VSM-300	20 20 20 175 175 175	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	6.5
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	431.0	Base		Fluid Dumped	
Pipe Cap	107.3	Drill Water	110.0	Transferred	
Active Pits	433.5	Dewatering		SCE	-8.6
Total Hole	538.3	Sea Water		Evaporation	
Total Circ	971.8	Whole Mud	1773.9	Trips	
Reserve	915.0	Barite		Other	
Prev Vol		Chemicals	11.5	Total Surface	
Net Change	1886.8	Other		Downhole	
Total Vol	1886.8	Total	1895.4	Total Losses	-8.6

Fluid Types Vol bbl

Deviation Information

Survey MD	1,529.4	m
Survey TVD	1,529.4	m
Angle	0.61	Deg
Direction	57	
Horiz Displ.	1.3	m

Daily Products Cost	$A16,035.58	Total Daily Cost	$A17,575.58
Cumulative Products Cost	$A649,433.27	Total Cumulative Cost	$A794,193.27

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Baroid Fluid Services

Report No 053

Daily Drilling Fluid Report

Date 20/01/2010		Depth 2,065.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity	188	ft/sec
Jet Impact Force	491.4	lbf
Bit HHSI	1.64	hhp/in2
Press Drop @ Bit	295	psi
Bit Depth	2,065.0	m
ECD @ Csg Shoe	9.98	ppg
ECD @ Bit	10.02	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,903.2
Drill Pipe	5.000	3.000	132.1
Drill Collar	6.750	2.875	29.6
Riser	19.750		100.0
Open Hole	8.500		100.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	55	0	53
gpm|bbl/min	276 | 6.57		266 | 6.33
Total GPM	542	AV, Riser 36.4	Circ Press psi 1930
Total Circ Time	63	AV min DP 243.3	Tot Pres Loss 1339
BU Time , min	35	AV max DC 497.5	Press Drop DP 650
Total Strokes	6,802	BU Strokes 3,733	Press Drop An 254

Properties

		1	2	3	Hyd 4	Targets				Program	
Source		Flow Line	Flow Line	Pit #2	Pit #2						
Time		7:40	15:20	3:00	21:30						
Depth	m	1,995	2,021	1,991	2,043						
FL Temp	Deg C	47	48	37	48						
Density @ Deg C	ppg	9.30 @ 43	9.30 @ 48	9.30 @ 37	9.30 @ 48					9.00	9.50
FV @ Deg C	sec/qt	57 @ 43	68 @ 48	57 @ 37	66 @ 48						
PV @ Deg C	cP	22 @ 49	21 @ 49	18 @ 49	21 @ 49						
YP	lbs/100 ft2	17	36	33	36						
GELS	lbs/100 ft2	8/13/16	10/16/19	10/13/17	11/17/20						
600/300		61.0/39.0	78.0/57.0	69.0/51.0	78.0/57.0						
200/100		30.0/20.0	47.0/35.0	41.0/31.0	47.0/35.0						
6/3		9.0/7.0	11.0/9.0	9.0/7.0	11.0/9.0						
API Filt	ml/30 min	4.4	4.3	4.5	4.3						4.5
HTHP @ Deg C	ml/30 min	9.5 @ 49	8.5 @ 49	9.3 @ 49	8.8 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.3	3.3	3.1	3.6						
NAP/Water	% by Vol	-/93.8	-/93.8	-/93.9	-/93.5						
Sand	% by vol	0.25	0.25	0.25	0.25						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		11.50 @ 22	9.50 @ 22	11.50 @ 22	9.50 @ 22	X		X		8.50	9.50
ALK Mud	Pm	6.30	1.60	5.80	0.80						
ALK Filt	Pf/Mf	1.50/5.90	0.60/3.50	1.40/5.20	0.40/2.60						
Chlorides	mg/l	35,500	36,000	36,000	36,000						
Tot. Hardness	mg/l	1,200	360	1,200	280	X		X			400
LGS/HGS	% by Vol	2.1/1.1	2.1/1.1	1.9/1.2	2.7/0.8						
LGS/HGS	ppb	19.57/16.86	19.17/16.89	17.31/18.37	24.73/12.47						
ASG	SG	3.157	3.165	3.234	2.981						
Additional Properties											
KCl %	-	6.40	6.50	6.50	6.50	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Reduce pH w/ citric acid. Reduce Hardness w/ sodium bicarbonate.
Add BARAZAN D PLUS to maintain programmed low end rheology.
Add EZ-MUD to maintain PHPA concentration.
*Note, LGS concentration includes 5 ppb Calcium Carbonate bridging agents. Change out scalping screens on shakers 2,3 & 4 to API 40 mesh to promote more efficient solids control & increase lower deck lifespan. Prepare BAROLIFT sweep as per program. Maintained properties in pit 3. Conducted a chemical & mud lab inventory.

Rig Activity

Break circ- CBU. Drill f/ 1970 - 1990 m. Drill directional hole f/ 1990 - 2065 m, as / DD's instruction.

Product Name

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Generic Mesh 40 (API 40)	1 each box	24		9	15	$A5,268.60
potassium chloride	1000 kg bag	18		3	15	$A4,450.56
citric acid	25 kg bag		80	33	47	$A2,514.60
EZ-MUD	25 kg pail	110		17	93	$A1,614.83
BARAZAN D PLUS	25 kg bag	104		6	98	$A1,292.04
sodium bicarbonate	25 kg bag		96	27	69	$A762.75
N-DRIL HT PLUS	50 lb bag	68		5	63	$A744.25
BAROLIFT	15 lb box	15		2	13	$A636.04
Techmesh 210 (API 120)	1 each box	4		1	3	$A585.40
Circal 60/16	25 kg bag	175		20	155	$A253.60
ALDACIDE G	25 kg can	11			11	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
CLAYSEAL PLUS	55 gal drum	50			50	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	92			92	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
mica	25 kg bag	36			36	
OXYGON	50 lb can	7			7	
PAC-L	25 kg bag	17			17	
potassium hydroxide	20 kg pail	71			71	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 50 50 50 50	
VSM-300	40 40 40 210 210 210 210	24.0
VSM-300	40 40 40 175 175 175 175	24.0
VSM-300	40 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	23.5
Circulating	0.5
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	23.5
ROP	14.1
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	445.8	Base		Fluid Dumped	
Pipe Cap	113.1	Drill Water	25.0	Transferred	
Active Pits	253.5	Dewatering		SCE	-104.1
Total Hole	558.9	Sea Water		Evaporation	-30.0
Total Circ	812.4	Whole Mud		Trips	-17.0
Reserve	937.0	Barite		Other	-31.0
Prev Vol	1886.8	Chemicals	19.7	Total Surface	
Net Change	-137.4	Other		Downhole	
Total Vol	1749.4	Total	44.7	Total Losses	-182.1

Fluid Types Vol bbl

Deviation Information

Survey MD	1,529.4 m
Survey TVD	1,529.4 m
Angle	0.61 Deg
Direction	57
Horiz Displ.	1.3 m

Daily Products Cost	$A18,122.67	Total Daily Cost	$A21,202.67
Cumulative Products Cost	$A667,555.94	Total Cumulative Cost	$A815,395.94

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Baroid Fluid Services

Report No 054

Daily Drilling Fluid Report

Date 21/01/2010		Depth 2,112.0 m	
Spud Date 30/11/2009		Rig Activity RIH w/ GEOPILOT 8.5' ST-1	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.35	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		147.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	Hyd 3	4	Targets				Program	
Source		Flow Line	Pit #3	Pit #3	Pit #2						
Time		8:20	14:00	21:40	3:50						
Depth	m	2,112	2,112	2,112	2,102						
FL Temp	Deg C	52			47						
Density @ Deg C	ppg	9.35 @ 43	9.35 @ 35	9.35 @ 25	9.30 @ 47					9.00	9.50
FV @ Deg C	sec/qt	65 @ 43	67 @ 35	58 @ 25	68 @ 47						
PV @ Deg C	cP	18 @ 47	18 @ 47	18 @ 47	21 @ 47						
YP	lbs/100 ft2	31	30	31	37						
GELS	lbs/100 ft2	8/13/17	8/13/16	9/14/17	11/16/19						
600/300		67.0/49.0	66.0/48.0	67.0/49.0	79.0/58.0						
200/100		43.0/31.0	40.0/29.0	41.0/30.0	48.0/36.0						
6/3		9.0/7.0	9.0/7.0	10.0/8.0	12.0/10.0						
API Filt	ml/30 min	4.4	4.4	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	9.0 @ 49	8.8 @ 49	9.1 @ 49	9.3 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.5	3.5	3.6	3.6						
NAP/Water	% by Vol	-/93.5	-/93.6	-/93.5	-/93.5						
Sand	% by vol	0.20	0.25	0.25	0.25						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	1.40	1.60	1.50	0.40						
ALK Filt	Pf/Mf	0.60/2.85	0.75/3.00	0.70/2.80	0.25/2.20						
Chlorides	mg/l	37,000	36,000	36,000	36,000						
Tot. Hardness	mg/l	360	380	340	240						400
LGS/HGS	% by Vol	2.3/1.2	2.1/1.3	2.3/1.2	2.7/0.8						
LGS/HGS	ppb	20.51/18.06	19.46/19.46	21.31/17.98	24.73/12.47						
ASG	SG	3.164	3.212	3.149	2.981						
Additional Properties											
KCl %	-	6.60	6.60	6.50	6.50	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Pump BAROLIFT sweep at 2112 m. No increase in cuttings visible.

Prepare & pump slug for POOH. Add ALDACIDE G Bacteriacide prior to POOH. Add OXYGON corroion inhibitor as per program. Incorporate all 5 sandtraps into active system. Maintain properties of premix. Identify leak in mixing line & patch as necessary. Calibrated Mud Balances. Checked shaker screens & repaired where necessary. All shaker screens are now in mesh size as opposed to API standard as requested by Co Man.

Rig Activity

Cont Drill 8.5" ST-1 interval f/ 2065 - 2112 m. Circ, pump 15 bbl BAROLIFT Pill as per program. POOH f/ 2096 - 1951 m pump 10.8 ppg Slug as per Co Man request, POOH to surface. MWD installed sources & test tools, cont RIH w/ GEOPILOT assy. Test @ 244 m failed. POOH remove source, change Jt. RIH plug in, install sources.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	17	80	9	88	$A1,442.88
Techmesh 210 (API 120)	1 each box	3		2	1	$A1,170.80
BARAZAN D PLUS	25 kg bag	98		3	95	$A646.02
OXYGON	50 lb can	7		1	6	$A572.03
EZ-MUD	25 kg pail	93		6	87	$A569.94
DEXTRID LTE	25 kg sack	92		8	84	$A423.84
sodium bicarbonate	25 kg bag	69		7	62	$A197.75
ALDACIDE G	25 kg can	11		1	10	$A173.09
potassium hydroxide	20 kg pail	71		1	70	$A132.11
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	13			13	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	155			155	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	50			50	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	63			63	
potassium chloride	1000 kg bag	15			15	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 20 20 84 84 84 84	
VSM-300	40 40 40 210 210 210 210	20.0
VSM-300	40 40 40 175 175 175 175	20.0
VSM-300	40 40 40 175 175 175 175	20.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	7.5
Circulating	1.0
Trips	10.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	5.0
Total	24.0
Rotating	7.5
ROP	20.6
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	200.0	Transferred	
Active Pits	672.0	Dewatering		SCE	-21.5
Total Hole	631.2	Sea Water		Evaporation	-4.4
Total Circ	672.0	Whole Mud		Trips	
Reserve	622.0	Barite		Other	-2.0
Prev Vol	1749.4	Chemicals	3.8	Total Surface	
Net Change	175.9	Other		Downhole	
Total Vol	1925.2	Total	203.8	Total Losses	-27.9

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	1,529.4	m
Survey TVD	1,529.4	m
Angle	0.61	Deg
Direction	57	
Horiz Displ.	1.3	m

Daily Products Cost	$A5,328.46	Total Daily Cost	$A8,408.46
Cumulative Products Cost	$A672,884.40	Total Cumulative Cost	$A823,804.40

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 055

Daily Drilling Fluid Report

Date 22/01/2010	**Depth** 2,368.0 m		
Spud Date 30/11/2009	**Rig Activity** Drilling 8.5" ST-1 Interval		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	113 ft/sec
Jet Impact Force	288.2 lbf
Bit HHSI	0.58 hhp/in2
Press Drop @ Bit	107 psi
Bit Depth	2,368.0 m
ECD @ Csg Shoe	9.93 ppg
ECD @ Bit	10.02 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,154.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		403.0

in Casing m

	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0
Leak Off ppg		14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	52	53	0
gpm|bbl/min	261 | 6.21	266 | 6.33	
Total GPM	527	AV, Riser 35.4	Circ Press psi 1816
Total Circ Time	107	AV min DP 236.5	Tot Pres Loss 1201
BU Time , min	39	AV max DC 483.7	Press Drop DP 699
Total Strokes	11,233	BU Strokes 4,084	Press Drop An 267

Properties		1	2	Hyd 3	4	Targets				Program	
Source		Flow Line	Flow Line	Pit #2	Pit #3						
Time		7:45	14:15	21:25	3:00						
Depth	m	2,112	2,195	2,344	2,112						
FL Temp	Deg C	45	49	53							
Density @ Deg C	ppg	9.40 @ 35	9.40 @ 43	9.35 @ 53	9.35 @ 25					9.00	9.50
FV @ Deg C	sec/qt	65 @ 35	55 @ 43	66 @ 53	61 @ 25						
PV @ Deg C	cP	18 @ 49	18 @ 49	18 @ 49	18 @ 49						
YP	lbs/100 ft2	28	29	30	31						
GELS	lbs/100 ft2	8/13/16	8/12/15	9/13/16	9/14/17						
600/300		64.0/46.0	65.0/47.0	66.0/48.0	67.0/49.0						
200/100		39.0/29.0	40.0/29.0	41.0/30.0	41.0/30.0						
6/3		9.0/7.0	9.0/7.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.4	4.3	4.4						4.5
HTHP @ Deg C	ml/30 min	8.0 @ 49	8.5 @ 49	8.8 @ 49	9.1 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.5	3.6	3.0	3.0						
NAP/Water	% by Vol	-/93.5	-/93.5	-/94.0	-/94.0						
Sand	% by vol	0.20	0.20	0.15	0.25						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	2.10	2.00	1.80	1.60						
ALK Filt	Pf/Mf	0.80/2.20	0.70/2.45	0.65/2.35	0.75/2.90						
Chlorides	mg/l	36,500	35,500	36,000	36,000						
Tot. Hardness	mg/l	360	320	280	340						400
LGS/HGS	% by Vol	1.9/1.6	2.0/1.6	1.3/1.7	1.3/1.7						
LGS/HGS	ppb	17.50/23.53	18.30/23.46	12.05/25.36	12.05/25.36						
ASG	SG	3.327	3.308	3.505	3.505						
Additional Properties											
KCl %	-	6.50	6.50	6.50	6.50	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add EZ-MUD to maintain PHPA concentration.
Add sodium bicarbonate to control hardness.
Build further premix volume & bleed into active to maintain properties & volume. Run centrifuge to control solids.
Change out damaged screens as necessary & patch older screens.
Continue to maintain properties in active system.

Rig Activity

RIH f/ 38 - 1845 m filling every 20 stds. Wash 1945 - 1970 m breaking in GEOPILOT as per DD' instruction. Logging 1970 - 2112 m @ 60 m/hr. Take SCR's, downlink, break in bit pattern & drill 8.5" ST-1 hole f/ 2112 - 2368 m MD. Ream f/ 2331 - 2350 m 30/40 & drag w/ pipe rotation, 5 K w/out rotation.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	50		12	38	$A18,114.84
potassium chloride	1000 kg bag	15		5	10	$A7,417.60
Techmesh 260(API 140)	1 each box	20		4	16	$A2,341.60
EZ-MUD	25 kg pail	87		14	73	$A1,329.86
PAC-L	25 kg bag	88		6	82	$A961.92
DEXTRID LTE	25 kg sack	84		17	67	$A900.66
BARAZAN D PLUS	25 kg bag	95		4	91	$A861.36
Circal 60/16	25 kg bag	155		60	95	$A760.80
Techmesh 210 (API 120)	1 each box	1		1		$A585.40
sodium bicarbonate	25 kg bag	62		8	54	$A226.00
soda ash	25 kg bag	62		1	61	$A30.42
ALDACIDE G	25 kg can	10			10	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	7			7	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	13			13	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	63			63	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	24.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	4.0
518	4,000	80.00	3.0

Time

Drilling	15.5
Circulating	
Trips	4.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	15.5
ROP	54.2
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	487.8	Base		Fluid Dumped	
Pipe Cap	128.8	Drill Water	200.0	Transferred	
Active Pits	725.0	Dewatering		SCE	-132.0
Total Hole	616.6	Sea Water		Evaporation	-24.0
Total Circ	1341.6	Whole Mud	125.0	Trips	-15.3
Reserve	737.0	Barite		Other	-41.0
Prev Vol	1925.2	Chemicals	40.6	Total Surface	
Net Change	153.3	Other		Downhole	
Total Vol	2078.6	Total	365.6	Total Losses	-212.3

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	1,529.4 m
Survey TVD	1,529.4 m
Angle	0.61 Deg
Direction	57
Horiz Displ.	1.3 m

Daily Products Cost	$A33,530.46	Total Daily Cost	$A36,610.46
Cumulative Products Cost	$A706,414.86	Total Cumulative Cost	$A860,414.86

Baroid Representatives Kosta Georgiou Mike Lawrance
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HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 056

Daily Drilling Fluid Report

Date	23/01/2010	**Depth**	2,706.0 m
Spud Date	30/11/2009	**Rig Activity**	Drilling 8.5" ST-1 Interval

Operator	ADA DRILLING	**Report For**	Bryan Houston / Kevin Monkhouse
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Brian Meechan / Geoff Chapman
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	132 ft/sec
Jet Impact Force	395.4 lbf
Bit HHSI	0.93 hhp/in2
Press Drop @ Bit	146 psi
Bit Depth	2,706.0 m
ECD @ Csg Shoe	10.03 ppg
ECD @ Bit	10.16 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,492.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		741.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	59	64	0
gpm|bbl/min	296 | 7.05	321 | 7.64	
Total GPM	617	AV, Riser	41.4
Total Circ Time	96	AV min DP	277.0
BU Time , min	37	AV max DC	566.7
Total Strokes	11,851	BU Strokes	4,499
Circ Press psi	2275		
Tot Pres Loss	1679		
Press Drop DP	1005		
Press Drop An	364		

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Flow Line	Flow Line	Pit #2						
Time		4:35	8:40	13:45	20:35						
Depth	m	2,419	2,482	2,547	2,642						
FL Temp	Deg C	58	52	52	68						
Density @ Deg C	ppg	9.40 @ 58	9.40 @ 47	9.40 @ 48	9.35 @ 49					9.00	9.50
FV @ Deg C	sec/qt	68 @ 58	65 @ 47	58 @ 48	66 @ 49						
PV @ Deg C	cP	20 @ 49	18 @ 49	19 @ 49	19 @ 49						
YP	lbs/100 ft2	29	33	30	34						
GELS	lbs/100 ft2	9/14/17	8/13/17	9/13/15	12/16/21						
600/300		69.0/49.0	69.0/51.0	68.0/49.0	72.0/53.0						
200/100		42.0/31.0	43.0/31.0	41.0/30.0	45.0/32.0						
6/3		11.0/9.0	9.0/7.0	9.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	8.9 @ 49	8.5 @ 49	9.0 @ 49	9.1 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.6	3.4	3.4	3.0						
NAP/Water	% by Vol	-/93.5	-/93.6	-/93.6	-/94.0						
Sand	% by vol	0.20	0.20	0.25	0.25						1.0
MBT	ppb Eq.	5.0	5.0	7.5	10.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	1.30	1.80	2.30	1.90						
ALK Filt	Pf/Mf	0.55/2.20	0.60/2.40	0.75/2.40	0.60/2.10						
Chlorides	mg/l	36,000	37,000	37,000	37,000						
Tot. Hardness	mg/l	280	360	320	280						400
LGS/HGS	% by Vol	2.0/1.6	1.7/1.7	1.7/1.7	1.2/1.7						
LGS/HGS	ppb	17.90/23.49	15.24/25.04	15.24/25.04	11.24/25.43						
ASG	SG	3.317	3.407	3.407	3.534						
Additional Properties											
KCl %	-	6.50	6.70	6.70	6.65	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add Radiagreen EME at a concentration of 0.5% vol to reduce torque. Maintain PHPA concentration w/ addition of EZ-MUD.
Build pre-mix & bleed into active to maintain properties & volume.
Pump BAROLIFT sweep - minimal increase in cuttings seen at shakers.
Add Sodium Bicarbonate to reduce hardness.

Rig Activity

Cont Drill 8.5" ST-1 f/ 2368 - 2706 m MD & 2635.3 TVD.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Radiagreen EME-Salt	175 kg drum	25		8	17	$A17,679.84
CLAYSEAL PLUS	55 gal drum	38		6	32	$A9,057.42
potassium chloride	1000 kg bag	10		3	7	$A4,450.56
BARAZAN D PLUS	25 kg bag	91		13	78	$A2,799.42
Techmesh 260(API 140)	1 each box	16		4	12	$A2,341.60
EZ-MUD	25 kg pail	73		11	62	$A1,044.89
PAC-L	25 kg bag	82		6	76	$A961.92
ALDACIDE G	25 kg can	10		1	9	$A173.09
sodium bicarbonate	25 kg bag	54		6	48	$A169.50
BARA-DEFOAM W300	25 l can	7		1	6	$A125.82
Amodrill 1235	1 bbl bulk	19.400			19.400	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	13			13	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	95			95	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	67			67	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	63			63	
OXYGEN	50 lb can	6			6	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	5.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	24.0

Time

Drilling	24.0
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	24.0
ROP	46.2
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	537.4	Base		Fluid Dumped	
Pipe Cap	148.0	Drill Water	164.0	Transferred	
Active Pits	730.0	Dewatering		SCE	-150.5
Total Hole	685.4	Sea Water		Evaporation	-36.0
Total Circ	1415.4	Whole Mud	91.0	Trips	-5.0
Reserve	734.0	Barite		Other	-14.1
Prev Vol	2078.6	Chemicals	21.5	Total Surface	
Net Change	70.9	Other		Downhole	
Total Vol	2149.4	Total	276.5	Total Losses	-205.6

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	2,684.9 m
Survey TVD	2,607.9 m
Angle	36.05 Deg
Direction	180
Horiz Displ.	1.2 m

Daily Products Cost	$A38,804.06	Total Daily Cost	$A41,884.06
Cumulative Products Cost	$A745,218.92	Total Cumulative Cost	$A902,298.92

Baroid Representatives Kosta Georgiou Mike Lawrance
Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555
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Baroid Fluid Services

Report No 057

Daily Drilling Fluid Report

Date 24/01/2010		Depth 2,973.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	132 ft/sec
Jet Impact Force	395.4 lbf
Bit HHSI	0.93 hhp/in2
Press Drop @ Bit	146 psi
Bit Depth	2,973.0 m
ECD @ Csg Shoe	10.06 ppg
ECD @ Bit	10.23 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,759.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		1,008.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	62	61	0
gpm|bbl/min	311 | 7.41	306 | 7.29	
Total GPM	617	AV, Riser 41.4	Circ Press psi 2462
Total Circ Time	96	AV min DP 277.0	Tot Pres Loss 1836
BU Time , min	39	AV max DC 566.7	Press Drop DP 1099
Total Strokes	11,862	BU Strokes 4,827	Press Drop An 427

Properties		Hyd 1	2	3	4	Targets				Program	
Source		Pit #2	Flow Line	Flow Line	Pit #2						
Time		4:00	10:00	13:45	20:30						
Depth	m	2,769	2,809	2,871	2,928						
FL Temp	Deg C	57	58	60	64						
Density @ Deg C	ppg	9.35 @ 48	9.40 @ 52	9.40 @ 54	9.35 @ 48					9.00	9.50
FV @ Deg C	sec/qt	66 @ 48	64 @ 52	59 @ 54	65 @ 48						
PV @ Deg C	cP	20 @ 49	20 @ 49	21 @ 49	21 @ 49						
YP	lbs/100 ft2	36	36	37	39						
GELS	lbs/100 ft2	10/14/17	10/14/17	10/14/19	12/15/18						
600/300		76.0/56.0	76.0/56.0	79.0/58.0	81.0/60.0						
200/100		47.0/34.0	47.0/34.0	48.0/36.0	50.0/38.0						
6/3		10.0/8.0	11.0/9.0	11.0/9.0	12.0/10.0						
API Filt	ml/30 min	4.4	4.1	4.2	4.4						4.5
HTHP @ Deg C	ml/30 min	9.0 @ 49	7.8 @ 49	8.0 @ 49	9.1 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.0	3.6	3.6	3.0						
NAP/Water	% by Vol	-/94.0	-/93.4	-/93.4	-/94.0						
Sand	% by vol	0.25	0.25	0.25	0.25						1.0
MBT	ppb Eq.	10.0	7.5	7.5	10.0						25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	0.55	0.75	0.60	0.55						
ALK Filt	Pf/Mf	0.18/2.90	0.35/2.80	0.20/3.20	0.90/2.90						
Chlorides	mg/l	36,000	37,000	36,500	36,000						
Tot. Hardness	mg/l	320	360	320	320						400
LGS/HGS	% by Vol	1.3/1.7	2.1/1.5	2.1/1.5	1.3/1.7						
LGS/HGS	ppb	12.05/25.36	18.95/22.09	19.35/22.06	12.05/25.36						
ASG	SG	3.505	3.271	3.262	3.505						
Additional Properties											
KCl %	-	6.60	6.70	6.70	6.60	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add Radiagreen EME to maintain 0.5% vol concentration in active. Maintain PHPA concentration w/ the addition of EZ-MUD. Control hardness w/ additon of soda ash. Maintain pH w/ addition of caustic potash. Add OXYGON corrosion inhibitor as per program.
Build pre-mix volume pit 1& bleed into active to maintain properties & volume. Continue to Build new Volume pit 3. Pumped a 17 bbl BAROLIFT pill at 2100 hrs on 3 rig pumps & boosted riser. Pill came over @ 2146 hrs slight increase in cuttings load. Continued to run on 3 rig pumps (BOOST) for 11 mins, until 2157 hrs.

