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Well Name	Toolka 1A
UNO	W7740003
PLSA File Reference	74/102
Operator	Esso Australia Ltd.
Contractor	Global Marine Australasia
Date of Report	May 1974
Confidentiality	

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74/102

WELL COMPLETION REPORT

TOOLKA-1A

BASS BASIN, TASMANIA, AUSTRALIA.

ESSO AUSTRALIA LTD.

J.S. Isom
May, 1974

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Well Completion Report

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WELL COMPLETION REPORT

TOOLKA-1A

BASS BASIN, TASMANIA, AUSTRALIA

COMPLETION REPORT

I. WELL DATA RECORD

Date May 15, 1974.

LOCATION

WELL NAME TOOLKA-1A	STATE TASMANIA	PERMIT or LICENCE T/3P	GEOLOGICAL BASIN BASS	FIELD ---
CO-ORDINATES Lat. Long. X Y Surface 39°24' 35.678"S 145°23' 45.108" Bottom hole x = 361,896 m.E. y = 5,636,491 m.N.		MAP PROJECTION AMG ZONE 55	GEOGRAPHICAL DESCRIPTION OFFSHORE TASMANIA (FOURTEEN MILES N.W. OF CORMORANT-1)	
ELEVATIONS & DEPTHS				
ELEVATIONS Ground KB 32' RT Braden Head Top Deck Platform	WATER DEPTH 258' PLUG BACK DEPTH 365'	TOTAL DEPTH M.D. 8907' T.V.D. REASONS FOR P.B. ABANDONMENT	Avg. Angle STRAIGHT HOLE	
DATES				
MOVE IN JANUARY 12, 1974.	RIG UP JANUARY 14, 1974	SPUDED JANUARY 16, 1974.		
RIG DOWN COMPLETE FEBRUARY 5, 1974.	RIG RELEASED FEBRUARY 5, 1974.	PROD. UNIT - Start Rigging Up		
PROD. UNIT - Rig Down Complete		I.P. ESTABLISHED		
MISCELLANEOUS				
OPERATOR ESSO AUSTRALIA LTD.,	PERMITTEE or LICENCEE HEMATITE PETROLEUM PTY. LTD	ESSO INTEREST 100%	OTHER INTEREST NIL	
CONTRACTOR GLOBAL MARINE AUSTRALASIA P/L	RIG NAME "GLOMAR CONCEPTION"	EQUIPMENT TYPE FLOATING DRILLING VESSEL		
TOTAL RIG DAYS 23.38	DRILLING AFE NO. 234-001	COMPLETION NO.	TYPE COMPLETION	
LAHEE WELL	Before Drilling	NEW FIELD WILDCAT		
CLASSIFICATION	After Drilling	UNSUCCESSFUL NEW FIELD WILDCAT		

B A S S

J.S. ISOM

Geologist

TOOLKA-1

II INITIAL PRODUCTION TEST					
Date	WELL COMPLETION AS: Oil Well _____ Gas Well _____ Dry Hole _____				
Choke size, inch			Calculated P.I.		
Length of Test			Calculated A.O.F.		
Oil, BPD			Perforations		
Water, BPD			Shut-In BHP		
Gas, MCFD			Flowing BHP		
Gas Liquids, BPD			Shut-In Tubing Press		
Gas-Oil Ratio			Flowing-Tubing Press		
Gravity, API			Flowing Temperature		

III PERFORATING RECORD (Prod.test, Completion, DST, FIT)						
INTERVAL	HPF	TOTAL SHOTS	SERV. CO.	DIFF. PRESS.	PERFORATION FLUID	SIZE AND TYPE GUN

Engineer

IV CASING-LINER-TUBING RECORD							
Type	Size	Weight	Grade	Thread	No. Joints	Amount	Depth
KB ELEVATION ABOVE CASING HEAD						281.00	281.00
24" PIPE JOINT						38.85	319.85
	20"	94#	X-52	JV-CC	1	22.35	342.20
	20"	92#	X-52	JV	9 + FLOAT SHOE	361.83	704.03
KB ELEVATION ABOVE HANGER						287.00	287.00
	13-3/8"	68#	K-55	BUTT	CSG HANGER + 61 JTS + FLOAT COLLAR	2464.74	2751.74
	13-3/8"	68#	K-55	BUTT	1 + FLOAT SHOE	38.33	2790.07
(

V CEMENT RECORD			
String	20"	13-3/8"	
Type of Cement	650 sx Aust N + 350 sx Aust N + 2% CaCl ₂	900 sx Aust N + 1% CaCl ₂	
Number of FT ³	1180	1062	
Average Weight of Slurry	15.6 ppg	15.6 ppg	
Cement Top	Sea Floor	770' (theoretical)	
Casing Tested with	-	1500	
Number of Centralizers	0	10	
Number of Scratchers			
Stage Collar, etc.			
Remarks		Tested formation with 13.8 ppg equivalent mud.	