Rig Activity

Cont drill 8.5" ST-1 hole f/ 2706 - 2856 m. Pump 20 bbl BAROLIFT Pill @ 2784 m & pump out. Cont drill f/ 2856 - 2926 m. R/B std f/ 2926 - 2897 m. C/O saver sub & disks in TDS. Wash f/ 2897 - 2926 m, Cont drill f/ 2926 - 2973 m pump 17 bbl BAROLIFT pill @ 2926, well clean. Max gas 13.9 %, background 3 %.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	32		4	28	$A6,038.28
Radiagreen EME-Salt	175 kg drum	17		2	15	$A4,419.96
EZ-MUD	25 kg pail	62		16	46	$A1,519.84
potassium hydroxide	20 kg pail	70		8	62	$A1,056.88
BAROLIFT	15 lb box	13		2	11	$A636.04
OXYGON	50 lb can	6		1	5	$A572.03
DEXTRID LTE	25 kg sack	67		7	60	$A370.86
soda ash	25 kg bag	61		6	55	$A182.52
ALDACIDE G	25 kg can	9			9	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	78			78	
barite	1 tons bulk	147.000			147.000	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	95			95	
Circal Y	25 kg bag	75			75	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	63			63	
PAC-L	25 kg bag	76			76	
potassium chloride	1000 kg bag	7			7	

Daily Products Cost	$A14,796.41	Total Daily Cost	$A17,876.41
Cumulative Products Cost	$A760,015.33	Total Cumulative Cost	$A920,175.33

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	8.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	24.0
518	4,000	80.00	24.0

Time

Drilling	23.5
Circulating	
Trips	
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	
Total	24.0
Rotating	23.5
ROP	37.3
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	576.5	Base		Fluid Dumped	
Pipe Cap	163.2	Drill Water	150.0	Transferred	
Active Pits	677.0	Dewatering		SCE	-110.0
Total Hole	739.7	Sea Water		Evaporation	-24.0
Total Circ	1416.7	Whole Mud	152.6	Trips	-3.0
Reserve	901.0	Barite		Other	-6.8
Prev Vol	2149.4	Chemicals	9.5	Total Surface	
Net Change	168.3	Other		Downhole	
Total Vol	2317.7	Total	312.1	Total Losses	-143.8

Fluid Types — Vol bbl

Deviation Information

Survey MD	2,944.7 m
Survey TVD	2,819.0 m
Angle	35.81 Deg
Direction	175
Horiz Displ.	422.2 m

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 058

Daily Drilling Fluid Report

Date 25/01/2010		Depth 3,158.0 m	
Spud Date 30/11/2009		Rig Activity POOH 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	127 ft/sec
Jet Impact Force	363.9 lbf
Bit HHSI	0.82 hhp/in2
Press Drop @ Bit	135 psi
Bit Depth	2,492.0 m
ECD @ Csg Shoe	10.06 ppg
ECD @ Bit	10.18 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,278.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		1,193.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	67	51	0
gpm|bbl/min	336 | 8.00	256 | 6.09	
Total GPM	592	AV, Riser 39.7	Circ Press psi 2020
Total Circ Time	92	AV min DP 265.8	Tot Pres Loss 1547
BU Time , min	36	AV max DC 543.6	Press Drop DP 908
Total Strokes	10,816	BU Strokes 4,236	Press Drop An 348

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Flow Line	Flow Line	Pit #2			
Time		4:00	8:15	13:30	20:05			
Depth	m	3,014	3,062	3,121	3,158			
FL Temp	Deg C	57	62	65				
Density @ Deg C	ppg	9.35 @ 48	9.35 @ 54	9.40 @ 53	9.35 @ 30		9.00	9.50
FV @ Deg C	sec/qt	66 @ 48	64 @ 54	65 @ 53	56 @ 30			
PV @ Deg C	cP	21 @ 49	20 @ 49	20 @ 49	19 @ 49			
YP	lbs/100 ft2	36	39	38	40			
GELS	lbs/100 ft2	10/14/17	10/14/17	10/15/18	10/13/15			
600/300		78.0/57.0	79.0/59.0	78.0/58.0	78.0/59.0			
200/100		37.0/33.0	49.0/37.0	47.0/34.0	47.0/34.0			
6/3		10.0/9.0	11.0/9.0	11.0/9.0	10.0/9.0			
API Filt	ml/30 min	4.3	4.2	4.1	4.3			4.5
HTHP @ Deg C	ml/30 min	8.8 @ 49	8.0 @ 49	7.5 @ 49	8.8 @ 49			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	3.0	3.5	3.8	3.0			
NAP/Water	% by Vol	-/94.0	-/93.5	-/93.2	-/94.0			
Sand	% by vol	0.25	0.20	0.20	0.25			1.0
MBT	ppb Eq.	7.5	7.5	7.5	10.0			25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	1.40	1.40	1.60	1.50			
ALK Filt	Pf/Mf	0.25/2.30	0.35/3.20	0.45/2.90	0.35/2.80			
Chlorides	mg/l	36,500	37,000	37,000	36,500			
Tot. Hardness	mg/l	320	320	280	240			400
LGS/HGS	% by Vol	1.3/1.7	2.3/1.2	2.5/1.3	1.3/1.7			
LGS/HGS	ppb	11.64/25.39	20.51/18.06	22.66/19.14	11.64/25.39			
ASG	SG	3.519	3.164	3.149	3.519			
Additional Properties								
KCl %	-	6.70	6.80	6.80	6.70	X X X X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add Circal Y & Circal 60/16 sized Calcium Carbonate bridging agents to compensate for used fluid f/ solids control equipment & maintain tight filtration. Add Soda ash to reduce hardness. Add Caustic Potash to maintain pH. Build premix & bleed into active to maintain volume/properties. Add Radiagreen EME to active to maintain 0.5%vol concentration. Pump 15 bbl BAROLIFT sweep at 3157 m. Minimal increase in solids observed. Centrifuge 2 had leaking hoses & was shut down early for repairs. Cont to maintain shaker screens.

Rig Activity

Cont drill 8.5" ST-1 f/ 2973 - 3158 m. Pump 15 bbl BAROLIFT pill & circ same out of hole, while boosting riser w/ 3 M/P. Halliburton MWD attempted to reset down load tool, neg. F/C, static. POOH f/ 3158 - 2492 wet, pumping & back reaming all 30 K over tight spots. 0000 hrs POOH depth, 2492 MD - 2451 TVD.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	28		8	20	$A12,076.56
potassium chloride	1000 kg bag	7		6	1	$A8,901.12
Radiagreen EME-Salt	175 kg drum	15		1	14	$A2,209.98
EZ-MUD	25 kg pail	46		16	30	$A1,519.84
N-DRIL HT PLUS	50 lb bag	63		10	53	$A1,488.50
PAC-L	25 kg bag	76		9	67	$A1,442.88
Circal 60/16	25 kg bag	95		95		$A1,204.60
Circal Y	25 kg bag	75		43	32	$A1,157.13
BARAZAN D PLUS	25 kg bag	78		4	74	$A861.36
potassium hydroxide	20 kg pail	62		6	56	$A792.66
soda ash	25 kg bag	55		16	39	$A486.72
DEXTRID LTE	25 kg sack	60		4	56	$A211.92
ALDACIDE G	25 kg can	9		1	8	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGEN	50 lb can	5			5	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	5.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	19.0
518	4,000	80.00	13.0

Time

Drilling	17.0
Circulating	1.0
Trips	4.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	2.0
Total	24.0
Rotating	17.0
ROP	35.7
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	506.0	Base		Fluid Dumped	
Pipe Cap	135.8	Drill Water	150.0	Transferred	
Active Pits	650.0	Dewatering		SCE	-308.0
Total Hole	795.2	Sea Water		Evaporation	-48.0
Total Circ	1291.8	Whole Mud	151.3	Trips	-43.0
Reserve	797.0	Barite		Other	-22.0
Prev Vol	2317.7	Chemicals	44.2	Total Surface	
Net Change	-75.5	Other		Downhole	
Total Vol	2242.2	Total	345.5	Total Losses	-421.0

Fluid Types Vol bbl

Deviation Information

Survey MD	2,944.7 m
Survey TVD	2,819.0 m
Angle	35.81 Deg
Direction	175
Horiz Displ.	422.2 m

Daily Products Cost	$A32,526.36	Total Daily Cost	$A35,606.36
Cumulative Products Cost	$A792,541.69	Total Cumulative Cost	$A955,781.69

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 059

Daily Drilling Fluid Report

Date 26/01/2010		Depth 3,158.0 m	
Spud Date 30/11/2009		Rig Activity RIH 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	HYCALOG/RSX 616M
Jets	6x18
TFA	1.491 sq-in
Jets Velocity	89 ft/sec
Jet Impact Force	179.1 lbf
Bit HHSI	0.28 hhp/in2
Press Drop @ Bit	66 psi
Bit Depth	2,525.0 m
ECD @ Csg Shoe	9.85 ppg
ECD @ Bit	9.95 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,311.5
Drill Pipe	5.000	3.000	144.6
Drill Collar	6.750	2.875	68.9
Riser	19.750		100.0
Open Hole	8.500		1,193.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	42	41	0
gpm|bbl/min	211 | 5.02	206 | 4.90	
Total GPM	416	AV, Riser 28.0	Circ Press psi 1250
Total Circ Time	138	AV min DP 187.0	Tot Pres Loss 972
BU Time , min	52	AV max DC 382.4	Press Drop DP 539
Total Strokes	11,492	BU Strokes 4,277	Press Drop An 274

Properties

		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Flow Line						
Time		10:00	15:00	3:00	22:40						
Depth	m	3,158	3,158	3,158	3,158						
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 45	9.35 @ 43	9.35 @ 48	9.30 @ 25					9.00	9.50
FV @ Deg C	sec/qt	67 @ 45	66 @ 43	56 @ 48	57 @ 25						
PV @ Deg C	cP	20 @ 49	19 @ 49	22 @ 49	19 @ 25						
YP	lbs/100 ft2	36	35	34	34						
GELS	lbs/100 ft2	10/15/17	9/13/16	10/14/17	9/13/16						
600/300		76.0/56.0	73.0/54.0	78.0/56.0	72.0/53.0						
200/100		47.0/33.0	44.0/32.0	47.0/31.0	43.0/31.0						
6/3		11.0/9.0	10.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.2	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	8.0 @ 49	8.5 @ 49	8.9 @ 49	9.1 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.7	3.5	3.0	3.0						
NAP/Water	% by Vol	-/93.3	-/93.5	-/94.0	-/94.0						
Sand	% by vol	0.20	0.20	0.20	0.20						1.0
MBT	ppb Eq.	7.5	7.5	10.0	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	1.30	1.10	1.40	1.00						
ALK Filt	Pf/Mf	0.45/3.10	0.30/3.20	0.30/2.90	0.29/3.30						
Chlorides	mg/l	37,000	37,000	37,000	37,000						
Tot. Hardness	mg/l	280	240	240	240						400
LGS/HGS	% by Vol	2.3/1.4	2.3/1.2	1.2/1.7	1.6/1.4						
LGS/HGS	ppb	20.80/20.62	20.51/18.06	11.24/25.43	14.65/19.92						
ASG	SG	3.208	3.164	3.534	3.331						
Additional Properties											
KCl %	-	6.80	6.80	6.80	6.80	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Cont to maintain properties in active pit 2. Start premix in pit 1. 317 bbl of brine brought into leg f/ boat. used two 15 bbl 9.3 ppg BAROLIFT pills & 19 bbl 11.3 ppg KCl- PHPA slug. Conducted a full chem inventory. Maintained screens at shakers & patched repairable screens.

Rig Activity

Cont POOH 8.5 BHA " ST-1 f/ 2492 m - surface. P/U & M/U bit, GEOpilot, MWD tools & upload. RIH - 239 m. Shallow test tools, 600 gpm_400 psi. Test Good. Cont RIH f/ 239 - 2525 MD_2478 TVD.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
N-DRIL HT PLUS	50 lb bag	53		12	41	$A1,786.20
BARAZAN D PLUS	25 kg bag	74		8	66	$A1,722.72
PAC-L	25 kg bag	67		5	62	$A801.60
potassium hydroxide	20 kg pail	56		4	52	$A528.44
sodium bicarbonate	25 kg bag	48		15	33	$A423.75
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	147.000			147.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	20			20	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	56			56	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	30			30	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGON	50 lb can	5			5	
potassium chloride	1000 kg bag	1	12		13	
Radiagreen EME-Salt	175 kg drum	14			14	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	2.0
VSM-300	20 40 40 210 210 210 210	24.0
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 175 175 175 175	24.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	12.0
518	4,000	80.00	12.0

Time

Drilling	
Circulating	
Trips	21.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	3.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	510.8	Base		Fluid Dumped	
Pipe Cap	137.7	Drill Water		Transferred	
Active Pits	724.0	Dewatering		SCE	-60.6
Total Hole	794.3	Sea Water		Evaporation	-4.0
Total Circ	1372.5	Whole Mud		Trips	-16.0
Reserve	647.0	Barite		Other	
Prev Vol	2242.2	Chemicals	3.8	Total Surface	
Net Change	-76.8	Other		Downhole	
Total Vol	2165.3	Total	3.8	Total Losses	-80.6

Fluid Types Vol bbl

Deviation Information

Survey MD	2,944.7 m
Survey TVD	2,819.0 m
Angle	35.81 Deg
Direction	175
Horiz Displ.	422.2 m

Daily Products Cost	$A5,262.71	Total Daily Cost	$A8,342.71
Cumulative Products Cost	$A797,804.40	Total Cumulative Cost	$A964,124.40
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 060

Daily Drilling Fluid Report

Date 27/01/2010	**Depth** 3,195.0 m		
Spud Date 30/11/2009	**Rig Activity** Down Load MWD Tools.		
Operator ADA DRILLING	**Report For** Bryan Houston / Kevin Monkhouse	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Brian Meechan / Geoff Chapman	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in				30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets					9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in							Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500	1,230.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets				Program	
Source		Pit #2	Flow Line	Pit #2	Pit #2						
Time		3:00	7:00	13:10	21:40						
Depth	m	3,158	3,171	3,194	3,195						
FL Temp	Deg C		64	66							
Density @ Deg C	ppg	9.30 @ 44	9.40 @ 52	9.40 @ 51	9.30 @ 25					9.00	9.50
FV @ Deg C	sec/qt	56 @ 44	63 @ 52	62 @ 51	58 @ 25						
PV @ Deg C	cP	18 @ 25	20 @ 25	19 @ 25	19 @ 25						
YP	lbs/100 ft2	37	38	37	36						
GELS	lbs/100 ft2	10/14/17	11/15/18	10/16/19	10/14/17						
600/300		73.0/55.0	78.0/58.0	75.0/56.0	74.0/55.0						
200/100		44.0/33.0	47.0/37.0	47.0/35.0	46.0/34.0						
6/3		10.0/8.0	12.0/10.0	12.0/9.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.2	4.1	4.3						4.5
HTHP @ Deg C	ml/30 min	9.1 @ 49	7.5 @ 49	6.5 @ 49	8.9 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.0	3.5	3.4	3.0						
NAP/Water	% by Vol	-/94.0	-/93.4	-/93.5	-/94.0						
Sand	% by vol	0.20	0.20	0.20	0.20						1.0
MBT	ppb Eq.	7.5	7.5	7.5	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	1.00	0.95	0.80	0.70						
ALK Filt	Pf/Mf	0.30/3.20	0.30/3.30	0.15/3.20	1.20/3.10						
Chlorides	mg/l	37,000	37,500	37,500	37,000						
Tot. Hardness	mg/l	240	240	280	240						400
LGS/HGS	% by Vol	1.6/1.4	2.0/1.5	1.8/1.6	1.6/1.4						
LGS/HGS	ppb	14.65/19.92	18.54/22.13	16.69/23.61	14.65/19.92						
ASG	SG	3.331	3.280	3.347	3.331						
Additional Properties											
KCl %	-	6.80	6.85	6.85	6.80	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Increased Radiagreen EME concentration to 1% per active volume. Bled over mix into active system for volume. Built new KCL- PHPA premix in pit 1. Centrifuging sandtraps to condition mud. Maintained all shakers, screens & repaired screens to increase longevity. Maintained properties in active system. Added Barite to inventory to have coresponding figures w/ Control Room.

Rig Activity

RIH f/ 2525 - 3158 m. Establish parameters f/ MWD tools & re-Log 3140 - 3156 m. Cont drill 8.5" ST-1 hole f/ 3156 - 3195 m. Circ & boost riser w/ 3 M/P. POOH f/ 3195 - 1965 m, max 10 K over pull, F/C OK. Cont POOH f/ 1965 - Surface. Remove sources & down load tools.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Radiagreen EME-Salt	175 kg drum	14		7	7	$A15,469.86
CLAYSEAL PLUS	55 gal drum	20		4	16	$A6,038.28
N-DRIL HT PLUS	50 lb bag	41		16	25	$A2,381.60
BARAZAN D PLUS	25 kg bag	66		4	62	$A861.36
PAC-L	25 kg bag	62		4	58	$A641.28
DEXTRID LTE	25 kg sack	56		4	52	$A211.92
EZ-MUD	25 kg pail	30		2	28	$A189.98
soda ash	25 kg bag	39		1	38	$A30.42
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	147.000	12.000		159.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGON	50 lb can	5			5	
potassium chloride	1000 kg bag	13			13	
potassium hydroxide	20 kg pail	52			52	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	2.0
VSM-300	20 40 40 210 210 210 210	18.0
VSM-300	20 40 40 175 175 175 175	18.0
VSM-300	20 40 40 175 175 175 175	18.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	13.0
518	4,000	80.00	13.0

Time

Drilling	5.0
Circulating	4.5
Trips	10.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	5.0
ROP	24.3
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	150.0	Transferred	
Active Pits	710.0	Dewatering		SCE	-161.0
Total Hole	880.6	Sea Water		Evaporation	-20.0
Total Circ	710.0	Whole Mud	9.4	Trips	-8.4
Reserve	553.0	Barite		Other	
Prev Vol	2165.3	Chemicals	8.3	Total Surface	
Net Change	-21.7	Other		Downhole	
Total Vol	2143.6	Total	167.7	Total Losses	-189.4

Fluid Types Vol bbl

Deviation Information

Survey MD	3,185.2 m
Survey TVD	3,016.1 m
Angle	35.7 Deg
Direction	178
Horiz Displ.	559.2 m

Daily Products Cost	$A25,824.70	Total Daily Cost	$A28,904.70
Cumulative Products Cost	$A823,629.10	Total Cumulative Cost	$A993,029.10

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 061

Daily Drilling Fluid Report

Date 28/01/2010		Depth 3,213.0 m	
Spud Date 30/11/2009		Rig Activity POOH 8.5" Core Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	CORPRO/8.5" X 4" MCP	
Jets		
TFA	1.310	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,087.0	m
ECD @ Csg Shoe	9.35	ppg
ECD @ Bit	9.35	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	875.4
Drill Pipe	5.000	3.000	93.9
Drill Collar	6.375	2.875	85.5
Drill Collar	8.250	5.250	32.2
Riser	19.750		100.0
Open Hole	8.500		1,248.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	Hyd 4	Targets			Program	
Source		Pit #2	Pit #2	Flow Line	Pit #2					
Time		3:30	9:40	14:45	21:10					
Depth	m	3,195	3,195	3,200	3,213					
FL Temp	Deg C			54						
Density @ Deg C	ppg	9.35 @ 25	9.35 @ 41	9.35 @ 48	9.35 @ 25				9.00	9.50
FV @ Deg C	sec/qt	56 @ 25	57 @ 41	64 @ 48	58 @ 25					
PV @ Deg C	cP	19 @ 25	18 @ 25	17 @ 25	17 @ 25					
YP	lbs/100 ft2	37	33	30	31					
GELS	lbs/100 ft2	10/14/17	9/13/15	9/13/16	10/14/17					
600/300		75.0/56.0	69.0/51.0	64.0/47.0	65.0/48.0					
200/100		47.0/35.0	43.0/32.0	39.0/29.0	40.0/30.0					
6/3		11.0/9.0	9.0/8.0	9.0/8.0	10.0/8.0					
API Filt	ml/30 min	4.3	4.2	4.3	4.4					4.5
HTHP @ Deg C	ml/30 min	8.8 @ 49	7.5 @ 49	7.8 @ 49	8.9 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2					
Corr Solid	% by Vol	3.0	3.2	3.3	2.9					
NAP/Water	% by Vol	-/94.0	-/93.7	-/93.6	-/94.0					
Sand	% by vol	0.20	0.15	0.15	0.25					1.0
MBT	ppb Eq.	10.0	5.0	5.0	5.0					25.0
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.70	0.95	0.65	0.70					
ALK Filt	Pf/Mf	1.00/3.10	0.30/2.80	0.15/3.10	0.20/3.30					
Chlorides	mg/l	37,000	37,500	37,500	38,000					
Tot. Hardness	mg/l	240	320	360	320					400
LGS/HGS	% by Vol	1.2/1.7	1.8/1.4	2.0/1.3	1.1/1.7					
LGS/HGS	ppb	11.24/25.43	16.39/21.05	18.25/19.57	10.42/25.51					
ASG	SG	3.534	3.309	3.238	3.564					
Additional Properties										
KCl %	-	6.80	6.90	6.90	7.00	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Treated active KCl- PHPA system to maintain fluid properties. Prepared new KCl- PHPA premix in pit 4. Continued to maintain shaker screens& change out as required. Continued to run centrifuges to assist in solids control.Conducted a Chem/Bulk inventory.

Rig Activity

P/U & M/U Core bit, core bbls & RIH - 3182 m on 5" DP. Wash f/ 3182 - 3196 m & take SCR's. L/O single, drop ball & establish parameters. Ball landed w/ 120 psi. Cut core f/ 3196 - 3213 m. Torque went flat, no penetration. F/C_static pump slug, Cont POOH w/ cores f/ 1935 - 1087 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
N-DRIL HT PLUS	50 lb bag	25		6	19	$A893.10
potassium hydroxide	20 kg pail	52		2	50	$A264.22
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	62			62	
barite	1 tons bulk	159.000			159.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	16			16	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	52			52	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	28			28	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGON	50 lb can	5			5	
PAC-L	25 kg bag	58			58	
potassium chloride	1000 kg bag	13			13	
Radiagreen EME-Salt	175 kg drum	7			7	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	38			38	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 140 140 140 140	12.0
VSM-300	20 40 40 140 140 140 140	12.0
VSM-300	20 40 40 175 175 175 175	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	18.0
518	4,000	80.00	18.0

Time

Drilling	
Circulating	
Trips	14.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	4.0
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	6.0
Total	24.0
Rotating	4.0
ROP	14.8
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	275.5	Base		Fluid Dumped	
Pipe Cap	57.7	Drill Water	210.0	Transferred	
Active Pits	675.0	Dewatering		SCE	-218.8
Total Hole	843.3	Sea Water		Evaporation	-16.0
Total Circ	1008.2	Whole Mud	100.6	Trips	-13.0
Reserve	689.0	Barite		Other	
Prev Vol	2143.6	Chemicals	0.7	Total Surface	
Net Change	63.5	Other		Downhole	
Total Vol	2207.3	Total	311.3	Total Losses	-247.8

Fluid Types Vol bbl

Deviation Information

Survey MD	3,203.4 m
Survey TVD	3,031.4 m
Angle	35.56 Deg
Direction	179
Horiz Displ.	569.7 m

Daily Products Cost	$A1,157.32	Total Daily Cost	$A4,237.32
Cumulative Products Cost	$A824,786.42	Total Cumulative Cost	$A997,266.42

Baroid Representatives Kosta Georgiou Mike Lawrance
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Baroid Fluid Services

Report No 062

Daily Drilling Fluid Report

Date 29/01/2010		Depth 3,234.0 m	
Spud Date 30/11/2009		Rig Activity Drill 8.5" ST-1 Interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	3x15|3x12	
TFA	0.849	sq-in
Jets Velocity	219	ft/sec
Jet Impact Force	620.9	lbf
Bit HHSI	2.42	hhp/in2
Press Drop @ Bit	404	psi
Bit Depth	3,213.0	m
ECD @ Csg Shoe	9.93	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	2,999.3
Drill Pipe	5.000	3.000	142.6
Drill Collar	6.750	2.875	71.1
Riser	19.750		100.0
Open Hole	8.500		1,269.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	58	58	0
gpm|bbl/min	291 6.93	291 6.93	
Total GPM	582	AV, Riser	39.1
Total Circ Time	104	AV min DP	261.3
BU Time , min	44	AV max DC	534.4
Total Strokes	12,044	BU Strokes	5,120
Circ Press psi	2233		
Tot Pres Loss	1891		
Press Drop DP	995		
Press Drop An	344		

Properties		1	2	3	Hyd 4	Targets			Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2					
Time		3:00	7:50	15:00	21:00					
Depth	m	3,213	3,213	3,213	3,213					
FL Temp	Deg C									
Density @ Deg C	ppg	9.30 @ 25	9.35 @ 32	9.35 @ 25	9.40 @ 25				9.00	9.50
FV @ Deg C	sec/qt	59 @ 25	62 @ 32	60 @ 25	62 @ 25					
PV @ Deg C	cP	17 @ 25	15 @ 25	15 @ 25	15 @ 25					
YP	lbs/100 ft2	30	24	23	25					
GELS	lbs/100 ft2	9/13/16	9/12/15	8/13/15	10/15/17					
600/300		64.0/47.0	54.0/39.0	53.0/38.0	55.0/40.0					
200/100		39.0/29.0	33.0/25.0	33.0/24.0	35.0/26.0					
6/3		10.0/8.0	9.0/8.0	9.0/7.0	11.0/9.0					
API Filt	ml/30 min	4.4	4.3	4.4	4.3					4.5
HTHP @ Deg C	ml/30 min	8.9 @ 49	7.8 @ 49	8.0 @ 49	8.9 @ 49					13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2					
Corr Solid	% by Vol	3.0	3.4	3.4	2.9					
NAP/Water	% by Vol	-/94.0	-/93.5	-/93.5	-/94.0					
Sand	% by vol	0.20	0.15	0.10	0.15					1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.50 @ 22				8.50	9.50
ALK Mud	Pm	0.60	0.55	0.95	0.80					
ALK Filt	Pf/Mf	0.45/2.90	0.25/3.40	0.40/3.25	0.28/2.90					
Chlorides	mg/l	37,000	37,500	38,000	38,000					
Tot. Hardness	mg/l	280	320	320	280					400
LGS/HGS	% by Vol	1.6/1.4	2.2/1.2	2.2/1.2	0.8/2.1					
LGS/HGS	ppb	14.65/19.92	20.10/18.09	19.69/18.13	7.01/31.02					
ASG	SG	3.331	3.173	3.181	3.772					
Additional Properties										
KCl %	-	6.90	6.90	6.90	7.00	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Valve repaired on Red mix line. Add Radiagreen directly to active to maintain 1% vol concentration. Cont to maintain PHPA concentration by adding EZ MUD. Cont to maintain fluid loss properties by adding PAC LE & N-DRILL HT PLUS. Continue to maintain properties in both premixes, pits 1 & 4. Centrifuge to control solids in drilling fluid & maintain MWt. Transferring volume across f/ pit 1 to maintain volume in active, pit 2. Change out shaker screens to maximise solids control continue to patch screens where necessary.