R. W. Oliver
Engineer

WELL TOOLKA-1A

VII SAMPLES, CONVENTIONAL CORES, SW CORES					
INTERVAL	TYPE	RECOVERED	INTERVAL	TYPE	RECOVERED
780'-8807'	Cuttings (Washed & Dried)	Five sets every 10'-30'			
780'-8807'	Cuttings (Unwashed)	One every 10'-30'			
780'-8807'	Cuttings (Canned Sample)	Composite every 100'			
5089'-5119'	Conventional Core #1	Cut 30', Recovered 30'			
4505'-8896'	C.S.T. Gun #1	Recovered 29; Shot 30			
VIII WIRELINE LOGS AND SURVEYS Incl. FIT)					
Type & Scale	From	To	Type & Scale	From	To
ISF	2790'	-8896'			
CNL/FDC	2790'	-8892'			
GR	290'	-8892'			
HDT	2790'	-8889'			
BHC	2790'	-8894'			
Velocity Survey	3300'	-8800'			
FIT #1	7361'				
FIT #2	7224.50'				

Geologist

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VI			
SUBSURFACE COMPLETION EQUIPMENT			
DATE COMPLETED _____			
Schematic	Equipment Description	Length	Depth

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Engineer

IX	FORMATION TOPS/Zones					
NAME	Tops		Gross: Interval (ft)	Net Pay (ft).		REMARKS
	M.D. m	Sub-sea		Gas	Oil	
Mid Miocene Seismic Marker	1647' 522	-1615'	1175' 358			
Oligocene Seismic Marker	2822' 860	-2790'	800' 244			
Top "Upper Eocene Shale"	3622' 1104	-3590'	740' 226			
Top Eastern View Group	4362' 1330	-4330'	555' 163			
P.asperopolus Seismic Marker	4917' 1522	-4885'	790' 222			
Upper M.diversus Seismic Marker	5707' 1732	-5675'	640' 137			
Lower M.diversus Seismic Marker	6347' 1935	-6315'	2592'+ 220			
	7522'					

X GEOLOGIC ANALYSIS (Pre Drilling prognosis Vs actual results)

Pre-Drill- Toolka-1A was drilled to evaluate a separate anticline on trend and to the north-west of the Cormorant-1 well. The primary objective was the middle Eocene sands which contain oil and gas/condensate at Cormorant-1. The structure has an areal closure of 18 square miles with 200 feet of closure. Structure growth was during the Oligocene-Miocene.

Post-Drill - Minor oil and gas shows were encountered in the Middle Eocene while drilling, but F.I.T. test results were negative. F.I.T. #1 @ 7361' recovered water, and F.I.T. #2 was tight.

The well came in essentially as predicted structurally, therefore, a valid, low relief structure on the Eastern View was tested. Several hundred feet of the Upper Eastern View sand was silted out at Toolka-1A due to the well being located in a more basinal position than Cormorant-1.

The absence of hydrocarbons in Toolka-1A is attributed to lean source rocks, and the discontinuous nature of the sands which contained hydrocarbons in Cormorant-1.

J.S. ISOM

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Geologist

WELL COMPLETION REPORT

TOOLKA-1A

APPENDIX I

PALYNOLOGICAL DETERMINATIONS FOR TOOLKA-1A,

BASS BASIN, TASMANIA, AUSTRALIA.

by

L.E. STOVER

PALYNOLOGICAL DETERMINATIONS FOR TOOLKA-1, BASS BASIN, AUSTRALIA

Lewis E. Stover

SUMMARY

<u>Depths</u>	<u>Spore-Pollen Zone</u>	<u>Age</u>
4540'	Middle <i>N. asperus</i>	M. Eocene
5089 - 5113'	Lower <i>N. asperus</i>	M. Eocene
5263 - 5461'	Probably Lower <i>N. asperus</i>	M-E. Eocene?
5657 - 5927'	<i>P. asperopolus</i>	E. Eocene
6105 - 6343'	Upper <i>M. diversus</i>	E. Eocene
6449 - 6828'	Middle <i>M. diversus</i>	E. Eocene
6990 - 7100'	Lower <i>M. diversus</i>	E. Eocene
7225 - 7288'	Probably Lower <i>M. diversus</i>	E. Eocene?
7362 - 8898'	Not Determinable, samples barren	

The above determinations are based on the examination of palynomorphs obtained from 17 sidewall and 1 conventional core. With the exception of SWC 29 (siltstone at 4540 feet), the palynological assemblages were recovered from sandstones which in general yield less diverse and fewer spore, pollen and dinoflagellates than intervening siltstones and shales. Because of this, the confidence ratings for an unusual number of samples from Toolka-1 is relatively low by comparison with the results from other Bass Basin wells. Of the 24 samples submitted for study, the deepest 6 samples from 7362 to 8898 are barren or nearly so.

Dinoflagellates occur in assemblages from 4540 to 5263 feet and from 5657 to 7100 feet and are abundant in some samples from the *M. diversus* zones, for example, sidewall cores 19, 15, 14 and 11. A marked change in the character and preservational quality of the palynomorph assemblages occurs between 6828 and 6900 feet and a similar but less obvious change also occurs between 7100 and 7225 feet. These changes may reflect significant lithological differences or hiatuses within the depositional sequence, or both.

DISCUSSION

SWC 29 at 4540 feet.

Zone: Middle *N. asperus*

Age: Middle Eocene

*C.R.: 1

*K.R.: 1+, slightly altered

*C.R. = confidence rating

K.R. = kerogen rating

The residue from this sample is commonly fossiliferous, and consists mainly of spore-pollen that are generally well preserved. Species diversity is moderate. Assemblage is dominated by specimens of *Nothofagidites* spp., and proteaceous pollen are sparse. Dinoflagellates are rare and poorly preserved, forms present are:

Nematosphaeropsis sp.
Leptodinium sp.
Areoligera sp. (fragments only)

Core 1 at 5089 - 5113 feet.