Rig Activity

Cont POOH core barrel f/ 1087 - 370 m & F/C_ static. Cont POOH f/ 370 - 32 m. HTBT check gas level_ok, remove inner core barrel. Service TDS & travelling equipment. HTBT P/U 8.5" BHA M/U BHA. Upload tools & install R/A source. RIH w/ BHA - 215 m. Shallow test & down link tools_ok. Cont RIH f/ 215 - 3132 m. Break circ, take SCR's, wash f/ 3123 - 3161 m, Log w/ Sperry f/ 3175 - 3213 m. Drill f/ 3213 - 3234 m as / DD instruction.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	16		10	6	$A15,095.70
PAC-L	25 kg bag	58		21	37	$A3,366.72
Radiagreen EME-Salt	175 kg drum	7		1	6	$A2,209.98
BARAZAN D PLUS	25 kg bag	62		8	54	$A1,722.72
DEXTRID LTE	25 kg sack	52		24	28	$A1,271.52
EZ-MUD	25 kg pail	28		13	15	$A1,234.87
N-DRIL HT PLUS	50 lb bag	19		8	11	$A1,190.80
potassium hydroxide	20 kg pail	50		8	42	$A1,056.88
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	159.000			159.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGON	50 lb can	5			5	
potassium chloride	1000 kg bag	13			13	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	38			38	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 175 175 175 175	24.0
VSM-300	20 40 40 140 140 140 140	24.0
VSM-300	20 40 40 140 140 140 140	6.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	16.0
518	4,000	80.00	16.0

Time

Drilling	2.5
Circulating	0.5
Trips	13.0
Rig	1.5
Surveys	
Fishing	
Run Casing	
Coring	2.5
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	5.0
ROP	13.8
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	611.5	Base		Fluid Dumped	
Pipe Cap	176.9	Drill Water		Transferred	
Active Pits	650.0	Dewatering		SCE	-75.0
Total Hole	793.3	Sea Water		Evaporation	-6.0
Total Circ	1438.4	Whole Mud	1.3	Trips	-13.5
Reserve	692.0	Barite		Other	
Prev Vol	2207.3	Chemicals	21.8	Total Surface	
Net Change	-71.4	Other		Downhole	
Total Vol	2135.3	Total	23.1	Total Losses	-94.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,203.4	m
Survey TVD	3,031.4	m
Angle	35.56	Deg
Direction	179	
Horiz Displ.	569.7	m

Daily Products Cost	$A27,149.19	Total Daily Cost	$A30,229.19
Cumulative Products Cost	$A851,935.61	Total Cumulative Cost	$A1,027,495.61
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 063

Daily Drilling Fluid Report

Date 30/01/2010		Depth 3,283.0 m	
Spud Date 30/11/2009		Rig Activity POOH 8.5" interval	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information			Drill String (in) / (m)				in Casing m			Circulation/Hydraulics Data			
				OD	ID	Length	OD	Set	MD				
Bit Size	8.500	in	Drill Pipe	5.000	4.276	913.4	30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type	CORPRO/8.5" X 4" MCP		Drill Pipe	5.000	3.000	93.9	13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets			Drill Collar	6.375	2.875	85.5	9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	1.310	sq-in	Drill Collar	8.250	5.250	32.2				Eff(%)	97	97	97
Jets Velocity		ft/sec								bbl/strk	0.119	0.119	0.119
Jet Impact Force		lbf								SPM	0	0	0
Bit HHSI		hhp/in2								gpm|bbl/min			
Press Drop @ Bit		psi								Total GPM		AV, Riser	Circ Press psi
Bit Depth	1,125.0	m	Riser	19.750		100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	9.35	ppg	Open Hole	8.500		1,318.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	9.35	ppg					Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	Hyd 4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2	Pit #2							Fluid Type 8 1/2" ST-1 KCl/Polymer
Time		3:45	9:30	13:45	19:40							Continue running centrifuges to maintain solids content as low as possible. Add KOH to maintain pH level. Change out shaker screens to maintain optimal solids control, repaired screens where necessary. Altered bulk figures to be in line w/ Control Room figures/volumes.
Depth	m	3,256	3,284	3,284	3,284							
FL Temp	Deg C	68										
Density @ Deg C	ppg	9.35 @ 50	9.40 @ 47	9.40 @ 39	9.35 @ 25					9.00	9.50	
FV @ Deg C	sec/qt	66 @ 50	64 @ 47	62 @ 39	58 @ 25							
PV @ Deg C	cP	20 @ 25	20 @ 25	18 @ 25	18 @ 25							
YP	lbs/100 ft2	34	32	30	33							
GELS	lbs/100 ft2	11/14/17	9/14/17	9/13/16	10/14/17							
600/300		74.0/54.0	72.0/52.0	66.0/48.0	69.0/51.0							
200/100		45.0/33.0	43.0/33.0	39.0/30.0	43.0/31.0							
6/3		10.0/8.0	11.0/8.0	10.0/8.0	10.0/8.0							
API Filt	ml/30 min	4.4	4.4	4.4	4.4						4.5	
HTHP @ Deg C	ml/30 min	8.9 @ 49	8.2 @ 49	8.0 @ 49	8.9 @ 49						13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2							
Corr Solid	% by Vol	2.9	3.5	3.5	2.8							
NAP/Water	% by Vol	-/94.0	-/93.3	-/93.3	-/94.0							
Sand	% by vol	0.20	0.20	0.15	0.20						1.0	
MBT	ppb Eq.	10.0	7.5	7.5	10.0						25.0	
pH @ Deg C		9.50 @ 22	9.00 @ 22	9.00 @ 22	9.50 @ 22					8.50	9.50	
ALK Mud	Pm	0.60	0.95	0.85	0.85							
ALK Filt	Pf/Mf	0.28/3.10	0.35/3.30	0.25/3.50	0.24/3.30							
Chlorides	mg/l	38,000	39,000	39,000	38,500							
Tot. Hardness	mg/l	240	280	360	320						400	
LGS/HGS	% by Vol	1.1/1.7	2.1/1.4	2.1/1.4	1.1/1.7							
LGS/HGS	ppb	10.42/25.51	19.18/20.78	19.18/20.78	10.01/25.55							
ASG	SG	3.564	3.242	3.242	3.580							
Additional Properties												Rig Activity
KCl %	-	7.00	6.95	6.95	7.00		X	X		7.00	7.00	Drill 8.5" f/ 3234 - 3283 m. Circ btms up while boosting riser w/ 3 MP. POOH f/ 3283 - shoe. Service TDS. Cont POOH f/ 1965 - surface. L/O Halliburton sources & down load, R/B same & clean floor. HTBT, ran outter barrel f/ derrick 7 P/U inner bbl f/ deck. Secure premier cg control hoses to prevent damage after wind shift. RIH core bbls on BHA f/ 32 - 1125 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	13		5	8	$A7,417.60
potassium hydroxide	20 kg pail	42		10	32	$A1,321.10
ALDACIDE G	25 kg can	8			8	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	54			54	
barite	1 tons bulk	159.000			159.000	
BAROLIFT	15 lb box	11			11	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	6			6	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	28			28	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	15			15	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	11			11	
OXYGON	50 lb can	5			5	
PAC-L	25 kg bag	37			37	
Radiagreen EME-Salt	175 kg drum	6			6	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	38			38	

Solids Control Equipment				
Shaker		Screens		Hrs
VSM-300		20 40 40 260 260 260 260		
VSM-300		20 40 40 140 140 140 140		10.0
VSM-300		20 40 40 140 140 140 140		10.0
VSM-300		20 40 40 175 175 175 175		10.0
Hydrocyclone	Cones	Screens		Hrs
Centrifuge	Speed	Feed Rate		Hrs
518	4,000	80.00		18.0
518	4,000	80.00		18.0

Time	
Drilling	7.0
Circulating	0.5
Trips	14.5
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.5
Total	24.0
Rotating	7.0
ROP	23.0
Dil Rate	0.00

Fluid Volume Breakdown		8 1/2" ST-1 KCl/Polymer			
Active	bbl	Additions	bbl	Losses	bbl
Annulus	282.0	Base		Fluid Dumped	-1.9
Pipe Cap	59.8	Drill Water		Transferred	
Active Pits	676.0	Dewatering		SCE	-53.6
Total Hole	858.4	Sea Water		Evaporation	-6.0
Total Circ	1017.8	Whole Mud		Trips	
Reserve	556.0	Barite		Other	
Prev Vol	2135.3	Chemicals	16.7	Total Surface	
Net Change	-44.8	Other		Downhole	
Total Vol	2090.4	Total	16.7	Total Losses	-61.5

Fluid Types	Vol bbl

Deviation Information		
Survey MD	3,203.4	m
Survey TVD	3,031.4	m
Angle	35.56	Deg
Direction	179	
Horiz Displ.	569.7	m

Daily Products Cost	$A8,738.70	Total Daily Cost	$A11,818.70
Cumulative Products Cost	$A860,674.31	Total Cumulative Cost	$A1,039,314.31
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 064

Daily Drilling Fluid Report

Date 31/01/2010		Depth 3,298.0 m	
Spud Date 30/11/2009		Rig Activity POOH 8.5" 2 nd core Interval.	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Geoff Chapman	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.35	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,333.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		7:30	14:00	4:00	19:25						
Depth	m	3,293	3,293	3,283	3,298						
FL Temp	Deg C	56									
Density @ Deg C	ppg	9.40 @ 39	9.35 @ 34	9.40 @ 25	9.35 @ 25					9.00	9.50
FV @ Deg C	sec/qt	69 @ 39	67 @ 34	75 @ 25	65 @ 25						
PV @ Deg C	cP	19 @ 25	18 @ 25	18 @ 25	18 @ 25						
YP	lbs/100 ft2	34	33	33	34						
GELS	lbs/100 ft2	10/14/18	9/13/17	10/14/17	10/13/16						
600/300		72.0/53.0	69.0/51.0	69.0/51.0	70.0/52.0						
200/100		42.0/31.0	41.0/32.0	43.0/31.0	42.0/33.0						
6/3		10.0/9.0	10.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.4	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	7.5 @ 49	8.0 @ 49	8.9 @ 49	8.6 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.7	3.4	3.9	3.4						
NAP/Water	% by Vol	-/93.2	-/93.5	-/93.0	-/93.5						
Sand	% by vol	0.20	0.15	0.20	0.20						1.0
MBT	ppb Eq.	7.5	7.5	10.0	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	0.55	0.45	0.65	0.50						
ALK Filt	Pf/Mf	0.25/3.40	0.15/2.85	0.26/3.30	0.25/3.00						
Chlorides	mg/l	38,500	38,500	38,000	38,000						
Tot. Hardness	mg/l	280	240	240	240						400
LGS/HGS	% by Vol	2.4/1.3	2.1/1.2	2.8/1.1	2.2/1.2						
LGS/HGS	ppb	21.44/19.26	19.29/18.17	25.56/16.27	19.69/18.13						
ASG	SG	3.172	3.189	3.052	3.181						
Additional Properties											
KCl %	-	6.95	6.95	7.00	7.00	X	X			7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Maintained properties in active system. Continued to centrifuge to maintain solids & MWt. Maintained screens to assist in solids control. Calibrated mud balances. Maintained chemical inventory.

Rig Activity

RIH f/ 1125 - 3236 m. Wash f/ 3236 - 3283 m. Space out, P/U pup, L/O single, drop ball & seat same. Core f/ 3283 - 3298 m, torque went flat. No penetration. Circ 15 min, pull back 1 std L/O pup. F/C_static. Pump slug, POOH f/ 3236 - surface.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	159.000		17.000	142.000	$A12,419.86
potassium hydroxide	20 kg pail	32		11	21	$A1,453.21
BAROLIFT	15 lb box	11		2	9	$A636.04
OXYGON	50 lb can	5		1	4	$A572.03
ALDACIDE G	25 kg can	8		1	7	$A173.09
EZ-MUD	25 kg pail	15		1	14	$A94.99
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	54			54	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	6			6	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	28			28	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	11			11	
PAC-L	25 kg bag	37			37	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	6			6	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	38			38	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 140 140 140 140	7.0
VSM-300	20 40 40 140 140 140 140	7.0
VSM-300	20 40 40 175 175 175 175	3.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	18.0
518	4,000	80.00	18.0

Time

Drilling	
Circulating	0.5
Trips	20.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	3.0
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	0.5
Total	24.0
Rotating	3.0
ROP	16.4
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	641.0	Dewatering		SCE	-18.0
Total Hole	904.3	Sea Water		Evaporation	-2.7
Total Circ	641.0	Whole Mud		Trips	-3.0
Reserve	550.0	Barite	25.5	Other	
Prev Vol	2090.4	Chemicals	1.3	Total Surface	
Net Change	3.1	Other		Downhole	
Total Vol	2095.3	Total	26.8	Total Losses	-23.7

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,203.4	m
Survey TVD	3,031.4	m
Angle	35.56	Deg
Direction	179	
Horiz Displ.	569.7	m

Daily Products Cost	$A15,349.22	Total Daily Cost	$A18,429.22
Cumulative Products Cost	$A876,023.53	Total Cumulative Cost	$A1,057,743.53

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 065

Daily Drilling Fluid Report

Date 01/02/2010		Depth 3,309.0 m	
Spud Date 30/11/2009		Rig Activity POOH w/ Core Head & BBLS # 3.	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	CORPRO/8.5" X 4" MCP	
Jets		
TFA	1.310	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	316.0	m
ECD @ Csg Shoe	9.40	ppg
ECD @ Bit	9.40	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	104.4
Drill Pipe	5.000	3.000	93.9
Drill Collar	6.375	2.875	85.5
Drill Collar	8.250	5.250	32.2
Riser	19.750		100.0
Open Hole	8.500		1,344.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		3:50	8:00	14:00	20:00						
Depth	m	3,298	3,298	3,309	3,309						
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 25	9.35 @ 38	9.40 @ 41	9.40 @ 25					9.00	9.50
FV @ Deg C	sec/qt	55 @ 25	67 @ 38	69 @ 41	68 @ 25						
PV @ Deg C	cP	18 @ 25	15 @ 25	19 @ 25	19 @ 25						
YP	lbs/100 ft2	34	24	35	34						
GELS	lbs/100 ft2	9/13/15	9/13/16	10/14/17	10/14/17						
600/300		70.0/52.0	54.0/39.0	73.0/54.0	72.0/53.0						
200/100		42.0/33.0	33.0/27.0	45.0/34.0	44.0/33.0						
6/3		10.0/8.0	9.0/8.0	11.0/9.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	9.0 @ 49	7.7 @ 49	8.0 @ 49	9.0 @ 49						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.9	3.4	3.8	3.9						
NAP/Water	% by Vol	-/93.0	-/93.5	-/93.1	-/93.0						
Sand	% by vol	0.20	0.15	0.15	0.20						1.0
MBT	ppb Eq.	10.0	7.5	7.5	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	0.45	0.55	0.85	0.75						
ALK Filt	Pf/Mf	0.24/2.90	0.15/3.35	0.20/3.40	0.20/3.10						
Chlorides	mg/l	38,000	38,500	38,500	38,000						
Tot. Hardness	mg/l	240	360	200	240						400
LGS/HGS	% by Vol	2.8/1.1	2.1/1.2	2.6/1.2	2.8/1.1						
LGS/HGS	ppb	25.56/16.27	19.29/18.17	23.30/17.79	25.56/16.27						
ASG	SG	3.052	3.189	3.114	3.052						
Additional Properties											
KCl %	-	7.00	6.95	6.95	7.00		X	X		7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Cont to centrifuge sand traps & active pit 2 in order to maintain solids content. Cont to maintain volume & properties in active.

Rig Activity

Cont L/O core singles. P/U new inner core barrel. RIH 32 - 547 m. Cut & slip drill line. Cont RIH f/ 547 - 3236 m. M/U TDS was down f/ 3236 - 3298.5 m space out & drop ball. Establish parameters & cut core # 3 f/ 3289.5 - 3309 m. P/U record depth, circ & boost riser. P/B f/ 3309 - 3256 m, F/C_static. Pump slug. Cont POOH f/ 3256 - 316 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	21		11	10	$A1,453.21
soda ash	25 kg bag	38		4	34	$A121.68
ALDACIDE G	25 kg can	7			7	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	54			54	
barite	1 tons bulk	142.000			142.000	
BAROLIFT	15 lb box	9			9	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	6			6	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	28			28	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	14			14	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
N-DRIL HT PLUS	50 lb bag	11			11	
OXYGON	50 lb can	4			4	
PAC-L	25 kg bag	37			37	
potassium chloride	1000 kg bag	8			8	
Radiagreen EME-Salt	175 kg drum	6			6	
sapp	25 kg bag	18			18	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 140 140 140 140	10.0
VSM-300	20 40 40 140 140 140 140	10.0
VSM-300	20 40 40 175 175 175 175	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	20.0
518	4,000	80.00	20.0

Time

Drilling	
Circulating	0.5
Trips	18.5
Rig	2.0
Surveys	
Fishing	
Run Casing	
Coring	2.0
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.0
Total	24.0
Rotating	2.0
ROP	18.0
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	144.5	Base		Fluid Dumped	
Pipe Cap	13.7	Drill Water		Transferred	
Active Pits	649.0	Dewatering		SCE	-66.4
Total Hole	886.0	Sea Water		Evaporation	-3.0
Total Circ	807.2	Whole Mud		Trips	
Reserve	492.0	Barite		Other	
Prev Vol	2095.3	Chemicals	1.2	Total Surface	
Net Change	-68.2	Other		Downhole	
Total Vol	2027.0	Total	1.2	Total Losses	-69.4

Fluid Types — **Vol bbl**

Deviation Information

Survey MD	3,203.4	m
Survey TVD	3,031.4	m
Angle	35.56	Deg
Direction	179	
Horiz Displ.	569.7	m

Daily Products Cost	$A1,574.89	Total Daily Cost	$A4,654.89
Cumulative Products Cost	$A877,598.42	Total Cumulative Cost	$A1,062,398.42

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 066

Daily Drilling Fluid Report

Date 02/02/2010		Depth 3,357.0 m	
Spud Date 30/11/2009		Rig Activity Drilling 8.5" ST-1 Interval.	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500 in
Make/Type	SECURITY DBS/FMS3653
Jets	3x15|3x12
TFA	0.849 sq-in
Jets Velocity	225 ft/sec
Jet Impact Force	653.5 lbf
Bit HHSI	2.61 hhp/in2
Press Drop @ Bit	425 psi
Bit Depth	3,357.0 m
ECD @ Csg Shoe	9.99 ppg
ECD @ Bit	10.15 ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	3,143.3
Drill Pipe	5.000	3.000	142.6
Drill Collar	6.750	2.875	71.1
Riser	19.750		100.0
Open Hole	8.500		1,392.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	59	60	0
gpm|bbl/min	296 | 7.05	301 | 7.17	
Total GPM	597	AV, Riser 40.1	Circ Press psi 2310
Total Circ Time	102	AV min DP 268.0	Tot Pres Loss 2030
BU Time , min	45	AV max DC 548.2	Press Drop DP 1055
Total Strokes	12,197	BU Strokes 5,297	Press Drop An 405

Properties		1	2	3	Hyd 4	Targets			Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2					
Time		1:45	9:00	13:00	17:30					
Depth	m	3,309	3,309	3,309	3,317					
FL Temp	Deg C				68					
Density @ Deg C	ppg	9.40 @ 25	9.40 @ 33	9.40 @ 31	9.40 @ 49				9.00	9.50
FV @ Deg C	sec/qt	66 @ 25	71 @ 33	73 @ 31	68 @ 49					
PV @ Deg C	cP	19 @ 25	16 @ 25	18 @ 25	15 @ 25					
YP	lbs/100 ft2	35	28	28	30					
GELS	lbs/100 ft2	10/14/17	9/13/17	9/14/18	11/13/17					
600/300		73.0/54.0	60.0/44.0	64.0/46.0	60.0/45.0					
200/100		45.0/34.0	37.0/28.0	39.0/28.0	38.0/29.0					
6/3		11.0/9.0	9.0/8.0	10.0/8.0	11.0/9.0					
API Filt	ml/30 min	4.4	4.3	4.4	4.4					4.5
HTHP @ Deg C	ml/30 min	9.0 @ 121	7.8 @ 121	8.2 @ 121	8.6 @ 121					13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2					
Corr Solid	% by Vol	3.9	3.7	3.5	4.0					
NAP/Water	% by Vol	-/93.0	-/93.2	-/93.4	-/93.0					
Sand	% by vol	0.20	0.15	0.20	0.20					1.0
MBT	ppb Eq.	10.0	7.5	7.5	10.0					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.80	0.70	0.55	0.60					
ALK Filt	Pf/Mf	0.21/3.20	0.20/3.15	0.15/3.35	0.17/3.10					
Chlorides	mg/l	38,000	38,000	38,000	37,500					
Tot. Hardness	mg/l	240	200	240	280					400
LGS/HGS	% by Vol	2.8/1.1	2.4/1.3	2.0/1.5	2.8/1.1					
LGS/HGS	ppb	25.56/16.27	21.85/19.22	18.14/22.17	25.96/16.23					
ASG	SG	3.052	3.164	3.289	3.046					
Additional Properties										
KCl %	-	7.00	6.95	6.95	6.90		X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Add Radiagreen EME to increase concentration to 1% /Volume. Added Circal 60/16 & Circal Y to maintain concentration of bridging agents in both active & premixes to assist in preventing fluid loss. Cont to maintain properties as per program. Prepared premix in pit 1. Maintain fluid volume in active via transfers. Cont to maintain & repair shaker screens as required. Mud filtrate, mud cake & drilling fluid provided to Geologist & MWD's. Off loaded chemical f/ Far Fosna & entered into inventory.

Rig Activity

Cont pull out 374 - 32 m w/ C/bbls. L/O C/bbls inner & outer. Run GeoPilot std f/ derrick & M/U bit. P/U HOC, BAT & ACAL. Down load sperry tools & install sources. RIH w/ 8.5" BHA - 160 m. L/O drilling jar & replace w/ Low Ha jars, cont RIH - 221 m. Shallow test MWD tools. Cont RIH f/ 221 - 1658 m, filling pipe every 20 std's. Cont RIH w/ 8.5" drilling assy - 9 5/8" shoe @ 1965 m. Break circ, space out. Function test BOP - ok, F/C_static, take SCR's. Cont RIH - 3260 m. Log, ream f/ 3260 - 3309 m.
Cont drill 8.5" ST-1 interval f/ 3309 -3357 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Radiagreen EME-Salt	175 kg drum	6		6		$A13,259.88
potassium chloride	1000 kg bag	8		5	3	$A7,417.60
EZ-MUD	25 kg pail	14	32	15	31	$A1,424.85
BARAZAN D PLUS	25 kg bag	54		6	48	$A1,292.04
Circal Y	25 kg bag	32	192	48	176	$A1,291.68
PAC-L	25 kg bag	37		8	29	$A1,282.56
potassium hydroxide	20 kg pail	10		6	4	$A792.66
N-DRIL HT PLUS	50 lb bag	11		5	6	$A744.25
Circal 60/16	25 kg bag		280	50	230	$A634.00
ALDACIDE G	25 kg can	7		2	5	$A346.18
soda ash	25 kg bag	34		4	30	$A121.68
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
barite	1 tons bulk	142.000			142.000	
BAROLIFT	15 lb box	9			9	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	6	8		14	
CON DET	5 gal can	32			32	
DEXTRID LTE	25 kg sack	28			28	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
OXYGEN	50 lb can	4			4	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 140 140 140 140	15.0
VSM-300	20 40 40 140 140 140 140	15.0
VSM-300	20 40 40 175 175 175 175	15.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	23.0
518	4,000	80.00	23.0

Time

Drilling	5.0
Circulating	1.0
Trips	10.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	3.5
Testing	
Logging	
Dir Work	
Repair	
Other	4.0
Total	24.0
Rotating	8.5
ROP	31.5
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	632.6	Base		Fluid Dumped	
Pipe Cap	185.1	Drill Water	122.0	Transferred	
Active Pits	639.0	Dewatering		SCE	-6.0
Total Hole	817.8	Sea Water		Evaporation	-1.0
Total Circ	1456.8	Whole Mud	8.1	Trips	
Reserve	720.0	Barite		Other	
Prev Vol	2027.0	Chemicals	26.7	Total Surface	
Net Change	149.8	Other		Downhole	
Total Vol	2176.8	Total	156.8	Total Losses	-7.0

Fluid Types Vol bbl

Deviation Information

Survey MD	3,324.8 m
Survey TVD	3,130.2 m
Angle	36.06 Deg
Direction	179
Horiz Displ.	640.5 m

Daily Products Cost	$A28,607.38	Total Daily Cost	$A31,687.38
Cumulative Products Cost	$A906,205.80	Total Cumulative Cost	$A1,094,085.80

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
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Baroid Fluid Services

Report No 067

Daily Drilling Fluid Report

Date	03/02/2010	**Depth**	3,482.0 m
Spud Date	30/11/2009	**Rig Activity**	POOH 8.5" ST-1 Interval

Operator	ADA DRILLING	**Report For**	Bryan Houston / Kevin Monkhouse
Well Name	Rockhopper-1		
Contractor	MAERSK	**Report For**	Brian Meechan / Ole Andreasen
Rig Name	Kantan IV	**Unit System**	ADA Drilling
Country	Australia	**State/Province/Region**	Tasmania
Geographic Area/County	Bass Strait	**Field or Block**	T/18P

Bit Information

Bit Size	8.500	in
Make/Type	SECURITY DBS/FMS3653	
Jets	3x15|3x12	
TFA	0.849	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,965.0	m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit	9.30	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.276	1,751.3
Drill Pipe	5.000	3.000	142.6
Drill Collar	6.750	2.875	71.1
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		1:15	7:00	13:30	19:30						
Depth	m	3,364	3,408	3,479	3,482						
FL Temp	Deg C	69	69	69							
Density @ Deg C	ppg	9.40 @ 49	9.40 @ 55	9.35 @ 52	9.30 @ 33					9.00	9.50
FV @ Deg C	sec/qt	67 @ 49	57 @ 55	57 @ 52	59						
PV @ Deg C	cP	15 @ 25	19 @ 25	20 @ 25	20 @ 25						
YP	lbs/100 ft2	29	36	36	35						
GELS	lbs/100 ft2	11/14/18	10/15/19	10/14/19	10/14/19						
600/300		59.0/44.0	74.0/55.0	76.0/56.0	75.0/55.0						
200/100		38.0/29.0	46.0/34.0	47.0/35.0	46.0/34.0						
6/3		10.0/8.0	11.0/8.0	11.0/9.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.3	4.2	4.3						4.5
HTHP @ Deg C	ml/30 min	8.1 @ 121	7.2 @ 121	6.8 @ 121	7.5 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	4.0	3.7	3.4	3.9						
NAP/Water	% by Vol	-/93.0	-/93.2	-/93.5	-/93.0						
Sand	% by vol	0.20	0.15	0.20	0.25						1.0
MBT	ppb Eq.	10.0	7.5	7.5	10.0						25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50
ALK Mud	Pm	0.65	0.45	0.65	0.60						
ALK Filt	Pf/Mf	0.22/2.90	0.15/3.25	0.20/3.30	0.21/3.40						
Chlorides	mg/l	37,500	38,500	37,500	38,000						
Tot. Hardness	mg/l	280	200	160	200						400
LGS/HGS	% by Vol	2.8/1.1	2.4/1.3	2.2/1.2	3.6/0.4						
LGS/HGS	ppb	25.96/16.23	21.44/19.26	20.10/18.09	32.38/5.24						
ASG	SG	3.046	3.172	3.173	2.746						
Additional Properties											
KCl %	-	6.90	7.00	6.95	6.90	X		X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Maintained properties in active. Made premix in pit 4. Continue to run centrifuges to prevent solids build in fluid. Change out & repair shaker screens as required. Conducted a full screen & chem inventory for back load. Provided Geologist & SLB w/ filtrate, mud cake & mud samples. Had small issue w/ barite hopper. Charged off all bulks both Brine & Barite, so figure correlate w/ Control Room figures.

Rig Activity

Drill 8.5" ST-1 f/ 3357 - 3482 m. Circ, F/C_static. Pump 20 bbl BAROLIFT pill, circ shakers clean. F/C_static. POOH f/ 3482 - 3309 m. RIH f/ 3309 - 3482 m. CIrc hole clean while reciprocating pipe. F/C for 15 mins_static. P/B - 3300 m. Pump 16 bbl, 11.1 ppg slug. POOH - 9 5/8" csg shoe 1965 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
barite	1 tons bulk	142.000		8.000	134.000	$A5,844.64
Techmesh 260(API 140)	1 each box	12		6	6	$A3,512.40
CLAYSEAL PLUS	55 gal drum	14		2	12	$A3,019.14
PAC-L	25 kg bag	29		16	13	$A2,565.12
OXYGON	50 lb can	4		4		$A2,288.12
BARAZAN D PLUS	25 kg bag	48		8	40	$A1,722.72
potassium chloride	1000 kg bag	3		1	2	$A1,483.52
DEXTRID LTE	25 kg sack	28		28		$A1,483.44
EZ-MUD	25 kg pail	31		15	16	$A1,424.85
Circal Y	25 kg bag	176		48	128	$A1,291.68
N-DRIL HT PLUS	50 lb bag	6		6		$A893.10
soda ash	25 kg bag	30		21	9	$A638.82
Circal 60/16	25 kg bag	230		45	185	$A570.60
potassium hydroxide	20 kg pail	4		4		$A528.44
ALDACIDE G	25 kg can	5		3	2	$A519.27
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BAROLIFT	15 lb box	9			9	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	8.0
VSM-300	20 40 40 100 100 100 100	19.0
VSM-300	20 40 40 260 260 260 260	19.0
VSM-300	20 40 40 260 260 260 260	19.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	23.0
518	4,000	80.00	23.0

Time

Drilling	14.5
Circulating	3.0
Trips	5.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	1.0
Total	24.0
Rotating	14.5
ROP	28.3
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	428.6	Base		Fluid Dumped	
Pipe Cap	105.8	Drill Water	134.0	Transferred	
Active Pits	597.0	Dewatering		SCE	-58.0
Total Hole	883.7	Sea Water		Evaporation	-9.8
Total Circ	1131.4	Whole Mud		Trips	-8.0
Reserve	788.0	Barite	12.0	Other	
Prev Vol	2176.8	Chemicals	21.9	Total Surface	
Net Change	92.1	Other		Downhole	
Total Vol	2268.7	Total	167.9	Total Losses	-75.8

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A27,785.86	Total Daily Cost	$A30,865.86
Cumulative Products Cost	$A933,991.66	Total Cumulative Cost	$A1,124,951.66

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 068

Daily Drilling Fluid Report

Date 04/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity CMR Wire Line Logs ST-1	
Operator ADA DRILLING	Report For Bryan Houston / Kevin Monkhouse	Well Name Rockhopper-1	
Contractor MAERSK	Report For Brian Meechan / Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	Hyd 4	Targets	Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2			
Time		4:00	10:00	14:00	22:00			
Depth	m	3,482	3,482	3,482	3,482			
FL Temp	Deg C							
Density @ Deg C	ppg	9.30 @ 25	9.30 @ 32	9.30 @ 23	9.30 @ 23		9.00	9.50
FV @ Deg C	sec/qt	57 @ 25	63 @ 32	65 @ 23	63 @ 23			
PV @ Deg C	cP	20 @ 25	18 @ 25	18 @ 25	18 @ 25			
YP	lbs/100 ft2	35	38	33	34			
GELS	lbs/100 ft2	10/14/19	10/14/17	9/13/16	10/14/17			
600/300		75.0/55.0	74.0/56.0	69.0/51.0	70.0/52.0			
200/100		46.0/34.0	45.0/33.0	42.0/30.0	43.0/31.0			
6/3		10.0/8.0	10.0/9.0	10.0/8.0	10.0/8.0			
API Filt	ml/30 min	4.3	4.3	4.3	4.3			4.5
HTHP @ Deg C	ml/30 min	7.2 @ 121	6.8 @ 121	7.0 @ 121	7.3 @ 121			13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2			
Corr Solid	% by Vol	3.9	3.2	3.2	3.9			
NAP/Water	% by Vol	-/93.0	-/93.7	-/93.7	-/93.0			
Sand	% by vol	0.25	0.15	0.15	0.20			1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0			25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22		8.50	9.50
ALK Mud	Pm	0.60	0.60	0.55	0.60			
ALK Filt	Pf/Mf	0.23/3.00	0.20/3.25	0.15/3.45	0.18/3.30			
Chlorides	mg/l	38,000	38,000	38,000	38,000			
Tot. Hardness	mg/l	200	120	80	120			400
LGS/HGS	% by Vol	3.6/0.4	2.1/1.1	2.1/1.1	3.6/0.4			
LGS/HGS	ppb	32.38/5.24	19.40/15.57	19.40/15.57	32.38/5.24			
ASG	SG	2.746	3.131	3.131	2.746			
Additional Properties								
KCl %	-	6.90	7.00	7.00	6.90	X X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Continue to Maintain KCl- PHPA properties. Begin to load Chem into containers, for back load. Cont to conduct inventories. Inventories will be adjusted once chem/containers are on the boat.