Zone: Lower *N. asperus*
Age: Middle Eocene
C.R.: 1
K.R.: 1+, slightly altered

Sample is commonly to abundantly fossiliferous with an almost exclusively spore-pollen assemblage in which specimens of *Nothofagidites* spp. are common. There is, however, an increase in the relative abundance of *Haloragacidites harrisii* and proteaceous pollen are more frequent and more diverse than in SWC 29. The only dinoflagellate identified in the assemblage is *Teneridinium* sp., a supposedly freshwater form.

SWC 27, 26 and 24 at 5263, 5330 and 5461 feet, respectively.

Zone: Indeterminate, probably Lower *N. asperus*
Age: Certainly Eocene, probably Middle Eocene
C.R.: 2
K.R.: 1+, slightly altered

Each of these samples is poorly fossiliferous and apparently yielded very small amounts of organic residue. Rare specimens of the acritarch *Epicephalopyxis indentata* occur in SWC 27 which also has fragments of dinoflagellates. No microplankton was observed in SWC 26 and SWC 24. Specimens of *Nothofagidites* spp. are more numerous than those of *H. harrisii*, but too few specimens of both forms were recovered to make this quantitative observation statistically reliable.

SWC 22, 21 and 20 at 5657, 5854 and 5957 feet, respectively.

Zone: *P. asperopolus*
Age: Early Eocene
C.R.: 1
K.R.: 1+, slightly altered

Samples from this interval are sparsely to commonly fossiliferous and consist almost exclusively of moderately well preserved spore-pollen. Assemblages are also moderately diverse. In addition to the spore-pollen SWC 22 and SWC 21 contain considerable amounts of plant debris consisting mainly of cuticular (herbaceous) tissue and very little woody or "coaly" pieces. The following dinoflagellates were found within this interval; all are very rare.

<i>Spiniferites cingulatus</i>	-	5657 feet
<i>Spiniferites</i> sp.	-	5657 feet
<i>Cordosphaeridium</i> sp.	-	5854 feet
<i>Thalassiphora</i> sp.	-	5947 feet

Recycled Early Cretaceous forms occur at 5657 feet (*Foraminisporis dailyi*; *Classopollis* sp.)

SWC 19 at 6150 feet.

Zone:	Upper <i>M. diversus</i>
Age:	Early Eocene
C.R.:	0
K.R.:	1+, slightly altered

The assemblage contains abundant spore-pollen and dinoflagellates and most specimens of both palynomorph groups are reasonably well preserved. The microplankton component is dominated by specimens of the *Wetzeliella homomorpha* - *W. ovalis* complex and examples of *Diphyes colligerum* are frequent. Other microplankton identified at 6150 feet are:

Achomosphaera sp.
Chiropteridium sp.
Epicephalopyxis indentata
Homotryblium tasmaniense
Hystriochosphaeridium sp.
Muratodinium fimbriatum
Spiniferites sp.
Thalassiphora sp.

SWC 18 at 6343 feet.

Zone:	Upper <i>M. diversus</i>
Age:	Early Eocene
C.R.:	1
K.R.:	1+, slightly altered

The sample has a mixed spore-pollen and microplankton assemblage with *Homotryblium tasmaniense* being the most commonly occurring dinoflagellate. Assignment to the Upper *M. diversus* zone is based more on the microplankton than on the spore-pollen; the latter suggest an older assignment (Middle *M. diversus*), but this would be on the absence of such forms as *Santalumidites cainozoicus*, *Proteacidites pachysolus* and *Myrtaceidites tenuis* rather than the presence of definitive Middle *M. diversus* forms. So far, *Homotryblium tasmaniense* has not been reported from below the Upper *M. diversus* zone.

SWC 17, 15 and 14 at 6449, 6817 and 6828 feet, respectively.

Zone:	Middle <i>M. diversus</i>
Age:	Early Eocene
C.R.:	1 for SWC 15 and 14, 2 for SWC 17
K.R.:	1+ slightly altered

Mixed spore-pollen and dinoflagellate assemblages were recovered from each of the samples. SWC 17 at 6449 is the least fossiliferous of the three and spore-pollen are sparse to rare in SWC 15 and SWC 14. Among the

microplankton, *Epicephalopyxis indentata* is abundant in SWC 15, and frequent in SWC 14; *Diphyes colligerum* is frequent in both sidewall cores, and *Wetzeliella homomorpha* is frequent in SWC 14 and sparse in SWC 15. These and other results concerning the distribution and occurrence of micorplankton in the Middle *M. diversus* interval in Toolka-1 are tabulated below.

Microplankton	Depths in Feet		
	6449	6817	6828
<i>Achomosphaera</i> sp.		p	
<i>Adnatosphaeridium retiintertextum</i>	p	p	p
<i>Apteodinium rugulatum</i>		p	p
<i>Cordosphaeridium fibrospinosum</i>			p
<i>Cordosphaeridium inodes</i>			p
<i>Diphyes colligerum</i>		f	f
<i>Emslandia</i> sp.	p		
<i>Epicephalopyxis indentata</i>	p	a	f
<i>Geiselodinium</i> sp.		p	
<i>Teneridinium</i> sp.		p	
<i>Turbiosphaera</i> sp.		p	
<i>Wetzeliella homomorpha</i>	p	s	f

Table 1. Microplankton distribution in Middle *M. diversus* zone, Toolka-1. a = abundant, f = frequent, p = present, s = sparse.

SWC 13 at 6900 feet and SWC 12 at 7016 feet.