Rig Activity

F/C_static. Service TDS. Cont POOH 1965 - 375 m, F/C_static pull BHA - 212 m. Remove Sperry R/A sources & shut down tools. L/O 8.5" stab, Float Stab, A CAL, HOC, Bat Sonic, PWD, CTN, ALD tab, B/O bit, L/O DGR & EWR, RLL Stab, NM Flex Jt, & GEOPILOT. HTBT R/U - wireline & P/U CMR tools. Log down - 4380 m. Log Up f/ 3480 - 195 m. Process data - RIH f/ 1965 - 3135 m. Correlate & tune tools. RIH f/ 3135 - 3330 m. Log up repeat. Log up main.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
CLAYSEAL PLUS	55 gal drum	12		3	9	$A4,528.71
Circal 60/16	25 kg bag	185		11	174	$A139.48
ALDACIDE G	25 kg can	2			2	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6			6	
BARAZAN D PLUS	25 kg bag	40			40	
barite	1 tons bulk	134.000			134.000	
BAROLIFT	15 lb box	9			9	
BARO-SEAL FINE	40 lb bag	40			40	
BARO-SEAL MEDIUM	40 lb bag	70			70	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	128			128	
citric acid	25 kg bag	47			47	
CON DET	5 gal can	32			32	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			36	
PAC-L	25 kg bag	13			13	
potassium chloride	1000 kg bag	2			2	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	9			9	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
STEELSEAL 100	50 lb sack	40			40	
STEELSEAL 400	50 lb sack	40			40	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 260 260 260 260	
VSM-300	20 40 40 100 100 100 100	2.0
VSM-300	20 40 40 260 260 260 260	2.0
VSM-300	20 40 40 260 260 260 260	2.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	3.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	14.5
Dir Work	
Repair	
Other	6.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	150.0	Transferred	
Active Pits	604.0	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	-9.5
Total Circ	604.0	Whole Mud		Trips	-15.0
Reserve	848.0	Barite		Other	
Prev Vol	2268.7	Chemicals	4.6	Total Surface	
Net Change	130.1	Other		Downhole	
Total Vol	2398.7	Total	154.6	Total Losses	-24.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A4,668.19	Total Daily Cost	$A7,748.19
Cumulative Products Cost	$A938,659.85	Total Cumulative Cost	$A1,132,699.85
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 069

Daily Drilling Fluid Report

Date 05/02/2010	**Depth** 3,482.0 m		
Spud Date 30/11/2009	**Rig Activity** MDT Wire Line Logs ST-1		
Operator ADA DRILLING	**Report For** Bryan Houston / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard/Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
			OD	ID	Length	OD	Set	MD				
Bit Size	in					30.000	@	158.0	Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type						13.375	@	961.0	Bore in	6.500	6.500	6.500
Jets						9.625	@	1,965.0	Strokes in	12.000	12.000	12.000
TFA	sq-in								Eff(%)	97	97	97
Jets Velocity	ft/sec								bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf								SPM	0	0	0
Bit HHSI	hhp/in2								gpm|bbl/min			
Press Drop @ Bit	psi								Total GPM		AV, Riser	Circ Press psi
Bit Depth	3,482.0 m	Riser	19.750		100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	9.30 ppg	Open Hole	8.500		1,517.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg					Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	Hyd 4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2	Pit #2	Pit #2							**Fluid Type** 8 1/2" ST-1 KCl/Polymer
Time		3:45	9:45	14:00	21:30							Continue to maintain properties a per program. Transfer KCL- PHPA reserve fluid into active to maintain volume & MWt. Mi Swaco centrifuge hand performed PM's on equipment. Continue to check chem & backload onto Far Fosna.
Depth	m	3,482	3,482	3,482	3,482							
FL Temp	Deg C											
Density @ Deg C	ppg	9.30 @ 23	9.30 @ 21	9.30 @ 20	9.30 @ 25					9.00	9.50	
FV @ Deg C	sec/qt	62 @ 23	66 @ 21	68 @ 20	66 @ 25							
PV @ Deg C	cP	18 @ 25	18 @ 25	18 @ 25	19 @ 25							
YP	lbs/100 ft2	35	28	33	32							
GELS	lbs/100 ft2	10/14/17	9/13/16	10/14/18	10/14/19							
600/300		71.0/53.0	64.0/46.0	69.0/51.0	70.0/51.0							
200/100		44.0/31.0	37.0/29.0	42.0/33.0	42.0/33.0							
6/3		10.0/8.0	9.0/8.0	10.0/9.0	10.0/8.0							
API Filt	ml/30 min	4.3	4.2	4.2	4.3						4.5	
HTHP @ Deg C	ml/30 min	7.2 @ 121	6.6 @ 121	6.8 @ 121	7.0 @ 121						13.0	
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2							
Corr Solid	% by Vol	2.9	3.1	3.1	2.9							
NAP/Water	% by Vol	-/94.0	-/93.7	-/93.7	-/94.0							
Sand	% by vol	0.20	0.20	0.20	0.25						1.0	
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0	
pH @ Deg C		9.00 @ 22	9.00 @ 22	9.00 @ 22	9.00 @ 22					8.50	9.50	
ALK Mud	Pm	0.60	0.60	0.45	0.40							
ALK Filt	Pf/Mf	0.18/3.20	0.20/2.95	0.15/3.05	0.20/3.00							
Chlorides	mg/l	38,000	38,500	38,500	38,000							
Tot. Hardness	mg/l	120	160	120	120						400	
LGS/HGS	% by Vol	1.5/1.4	2.1/1.1	2.1/1.1	1.5/1.4							
LGS/HGS	ppb	13.83/20.00	18.99/15.61	18.99/15.61	13.83/20.00							
ASG	SG	3.356	3.140	3.140	3.356							
Additional Properties												
KCl %	-	6.90	6.95	6.95	6.90	X	X	X	X	7.00	7.00	

Rig Activity

Cont W/L log # 1 - 3480.5 m. POOH - surface. SLB remove R/A sources & tools. SLB M/U tool head & tools for run # 2. L/O logging tools. RIH w/ SLB MDT string # 2 - 2135 m. Drop off test. Take pressure points between 2135 - 3320 m. Tool String = XPT, GR, ECRD,LEHQT.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	2		1	1	$A1,483.52
BARAZAN D PLUS	25 kg bag	40		1	39	$A215.34
ALDACIDE G	25 kg can	2			2	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARA-DEFOAM W300	25 l can	6				
barite	1 tons bulk	134.000			134.000	
BAROLIFT	15 lb box	9				
BARO-SEAL FINE	40 lb bag	40				
BARO-SEAL MEDIUM	40 lb bag	70				
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	128			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	9			5	
CON DET	5 gal can	32				
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	36			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	9			9	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
STEELSEAL 100	50 lb sack	40				
STEELSEAL 400	50 lb sack	40				

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	5.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	18.5
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	624.0	Dewatering		SCE	-15.0
Total Hole	946.7	Sea Water		Evaporation	-1.0
Total Circ	624.0	Whole Mud		Trips	-4.0
Reserve	811.3	Barite		Other	
Prev Vol	2398.7	Chemicals	3.3	Total Surface	
Net Change	-16.7	Other		Downhole	
Total Vol	2382.0	Total	3.3	Total Losses	-20.0

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A1,698.86	Total Daily Cost	$A4,778.86
Cumulative Products Cost	$A940,358.71	Total Cumulative Cost	$A1,137,478.71
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 070

Daily Drilling Fluid Report

Date 06/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity Wireline Run 3 Quick Silver Probe MDT	
Operator ADA DRILLING	Report For Bryan Houston / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	3,482.0	m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	Hyd 3	4	Targets			Program	
Source		Pit #2	Pit #2	Pit #2						
Time		8:00	14:00	20:00						
Depth	m	3,482	3,482	3,482						
FL Temp	Deg C									
Density @ Deg C	ppg	9.30 @ 23	9.30 @ 21	9.30 @ 20					9.00	9.50
FV @ Deg C	sec/qt	69 @ 23	70 @ 21	72 @ 20						
PV @ Deg C	cP	15 @ 25	16 @ 25	16 @ 25						
YP	lbs/100 ft2	27	26	27						
GELS	lbs/100 ft2	9/13/15	9/13/16	9/13/15						
600/300		57.0/42.0	58.0/42.0	59.0/43.0						
200/100		36.0/27.0	37.0/29.0	38.0/30.0						
6/3		9.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.2	4.3						4.5
HTHP @ Deg C	ml/30 min	6.8 @ 121	7.0 @ 121	7.0 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2						
Corr Solid	% by Vol	3.4	3.1	3.4						
NAP/Water	% by Vol	-/93.5	-/93.7	-/93.5						
Sand	% by vol	0.15	0.15	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	1.45	1.60	1.50						
ALK Filt	Pf/Mf	0.45/3.55	0.45/3.30	0.45/3.00						
Chlorides	mg/l	38,000	38,500	38,000						
Tot. Hardness	mg/l	160	160	160						400
LGS/HGS	% by Vol	2.5/0.9	2.1/1.1	2.5/0.9						
LGS/HGS	ppb	23.11/12.62	18.99/15.61	23.11/12.62						
ASG	SG	3.004	3.140	3.004						
Additional Properties										
KCl %	-	6.95	6.95	6.90		X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Received KOH off Far Fosna & maintained pH of fluid in Pit 3 & 4. Continued maintaining properties in Active pit 2 as/ program. Begin to clean empty Pit 1 w/ sea water, after transferring remaining KCl- PHPA volume over to active. Cont to maintain volume in active using Pits 3 & 4.
Changed shaker 1,3 & 4 to 140 mesh screens. Shaker 2 has 100 mesh on btms.

Rig Activity

Cont - log # 2 taking pressure points f/ 3320 - 2135.5 m. Correlate tools @ 3303 m string # 2 = XPT, GR, ECRD & LEHQT. POOH w/ string # 2 & R/D same. SLB R/U & test string # 3 Quick Silver Probe MDT. RIH - 1965 m Enter O/H - difficulties getting down 2 K over. Correlate tools. Drop off test. Start sampling @ 2941 m. Correlate & POOH - 2772 m & start sampling. RIH - 3435 m start sampling @ 3409 - 2415 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail		32	12	20	$A1,585.32
BARAZAN D PLUS	25 kg bag	39		2	37	$A430.68
ALDACIDE G	25 kg can	2			2	
Amodrill 1235	1 bbl bulk	19.400			19.400	
barite	1 tons bulk	134.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
potassium chloride	1000 kg bag	1			1	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	9			9	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 140 140 140 140	
VSM-300	20 40 40 100 100 100 100	
VSM-300	20 40 40 140 140 140 140	
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	5.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	19.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	704.0	Dewatering		SCE	-30.0
Total Hole	946.7	Sea Water		Evaporation	-5.5
Total Circ	704.0	Whole Mud		Trips	
Reserve	697.0	Barite		Other	
Prev Vol	2382.0	Chemicals	1.2	Total Surface	
Net Change	-34.3	Other		Downhole	
Total Vol	2347.7	Total	1.2	Total Losses	-35.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A2,016.00	Total Daily Cost	$A5,096.00
Cumulative Products Cost	$A942,374.71	Total Cumulative Cost	$A1,142,574.71
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 071

Daily Drilling Fluid Report

Date 07/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity W/L QUICK SILVER PROBE MDT Run 3	
Operator ADA DRILLING	Report For Bryan Houston / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	3,482.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets	Program	
Source		Pit #2	Pit #2					
Time		14:00	9:30					
Depth	m	3,482	3,482					
FL Temp	Deg C							
Density @ Deg C	ppg	9.30 @ 19	9.30 @ 20				9.00	9.50
FV @ Deg C	sec/qt	74 @ 19	71 @ 20					
PV @ Deg C	cP	16 @ 25	15 @ 25					
YP	lbs/100 ft2	25	26					
GELS	lbs/100 ft2	9/13/16	9/12/15					
600/300		57.0/41.0	56.0/41.0					
200/100		36.0/27.0	35.0/26.0					
6/3		9.0/8.0	9.0/8.0					
API Filt	ml/30 min	4.4	4.3					4.5
HTHP @ Deg C	ml/30 min	7.2 @ 121	7.0 @ 121					13.0
Cake API/HTHP	32nd in	1/2	1/2					
Corr Solid	% by Vol	3.0	3.0					
NAP/Water	% by Vol	-/93.8	-/93.8					
Sand	% by vol	0.15	0.15					1.0
MBT	ppb Eq.	5.0	5.0					25.0
pH @ Deg C		9.00 @ 22	9.00 @ 22				8.50	9.50
ALK Mud	Pm	0.70	0.85					
ALK Filt	Pf/Mf	0.20/2.90	0.25/3.15					
Chlorides	mg/l	38,500	38,500					
Tot. Hardness	mg/l	160	120					400
LGS/HGS	% by Vol	1.9/1.2	1.9/1.2					
LGS/HGS	ppb	17.13/17.09	17.13/17.09					
ASG	SG	3.211	3.211					
Additional Properties								
KCl %	-	6.95	6.95			X X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

175 bbl Sea Water used to clean pit 1 treated to sea. Cont to maintain KCl-PHPA properties.

Rig Activity

Cont SLB W/L Quick Silver Probe MDT run 3, f/ 3410 - 3183.2 m sampling.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium chloride	1000 kg bag	1		1		$A1,483.52
potassium hydroxide	20 kg pail	20		2	18	$A264.22
ALDACIDE G	25 kg can	2		1	1	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	9			9	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	704.0	Dewatering		SCE	-175.0
Total Hole	946.7	Sea Water		Evaporation	-5.5
Total Circ	704.0	Whole Mud		Trips	
Reserve	520.0	Barite		Other	
Prev Vol	2347.7	Chemicals	3.5	Total Surface	
Net Change	-177.0	Other		Downhole	
Total Vol	2170.7	Total	3.5	Total Losses	-180.5

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A1,920.83	Total Daily Cost	$A5,000.83
Cumulative Products Cost	$A944,295.54	Total Cumulative Cost	$A1,147,575.54

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

HALLIBURTON | Fluid Systems

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Baroid Fluid Services

Report No 072

Daily Drilling Fluid Report

Date 08/02/2010	**Depth** 3,482.0 m		
Spud Date 30/11/2009	**Rig Activity** POOH Run 4 FMI-OSI Wireline		
Operator ADA DRILLING	**Report For** Bryan Houston / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard/Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in						30.000	@	158.0
Make/Type							13.375	@	961.0
Jets							9.625	@	1,965.0
TFA	sq-in								
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	3,482.0 m	Riser	19.750		100.0				
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,517.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		2:00	8:00	14:00	22:00						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C										
Density @ Deg C	ppg	9.30 @ 21	9.30 @ 18	9.30 @ 17	9.30 @ 18					9.00	9.50
FV @ Deg C	sec/qt	70 @ 21	72 @ 18	75 @ 17	77 @ 18						
PV @ Deg C	cP	16 @ 25	15 @ 25	15 @ 25	15 @ 25						
YP	lbs/100 ft2	27	27	28	29						
GELS	lbs/100 ft2	9/13/15	9/13/17	9/13/18	10/14/19						
600/300		59.0/43.0	57.0/42.0	58.0/43.0	59.0/44.0						
200/100		35.0/28.0	36.0/27.0	36.0/28.0	37.0/29.0						
6/3		10.0/8.0	9.0/8.0	9.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.3	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	7.1 @ 121	6.8 @ 121	7.2 @ 121	7.8 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.1	3.0	3.0	3.4						
NAP/Water	% by Vol	-/93.8	-/93.8	-/93.8	-/93.5						
Sand	% by vol	0.20	0.15	0.15	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.50 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	0.60	1.55	0.95	1.00						
ALK Filt	Pf/Mf	0.20/3.00	0.35/3.15	0.25/3.05	0.20/2.90						
Chlorides	mg/l	38,000	38,500	38,500	38,000						
Tot. Hardness	mg/l	160	120	160	160						400
LGS/HGS	% by Vol	1.9/1.2	1.9/1.2	1.9/1.2	2.5/0.9						
LGS/HGS	ppb	17.54/17.05	17.13/17.09	17.13/17.09	23.11/12.62						
ASG	SG	3.201	3.211	3.211	3.004						
Additional Properties											
KCl %	-	6.90	6.95	6.95	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Whilst boosting riser add potassium hydroxide(KOH) to maintain pH & soda ash to reduce hardness. Conduct full used screen inventory.

Rig Activity

SLB W/L Cont run 3 f/ 3183 - 3109 m. POOH run 3 - surface. L/O tools. Test & M/U FMI - OSI tools for Run 4. RIH - 1965 m. Log down f/ 1965 - 3375 m. Log up f/ 3365 - 1965 m shoe. POOH w/ FMI - OSI W/L run 4 - surface.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	18		2	16	$A264.22
soda ash	25 kg bag	9		1	8	$A30.42
ALDACIDE G	25 kg can	1			1	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	4.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	17.5
Dir Work	
Repair	
Other	2.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	704.0	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	-0.3
Total Circ	704.0	Whole Mud		Trips	
Reserve	520.0	Barite		Other	
Prev Vol	2170.7	Chemicals	0.2	Total Surface	
Net Change	-0.1	Other		Downhole	
Total Vol	2170.7	Total	0.2	Total Losses	-0.3

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A294.64	Total Daily Cost	$A3,374.64
Cumulative Products Cost	$A944,590.18	Total Cumulative Cost	$A1,150,950.18
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 073

Daily Drilling Fluid Report

Date 09/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity SLB W/L Under Tension.	
Operator ADA DRILLING	Report For Bryan Houston / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in						30.000	@	158.0
Make/Type							13.375	@	961.0
Jets							9.625	@	1,965.0
TFA	sq-in								
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	3,482.0 m	Riser	19.750		100.0				
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,517.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		3:00	9:00	14:00	21:00						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C										
Density @ Deg C	ppg	9.30 @ 18	9.30 @ 19	9.30 @ 19	9.30 @ 18					9.00	9.50
FV @ Deg C	sec/qt	77 @ 18	77 @ 19	79 @ 19	78 @ 19						
PV @ Deg C	cP	14 @ 25	15 @ 25	15 @ 25	15 @ 25						
YP	lbs/100 ft2	31	25	24	25						
GELS	lbs/100 ft2	10/14/19	8/12/16	9/12/15	10/14/18						
600/300		59.0/45.0	55.0/40.0	54.0/39.0	55.0/40.0						
200/100		38.0/29.0	34.0/26.0	33.0/26.0	34.0/27.0						
6/3		10.0/8.0	9.0/7.0	9.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	7.2 @ 121	7.0 @ 121	7.2 @ 121	7.1 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.4	3.0	3.0	3.4						
NAP/Water	% by Vol	-/93.5	-/93.8	-/93.8	-/93.5						
Sand	% by vol	0.20	0.15	0.15	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.50 @ 22	9.50 @ 22	9.00 @ 22	9.50 @ 22					8.50	9.50
ALK Mud	Pm	0.45	0.45	0.35	0.40						
ALK Filt	Pf/Mf	0.25/2.90	0.15/3.35	0.10/3.30	0.10/3.00						
Chlorides	mg/l	38,000	38,500	38,500	38,000						
Tot. Hardness	mg/l	160	80	120	160						400
LGS/HGS	% by Vol	2.5/0.9	1.9/1.2	1.9/1.2	2.5/0.9						
LGS/HGS	ppb	23.11/12.62	17.13/17.09	17.13/17.09	23.11/12.62						
ASG	SG	3.004	3.211	3.211	3.004						
Additional Properties											
KCl %	-	0.00	6.95	6.95	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

6 ALDACIDE G added to inventory came off Far Fosna. Cont maintain properties fluid to targets.

Rig Activity

HTBT R/D FMI string 4. Slb W/L R/U Seismic string 5. Guns in water on stbd crane. SLB W/L RIH w/ Seismic string 5 - 3370 m. Log out 3370 - 1600 m. POOH - surface. L/O seismic string 5 tools. M/U MSCT string 6 tools. RIH MSCT logging string 6 - 3420 m, correlate. Core 3420 - 3316 m, correlate log. Core f/ 3300 - 3137 m core # 26. SLB W/L under tension. Attempt to wok loose.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	16		4	12	$A528.44
ALDACIDE G	25 kg can	1	6	1	6	$A173.09
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	8			8	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 50 50 50 50	
VSM-300	20 40 40 100 100 100 100	
VSM-300	20 40 40 50 50 50 50	
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	6.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	10.0
Dir Work	
Repair	
Other	7.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	649.0	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	-4.4
Total Circ	649.0	Whole Mud		Trips	-3.0
Reserve	568.0	Barite		Other	
Prev Vol	2170.7	Chemicals	0.5	Total Surface	
Net Change	-6.9	Other		Downhole	
Total Vol	2163.7	Total	0.5	Total Losses	-7.4

Fluid Types	Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A701.53	Total Daily Cost	$A3,781.53
Cumulative Products Cost	$A945,291.71	Total Cumulative Cost	$A1,154,731.71
Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 074

Daily Drilling Fluid Report

Date 10/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity POOH W/ Fishing Assy	
Operator ADA DRILLING	Report For Bryan Houston / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	7.500	in
Make/Type	N/A/F.S. Overshot	
Jets		
TFA	1.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	954.0	m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit	9.30	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	4.184	951.1
Drill Collar	4.688	2.500	2.9
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		3:00	12:15	16:00	22:40						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C		38	48							
Density @ Deg C	ppg	9.30 @ 19	9.35 @ 25	9.35 @ 32	9.30 @ 26					9.00	9.50
FV @ Deg C	sec/qt	78 @ 19	75 @ 25	77 @ 32	69 @ 26						
PV @ Deg C	cP	15 @ 25	17 @ 25	18 @ 25	18 @ 25						
YP	lbs/100 ft2	23	31	38	37						
GELS	lbs/100 ft2	8/12/15	10/14/18	11/15/21	11/15/21						
600/300		53.0/38.0	65.0/48.0	74.0/56.0	73.0/55.0						
200/100		32.0/24.0	40.0/31.0	48.0/37.0	47.0/36.0						
6/3		9.0/7.0	11.0/8.0	12.0/10.0	11.0/9.0						
API Filt	ml/30 min	4.3	4.3	4.4	4.4						4.5
HTHP @ Deg C	ml/30 min	7.2 @ 121	7.0 @ 121	7.5 @ 121	7.7 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.0	3.4	3.4	2.9						
NAP/Water	% by Vol	-/93.8	-/93.5	-/93.5	-/94.0						
Sand	% by vol	0.15	0.15	0.15	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		9.00 @ 22	8.50 @ 22	8.50 @ 22	8.50 @ 22					8.50	9.50
ALK Mud	Pm	0.35	0.15	0.20	0.20						
ALK Filt	Pf/Mf	0.10/3.35	0.05/3.15	0.05/3.34	0.10/3.55						
Chlorides	mg/l	38,500	38,500	38,000	38,000						
Tot. Hardness	mg/l	80	120	240	280						400
LGS/HGS	% by Vol	1.9/1.2	2.1/1.2	2.2/1.2	1.5/1.4						
LGS/HGS	ppb	17.13/17.09	19.29/18.17	19.69/18.13	13.83/20.00						
ASG	SG	3.211	3.189	3.181	3.356						
Additional Properties											
KCl %	-	6.95	6.95	6.90	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

On circulating @ shoe add potassium hydroxide to maintain pH.
Change out lower deck screens to coarser mesh to avoid stripping out calcium carbonate bridging agents. Divert bottom's up return to empty pit for treatment. Replace volume with in-spec surface fluid. Add soda ash to reduce hardness. Add ALDACIDE G to inhibit bacterial growth. Prepare slug.

Rig Activity

SLB held tension on W/L & attempt to free. Attach "t" bars to W/L & TDS & pull. W/L shear pin broke free @ 10 K O/P. POOH W/ SLB W/L, R/D SLB. P/U o'shot assy & M/U to std # 1. Service TDS. TOFS- dropped object survey TDS. RIH w/ fishing assy - 1965 m. Estab circ & increased 700 gpm, 140 spm, 1630 psi. Cont RIH f/ 1965 - 3110 m. Circ & condition mud, take SCR's. Reduce stks, lower O/S fish, engage fish. Shut down pump, P/U O/S 3117 m, confirm fish engaged. F/C pump slug & POOH - shoe. F/C_static. Service TDS. Cont POOH w/ fishing assy - 954 m.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
potassium hydroxide	20 kg pail	12		6	6	$A792.66
ALDACIDE G	25 kg can	6		1	5	$A173.09
soda ash	25 kg bag	8		1	7	$A30.42
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	174			174	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	13			13	
sapp	25 kg bag	18			18	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	4.0
VSM-300	20 40 40 100 100 100 100	4.0
VSM-300	40 40 40 80 80 80 80	4.0
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	13.5
Rig	1.0
Surveys	
Fishing	1.5
Run Casing	
Coring	
Reaming	
Testing	
Logging	3.0
Dir Work	
Repair	
Other	5.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	261.8	Base		Fluid Dumped	
Pipe Cap	53.7	Drill Water		Transferred	
Active Pits	663.0	Dewatering		SCE	-37.0
Total Hole	921.2	Sea Water		Evaporation	-2.1
Total Circ	978.5	Whole Mud		Trips	-5.0
Reserve	536.0	Barite		Other	
Prev Vol	2163.7	Chemicals	0.7	Total Surface	
Net Change	-43.4	Other		Downhole	
Total Vol	2120.2	Total	0.7	Total Losses	-44.1

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A996.17	Total Daily Cost	$A4,076.17
Cumulative Products Cost	$A946,287.88	Total Cumulative Cost	$A1,158,807.88

Baroid Representatives	Kosta Georgiou	Mike Lawrance	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 075

Daily Drilling Fluid Report

Date 11/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity Wash & Ream.	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	8.500	in
Make/Type	HUGHES/A841A9GT5	
Jets	3x20	
TFA	0.920	sq-in
Jets Velocity	192	ft/sec
Jet Impact Force	515.3	lbf
Bit HHSI	1.75	hhp/in2
Press Drop @ Bit	309	psi
Bit Depth	3,482.0	m
ECD @ Csg Shoe	9.96	ppg
ECD @ Bit	10.14	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	3.000	3,310.9
Drill Pipe	3.450	3.000	141.7
Drill Collar	6.750	3.000	27.9
Other	8.125	0.000	1.5
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600			
Bore in	6.500	6.500	6.500			
Strokes in	12.000	12.000	12.000			
Eff(%)	97	97	97			
bbl/strk	0.119	0.119	0.119			
SPM	55	55	0			
gpm|bbl/min	276	6.57	276	6.57		
Total GPM	552	AV, Riser	37.0	Circ Press psi	1630	
Total Circ Time	103	AV min DP	224.1	Tot Pres Loss	4157	
BU Time , min	50	AV max DC	506.8	Press Drop DP	3310	
Total Strokes	11,379	BU Strokes	5,533	Press Drop An	407	

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		3:00	9:00	14:00	22:00						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C				68						
Density @ Deg C	ppg	9.30 @ 20	9.30 @ 25	9.35 @ 20	9.40 @ 50					9.00	9.50
FV @ Deg C	sec/qt	77 @ 20	72 @ 25	70 @ 20	65 @ 50						
PV @ Deg C	cP	18 @ 25	16 @ 25	16 @ 25	16 @ 25						
YP	lbs/100 ft2	39	33	28	29						
GELS	lbs/100 ft2	11/15/21	11/14/17	8/12/14	9/13/15						
600/300		75.0/57.0	65.0/49.0	60.0/44.0	61.0/45.0						
200/100		49.0/38.0	40.0/31.0	37.0/28.0	38.0/29.0						
6/3		11.0/9.0	10.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.4	4.4	4.5	4.5						4.5
HTHP @ Deg C	ml/30 min	7.7 @ 121	7.2 @ 121	8.0 @ 121	7.7 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	2.9	3.0	3.2	2.8						
NAP/Water	% by Vol	-/94.0	-/93.8	-/93.5	-/94.0						
Sand	% by vol	0.20	0.20	0.20	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		8.50 @ 22	8.50 @ 22	8.50 @ 20	8.50 @ 20					8.50	9.50
ALK Mud	Pm	0.20	0.25	0.20	0.25						
ALK Filt	Pf/Mf	0.90/3.40	0.10/3.20	0.10/2.80	0.10/3.40						
Chlorides	mg/l	38,000	38,500	40,000	39,000						
Tot. Hardness	mg/l	280	240	320	280						400
LGS/HGS	% by Vol	1.5/1.4	1.9/1.2	2.0/1.2	0.7/2.1						
LGS/HGS	ppb	13.83/20.00	17.13/17.09	18.06/18.30	6.19/31.11						
ASG	SG	3.356	3.211	3.217	3.811						
Additional Properties											
KCl %	-	6.90	6.90	6.90	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Prepared 8.8 ppg Lo-Weight and 10.3 ppg Hi Weight pills as per prog.
Prepared 10.3 ppg slug. Conditioned & Maintained active system w/ bridging agents & PAC LE. Treated active mud w/ KOH for alkalinity.
Diverted heavy contaminated mud w/ CO2 into pit 1. Maintain active mud weight at 9.3 ppg w/ premix from pit 4. Radiagreen - 1.4 %