Zone: Lower *M. diversus*
 Age: Early Eocene
 C.R.: 1
 K.R.: 2-, slight to moderate alteration

A mainly spore-pollen assemblage consisting of mostly long-ranging species was recovered from SWC 13. Dinoflagellates are sparse and the majority of specimens are poorly preserved owing to scarring by minute pyrite crystals. Forms identified are *Adnatosphaeridium retiintertextum*, *Cordosphaeridium fibrospinosum*, *Deflandrea?* sp., *Diphyes colligerum* and *Wetzeliella homomorpha*.

In SWC 12 at 7016 feet, spore-pollen and microplankton are about equally abundant and as in SWC 13, the spore-pollen are represented by relatively long-ranging species. Among the microplankton, specimens of *Epicephalopyxis indentata* and *Wetzeliella homomorpha* are common; other forms include:

Achomosphaera sp.
Adnatosphaeridium retiintertextum
Apteodinium sp.
Cordosphaeridium fibrospinosum
Deflandrea? sp.
Diphyes colligerum

SWC 11 at 7100 feet.

Zone: Lower *M. diversus*
Age: Early Eocene
C.R.: 2
K.R.: 2-, slight to moderate alteration

The assemblage consists of rare, poorly preserved spore-pollen and an overwhelming dominance of a single, undescribed species of dinoflagellates, tentatively identified as *Deflandrea? sp.*

SWC 10 at 7225 feet and SWC 9 at 7288 feet.

Zone: Indeterminate, probably Lower *M. diversus*
Age: Probably Early Eocene
C.R.: 2
K.R.: 2 to 2+, moderately altered

Rare, dark, poorly preserved spore-pollen are present in both samples and SWC 9 has a few specimens of *Epicephalopyxis indentata*. The samples are no older than Upper *L. balmei*, but because no forms indicative of the *L. balmei* zones were found, a Lower *M. diversus* zone assignment is favored.

SWC 8 to SWC 1 from 7362 to 8896 feet.

Zone: Indeterminate
Age: Indeterminate
C.R.: Not rateable
K.R.: Not rateable (too little organic matter) Samples from this interval are barren.

COMMENTS

In general, the spore-pollen assemblages from Toolka-1 are less diverse in terms of species and less abundant in terms of the quantity of specimens than were obtained from the sidewall cores from other Bass Basin wells. This is probably due in part to the fact that all of the fossiliferous samples between 5263 and 7288 feet are from sandstones rather than finer grained clastics. The latter customarily yield more abundant and diverse and consequently more representative palynomorph assemblages than do sandstones and other coarser clastic sediments.

Because of the rather low spore-pollen diversity, particularly within the *M. diversus* zones, it was necessary to rely on the microplankton -perhaps disproportionately so- to subdivide the Toolka-1 section between approximately 6000 and 7100 feet. As a result, the relatively high confidence ratings (0 and 1) given to some of the assemblages from this interval reflect the reliability now placed on the dinoflagellates.

[illegible]

*C=core; S=sidewall core; T=cuttings.

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APPENDIX II

SIDEWALL CORE DESCRIPTION

NO. 1a	DEPTH 1	REC 2	ROCK TYPE 3	MODIFIERS 4	CAL 5	COLOR 6	INDUR DEG 7	GRAIN SIZE 8	SRTG 9	RND 10	DISS CLAY 11	STAIN 12	FLOURESCENCE				CUT FLUOR.		CUT RESIDUE		SHOW 21	PROB PROD 22	REMARKS - GAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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APPENDIX III

SAMPLE DESCRIPTIONS

DEPTH	%	DESCRIPTION
		20" casing to 704'
		No returns to 780'
780-810	70	Fossiliferous <u>Limestone</u> , unconsolidated, crinoids, bivalves, forams coral, etc. - trace of volcanics? (light coloured inclusions in red matrix).
	30	Cement cavings.
810-840	70	<u>Limestone</u> . 60% as above, 10% micritic, grey, hard.
	30	Cement.
840-870	60	Fossiliferous <u>Limestone</u> , as above with volcanics?
	40	Cement
870-900	70	<u>Limestone</u> , as above, with volcanics? and some micritic limestone
	30	Cement
900-930	60	<u>Limestone</u> , as above
	40	Cement.
		P.O.H. at 945' - u reamer washed out.
930-960	70	<u>Limestone</u> , as above
	30	Cement
960-990	80	<u>Limestone</u>
	20	Cement
990-1020	60	<u>Limestone</u> , as above, unconsolidated, fossil fragments and some micritic <u>limestone</u> as above
	40	Cement
1020-1050	50	<u>Limestone</u> , as above and trace calcite
	50	Cement? cavings.
1050-1080	40	<u>Limestone</u>
	60	Cement?
1080-1110	70	<u>Limestone</u> , 60% fossiliferous, bryozoa, coral, crinoid etc.
		10% micritic, firm, grey and dark grey to black.
	30	Cement
1110-1140	100	<u>Limestone</u> , 80% unconsolidated, fossiliferous, calcite.
		20% micritic, as above
1140-1170	80	<u>Limestone</u> , 75% fossiliferous, unconsolidated, mainly mollusk fragments and coral fragments, minor forams-skeletal.
		5% micritic - firm hard, dark grey-black.
	20	Cement
1170-1200	90	<u>Limestone</u> - 85% fossiliferous as above. 5% micritic as above
	10	Cement.
1200-1230	90	<u>Limestone</u> , 85% mainly molluskan fragments, minor coral trace sparry calcite, minor bryozoa - skeletal. 5% micritic as above.
	10	Cement.
1230-1260	100	<u>Limestone</u> , 95% fossiliferous, mainly molluskan and bryozoal fragments and coral - skeletal, and cement cavings. 5% micritic as above
1260-1290	100	<u>Limestone</u> , as above and cement cavings and trace plant remains
1290-1390	100	<u>Limestone</u> , as above plus cement cavings.
1320-1350	100	<u>Limestone</u> , as above plus cement cavings some calcite and some fine grained calcite cemented limestone.

DEPTH	%	DESCRIPTION
1350-1380	100	<u>Limestone</u> , as above
1380-1410	100	<u>Limestone</u> , as above plus calcarenite with dark moderately soft non calcareous inclusions. Plus abundant cement cavings.
1410-1440	100	<u>Limestone</u> , 60% fossiliferous, unconsolidated skeletal fragments, 40% calcarenite with glauconite and dark inclusions (glauconite) too small to identify.
1440-1470	100	<u>Limestone</u> 50% fossiliferous as above plus trace cement 10% calcarenite as above.
1470-1500	100	<u>Limestone</u> , 50% fossiliferous as above, 50% calcarenite as above
1500-1530	100	<u>Limestone</u> , 60% fossiliferous, as above plus trace cement 40% calcarenite as above plus trace micrite.
1530-1560	100	<u>Limestone</u> , 60% fossiliferous, as above plus abundant cement. 40% Calcarenite, as above.
1560-1590	100	<u>Limestone</u> , 50% as above with abundant cement, 50% calcarenite as above Trace plant remain
1590-1620	100	<u>Limestone</u> , 30% fossiliferous as above, trace cement. 70% calcarenite with glauconite inclusions and dark coloured inclusions which is possible glauconite.
1620-1650	100	<u>Limestone</u> , 40% fossiliferous, foram, coral etc, trace cement 60% calcarenite as above plus some micrite.
1650-1680	100	<u>Limestone</u> , 50% fossiliferous, as above with abundant spicules and cement. 50% calcarenite as above. Trace slightly calcareous medium grey, firm shale?
1680-1710		As above with abundant cement
1710-1740	100	<u>Limestone</u> , 55% skeletal fossiliferous, abundant forams, bryozoa, mollusk fragments, coral. 45% calcarenite, fine grained, consolidated, moderately hard, grey, trace glauconite, with abundant cement.
1740-1770	100	<u>Limestone</u> , 60% as above skeletal fossiliferous. 40% Calcarenite as above, trace glauconite.
1770'-1800	100	<u>Limestone</u> , 50% fossiliferous, as above. 50% calcarenite, as above. Trace marl, light grey, soft.
1800-1830	90	<u>Limestone</u> , 50% skeletal unconsolidated, coral, gastropods etc. 50% very fine calcarenite as above, and some micrite.
	10	<u>Marl</u> , light grey, soft, calcareous.
1830-1860	60	<u>Limestone</u> , 40% fossiliferous, unconsolidated, stems, gastropods, coral etc. 10% calcarenite - as above with dark inclusions. 10% calcilutite, medium grained, hard.
	40	<u>Marl</u> , light grey, soft plus cement cavings.
1860-1890	40	<u>Limestone</u> , fossiliferous, as above plus traces of calcarenite as above.
	60	<u>Marl</u> , as above plus trace cement. Trace black fine grained grey <u>Coal</u> ?
1890-1920	30	<u>Limestone</u> , fossiliferous, stems, etc, as above plus trace calcarenite as above
	70	<u>Marl</u> and trace cement
1920-1950	10	<u>Limestone</u> , fossiliferous plus trace calcarenite.
	90	<u>Marl</u> , light grey to medium grey, soft.
1950-1980		As above

DEPTH	%	DESCRIPTION
1980-2010		As above.
2010-2040	10	<u>Limestone</u> , 5% unconsolidated, skeletal, mollusk, echinoid remains forams, bryozoa. 5% Micrite- light grey, hard.
	90	<u>Marl</u> , as above
2040'-2070	15	Limestone, 5% skeletal unconsolidated as above. 5% very fine calcarenite, light grey, hard, trace glauconite, 5% micrite dark grey, hard.
	85	<u>Marl</u> , light grey to medium grey, very soft.
2070-2100	10	<u>Limestone</u> , 5% skeletal unconsolidated as above
	5%	Micrite as above
	90	<u>Marl</u> , as above
2100-2130	10	<u>Limestone</u> , 5% skeletal unconsolidated as above trace spar. 5% micrite as above to very fine calcarenite.
	90	<u>Marl</u> plus cement.
2130-2160	10	<u>Limestone</u> , 50% unconsolidated skeletal as above. 5% very fine calcarenite, micrite as above, sparry calcite trace glauconite.
	90	<u>Marl</u> , as above, plus cement
2160-2190	10	<u>Limestone</u> , 5% skeletal as above, trace glauconite. 5% very fine calcarenite, light grey, black hard.
	90	<u>Marl</u> plus cement
2190-2250	100	<u>Marl</u> , medium grey, soft to moderately firm, less calcarenite than previously, plus abundant fossiliferous fragments.
2250-2280	100	<u>Marl</u> , as above plus fossiliferous fragments (caving?)
2280-2310		As above
2310-2340	100	<u>Marl</u> , medium grey, soft to moderately firm and some dark grey becoming fissile, slightly calcareous, as above
2370-2400	100	<u>Marl</u> , as above with trace fossils, glauconite, and coal (black moderately firm).
2400-2430	90	<u>Marl</u> , light to medium grey, trace fossiliferous, glauconite.
	10	<u>Shale</u> , grey, only slightly calcareous, moderately fissile, moderately firm to soft
2430-2460		As above
2460-2490		As above plus trace carbonaceous material
2490-2520	80	<u>Marl</u> , medium to dark grey, soft, trace fossils, glauconite.
	20	<u>Shale</u> , green, soft to moderately firm, calcarenite, non-fissile.
2520-2550	70	<u>Marl</u> , as above
	30	<u>Shale</u> , as above
2550-2580	50	<u>Marl</u> , as above with trace grey, firm micrite
	50	<u>Shale</u> , grey and green, moderately firm, slightly calcareous
2580-2600	10	<u>Marl</u> , plus micrite (grey) plus fossiliferous fragments
	90	<u>Shale</u> , as above
2610-2640	30	<u>Marl</u> , plus trace calcarenite (light colour) with dark inclusions
	70	<u>Shale</u> , as above