Rig Activity

Cont POOH w/ fish assy f/ 954 - surface. F/C_static prior - pulling pipe through BHA.SLB L/O fish (100%), L/O o' shot & fish assy. Run BHA f/ derrick, P/U stab, bit sub, 8.5" bit, 1 stg stb - 89 m. Jet WH w/ bit f/ 89 - 174 m. M/U BHA test assy & RIH . L/O in WH @ 95 m w/ 40K under. HTBT, BOP test / Maersk precedures. Unseat BOP test tool, POOH - 174 m, L/O assy & install diverter packer. RIH f/ 174 - 1965 m. Estab circ @ shoe, cont RIH f/ 1965 - 3470 m. Circ btms up f/ 3150 - 3470 & worked tight spots, up & down.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	13		4	9	$A641.28
potassium hydroxide	20 kg pail	6		1	5	$A132.11
Circal 60/16	25 kg bag	174		6	168	$A76.08
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	7			7	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	6.0
VSM-300	20 40 40 100 100 100 100	10.0
VSM-300	40 40 40 80 80 80 80	10.0
VSM-300	20 40 40 140 140 140 140	7.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	6.0
Rig	5.0
Surveys	
Fishing	4.5
Run Casing	
Coring	
Reaming	3.0
Testing	
Logging	
Dir Work	
Repair	
Other	3.5
Total	24.0
Rotating	3.0
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	660.8	Base		Fluid Dumped	
Pipe Cap	100.2	Drill Water		Transferred	
Active Pits	598.0	Dewatering		SCE	-37.0
Total Hole	761.1	Sea Water		Evaporation	-12.0
Total Circ	1359.1	Whole Mud		Trips	-9.0
Reserve	690.0	Barite		Other	-13.9
Prev Vol	2120.2	Chemicals	0.8	Total Surface	
Net Change	-71.1	Other		Downhole	
Total Vol	2049.1	Total	0.8	Total Losses	-71.9

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0	m
Survey TVD	3,245.0	m
Angle	35.47	Deg
Direction	179	
Horiz Displ.	723.6	m

Daily Products Cost	$A849.47	Total Daily Cost	$A3,929.47
Cumulative Products Cost	$A947,137.35	Total Cumulative Cost	$A1,162,737.35

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 076

Daily Drilling Fluid Report

Date 12/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity SLB W/L Dual Packer Run # 7	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size		in
Make/Type		
Jets		
TFA		sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth		m
ECD @ Csg Shoe	9.30	ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	2	3	Hyd 4	Targets				Program	
Source		Pit #2	Pit #2	Pit #2	Pit #2						
Time		2:45	9:00	14:00	22:00						
Depth	m	3,482	3,482	3,482	3,482						
FL Temp	Deg C										
Density @ Deg C	ppg	9.40 @ 50	9.30 @ 30	9.30 @ 20	9.30 @ 25					9.00	9.50
FV @ Deg C	sec/qt	60 @ 50	65 @ 30	70 @ 20	71 @ 25						
PV @ Deg C	cP	15 @ 25	17 @ 49	17 @ 49	17 @ 49						
YP	lbs/100 ft2	30	28	29	30						
GELS	lbs/100 ft2	9/13/17	8/12/15	8/12/15	9/13/17						
600/300		60.0/45.0	62.0/45.0	63.0/46.0	64.0/47.0						
200/100		38.0/30.0	37.0/27.0	37.0/27.0	38.0/27.0						
6/3		10.0/8.0	9.0/8.0	10.0/8.0	10.0/8.0						
API Filt	ml/30 min	4.5	4.5	4.5	4.5						4.5
HTHP @ Deg C	ml/30 min	7.8 @ 121	7.6 @ 121	7.8 @ 121	7.8 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2	1/2	1/2						
Corr Solid	% by Vol	3.3	3.5	3.5	3.4						
NAP/Water	% by Vol	-/93.5	-/93.5	-/93.5	-/93.5						
Sand	% by vol	0.20	0.20	0.20	0.20						1.0
MBT	ppb Eq.	5.0	5.0	5.0	5.0						25.0
pH @ Deg C		8.50 @ 20	8.50 @ 20	8.50 @ 20	8.50 @ 20					8.50	9.50
ALK Mud	Pm	0.10	0.20	0.20	0.25						
ALK Filt	Pf/Mf	0.20/3.45	0.15/2.70	0.15/2.80	0.20/2.70						
Chlorides	mg/l	39,000	37,000	37,000	38,000						
Tot. Hardness	mg/l	240	280	280	240						400
LGS/HGS	% by Vol	1.7/1.6	2.6/0.9	2.6/0.9	2.5/0.9						
LGS/HGS	ppb	15.47/23.73	23.92/12.54	23.92/12.54	23.11/12.62						
ASG	SG	3.379	2.992	2.992	3.004						
Additional Properties											
KCl %	-	6.90	6.60	6.50	6.90	X	X	X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Moved chemicals into containers wait on back load. Packing mud lab equipment in progress. Conditioned & treated contaminated mud f/ hole. Maintained properties in active pit 2. Prepared unused shaker screens for back load.

Rig Activity

Wash & ream f/ 3470 - 3482 m.Circ btms up. Pump 20 bbl Low Wt 8.9 ppg pill, followed by High Wt 10.3 ppg pill. Cont circ 2 x btms up until Mud Eng'rs instruction. F/C_static. POOH to surface. HTBT, R/U w/ WL Dual Packer. M/U WL Dual Packer run # 7. RIH - 3400 m. Tight hole @ 2740 & 2793 m. Correlate, POOH - 3302. Tight @ 3396 - 3350 m. Sample @ 3302 (2nd Station) RIH - 3340 m. Log up f/ 3340 3294.2 m. Sample @ 3294.2 m (2nd Station).

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	9		4	5	$A641.28
potassium hydroxide	20 kg pail	5		1	4	$A132.11
Circal 60/16	25 kg bag	168		6	162	$A76.08
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	7			7	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	7.0
VSM-300	20 40 40 100 100 100 100	7.0
VSM-300	40 40 40 80 80 80 80	7.0
VSM-300	20 40 40 140 140 140 140	7.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.5
Trips	9.5
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	1.5
Testing	
Logging	7.5
Dir Work	
Repair	
Other	3.0
Total	24.0
Rotating	1.5
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water	100.0	Transferred	
Active Pits	639.0	Dewatering		SCE	-3.0
Total Hole	946.7	Sea Water		Evaporation	-3.0
Total Circ	639.0	Whole Mud		Trips	-2.1
Reserve	556.0	Barite		Other	
Prev Vol	2049.1	Chemicals	0.8	Total Surface	
Net Change	92.7	Other		Downhole	
Total Vol	2141.7	Total	100.8	Total Losses	-8.1

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A849.47	Total Daily Cost	$A3,929.47
Cumulative Products Cost	$A947,986.82	Total Cumulative Cost	$A1,166,666.82

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 077

Daily Drilling Fluid Report

Date 13/02/2010	**Depth** 3,482.0 m		
Spud Date 30/11/2009	**Rig Activity** SLB W/L Dual Packer Run # 7		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard/Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD
Bit Size	in								
Make/Type							30.000	@	158.0
Jets							13.375	@	961.0
TFA	sq-in						9.625	@	1,965.0
Jets Velocity	ft/sec								
Jet Impact Force	lbf								
Bit HHSI	hhp/in2								
Press Drop @ Bit	psi								
Bit Depth	3,482.0 m	Riser	19.750		100.0				
ECD @ Csg Shoe	9.30 ppg	Open Hole	8.500		1,517.0				
ECD @ Bit	ppg					Leak Off ppg			14.60

Circulation/Hydraulics Data			
Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			
Total GPM	AV, Riser	Circ Press psi	
Total Circ Time	AV min DP	Tot Pres Loss	
BU Time , min	AV max DC	Press Drop DP	
Total Strokes	BU Strokes	Press Drop An	

Properties		1	Hyd 2	3	4	Targets		Program	
Source		Pit #2	Pit #2						
Time		8:30	21:00						
Depth	m	3,482	3,482						
FL Temp	Deg C								
Density @ Deg C	ppg	9.30 @ 20	9.30 @ 18					9.00	9.50
FV @ Deg C	sec/qt	70 @ 20	71 @ 18						
PV @ Deg C	cP	18 @ 49	18 @ 49						
YP	lbs/100 ft2	28	27						
GELS	lbs/100 ft2	7/11/14	7/11/14						
600/300		64.0/46.0	63.0/45.0						
200/100		37.0/27.0	36.0/26.0						
6/3		9.0/8.0	9.0/8.0						
API Filt	ml/30 min	4.5	4.5						4.5
HTHP @ Deg C	ml/30 min	7.8 @ 121	7.5 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2						
Corr Solid	% by Vol	3.5	3.4						
NAP/Water	% by Vol	-/93.5	-/93.5						
Sand	% by vol	0.20	0.20						1.0
MBT	ppb Eq.	5.0	5.0						25.0
pH @ Deg C		8.50 @ 20	8.50 @ 20					8.50	9.50
ALK Mud	Pm	0.10	1.20						
ALK Filt	Pf/Mf	0.15/2.70	0.16/2.80						
Chlorides	mg/l	37,000	37,500						
Tot. Hardness	mg/l	280	280						400
LGS/HGS	% by Vol	2.6/0.9	2.6/0.9						
LGS/HGS	ppb	23.92/12.54	23.51/12.58						
ASG	SG	2.992	2.998						
Additional Properties									
KCl %	-	6.50	6.60			X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

General packing & housekeeping at mud lab. Transferred unused shaker screens into container OPC 437 for backload. Radiagreen conc. @ 1.42%.

Rig Activity

Cont Sample @ 3294.2 m (3rd station). Correlate up - 3230 m, positioned f/ @ 3214.4 m & sample. Stuck @ 3214.4 m, work free turning packer on & off. POOH - 3205 m correlate & sample station 5 @ 3205 m. POOH - 3110 m & sample station 6. RIH - 3140 m & sample station 7.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	37			37	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	162			162	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	5			5	
potassium hydroxide	20 kg pail	4			4	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	7			7	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	639.0	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	
Total Circ	639.0	Whole Mud		Trips	
Reserve	556.0	Barite		Other	
Prev Vol	2141.7	Chemicals		Total Surface	
Net Change		Other		Downhole	
Total Vol	2141.7	Total		Total Losses	

Fluid Types Vol bbl

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A947,986.82	Total Cumulative Cost	$A1,169,746.82

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Baroid Representatives Kosta Georgiou Jay Wan

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Baroid Fluid Services

Report No 078

Daily Drilling Fluid Report

Date 14/02/2010	**Depth** 3,482.0 m		
Spud Date 30/11/2009	**Rig Activity** POOH w/ W/L Dual Packer Run # 7		
Operator ADA DRILLING	**Report For** Mike Lanzer / Paul Leathem	**Well Name** Rockhopper-1	
Contractor MAERSK	**Report For** Stig Sundgaard/Ole Andreasen	**Rig Name** Kantan IV	**Unit System** ADA Drilling
Country Australia	**State/Province/Region** Tasmania	**Geographic Area/County** Bass Strait	**Field or Block** T/18P

Bit Information		Drill String (in) / (m)	OD	ID	Length	in Casing m	OD	Set	MD	Circulation/Hydraulics Data			
Bit Size	in									Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type							30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets							13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	sq-in						9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity	ft/sec									bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf									SPM	0	0	0
Bit HHSI	hhp/in2									gpm|bbl/min			
Press Drop @ Bit	psi									Total GPM		AV, Riser	Circ Press psi
Bit Depth	3,482.0 m	Riser	19.750		100.0					Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500		1,517.0					BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg					Leak Off ppg			14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2									**Fluid Type** 8 1/2" ST-1 KCl/Polymer
Time		9:00	21:30									General housekeeping & packing in mud lab.
Depth	m	3,482	3,482									Radiagreen concentration = 1.4%.
FL Temp	Deg C											Prepared 9.3 ppg, 55 bbl Hi-vis BARAZAN D
Density @ Deg C	ppg	9.30 @ 20	9.30 @ 16							9.00	9.50	PLUS in slug, for P&A job.
FV @ Deg C	sec/qt	68 @ 20	73 @ 17									
PV @ Deg C	cP	17 @ 49	17 @ 49									
YP	lbs/100 ft2	29	30									
GELS	lbs/100 ft2	7/11/13	8/12/14									
600/300		63.0/46.0	64.0/47.0									
200/100		37.0/27.0	38.0/27.0									
6/3		9.0/8.0	9.0/8.0									
API Filt	ml/30 min	4.5	4.5								4.5	
HTHP @ Deg C	ml/30 min	7.6 @ 121	7.6 @ 121								13.0	
Cake API/HTHP	32nd in	1/2	1/2									
Corr Solid	% by Vol	3.5	3.4									
NAP/Water	% by Vol	-/93.5	-/93.5									
Sand	% by vol	0.20	0.20								1.0	
MBT	ppb Eq.	5.0	5.0								25.0	
pH @ Deg C		8.50 @ 20	8.50 @ 20							8.50	9.50	
ALK Mud	Pm	0.20	0.15									
ALK Filt	Pf/Mf	0.15/2.70	0.15/2.70									
Chlorides	mg/l	37,000	37,500									
Tot. Hardness	mg/l	280	280								400	
LGS/HGS	% by Vol	2.6/0.9	2.6/0.9									
LGS/HGS	ppb	23.92/12.54	23.51/12.58									
ASG	SG	2.992	2.998									
Additional Properties												
KCl %	-	6.50	6.60			X	X			7.00	7.00	

Rig Activity

Cancelled station # 8 @ 3312.8 m. Correlated up f/ 3140 m. Sampling @ station # 9, 3184.6 m. POOH - 3083 m & pressure test @ station # 10. RIH - 3172 m & pressure test @ station # 11 - 3172 m. RIH - 3331 m & pressure test station # 12. POOH - 3312 m. Correlate & pressure test station # 13.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
BARAZAN D PLUS	25 kg bag	37		2	35	$A430.68
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	162			162	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
PAC-L	25 kg bag	5			5	
potassium hydroxide	20 kg pail	4			4	
sapp	25 kg bag	18			18	
soda ash	25 kg bag	7			7	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	
Trips	
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	24.0
Dir Work	
Repair	
Other	
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	586.2	Dewatering		SCE	
Total Hole	946.7	Sea Water		Evaporation	
Total Circ	586.2	Whole Mud		Trips	
Reserve	609.0	Barite		Other	
Prev Vol	2141.7	Chemicals	0.2	Total Surface	
Net Change	0.2	Other		Downhole	
Total Vol	2141.9	Total	0.2	Total Losses	

Fluid Types	Vol bbl

Daily Products Cost	$A430.68	Total Daily Cost	$A3,510.68
Cumulative Products Cost	$A948,417.50	Total Cumulative Cost	$A1,173,257.50

Deviation Information	
Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Baroid Representatives	Kosta Georgiou	Jay Wan	
Office	90 Talinga Rd Melbourne	Telephone	61-03-9581-7555
Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 079

Daily Drilling Fluid Report

Date 15/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity P & A Set Plug # 1C	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	2.875	in
Make/Type	DUMMY/2 7/8 Open End	
Jets		
TFA	10.000	sq-in
Jets Velocity	19	ft/sec
Jet Impact Force	55.8	lbf
Bit HHSI	0.17	hhp/in2
Press Drop @ Bit	3	psi
Bit Depth	3,162.0	m
ECD @ Csg Shoe	9.85	ppg
ECD @ Bit	9.93	ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	2.750	2,993.0
Drill Pipe	2.875	2.375	169.0
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	60	60	0
gpm|bbl/min	301 | 7.17	301 | 7.17	
Total GPM	602	AV, Riser 40.4	Circ Press psi 1600
Total Circ Time	101	AV min DP 230.6	Tot Pres Loss 5999
BU Time , min	43	AV max DC	Press Drop DP 5514
Total Strokes	12,176	BU Strokes 5,209	Press Drop An 322

Properties		1	Hyd 2	3	4	Targets		Program	
Source		Pit #2	Pit #2						
Time		10:00	21:20						
Depth	m	3,482	3,482						
FL Temp	Deg C								
Density @ Deg C	ppg	9.30 @ 20	9.30 @ 20					9.00	9.50
FV @ Deg C	sec/qt	70 @ 20	70 @ 20						
PV @ Deg C	cP	17 @ 49	17 @ 49						
YP	lbs/100 ft2	29	30						
GELS	lbs/100 ft2	7/10/13	8/11/14						
600/300		63.0/46.0	64.0/47.0						
200/100		37.0/27.0	38.0/28.0						
6/3		9.0/7.0	9.0/7.0						
API Filt	ml/30 min	4.5	4.5						4.5
HTHP @ Deg C	ml/30 min	7.8 @ 121	8.0 @ 121						13.0
Cake API/HTHP	32nd in	1/2	1/2						
Corr Solid	% by Vol	3.5	3.4						
NAP/Water	% by Vol	-/93.5	-/93.5						
Sand	% by vol	0.20	0.20						1.0
MBT	ppb Eq.	5.0	5.0						25.0
pH @ Deg C		8.50 @ 20	8.50 @ 20					8.50	9.50
ALK Mud	Pm	0.15	0.15						
ALK Filt	Pf/Mf	0.10/2.80	0.15/2.70						
Chlorides	mg/l	37,000	37,500						
Tot. Hardness	mg/l	280	280						400
LGS/HGS	% by Vol	2.6/0.9	2.6/0.9						
LGS/HGS	ppb	23.92/12.54	23.51/12.58						
ASG	SG	2.992	2.998						
Additional Properties									
KCl %	-	6.50	6.60			X	X	7.00	7.00

Fluid Treatments

Fluid Type 8 1/2" ST-1 KCl/Polymer

Mixed 55 bbl Hi-vis @ 9.5 ppg FV 198 sec/qt. Circ & Conditioned mud balance at 9.5 ppg. Plug 1A Diverted & treated out , 73.1 bbl contaminated mud/DW/traces of cement @ 9.35 ppg. Started placing non essential, packed lab equipment on pallet ready for back load.

Rig Activity

Cont - pressure test station # 13 @ 3312 m. POOH w/ SLB tool string, L/O & R/D W/L. Slip & cut drlg line. R/U 2 7/8" handling equipment & RIH - 168 m. RIH 5" DP f/ 168 - 1961 m. Service TDS. Cont RIH f/ 1961 - 3482 m & tag btm. Circ & condition mud. HTBT, M/U cmt assy. Proceed w/ cmt plug # 1A / program. R/D cmt assy. POOH f/ 3482 - 3322 m. Pump plug 1B. Circ 1.5 btms up, treated out 33 bbl of cont mud. HTBT, R/U cmt line & press Test_ ok. Mix & pump 195 Sx "G" class cmt w/ 24 bbl H2O @ 15.8 ppg. Displace w/ drillwater. Check flow back + 1.5 bbl. POOH f/ 3322 - 3162 m, circ btms up. treated out 19 bbl of cont mud. Test lines & set plug # 1C /

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
PAC-L	25 kg bag	5		5		$A801.60
potassium hydroxide	20 kg pail	4		4		$A528.44
soda ash	25 kg bag	7		7		$A212.94
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	35			35	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	162			162	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
sapp	25 kg bag	18			18	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	13.0
VSM-300	20 40 40 100 100 100 100	13.0
VSM-300	40 40 40 80 80 80 80	13.0
VSM-300	20 40 40 140 140 140 140	13.0

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	2.0
Trips	8.5
Rig	0.5
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	0.5
Dir Work	
Repair	
Other	12.5
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	622.1	Base		Fluid Dumped	
Pipe Cap	75.2	Drill Water		Transferred	
Active Pits	757.0	Dewatering		SCE	-73.1
Total Hole	771.0	Sea Water		Evaporation	
Total Circ	1454.3	Whole Mud		Trips	
Reserve	542.0	Barite		Other	
Prev Vol	2141.9	Chemicals	1.3	Total Surface	
Net Change	-71.8	Other		Downhole	
Total Vol	2070.0	Total	1.3	Total Losses	-73.1

Fluid Types Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A1,542.98	Total Daily Cost	$A4,622.98
Cumulative Products Cost	$A949,960.48	Total Cumulative Cost	$A1,177,880.48

Baroid Representatives Kosta Georgiou Jay Wan

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Baroid Fluid Services

Report No 080

Daily Drilling Fluid Report

Date 16/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity P & A	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	2.875	in
Make/Type	DUMMY/2 7/8 Open End	
Jets		
TFA	10.000	sq-in
Jets Velocity		ft/sec
Jet Impact Force		lbf
Bit HHSI		hhp/in2
Press Drop @ Bit		psi
Bit Depth	1,730.0	m
ECD @ Csg Shoe		ppg
ECD @ Bit		ppg

Drill String (in) / (m)

	OD	ID	Length
Drill Pipe	5.000	2.750	1,561.0
Drill Pipe	2.875	2.375	169.0
Riser	19.750		100.0
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets				Program		Fluid Treatments
Source		Pit #2	Pit #2									Fluid Type 8 1/2" ST-1 KCl/Polymer
Time		8:00	20:00									Plug 1b - Diverted 19 bbl contaminated mud w/ traces of cmt.
Depth	m	3,482	3,482									Plug 1c - Diverted 10.5 bbl contaminated mud w/ traces of cmt.
FL Temp	Deg C											Plug 2 - Diverted 9 bbl contaminated mud w/ traces of cmt.
Density @ Deg C	ppg	9.50 @ 30	9.40 @ 30							9.00	9.50	Mixed 60 bbl 10.6 ppg Slug.
FV @ Deg C	sec/qt	65 @ 30	66 @ 30									Plug 3 - Diverted 21 bbl contaminated mud/Drill water @ 9.2 ppg - traces of cmt.
PV @ Deg C	cP	17 @ 49	18 @ 49									Cement in hole - 187.2 bbl
YP	lbs/100 ft2	26	24									Mud properties not in specs due to cement contamination & no treatment.
GELS	lbs/100 ft2	8/11/13	7/10/12									Mud engineering cost for Kosta ends 16 Feb 2010.
600/300		60.0/43.0	60.0/42.0									
200/100		35.0/24.0	35.0/26.0									
6/3		9.0/7.0	9.0/7.0									
API Filt	ml/30 min	5.1	5.5			X	X				4.5	
HTHP @ Deg C	ml/30 min	8.2 @ 121	8.4 @ 121								13.0	
Cake API/HTHP	32nd in	1/2	1/2									
Corr Solid	% by Vol	4.5	4.2									
NAP/Water	% by Vol	-/92.7	-/93.0									
Sand	% by vol	0.20	0.10								1.0	
MBT	ppb Eq.	5.0	5.0								25.0	
pH @ Deg C		10.00 @ 20	10.00 @ 20			X	X			8.50	9.50	
ALK Mud	Pm	0.20	0.20									
ALK Filt	Pf/Mf	0.20/3.10	0.20/2.90									
Chlorides	mg/l	34,500	35,000									
Tot. Hardness	mg/l	720	880			X	X				400	
LGS/HGS	% by Vol	3.0/1.5	3.1/1.1									
LGS/HGS	ppb	27.09/22.61	27.96/16.05									
ASG	SG	3.145	3.019									
Additional Properties												
KCl %	-	6.10	5.80			X	X			7.00	7.00	

Rig Activity

Halliburton cementing pumped cement plugs 1B, 1C, 2 as per P & A program. Excess DP were laid down. TOC was tagged @ 2768m. 25 bbl h-ivis was pumped & diplaced @ 2115 m. Cement plug # 3 was pumped & displaced as per program. Excess DP was laid down.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer 2	day(s)			1		$A1,540.00
Drilling Fluids Engineer	day(s)			1		$A1,540.00
ALDACIDE G	25 kg can	5			5	
Amodrill 1235	1 bbl bulk	19.400			19.400	
BARAZAN D PLUS	25 kg bag	35			35	
barite	1 tons bulk	80.000			80.000	
bentonite	1000 kg bulk	19.000			19.000	
Circal 60/16	25 kg bag	162			162	
Circal Y	25 kg bag	32			32	
citric acid	25 kg bag	47			47	
CLAYSEAL PLUS	55 gal drum	5			5	
EZ SPOT	55 gal drum	5			5	
EZ-MUD	25 kg pail	16			16	
Generic mesh 24 (API 20)	1 each box	12			12	
Generic Mesh 40 (API 40)	1 each box	15			15	
mica	25 kg bag	10			10	
sapp	25 kg bag	18			18	
sodium bicarbonate	25 kg bag	33			33	
SOURSCAV	25 kg pail	32			32	
Techmesh 110 (API 60)	1 each box	12			12	
Techmesh 140 (API 80)	1 each box	15			15	
Techmesh 260(API 140)	1 each box	6			6	
Techmesh 84 (API 50)	1 each box	3			3	

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	12.0
VSM-300	20 40 40 100 100 100 100	12.0
VSM-300	40 40 40 80 80 80 80	12.0
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	4.0
Trips	10.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	10.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" ST-1 KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus	404.8	Base		Fluid Dumped	
Pipe Cap	40.7	Drill Water		Transferred	
Active Pits	613.0	Dewatering		SCE	
Total Hole	854.4	Sea Water		Evaporation	
Total Circ	1058.4	Whole Mud		Trips	
Reserve	543.1	Barite		Other	-59.5
Prev Vol	2070.0	Chemicals		Total Surface	
Net Change	-59.5	Other		Downhole	
Total Vol	2010.5	Total		Total Losses	-59.5

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,467.0 m
Survey TVD	3,245.0 m
Angle	35.47 Deg
Direction	179
Horiz Displ.	723.6 m

Daily Products Cost	$A0.00	Total Daily Cost	$A3,080.00
Cumulative Products Cost	$A949,960.48	Total Cumulative Cost	$A1,180,960.48

Baroid Representatives	Kosta Georgiou	Jay Wan	
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Warehouse	c/o of Esso Australia Ltd	Telephone	61-3-56-881-445

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Baroid Fluid Services

Report No 081

Daily Drilling Fluid Report

Date 17/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity P & A	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information		Drill String (in) / (m)			in Casing m			Circulation/Hydraulics Data			
		OD	ID	Length	OD	Set	MD				
Bit Size	in							Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Make/Type					30.000	@	158.0	Bore in	6.500	6.500	6.500
Jets					13.375	@	961.0	Strokes in	12.000	12.000	12.000
TFA	sq-in				9.625	@	1,965.0	Eff(%)	97	97	97
Jets Velocity	ft/sec							bbl/strk	0.119	0.119	0.119
Jet Impact Force	lbf							SPM	0	0	0
Bit HHSI	hhp/in2							gpm|bbl/min			
Press Drop @ Bit	psi							Total GPM		AV, Riser	Circ Press psi
Bit Depth	m	Riser	19.750	100.0				Total Circ Time		AV min DP	Tot Pres Loss
ECD @ Csg Shoe	ppg	Open Hole	8.500	1,517.0				BU Time , min		AV max DC	Press Drop DP
ECD @ Bit	ppg				Leak Off ppg		14.60	Total Strokes		BU Strokes	Press Drop An

Properties		1	2	3	4	Targets		Program		Fluid Treatments
Source		Pit #2	Pit #2							Fluid Type 8 1/2" KCl/Polymer
Time		9:00	16:00							Plug 3A - Mud return @ 9.3 ppg. No cement return.
Depth	m	3,482	3,482							
FL Temp	Deg C									Cement in hole - 216.2 bbl
Density @ Deg C	ppg	9.40 @ 30	9.40 @ 30					9.00	10.00	Mud properties not in spec due to cement contamination & no treatment.
FV @ Deg C	sec/qt	65 @ 30	67 @ 30							Chemicals backload to Far Scimitar.
PV @ Deg C	cP	17 @ 49	18 @ 49							Shaker screens backload to Far Scimitar.
YP	lbs/100 ft2	26	25							Mud lab equipment backload to Far Scimitar.
GELS	lbs/100 ft2	7/10/12	7/10/12							6 bags damaged Circal 60/16 - inventory correction.
600/300		60.0/43.0	61.0/43.0							
200/100		34.0/24.0	35.0/24.0							
6/3		8.0/6.0	9.0/7.0							
API Filt	ml/30 min	5.8	6.2			X	X		5.0	
HTHP @ Deg C	ml/30 min	9.2 @ 121	10.2 @ 121						13.0	
Cake API/HTHP	32nd in	1/2	1/2							
Corr Solid	% by Vol	3.6	3.6							
NAP/Water	% by Vol	-/93.5	-/93.5							
Sand	% by vol	0.10	0.10						1.0	**Rig Activity**
MBT	ppb Eq.	5.0	5.0						25.0	WOC. P/ tested csg - failed. RIH & tagged TOC
pH @ Deg C		10.00 @ 20	10.00 @ 20			X	X	8.50	9.50	@ 1978 m. Circ. M/U cement head & pumped
ALK Mud	Pm	0.20	0.20							19 bbl cmt plug # 3A. POOH to 1701 m & circ.
ALK Filt	Pf/Mf	0.20/3.00	0.20/3.10							WOC. P/Test csg to 2000 psi/15 min - ok. POOH
Chlorides	mg/l	35,000	35,000							& laid down DP. Retrieved wear bushing.
Tot. Hardness	mg/l	1,000	920			X	X		400	
LGS/HGS	% by Vol	2.1/1.6	2.1/1.6							
LGS/HGS	ppb	18.70/23.42	18.70/23.42							
ASG	SG	3.299	3.299							
Additional Properties										
KCl %	-	5.80	5.50							