Depth	%	DESCRIPTION
2640-2670	70	<u>Marl</u> , grey, moderately firm, plus calcarenite, light coloured with glauconitic inclusions and fossiliferous fragments.
	30	<u>Shale</u> , grey to dark grey, moderately firm, trace pyrite.
2670-2700	40	<u>Marl</u> , as above and fossil fragments.
	50	Calcarenite, soft moderately firm, dark inclusions (glauconite).
	10	<u>Shale</u> , as above.
2700-2730	50	Calcarenite, as above
	50	<u>Marl</u> , very soft to moderately firm, light grey to grey.
2730-2760	40	<u>Marl</u> , as above.
	60	Calcarenite, soft to moderately firm, dark inclusions and glauconite inclusions. Trace of shale and pyrite.
2760-2790	30	<u>Marl</u> , light grey, fossil fragments.
	70	Very soft calcilutite with dark inclusions.
2790-2820	20	<u>Marl</u> , as above, with some light green shale.
	80	Calcilutite/Calcarenite, as above, some firm and pyritic in places.
		POH @ 2840' to run casing.
		A. Rigg D. Maughan S. Benedek. 22nd January, 1974
		Ran casing unable to run seal assembly, pulled and repaired choke line on stack. Reran stack.
2820-2850	100	Cement
2850-2880	100	<u>Marl</u> , light grey fossiliferous, glauconitic. <u>Trace grey shale</u> , red jasper with quartz.
2880-2910	100	<u>Marl</u> as above soft.
2910-2940	100	<u>Marl</u> , as above, soft, light grey, fossiliferous, glauconite. dark green almost black. Trace grading to calcarenite.
2940-2970	100	<u>Marl</u> , as above, soft, trace firm, trace pyrite.
2970-3000	100	<u>Marl</u> , as above, very soft, trace round clear quartz, red chert.
3000-3030	100	<u>Marl</u> , as above, light grey, very soft, glauconitic, fossiliferous. Trace pyrite.
3030-3060	100	<u>Marl</u> , light grey, very soft, slightly less glauconitic, fossiliferous, trace pyrite, clear coarse red quartz.
3060-3090	100	<u>Marl</u> , light grey, very soft, fossiliferous, glauconite, trace brown, sandy marl, pale green-grey, calcarenite, pyrite.
3090-3120	95	<u>Marl</u> , as above, increasingly sandy, common grains of medium to coarse, rounded, clear quartz grains, glauconitic, fossiliferous.
	5	<u>Marl</u> , sandy light to pale green-grey with very fine quartz, glauconitic, fossiliferous. Trace pyrite.

DEPTH	%	DESCRIPTION
3120-3150	90	Marl, light grey, becoming coarser grading towards calcarenite, glauconitic.
	10	Marl, brown, slightly sandy, fine grained, trace glauconite, trace pyrite, light brown sandy dolomite.
3150-3180	70	Marl, light grey as above, glauconitic, fossiliferous.
	30	Marl, brown, sandy with very fine grained quartz. Trace dolomite, light brown, hard, glauconitic, sandy, trace pyrite.
3180-3210	50	Marl, light grey, as above, soft.
	50	Marl, brown, sandy silty, soft as above Trace pyrite.
3210-3240	60	Marl, light grey, as above, soft glauconitic, fossiliferous.
	40	Marl, brown, sandy silty, glauconitic, trace gas bubbles.
3240-3300	60	Marl, light grey, as above, soft, glauconitic, fossiliferous.
	40	Marl, brown, sandy Trace dolomite, light brown, glauconitic.
		Drill speed increased 60' sample taken.
3300-3360	60	Marl, brown, sandy, silty, soft, slightly glauconitic.
	40	Marl, light grey, soft, fossiliferous, glauconitic.
3360-3390	60	Marl, brown, sandy silty, soft, slightly glauconitic.
	40	Marl, light grey, fossiliferous, decreasingly glauconitic. Trace pyrite.
3390-3420	60	Marl, brown sandy, silty, soft.
	40	Marl, light grey, soft, fossiliferous, glauconitic.
3420-3450	70	Marl, brown, sandy, silty, soft.
	30	Marl, light grey, soft, fossiliferous, glauconite.
3450-3480	70	Marl, brown, sandy, silty
	30	Marl, light grey, glauconitic, fossiliferous. Trace coal, pyrite.
() 3480-3510	70	Marl, brown, sandy silty, as above.
	30	Marl, light grey, glauconitic, fossiliferous. Trace, pyrite, coal.
3510-3540	60	Marl, brown, sandy, silty, soft, slightly fossiliferous, glauconitic.
	40	Marl, light grey, glauconitic, fossiliferous. Trace pyrite, trace light brown dolomite, glauconitic, foraminifera, polished clear quartz grains.
3540-3570	60	Sandy to dolomitic Sandstone, light brown, with coarse polished clear to milky quartz grains, glauconitic.
	20	Marl, brown as above.
	20	Marl, light grey, as above. Trace pyrite.
3570-3600	50	Dolomitic sandstone. light brown to orange, coarse to fine, well rounded to subangular clear to milky grains, glauconitic.
	25	Marl, brown, as above.
	25	Marl, light grey, as above. Trace coal.
3600-3630	40	Marl, light grey, glauconitic, fossiliferous
	40	Marl, brown, sandy, silty
	20	Dolomitic sandstone, light brown, orange, coarse, rounded polished quartz grains. Trace pyrite, trace coal.