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00
Circal 60/16	25 kg bag	162		6		$A76.08
ALDACIDE G	25 kg can	5				
Amodrill 1235	1 bbl bulk	19.400				
BARAZAN D PLUS	25 kg bag	35				
barite	1 tons bulk	80.000				
bentonite	1000 kg bulk	19.000				
Circal Y	25 kg bag	32				
citric acid	25 kg bag	47				
CLAYSEAL PLUS	55 gal drum	5				
EZ SPOT	55 gal drum	5				
EZ-MUD	25 kg pail	16				
Generic mesh 24 (API 20)	1 each box	12				
Generic Mesh 40 (API 40)	1 each box	15				
mica	25 kg bag	10				
sapp	25 kg bag	18				
sodium bicarbonate	25 kg bag	33				
SOURSCAV	25 kg pail	32				
Techmesh 110 (API 60)	1 each box	12				
Techmesh 140 (API 80)	1 each box	15				
Techmesh 260(API 140)	1 each box	6				
Techmesh 84 (API 50)	1 each box	3				

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300	20 40 40 80 80 80 80	10.0
VSM-300	20 40 40 100 100 100 100	10.0
VSM-300	40 40 40 80 80 80 80	10.0
VSM-300	20 40 40 140 140 140 140	

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	6.0
Trips	10.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	8.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	
Pipe Cap		Drill Water		Transferred	
Active Pits	543.0	Dewatering		SCE	-5.7
Total Hole	946.7	Sea Water		Evaporation	
Total Circ	543.0	Whole Mud	2010.5	Trips	
Reserve	515.1	Barite		Other	
Prev Vol		Chemicals		Total Surface	
Net Change	2004.8	Other		Downhole	
Total Vol	2004.8	Total	2010.5	Total Losses	-5.7

Fluid Types — Vol bbl

Deviation Information

Survey MD	3,290.0 m
Survey TVD	3,019.0 m
Angle	42.18 Deg
Direction	356
Horiz Displ.	m

Daily Products Cost	$A76.08	Total Daily Cost	$A1,616.08
Cumulative Products Cost	$A950,036.56	Total Cumulative Cost	$A1,182,576.56

Baroid Representatives Jay Wan

Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555

Warehouse c/o of Esso Australia Ltd Telephone 61-3-56-881-445

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Baroid Fluid Services

Report No 082

Daily Drilling Fluid Report

Date 18/02/2010		Depth 3,482.0 m	
Spud Date 30/11/2009		Rig Activity P & A	
Operator ADA DRILLING	Report For Mike Lanzer / Paul Leathem	Well Name Rockhopper-1	
Contractor MAERSK	Report For Stig Sundgaard/Ole Andreasen	Rig Name Kantan IV	Unit System ADA Drilling
Country Australia	State/Province/Region Tasmania	Geographic Area/County Bass Strait	Field or Block T/18P

Bit Information

Bit Size	in
Make/Type	
Jets	
TFA	sq-in
Jets Velocity	ft/sec
Jet Impact Force	lbf
Bit HHSI	hhp/in2
Press Drop @ Bit	psi
Bit Depth	m
ECD @ Csg Shoe	ppg
ECD @ Bit	ppg

Drill String (in) / (m)

	OD	ID	Length
Riser	0.000		
Open Hole	8.500		1,517.0

in Casing m

OD	Set	MD
30.000	@	158.0
13.375	@	961.0
9.625	@	1,965.0

Leak Off ppg 14.60

Circulation/Hydraulics Data

Model	Emsco FB 1600	Emsco FB 1600	Emsco FB 1600
Bore in	6.500	6.500	6.500
Strokes in	12.000	12.000	12.000
Eff(%)	97	97	97
bbl/strk	0.119	0.119	0.119
SPM	0	0	0
gpm|bbl/min			

Total GPM | AV, Riser | Circ Press psi
Total Circ Time | AV min DP | Tot Pres Loss
BU Time , min | AV max DC | Press Drop DP
Total Strokes | BU Strokes | Press Drop An

Properties		1	2	3	4	Targets	Program	
Source		Pit #2						
Time		12:00						
Depth	m	0						
FL Temp	Deg C							
Density @ Deg C	ppg	9.40 @ 25					9.00	10.00
FV @ Deg C	sec/qt	65 @ 25						
PV @ Deg C	cP	18 @ 49						
YP	lbs/100 ft2	25						
GELS	lbs/100 ft2	7/10/12						
600/300		61.0/43.0						
200/100		35.0/24.0						
6/3		9.0/7.0						
API Filt	ml/30 min	6.2				X		5.0
HTHP @ Deg C	ml/30 min	10.2 @ 121						13.0
Cake API/HTHP	32nd in	1/2						
Corr Solid	% by Vol	3.6						
NAP/Water	% by Vol	-/93.5						
Sand	% by vol	0.10						1.0
MBT	ppb Eq.	5.0						25.0
pH @ Deg C		10.00 @ 20				X	8.50	9.50
ALK Mud	Pm	0.20						
ALK Filt	Pf/Mf	0.20/3.10						
Chlorides	mg/l	35,000						
Tot. Hardness	mg/l	920				X		400
LGS/HGS	% by Vol	2.1/1.6						
LGS/HGS	ppb	18.70/23.42						
ASG	SG	3.299						
Additional Properties								
KCL %	% by vol	5.5						

Fluid Treatments

Fluid Type 8 1/2" KCl/Polymer

Last mud report for Rockhopper - 1.

611 bbl mud left in hole.
Disposed 1393.8 bbl mud.

Rig Activity

M/U EZSV / bridge plug assy. Set bridge plug at 205m. Cont laying down excess DP. M/U 9 5/8" csg cutter assy & RIH. Cut csg @ 153m. Retrieved csg as per prog. N/D BOP & marine riser in progress.

Product Name	Units	Start	Rec	Used	End	Cost
Drilling Fluids Engineer	day(s)			1		$A1,540.00

Solids Control Equipment

Shaker	Screens	Hrs
VSM-300		
VSM-300		
VSM-300		
VSM-300		

Hydrocyclone	Cones	Screens	Hrs

Centrifuge	Speed	Feed Rate	Hrs
518	4,000	80.00	
518	4,000	80.00	

Time

Drilling	
Circulating	1.0
Trips	11.0
Rig	
Surveys	
Fishing	
Run Casing	
Coring	
Reaming	
Testing	
Logging	
Dir Work	
Repair	
Other	12.0
Total	24.0
Rotating	
ROP	
Dil Rate	0.00

Fluid Volume Breakdown — 8 1/2" KCl/Polymer

Active	bbl	Additions	bbl	Losses	bbl
Annulus		Base		Fluid Dumped	-242.6
Pipe Cap		Drill Water		Transferred	
Active Pits		Dewatering		SCE	
Total Hole		Sea Water		Evaporation	
Total Circ		Whole Mud		Trips	
Reserve		Barite		Other	-611.0
Prev Vol	2004.8	Chemicals		Total Surface	
Net Change	-853.6	Other		Downhole	
Total Vol		Total		Total Losses	-853.6

Fluid Types Vol bbl

Deviation Information

Survey MD	3,290.0 m
Survey TVD	3,019.0 m
Angle	42.18 Deg
Direction	356
Horiz Displ.	m

Daily Products Cost	$A0.00	Total Daily Cost	$A1,540.00
Cumulative Products Cost	$A950,036.56	Total Cumulative Cost	$A1,184,116.56

Baroid Representatives Jay Wan
Office 90 Talinga Rd Melbourne Telephone 61-03-9581-7555
Warehouse c/o of Esso Australia Ltd Telephone 61-3-56-881-445

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APPENDIX 22: WATER ANALYSIS & PVT REPORTS

PETROLAB

Company : Origin Energy Resources Ltd.
Well : Rockhopper #1 ST#1 File : O - 10006b

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Rockhopper ST1 Samples	
Transfer Details	1
Compositional Analyses of Reservior Oils	2 - 9
Compositional Analyses of Reservior Water	10 - 11
Compositional Analyses of Stock Tank Water	12 - 25

TRANSFER DETAILS

Transferred on February 19, 2010 @ 6000 psig & 60 °C

Sample ID #	MDT MPSR #	Depth MDRT (metres)	Opening Pressure (psig)	Transferred to Petrolab Cylinder	Volume Transferred	Fluid Phase Transferred
1	56	2941.2	2406 @ 89.6 °F	815-28	370	Oil
2	487	2941.2	2625 @ 104 °F	812319	375	Oil
3	3305	3135.0	1163 @ 78 °F	84062602	385	Water
4	3357	3135.0	1576 @ 98.6 °F	84062103	380	Water

Validity Check on Cylinder 815-28 ex MPSR 56

Saturation Pressure : 3075 @ 122 °F

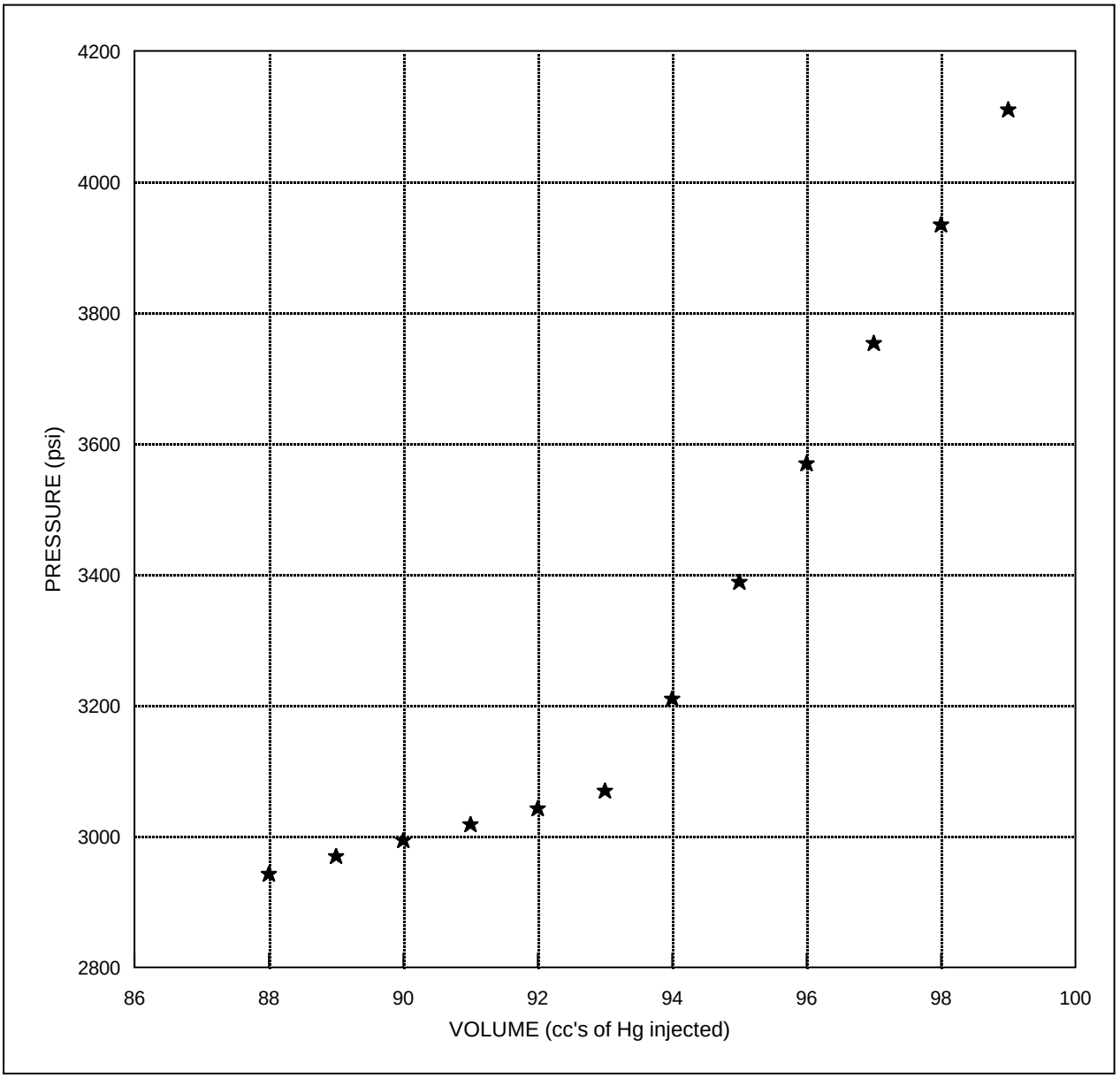
Sample # 1

Transfer Conditions

Transferred	:	February 19, 2009
Sampler ID	:	56
	:	

Transferred into Cylinder #	:	815-28
Amount Transferred (ccs)	:	370
Transfer Pressure (psig)	:	6000

Volume (cc's)	Pressure (psi)
88.0	2945
89.0	2970
90.0	2995
91.0	3020
92.0	3045
93.0	3070
94.0	3210
95.0	3390
96.0	3570
97.0	3755
98.0	3935
99.0	4110



FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On Stock Tank Oil from atmospheric flash of sample in cylinder # 815-28 Ex MPSR 56

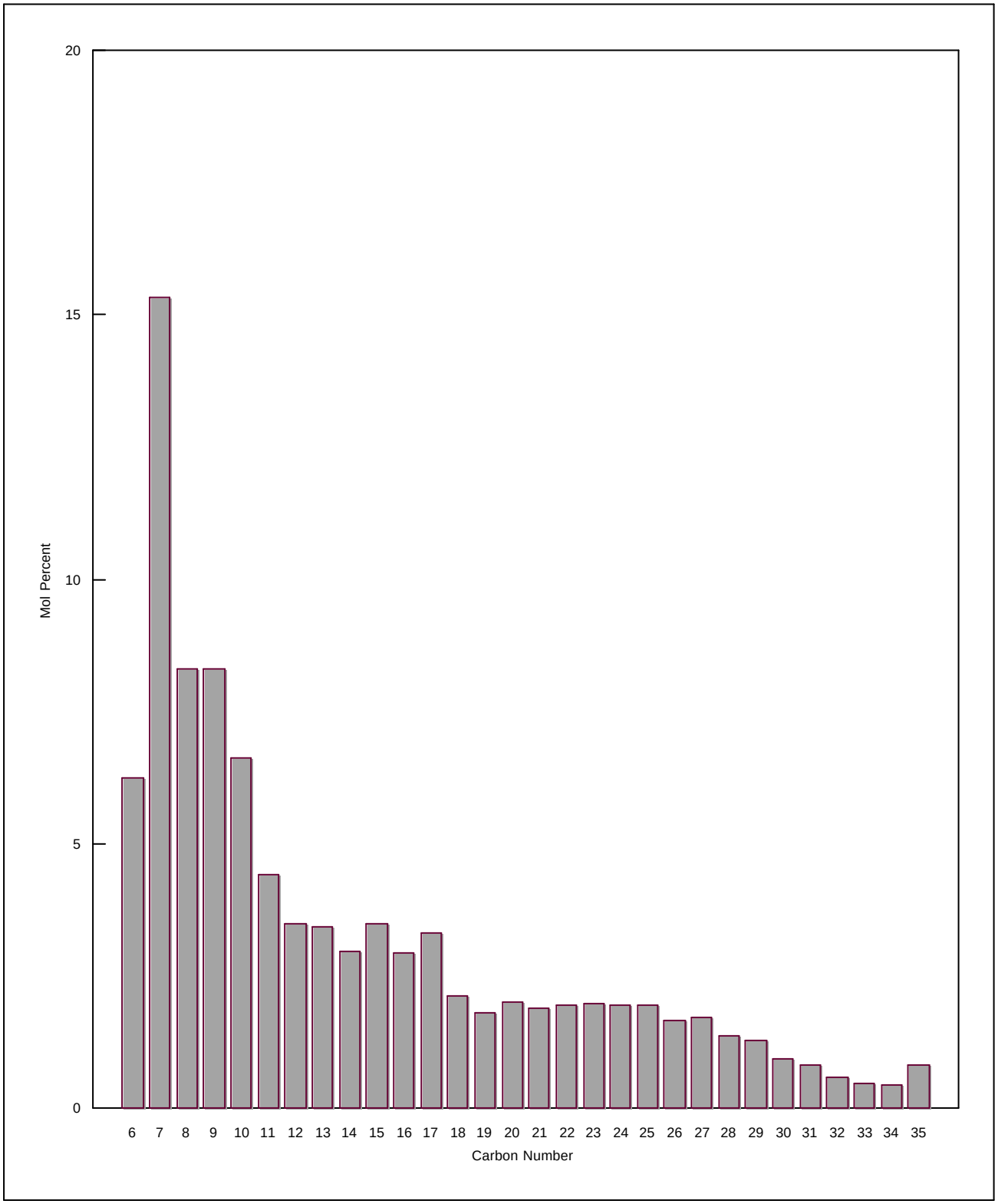
Component		Mol %
Hexanes minus	C6-	5.54
Hexanes	C6	6.24
Heptanes	C7	15.32
Octanes	C8	8.29
Nonanes	C9	8.31
Decanes	C10	6.62
Undecanes	C11	4.41
Dodecanes	C12	3.48
Tridecanes	C13	3.43
Tetradecanes	C14	2.96
Pentadecanes	C15	3.48
Hexadecanes	C16	2.93
Heptadecanes	C17	3.30
Octadecanes	C18	2.13
Nonadecanes	C19	1.79
Eicosanes	C20	2.00
Heneicosanes	C21	1.89
Docosanes	C22	1.94
Tricosanes	C23	1.97
Tetracosanes	C24	1.95
Pentacosanes	C25	1.95
Hexacosanes	C26	1.65
Heptacosanes	C27	1.70
Octacosanes	C28	1.36
Nonacosanes	C29	1.29
Triacontanes	C30	0.94
Hentriacontanes	C31	0.82
Dotriacontanes	C32	0.57
Tritriacontanes	C33	0.47
Tetratriacontanes	C34	0.45
Pentatriacontanes Plus	C35+	0.82
TOTAL		100.00

Molecular Weight Calculated *	:	184.6
Density @ 60 °F Calculated *	:	0.8194
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.8415

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On Stock Tank Oil from atmospheric flash of sample in cylinder # 815-28 Ex MPSR 56



COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 815-28 Ex MPSR 56

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.06	4.53	3.45
Nitrogen	N2	0.00	0.31	0.24
Methane	C1	0.32	59.75	45.45
Ethane	C2	0.28	9.97	7.64
Propane	C3	1.20	12.67	9.91
Iso-Butane	iC4	0.60	2.65	2.16
N-Butane	nC4	1.49	4.65	3.89
Iso-Pentane	iC5	1.22	1.50	1.43
N-Pentane	nC5	1.59	1.55	1.56
Hexanes	C6	6.16	1.30	2.47
Heptanes	C7	15.12	0.88	4.31
Octanes	C8	8.18	0.17	2.10
Nonanes	C9	8.20	0.06	2.02
Decanes	C10	6.53	0.01	1.58
Undecanes	C11	4.35	0.00	1.05
Dodecanes Plus	C12+	44.68	0.00	10.74
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.2406	0.7594	1.0000
Mass Ratio	:	0.6662	0.3338	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	1.9561 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	1887 SCF	--
Stream Properties				
Molecular Weight	:	182.0	28.90	65.7
Density obs. (gm/cc)	:	0.8182 @ 60 °F	--	0.6296 @ PT*
Gravity (AIR = 1.000)	:	41.3 °API @ 60 °F	1.005	93.0
GHV (BTU/scf)	:	--	1595	--
Hexanes Plus Properties				
Mol %	:	93.23	2.42	24.27
Molecular Weight	:	191.0	91.1	183.5
Density (gm/cc @ 60 °F)	:	0.8259	0.6768	0.8191
Gravity (°API @ 60 °F)	:	39.7	77.4	41.1
Heptanes Plus Properties				
Mol %	:	87.07	1.12	21.80
Molecular Weight	:	198.6	99.3	194.7
Density (gm/cc @ 60 °F)	:	0.8310	0.6882	0.8276
Gravity (°API @ 60 °F)	:	38.6	73.9	39.3
Decanes Plus Properties				
Mol %	:	55.57	0.01	13.37
Molecular Weight	:	251.5	133.9	251.4
Density (gm/cc @ 60 °F)	:	0.8559	0.7277	0.8559
Gravity (°API @ 60 °F)	:	33.7	62.8	33.7
Undecanes Plus Properties				
Mol %	:	49.03	0.00	11.79
Molecular Weight	:	267.1	--	267.1
Density (gm/cc @ 60 °F)	:	0.8617	--	0.8617
Gravity (°API @ 60 °F)	:	32.6	--	32.6
Dodecanes Plus Properties				
Mol %	:	44.68	0.00	10.74
Molecular Weight	:	278.8	--	278.8
Density (gm/cc @ 60 °F)	:	0.8658	--	0.8658
Gravity (°API @ 60 °F)	:	31.8	--	31.8

* (P)ressure : 5000 psig * (T)emperature : 122 °F

Validity Check on Cylinder 812319 ex MPSR 487

Saturation Pressure : 3055 @ 122 °F

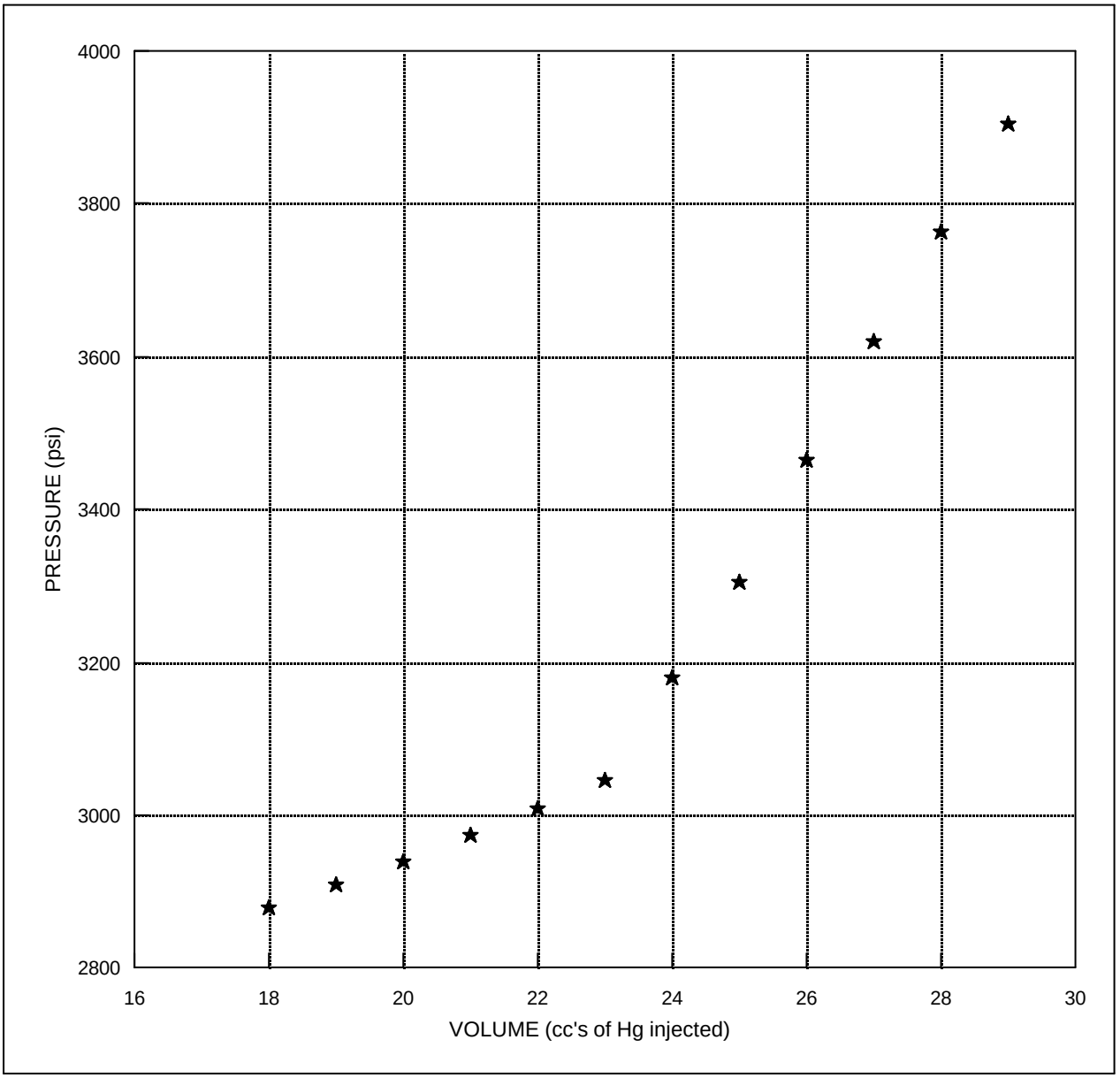
Sample # 2

Transfer Conditions

Transferred	:	February 19, 2009
Sampler ID	:	487
	:	

Transferred into Cylinder #	:	812319
Amount Transferred (ccs)	:	375
Transfer Pressure (psig)	:	6000

Volume (cc's)	Pressure (psi)
18.0	2880
19.0	2910
20.0	2940
21.0	2975
22.0	3010
23.0	3045
24.0	3180
25.0	3305
26.0	3465
27.0	3620
28.0	3765
29.0	3905



FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On Stock Tank Oil from atmospheric flash of sample in cylinder # 812319 Ex MPSR 0487

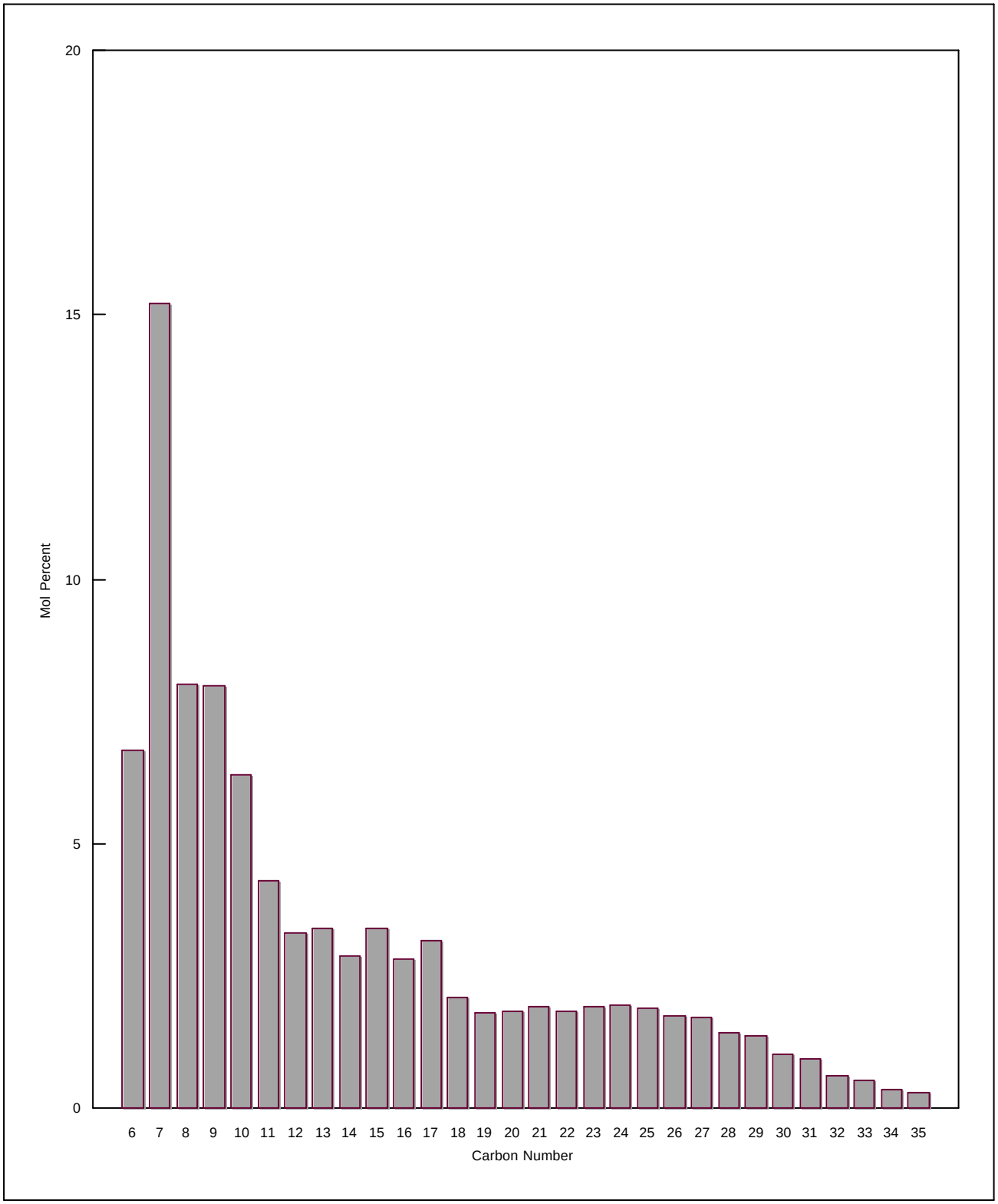
Component		Mol %
Hexanes minus	C6-	7.31
Hexanes	C6	6.76
Heptanes	C7	15.21
Octanes	C8	8.01
Nonanes	C9	7.99
Decanes	C10	6.31
Undecanes	C11	4.30
Dodecanes	C12	3.30
Tridecanes	C13	3.39
Tetradecanes	C14	2.88
Pentadecanes	C15	3.40
Hexadecanes	C16	2.82
Heptadecanes	C17	3.15
Octadecanes	C18	2.08
Nonadecanes	C19	1.80
Eicosanes	C20	1.84
Heneicosanes	C21	1.93
Docosanes	C22	1.83
Tricosanes	C23	1.92
Tetracosanes	C24	1.95
Pentacosanes	C25	1.88
Hexacosanes	C26	1.74
Heptacosanes	C27	1.71
Octacosanes	C28	1.42
Nonacosanes	C29	1.37
Triacontanes	C30	1.02
Hentriacontanes	C31	0.93
Dotriacontanes	C32	0.60
Tritriacontanes	C33	0.51
Tetratriacontanes	C34	0.34
Pentatriacontanes Plus	C35+	0.30
TOTAL		100.00