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DEPTH	%	DESCRIPTION
3630-3660	50	<u>Marl</u> , brown, sandy silty, grading to calcareous siltstone, carbonaceous soft,
	45	<u>Marl</u> , light grey, very fossiliferous, glauconitic, glauconite coarser and increased.
	5	<u>Sandstone</u> , dolomitic, coarse; as above. Trace coal, pyrite.
3660-3690	70	<u>Siltstone</u> , brown, glauconitic, soft calcareous.
	30	<u>Marl</u> , light grey, glauconitic, fossiliferous. Trace pyrite, coal, dolomitic <u>sandstone</u> .
3690-3720	50	<u>Siltstone</u> , brown, soft.
	35	<u>Marl</u> , light grey, glauconitic, fossiliferous.
	15	<u>Sandstone</u> , dolomitic, light brown. Trace coal, pyrite.
3720-3750	60	<u>Siltstone</u> , brown, slightly carbonaceous, gas bubbles, calcareous.
	40	<u>Marl</u> , light grey, glauconitic, fossiliferous. Trace pyrite.
3750-3780	70	<u>Siltstone</u> , brown, carbonaceous, pyritic, soft calcareous
	30	<u>Marl</u> , light grey, glauconitic, fossiliferous, soft.
3780-3810	80	<u>Siltstone</u> , brown, carbonaceous, soft, calcareous.
	20	<u>Marl</u> , light grey, glauconitic, fossiliferous, soft.
		Trace pyrite, dolomitic <u>sandstone</u> , foraminifera.
3810-3840	80	<u>Siltstone</u> , brown, carbonaceous, sandy, soft, calcareous.
	20	<u>Marl</u> , light grey, glauconitic, fossiliferous, foraminiferal. Trace pyrite, polished coarse grained sand.
3840-3870	85	<u>Siltstone</u> , brown to light brown, carbonaceous, calcareous, soft
	15	<u>Marl</u> , light grey, glauconitic, fossiliferous, probable caving from above. Trace coal, sand grains, pyrite.
3870-3885	85	<u>Siltstone</u> , brown, carbonaceous, sandy, very slightly calcareous.
	15	<u>Marl</u> , caving.
Trip for bit 3884'		
Changed bit, lost 3 cones. Run in bit to drill up cones. start milling.		
3885-3900	90	<u>Siltstone</u> , brown, carbonaceous, calcareous.
	10	<u>Marl</u> , as above Trace pyrite, coarse, polished quartz grains.
3900-3920	100	<u>Siltstone</u> , brown, carbonaceous, calcareous. Trace pyrite, <u>Marl</u> as above, fine grained, dolomitic <u>sandstone</u> , orange.
3920-3940	100	<u>Siltstone</u> , brown, soft, carbonaceous, calcareous Trace pyrite.
3940-3960	90	<u>Siltstone</u> , brown, soft slightly pyritic, micaceous, fossiliferous, calcareous, carbonaceous.
	10	<u>Marl</u> , light grey, glauconitic, (caving). Trace pyrite.
3960-3980	100	<u>Siltstone</u> , brown, soft, carbonaceous, calcareous. Pulled bit 3998'.