Molecular Weight Calculated *	:	181.2
Density @ 60 °F Calculated *	:	0.8163
Molecular Weight Measured	:	--
Density @ 60 °F Measured	:	0.8278

*Calculation based on generalized properties as published by Katz and Firoozabadi

FINGERPRINT ANALYSIS
BY CAPILLARY GAS CHROMATOGRAPHY

On Stock Tank Oil from atmospheric flash of sample in cylinder # 812319 Ex MPSR 0487



COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Cylinder # 812319 Ex MPSR 0487

Component		Stock Tank Liquid Mol %	Stock Tank Gas Mol %	Reservoir Fluid Mol %
Hydrogen Sulphide	H2S	0.00	0.00	0.00
Carbon Dioxide	CO2	0.05	4.47	3.37
Nitrogen	N2	0.00	0.30	0.23
Methane	C1	0.30	59.63	44.88
Ethane	C2	0.24	9.82	7.44
Propane	C3	0.99	12.57	9.69
Iso-Butane	iC4	0.51	2.78	2.22
N-Butane	nC4	1.25	4.89	3.99
Iso-Pentane	iC5	0.99	1.56	1.42
N-Pentane	nC5	1.28	1.61	1.53
Hexanes	C6	6.88	1.32	2.70
Heptanes	C7	15.49	0.84	4.48
Octanes	C8	8.16	0.15	2.14
Nonanes	C9	8.14	0.05	2.06
Decanes	C10	6.43	0.01	1.61
Undecanes	C11	4.38	0.00	1.09
Dodecanes Plus	C12+	44.92	0.00	11.15
TOTAL		100.00	100.00	100.00

Ratios				
Molar Ratio	:	0.2486	0.7514	1.0000
Mass Ratio	:	0.6755	0.3245	1.0000
Liquid Ratio (bbl/bbl)	:	1.0000 @ SC	--	1.9157 @ PT*
Gas Liquid Ratio	:	1.0000 bbl @ SC	1803 SCF	--
Stream Properties				
Molecular Weight	:	182.5	29.01	67.2
Density obs. (gm/cc)	:	0.8187 @ 60 °F	--	0.6342 @ PT*
Gravity (AIR = 1.000)	:	41.2 °API @ 60 °F	1.008	91.4
GHV (BTU/scf)	:	--	1603	--
Hexanes Plus Properties				
Mol %	:	94.39	2.37	25.23
Molecular Weight	:	189.9	90.7	182.9
Density (gm/cc @ 60 °F)	:	0.8250	0.6762	0.8187
Gravity (°API @ 60 °F)	:	39.8	77.6	41.2
Heptanes Plus Properties				
Mol %	:	87.51	1.05	22.53
Molecular Weight	:	198.2	99.1	194.8
Density (gm/cc @ 60 °F)	:	0.8307	0.6879	0.8276
Gravity (°API @ 60 °F)	:	38.7	74.0	39.3
Decanes Plus Properties				
Mol %	:	55.72	0.01	13.85
Molecular Weight	:	251.3	133.9	251.2
Density (gm/cc @ 60 °F)	:	0.8558	0.7277	0.8557
Gravity (°API @ 60 °F)	:	33.7	62.8	33.7
Undecanes Plus Properties				
Mol %	:	49.30	0.00	12.24
Molecular Weight	:	266.5	--	266.5
Density (gm/cc @ 60 °F)	:	0.8614	--	0.8614
Gravity (°API @ 60 °F)	:	32.6	--	32.6
Dodecanes Plus Properties				
Mol %	:	44.92	0.00	11.15
Molecular Weight	:	278.2	--	278.2
Density (gm/cc @ 60 °F)	:	0.8655	--	0.8655
Gravity (°API @ 60 °F)	:	31.8	--	31.8

* (P)ressure : 5000 psig * (T)emperature : 122 °F

COMPOSITIONAL ANALYSIS OF GAS IN WATER SOLUTION

CYLINDER NUMBER 84062602 Ex MPSR 3305

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	25.91	
Nitrogen	N2	0.74	
Methane	C1	69.49	
Ethane	C2	2.95	0.790
Propane	C3	0.59	0.163
Iso-Butane	iC4	0.03	0.010
N-Butane	nC4	0.06	0.019
Iso-Pentane	iC5	0.01	0.004
N-Pentane	nC5	0.01	0.004
Hexanes	C6	0.05	0.019
Heptanes	C7	0.06	0.025
Octanes	C8	0.06	0.027
Nonanes	C9	0.03	0.015
Decanes	C10	0.01	0.005
Undecanes	C11	0.00	0.000
Dodecanes Plus	C12+	0.00	0.000
TOTAL		100.00	1.081

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	24.19
Gas Gravity	:	0.837
Pc	:	770.1
Tc	:	405.3
Mol Weight C6+	:	101.7
Density C6+	:	0.6913
Mol Weight C7+	:	107.2
Density C7+	:	0.6983
Mol Weight C10+	:	134.0
Density C10+	:	0.7278
Mol Weight C11+	:	--
Density C11+	:	--
Mol Weight C12+	:	--
Density C12+	:	--
Heating Value (BTU/ft3)		
Gross	:	789
Nett	:	711
Wobbe Index	:	862
Zpt *	:	1.000

Gas Water Ratio: 16.8 Scf / Bbl

COMPOSITIONAL ANALYSIS OF GAS IN WATER SOLUTION

CYLINDER NUMBER 84062103 Ex MPSR 3357

Component		Mol %	GPM
Hydrogen Sulphide	H2S	0.00	
Carbon Dioxide	CO2	20.40	
Nitrogen	N2	1.17	
Methane	C1	71.17	
Ethane	C2	3.45	0.923
Propane	C3	1.27	0.350
Iso-Butane	iC4	0.19	0.062
N-Butane	nC4	0.08	0.025
Iso-Pentane	iC5	0.05	0.018
N-Pentane	nC5	0.11	0.040
Hexanes	C6	0.96	0.373
Heptanes	C7	0.50	0.211
Octanes	C8	0.40	0.182
Nonanes	C9	0.19	0.095
Decanes	C10	0.06	0.033
Undecanes	C11	0.00	0.000
Dodecanes Plus	C12+	0.00	0.000
TOTAL		100.00	2.312

Pressure Base	:	14.696
Zsc	:	0.997
Mol Weight	:	24.62
Gas Gravity	:	0.853
Pc	:	741.6
Tc	:	409.8
Mol Weight C6+	:	96.0
Density C6+	:	0.6836
Mol Weight C7+	:	105.9
Density C7+	:	0.6967
Mol Weight C10+	:	134.0
Density C10+	:	0.7278
Mol Weight C11+	:	--
Density C11+	:	--
Mol Weight C12+	:	--
Density C12+	:	--
Heating Value (BTU/ft3)		
Gross	:	943
Nett	:	854
Wobbe Index	:	1022
Zpt *	:	1.000

Gas Water Ratio: 18.6 Scf / Bbl

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STOCK TANK WATER ANALYSIS

SAMPLE FROM MPSR 2040 Depth 2766.7

Resistivity	:	0.222	Ohm.M @ 25 °C
Conductivity (E.C)	:	45000	micro-S/cm @ 25 °C
pH	:	6.3	
Density	:	1.0218	gm/cc @ 25 °C
Total alkalinity	:	1500	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	230.0	11.48
Magnesium	(Mg):	43.0	3.54
Sodium	(Na):	11000.0	478.47
Potassium	(K):	400.0	10.23

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	1829.0	29.97
Sulphate	(SO4):	8.0	0.17
Chloride	(Cl):	15000.0	423.13
Nitrate	(NO3):	0.0	0.00

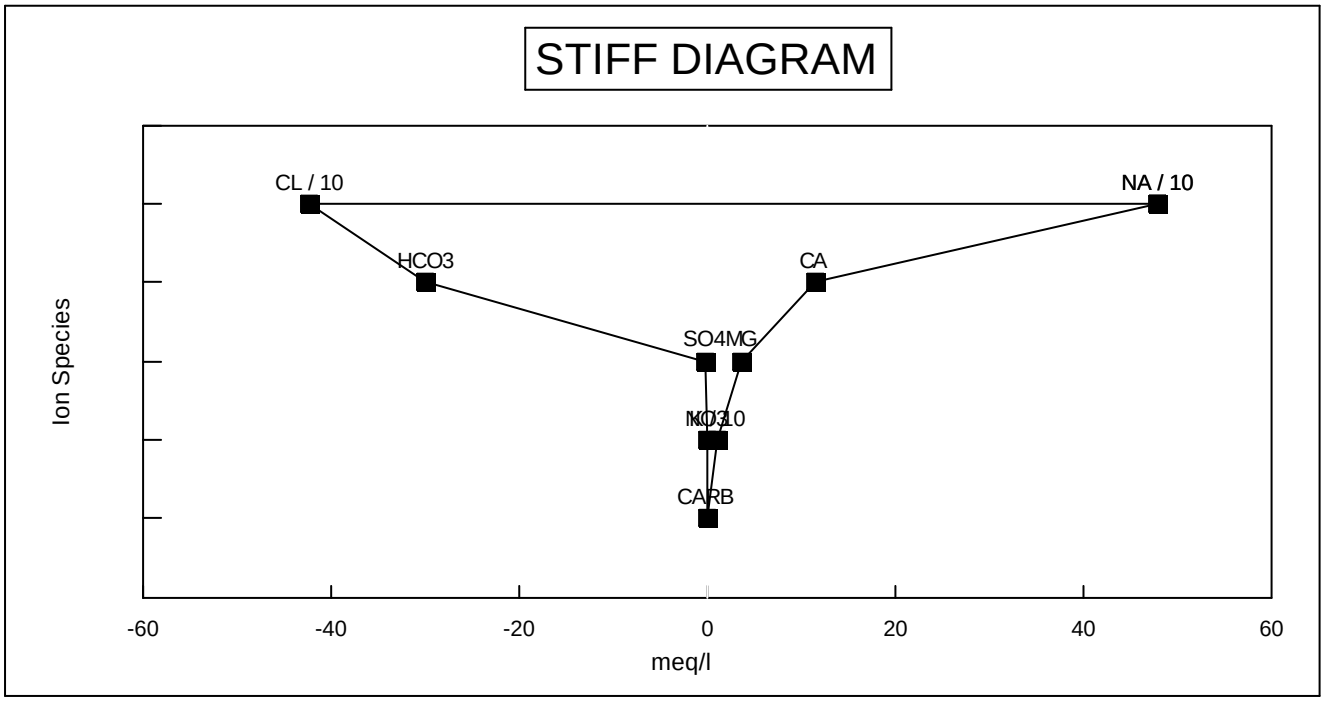
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	27659
From Conductivity	:	28485
Salinity	:	27075

Hardness

Carbonate	:	751
Non-Carbonate	:	0
Total	:	751

STIFF DIAGRAM



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STOCK TANK WATER ANALYSIS

SAMPLE FROM MPSR 2590 Depth 2766.7

Resistivity	:	0.222	Ohm.M @ 25 °C
Conductivity (E.C)	:	45000	micro-S/cm @ 25 °C
pH	:	6.4	
Density	:	1.0218	gm/cc @ 25 °C
Total alkalinity	:	1500	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	230.0	11.48
Magnesium	(Mg):	42.0	3.46
Sodium	(Na):	10000.0	434.97
Potassium	(K):	450.0	11.51

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	1829.0	29.97
Sulphate	(SO4):	10.0	0.21
Chloride	(Cl):	15000.0	423.13
Nitrate	(NO3):	0.0	0.00

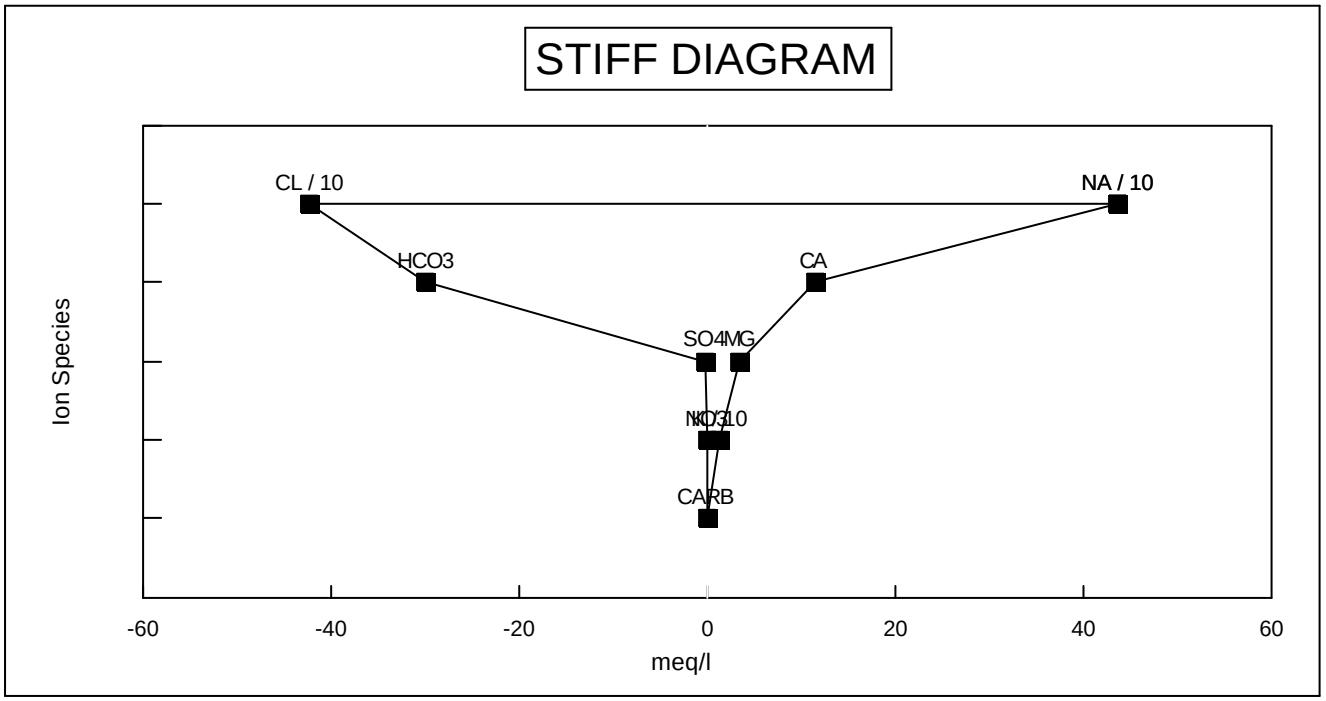
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	26709
From Conductivity	:	28485
Salinity	:	27075

Hardness

Carbonate	:	747
Non-Carbonate	:	0
Total	:	747

STIFF DIAGRAM



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STOCK TANK WATER ANALYSIS

SAMPLE FROM Cylinder 84062602 EX MPSR 3305 Depth 3135

Resistivity	:	0.101	Ohm.M @ 25 °C
Conductivity (E.C)	:	99000	micro-S/cm @ 25 °C
pH	:	7.4	
Density	:	1.0465	gm/cc @ 25 °C
Total alkalinity	:	2800	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	260.0	12.97
Magnesium	(Mg):	34.0	2.80
Sodium	(Na):	6400.0	278.38
Potassium	(K):	28000.0	716.11

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	3414.0	55.95
Sulphate	(SO4):	380.0	7.91
Chloride	(Cl):	30000.0	846.26
Nitrate	(NO3):	0.0	0.00

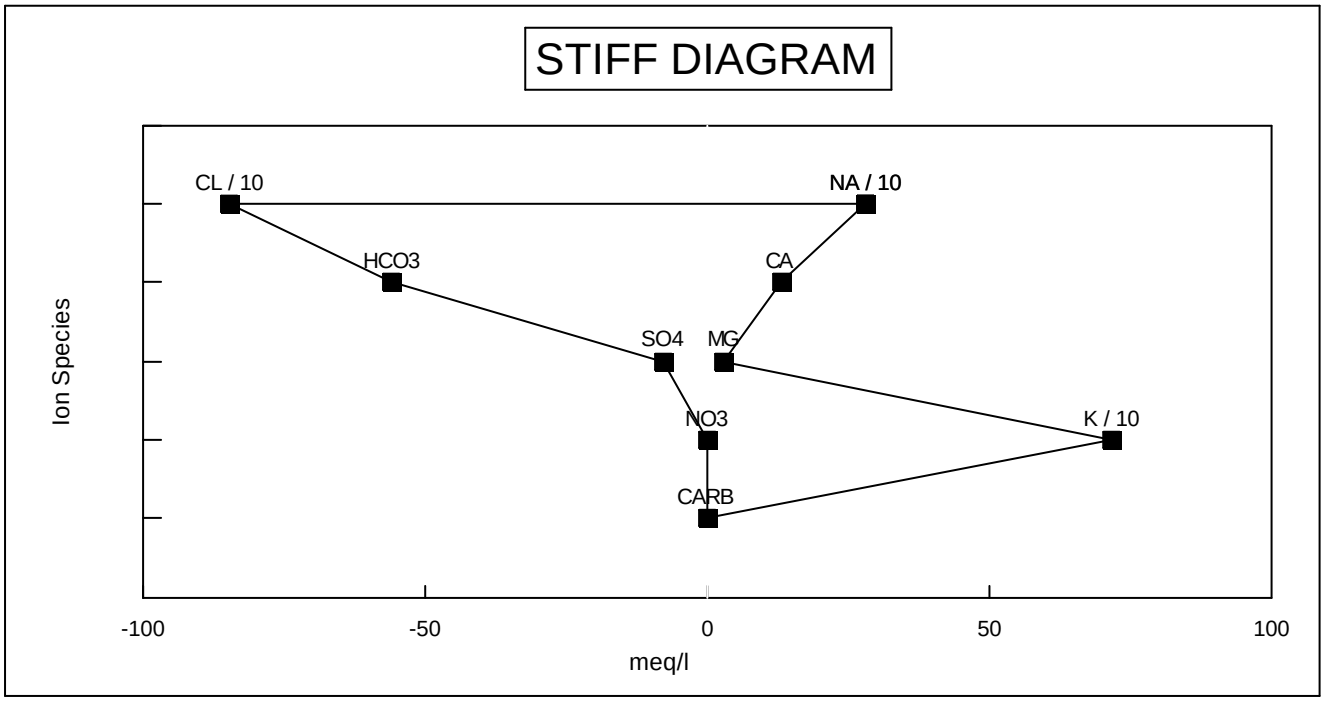
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	66807
From Conductivity	:	62667
Salinity	:	54150

Hardness

Carbonate	:	789
Non-Carbonate	:	0
Total	:	789

STIFF DIAGRAM



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STOCK TANK WATER ANALYSIS

SAMPLE FROM Cylinder 84062103 EX MPSR 3357 Depth 3135

Resistivity	:	0.103	Ohm.M @ 25 °C
Conductivity (E.C)	:	97000	micro-S/cm @ 25 °C
pH	:	6.9	
Density	:	1.0456	gm/cc @ 25 °C
Total alkalinity	:	2700	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	260.0	12.97
Magnesium	(Mg):	33.0	2.72
Sodium	(Na):	6400.0	278.38
Potassium	(K):	27000.0	690.54

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	3292.1	53.95
Sulphate	(SO4):	370.0	7.70
Chloride	(Cl):	31000.0	874.47
Nitrate	(NO3):	0.0	0.00

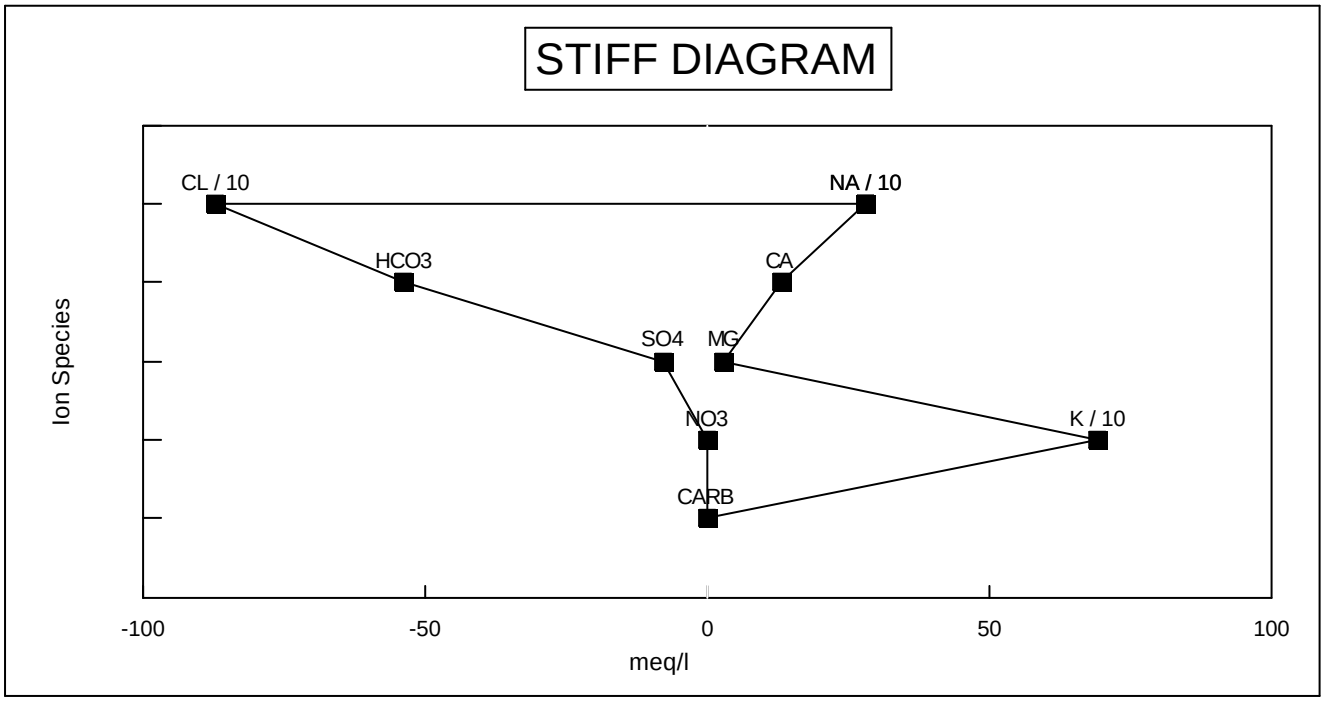
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	66757
From Conductivity	:	61401
Salinity	:	55955

Hardness

Carbonate	:	785
Non-Carbonate	:	0
Total	:	785

STIFF DIAGRAM



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STOCK TANK WATER ANALYSIS

SAMPLE FROM MPSR 2093 Depth 3138-3140.4

Resistivity	:	0.172	Ohm.M @ 25 °C
Conductivity (E.C)	:	58000	micro-S/cm @ 25 °C
pH	:	6.6	
Density	:	1.0277	gm/cc @ 25 °C
Total alkalinity	:	2500	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	170.0	8.48
Magnesium	(Mg):	20.0	1.65
Sodium	(Na):	5200.0	226.19
Potassium	(K):	14000.0	358.06

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	3048.3	49.96
Sulphate	(SO4):	160.0	3.33
Chloride	(Cl):	17000.0	479.55
Nitrate	(NO3):	0.0	0.00

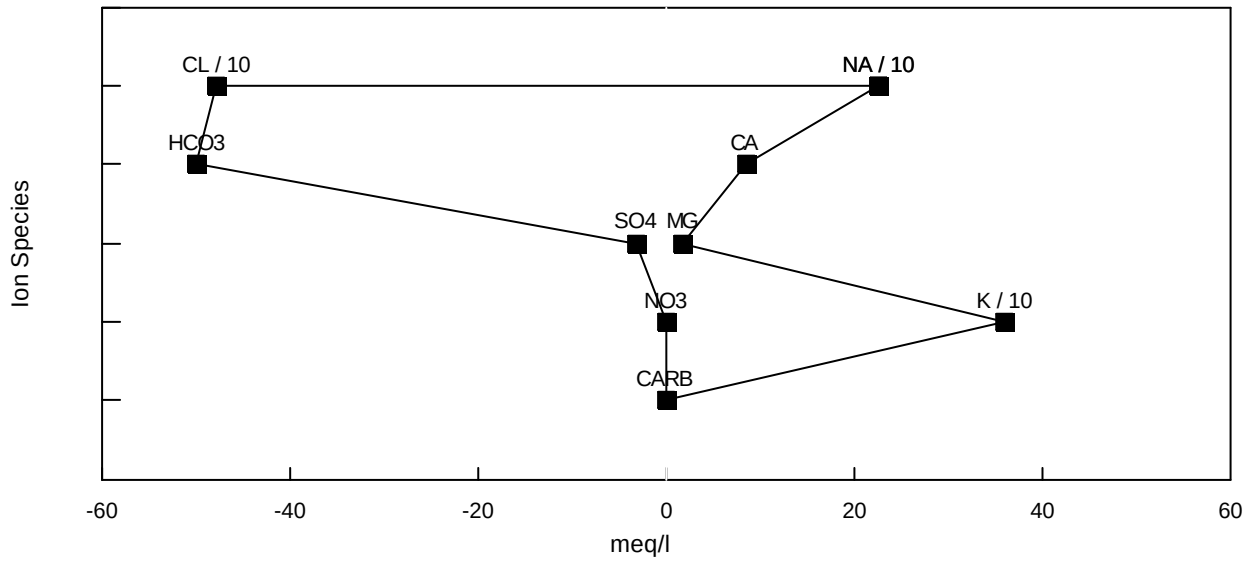
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	38081
From Conductivity	:	36714
Salinity	:	30685

Hardness

Carbonate	:	507
Non-Carbonate	:	0
Total	:	507

STIFF DIAGRAM



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Well : Rockhopper #1 ST#1	File : O - 10006b

STOCK TANK WATER ANALYSIS

SAMPLE FROM MPSR 2672 Depth 3138-3140.4

Resistivity	:	0.175	Ohm.M @ 25 °C
Conductivity (E.C)	:	57000	micro-S/cm @ 25 °C
pH	:	6.6	
Density	:	1.0272	gm/cc @ 25 °C
Total alkalinity	:	2400	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	160.0	7.98
Magnesium	(Mg):	15.0	1.23
Sodium	(Na):	5100.0	221.84
Potassium	(K):	13000.0	332.48

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	2926.3	47.96
Sulphate	(SO4):	150.0	3.12
Chloride	(Cl):	16000.0	451.34
Nitrate	(NO3):	0.0	0.00

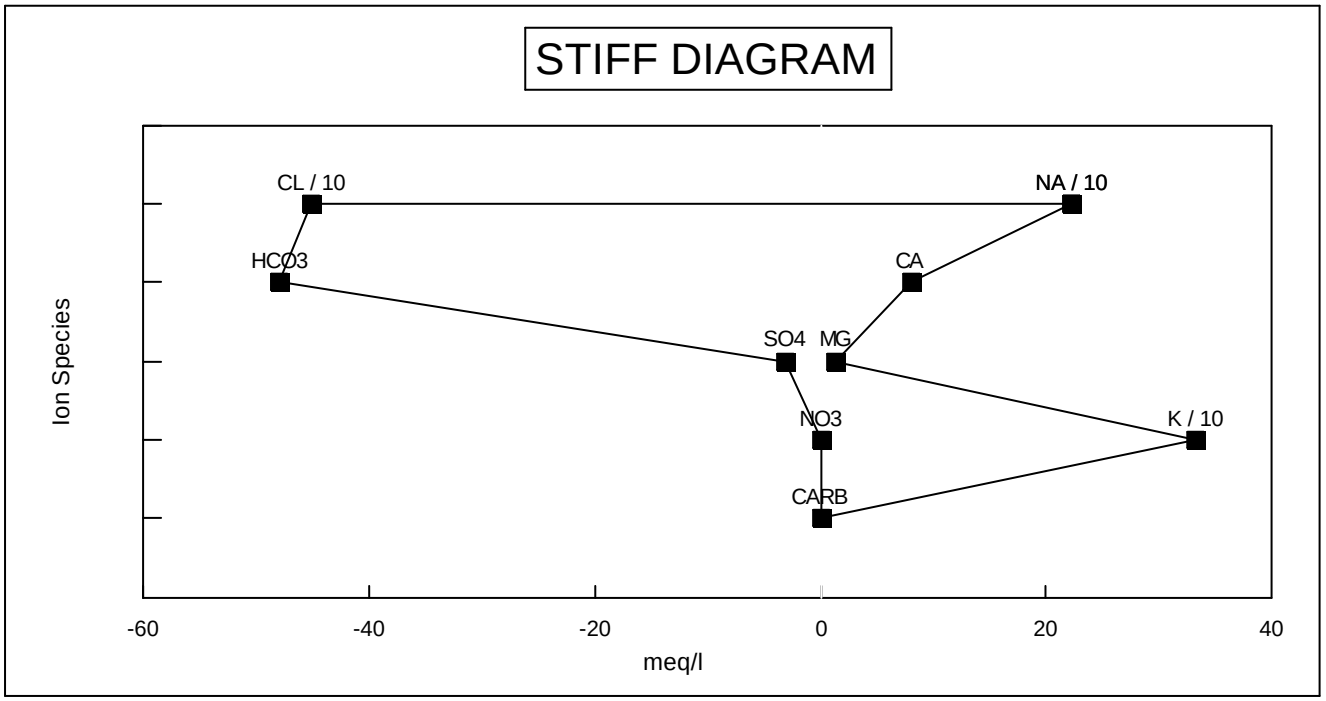
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	35892
From Conductivity	:	36081
Salinity	:	28880

Hardness

Carbonate	:	461
Non-Carbonate	:	0
Total	:	461

STIFF DIAGRAM



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STOCK TANK WATER ANALYSIS

SAMPLE FROM MPSR 2668 Depth 3140

Resistivity	:	0.102	Ohm.M @ 25 °C
Conductivity (E.C)	:	98000	micro-S/cm @ 25 °C
pH	:	6.9	
Density	:	1.0461	gm/cc @ 25 °C
Total alkalinity	:	2700	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	270.0	13.47
Magnesium	(Mg):	32.0	2.63
Sodium	(Na):	6500.0	282.73
Potassium	(K):	27000.0	690.54

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	3292.1	53.95
Sulphate	(SO4):	360.0	7.50
Chloride	(Cl):	31000.0	874.47
Nitrate	(NO3):	0.0	0.00

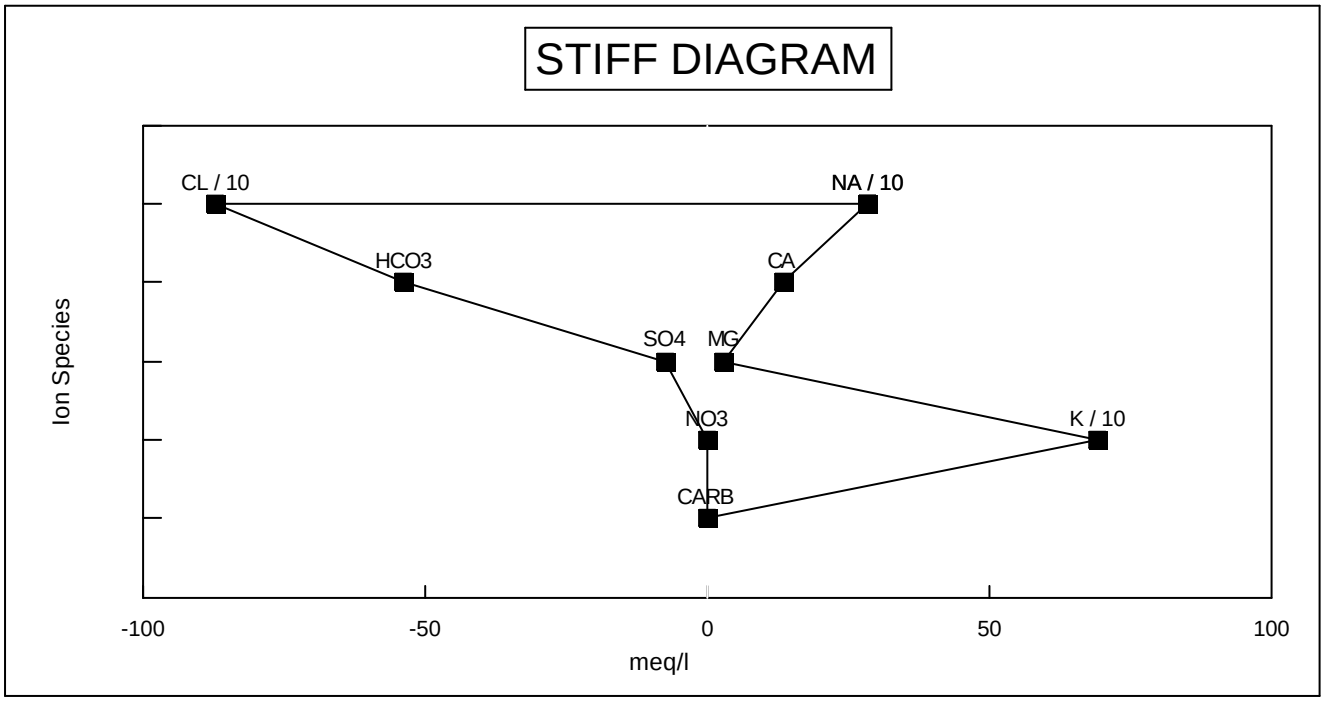
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	66825
From Conductivity	:	62034
Salinity	:	55955

Hardness

Carbonate	:	806
Non-Carbonate	:	0
Total	:	806

STIFF DIAGRAM



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STOCK TANK WATER ANALYSIS

SAMPLE FROM MPSR 2750 Depth 3182.2-3184.6

Resistivity	:	0.179	Ohm.M @ 25 °C
Conductivity (E.C)	:	56000	micro-S/cm @ 25 °C
pH	:	6.5	
Density	:	1.0268	gm/cc @ 25 °C
Total alkalinity	:	2100	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	190.0	9.48
Magnesium	(Mg):	20.0	1.65
Sodium	(Na):	5200.0	226.19
Potassium	(K):	12000.0	306.91

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	2560.5	41.96
Sulphate	(SO4):	150.0	3.12
Chloride	(Cl):	16000.0	451.34
Nitrate	(NO3):	0.0	0.00

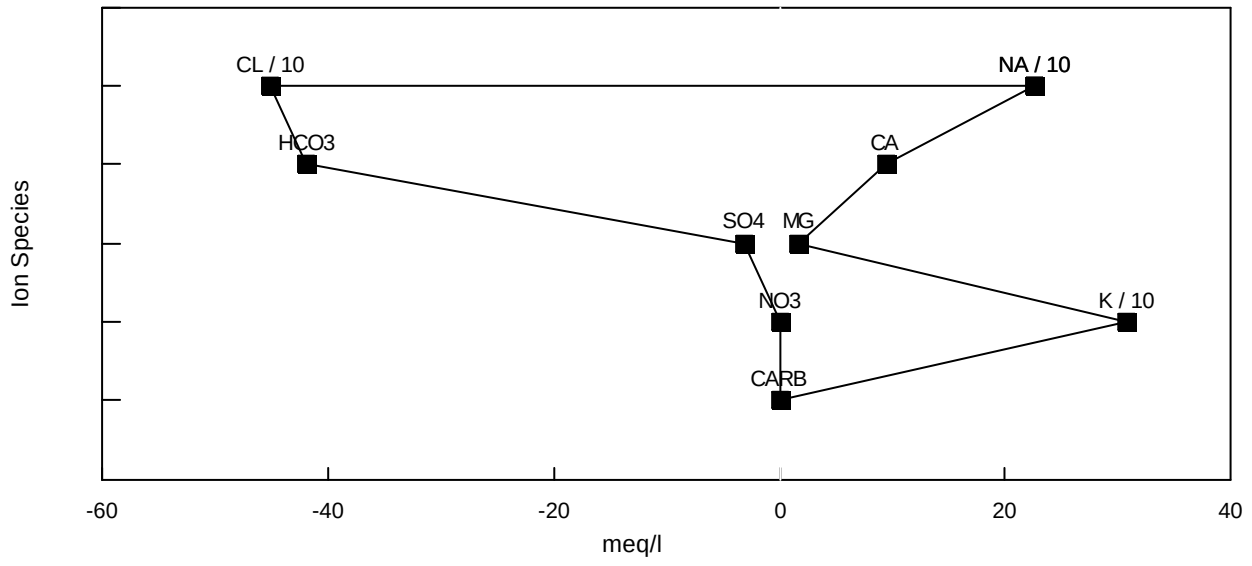
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	34848
From Conductivity	:	35448
Salinity	:	28880

Hardness

Carbonate	:	557
Non-Carbonate	:	0
Total	:	557

STIFF DIAGRAM



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Well : Rockhopper #1 ST#1	File : O - 10006b

STOCK TANK WATER ANALYSIS

SAMPLE FROM MPSR 3331 Depth 3182.2-3184.6

Resistivity	:	0.185	Ohm.M @ 25 °C
Conductivity (E.C)	:	54000	micro-S/cm @ 25 °C
pH	:	6.5	
Density	:	1.0259	gm/cc @ 25 °C
Total alkalinity	:	2200	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	180.0	8.98
Magnesium	(Mg):	20.0	1.65
Sodium	(Na):	5000.0	217.49
Potassium	(K):	12000.0	306.91

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	2682.5	43.96
Sulphate	(SO4):	140.0	2.91
Chloride	(Cl):	15000.0	423.13
Nitrate	(NO3):	0.0	0.00

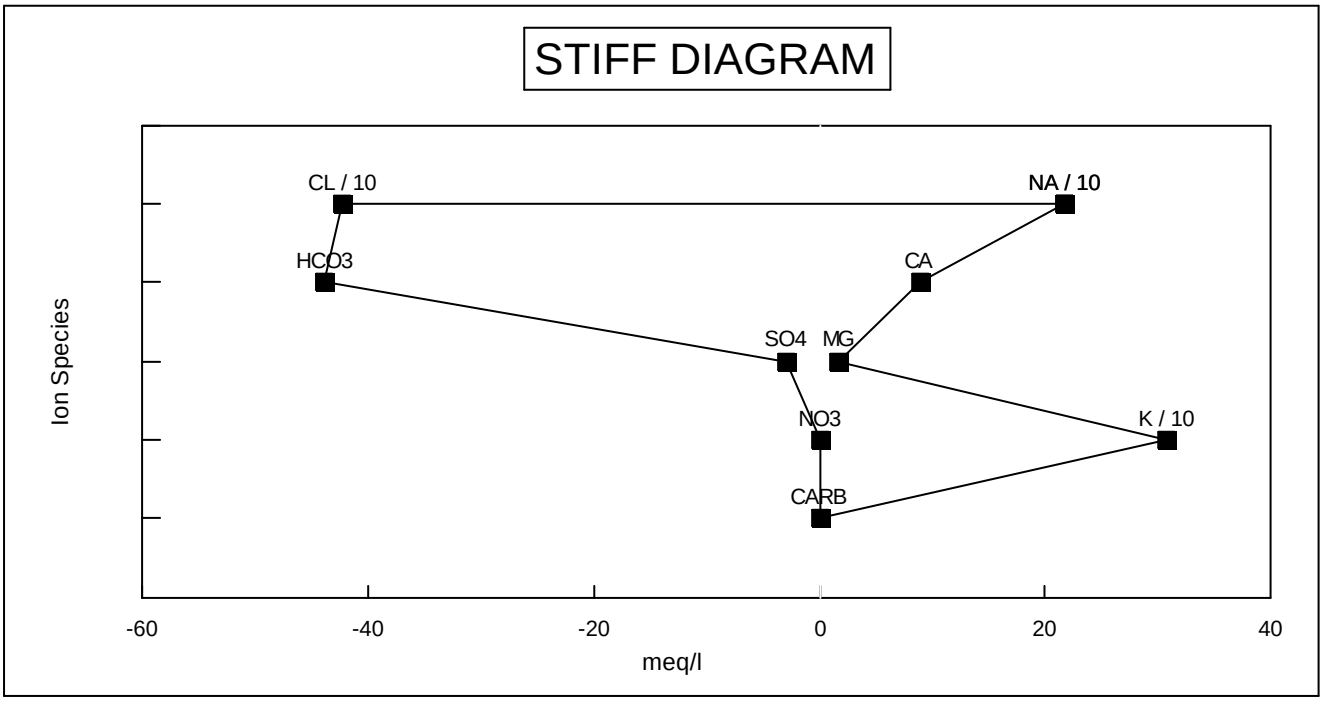
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	33692
From Conductivity	:	34182
Salinity	:	27075

Hardness

Carbonate	:	532
Non-Carbonate	:	0
Total	:	532

STIFF DIAGRAM



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STOCK TANK WATER ANALYSIS

SAMPLE FROM MPSR 2602 Depth 3313

Resistivity	:	0.091	Ohm.M @ 25 °C
Conductivity (E.C)	:	110000	micro-S/cm @ 25 °C
pH	:	6.8	
Density	:	1.0516	gm/cc @ 25 °C
Total alkalinity	:	3100	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	300.0	14.97
Magnesium	(Mg):	28.0	2.30
Sodium	(Na):	6500.0	282.73
Potassium	(K):	34000.0	869.57

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	3779.8	61.94
Sulphate	(SO4):	340.0	7.08
Chloride	(Cl):	35000.0	987.31
Nitrate	(NO3):	0.0	0.00

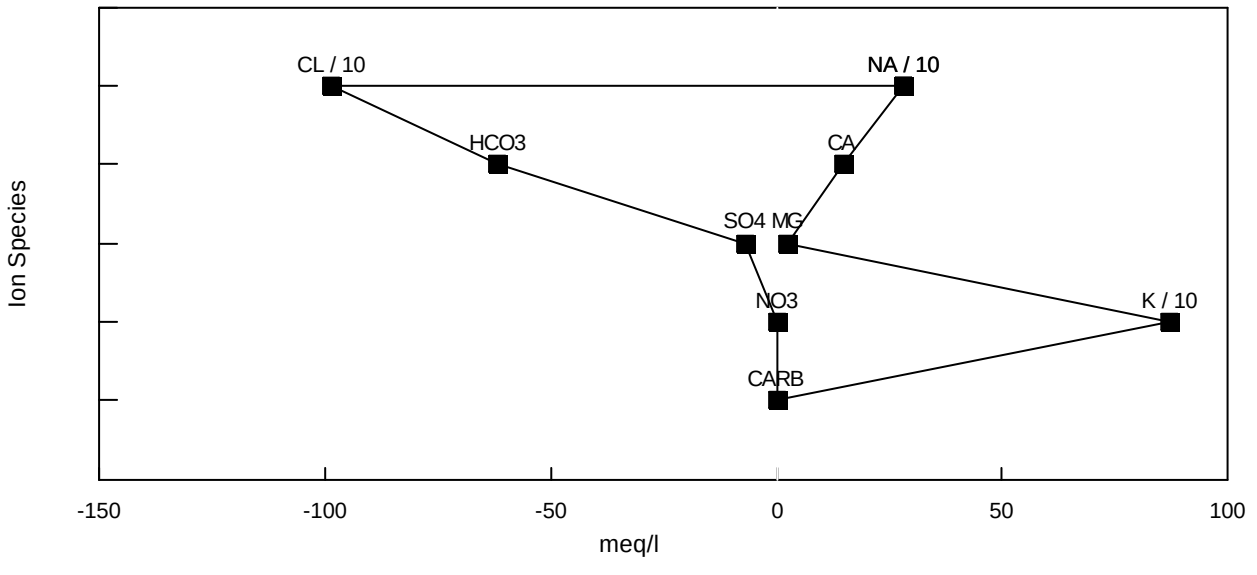
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	78086
From Conductivity	:	69630
Salinity	:	63175

Hardness

Carbonate	:	865
Non-Carbonate	:	0
Total	:	865

STIFF DIAGRAM



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STOCK TANK WATER ANALYSIS

SAMPLE FROM Mud Filtrate CMR 04 Feb 10 06:00 Depth 3482

Resistivity	:	0.118	Ohm.M @ 25 °C
Conductivity (E.C)	:	85000	micro-S/cm @ 25 °C
pH	:	8.1	
Density	:	1.0401	gm/cc @ 25 °C
Total alkalinity	:	3000	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	52.0	2.59
Magnesium	(Mg):	43.0	3.54
Sodium	(Na):	3800.0	165.29
Potassium	(K):	27000.0	690.54

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	3657.9	59.95
Sulphate	(SO4):	310.0	6.45
Chloride	(Cl):	27000.0	761.64
Nitrate	(NO3):	0.0	0.00

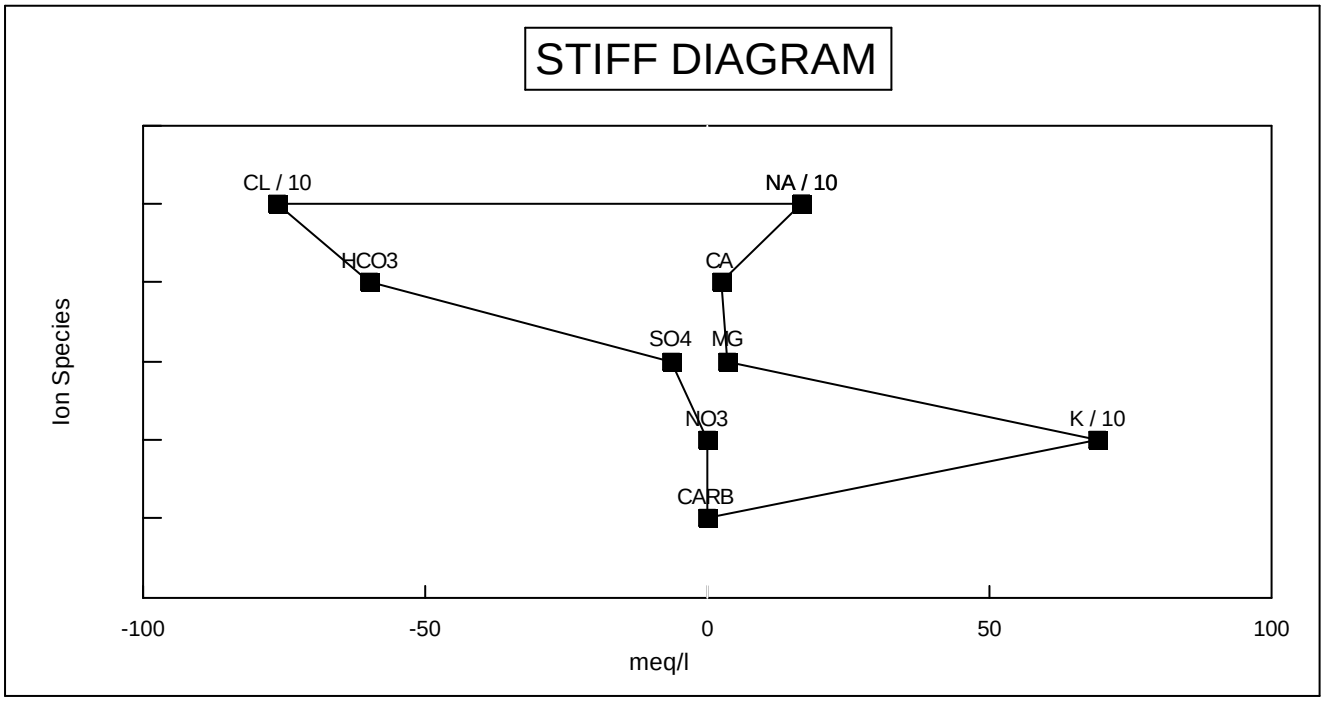
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	60085
From Conductivity	:	53805
Salinity	:	48735

Hardness

Carbonate	:	307
Non-Carbonate	:	0
Total	:	307

STIFF DIAGRAM



PETROLAB

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Well : Rockhopper #1 ST#1	File : O - 10006b

STOCK TANK WATER ANALYSIS

SAMPLE FROM Mud Filtrate Dual Packer 12 Feb 10 02:45

Resistivity	:	0.077	Ohm.M @ 25 °C
Conductivity (E.C)	:	130000	micro-S/cm @ 25 °C
pH	:	7.8	
Density	:	1.0610	gm/cc @ 25 °C
Total alkalinity	:	5600	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	110.0	5.49
Magnesium	(Mg):	84.0	6.91
Sodium	(Na):	6600.0	287.08
Potassium	(K):	44000.0	1125.32

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	6828.1	111.90
Sulphate	(SO4):	500.0	10.41
Chloride	(Cl):	42000.0	1184.77
Nitrate	(NO3):	0.0	0.00

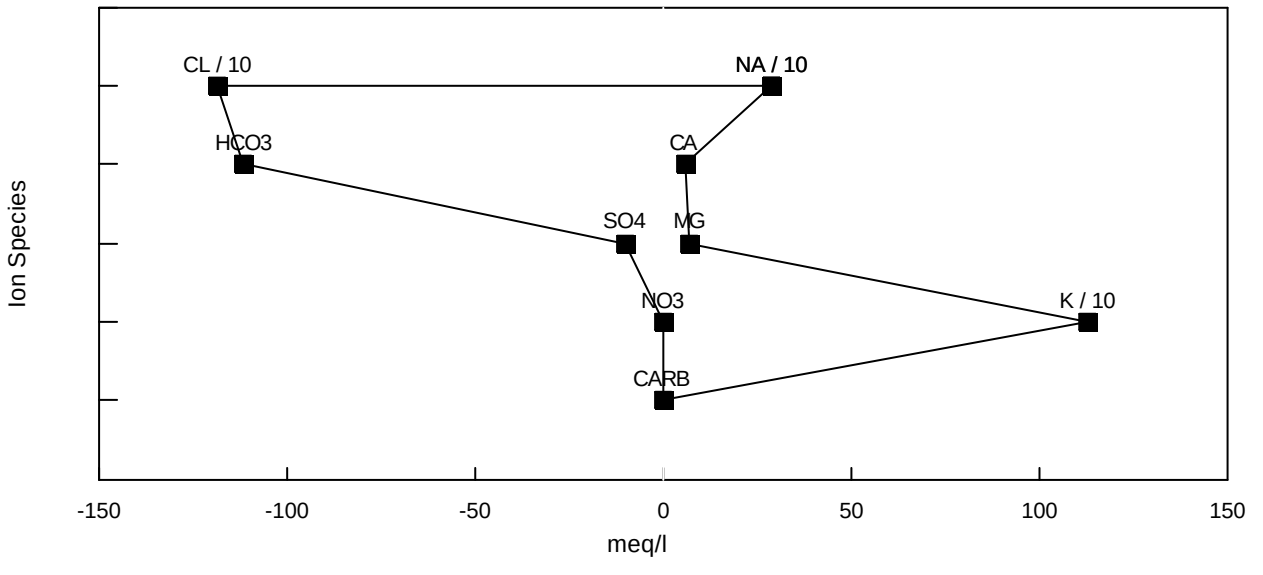
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	96733
From Conductivity	:	82290
Salinity	:	75810

Hardness

Carbonate	:	621
Non-Carbonate	:	0
Total	:	621

STIFF DIAGRAM



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Well : Rockhopper #1 ST#1	File : O - 10006b

STOCK TANK WATER ANALYSIS

SAMPLE FROM Mud Filtrate 12 Feb 10 06:00 Depth 3482

Resistivity	:	0.118	Ohm.M @ 25 °C
Conductivity (E.C)	:	85000	micro-S/cm @ 25 °C
pH	:	7.8	
Density	:	1.0401	gm/cc @ 25 °C
Total alkalinity	:	3000	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	54.0	2.69
Magnesium	(Mg):	43.0	3.54
Sodium	(Na):	3800.0	165.29
Potassium	(K):	27000.0	690.54

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	3657.9	59.95
Sulphate	(SO4):	300.0	6.25
Chloride	(Cl):	26000.0	733.43
Nitrate	(NO3):	0.0	0.00

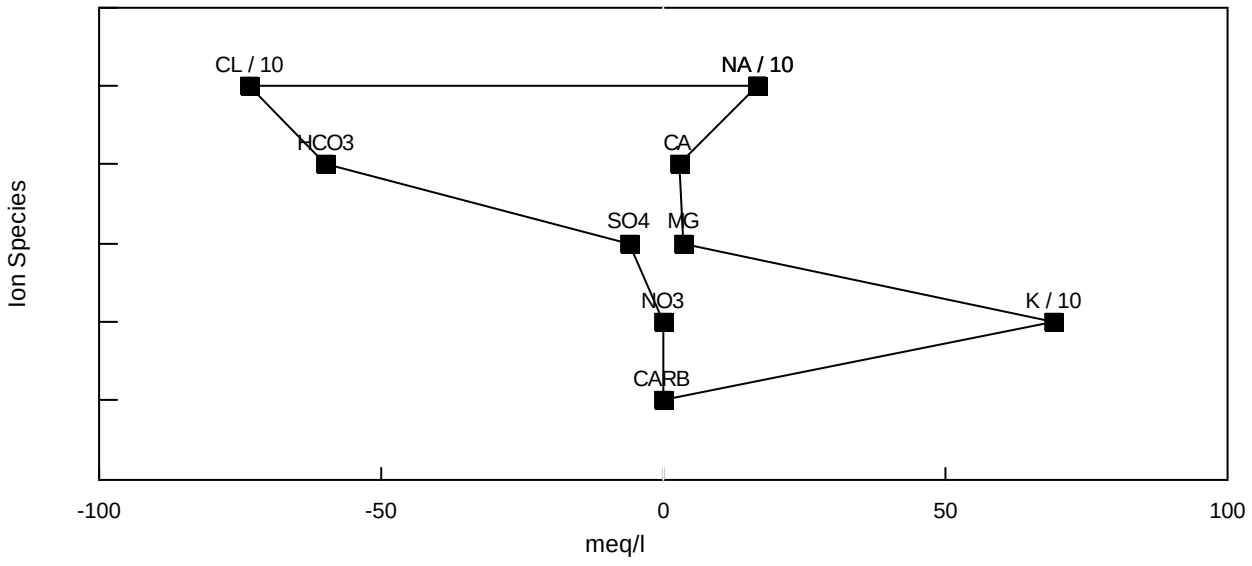
Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	59085
From Conductivity	:	53805
Salinity	:	46930

Hardness

Carbonate	:	312
Non-Carbonate	:	0
Total	:	312

STIFF DIAGRAM



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STOCK TANK WATER ANALYSIS

SAMPLE FROM Mud 12 Feb 10 10:14 Depth 3482

Resistivity	:	0.077	Ohm.M @ 25 °C
Conductivity (E.C)	:	130000	micro-S/cm @ 25 °C
pH	:	7.8	
Density	:	1.0610	gm/cc @ 25 °C
Total alkalinity	:	7500	Each as CaCO3

Cations

		mg/l	meq/l
Calcium	(Ca):	220.0	10.98
Magnesium	(Mg):	72.0	5.93
Sodium	(Na):	6100.0	265.33
Potassium	(K):	41000.0	1048.59

Anions

		mg/l	meq/l
Hydroxide	(OH):	0.0	0.00
Carbonate	(CO3):	0.0	0.00
Bi-Carbonate	(HCO3):	9144.8	149.87
Sulphate	(SO4):	320.0	6.66
Chloride	(Cl):	40000.0	1128.35
Nitrate	(NO3):	0.0	0.00

Total dissolved solids

		mg/l
Calculated (HCO3=CO3)	:	92384
From Conductivity	:	82290
Salinity	:	72200

Hardness

Carbonate	:	846
Non-Carbonate	:	0
Total	:	846

STIFF DIAGRAM