DEPTH	%	DESCRIPTION
3980-4000	100	<u>Siltstone</u> , brown to dark brown, carbonaceous, calcareous, to very slightly calcareous (dark brown less calcareous), fossiliferous, pyritic.
4000-4020	100	<u>Siltstone</u> , brown to mainly dark brown, carbonaceous calcareous, as above.
4020-4040	100	<u>Siltstone</u> , mainly dark brown, calcareous, only in very thin fissures, carbonaceous, pyritic.
4040-4050	100	<u>Siltstone</u> , dark brown, carbonaceous, fossiliferous as above. Trace <u>marl</u> , grey, glauconitic, cavings.
4050-4060	100	<u>Siltstone</u> , dark brown, carbonaceous, fossiliferous, pyritic, as above. Trace <u>marl</u> cavings, trace fine sand grains, subrounded, milky.
4060-4070	60	Dolomite, cryptocrystalline, massive, small sparry veinlets, very hard, very calcareous, light fawn-buff.
	40	<u>Siltstone</u> , brown, as above Trace <u>sandstone</u> , clean, dolomitic, tight, grains subrounded, clear.
4070-4080	70	Dolomitic <u>sandstone</u> , brown-buff, sparry veins (rare calcareous).
	30	<u>Siltstone</u> , dark brown as above.
4080-4090	100	<u>Siltstone</u> , dark brown, carbonaceous, very slightly calcareous, pyritic. Trace dolomitic <u>sandstone</u> , <u>marl</u> .
4090-4100	100	<u>Siltstone</u> , dark brown, carbonaceous, very slightly calcareous, pyritic. Trace dolomitic <u>sandstone</u> , <u>marl</u> .
4100-4110	100	<u>Siltstone</u> , dark brown, carbonaceous, as above. Trace dolomitic <u>sandstone</u> , <u>marl</u> .
4110-4120	100	<u>Siltstone</u> , dark brown, carbonaceous, slightly harder, as above.
4120-4130	85	<u>Siltstone</u> , dark brown, carbonaceous, as above
	15	Dolomitic <u>sandstone</u> , dark brown, matrix abundant, tight.
4130-4140	80	Dolomitic <u>sandstone</u> , dark brown, hard, as above
	20	<u>Siltstone</u> , dark brown, carbonaceous, as above.
4140-4160	70	<u>Siltstone</u> , dark brown, carbonaceous, as above.
	30	Dolomitic <u>sandstone</u> , dark brown, as above
4160-4180	100	<u>Siltstone</u> , dark brown, carbonaceous, soft Trace dolomite, brown with calcite fracture filling.
4180-4200	100	<u>Siltstone</u> , dark brown, carbonaceous, as above. Trace dolomitic <u>sandstone</u> , as above
4200-4220	100	<u>Siltstone</u> , dark brown, carbonaceous, as above. Trace dolomitic <u>sandstone</u> , as above
4220-4240	90	<u>Siltstone</u> , dark brown, carbonaceous, as above
	10	Dolomitic <u>sandstone</u> , as above.
4240-4260	100	<u>Siltstone</u> , dark brown, carbonaceous, as above Trace dolomitic <u>sandstone</u> , as above.
4260-4280	100	<u>Siltstone</u> , dark brown, carbonaceous, as above

DEPTH	%	DESCRIPTIONS
4280-4290	60 40	<u>Siltstone</u> , dark brown, carbonaceous, as above. <u>Sandstone</u> , friable, grains clear to milky, fine to coarse, subangular to subrounded.
4290-4300	80 20	<u>Siltstone</u> , dark brown, carbonaceous, as above. <u>Sandstone</u> , friable, fine to medium as above.
4300-4310	80 20	<u>Siltstone</u> , dark brown, carbonaceous as above <u>Sandstone</u> , friable, fine to medium as above
4310-4320	85 15	<u>Siltstone</u> , dark brown, carbonaceous, as above <u>Sandstone</u> , friable, fine to medium, as above
4320-4340	90 10	<u>Siltstone</u> , dark brown, carbonaceous, as above <u>Sandstone</u> , friable, fine to medium, as above
4340-4350	80 15 5	<u>Siltstone</u> , dark brown, carbonaceous, as above. <u>Dolomitic sandstone</u> , dark brown, as above. <u>Sandstone</u> , friable, as above
4350-4360	50 50	<u>Siltstone</u> , as above, dark brown, carbonaceous <u>Sandstone</u> , dolomitic, brown as above Trace <u>sandstone</u> , friable
4360-4370	60 40	<u>Siltstone</u> , dark brown, carbonaceous, soft bleeding gas. <u>Sandstone</u> , lighter brown, calcareous, friable to hard, very fine grained, quartz, lithic, carbonaceous matrix, trace common coarse quartz.
4370-4390	50 20 30	<u>Siltstone</u> , brown, carbonaceous, soft Sandy to friable, <u>sandstone</u> , lighter brown, calcareous. Sandy, loose, very fine to medium, poorly sorted, rounded polished quartz, clear to milky, lithic with apple green grains.
4390-4410	60 40	<u>Siltstone</u> , brown, carbonaceous as above <u>Sandstone</u> , light brown, very fine, fairly sorted, calcareous, friable to consolidated, quartz and lithic. Trace coarse sand.
4410-4430	50 30 20	<u>Siltstone</u> , brown, carbonaceous, as above. Sand quartz, medium to coarse to fine, poorly sorted, clear to white, <u>Sandstone</u> , light brown, very fine, calcareous lithics.
4430-4450	50 50	<u>Siltstone</u> , brown carbonaceous, as above Sand, loose fine to coarse, poorly sorted, round to polished clear to white quartz.
		Samples are poor quality, it is hard to wash and retain the loose sand, quantities are only estimated.
4450-4470	40 50 10	<u>Siltstone</u> , brown, as above Sand, loose, very fine quartz. <u>Sandstone</u> , medium brown, very fine, calcareous lithics.
4470-4490	70 20 10	<u>Sandstone</u> , very fine to <u>siltstone</u> , medium grey, calcareous, very tight. <u>Siltstone</u> , brown, carbonaceous. <u>Dolomite</u> , chocolate brown, hard.
		Drilling break 4515'. Circulated sample 4525'.

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4490-4510	70	Sand to <u>sandstone</u> , light to medium grey, very fine to coarse well sorted in sandstone, unsorted in loose sand. Sample is very poor.
	30	<u>Siltstone</u> , brown, as above
4510-4520	70	<u>Siltstone</u> , brown, carbonaceous
	30	<u>Sandstone</u> , very fine to siltstone, calcareous, lithic, very tight. Trace coarse sand.
4520-4530	70	<u>Siltstone</u> , brown, as above.
	20	Silty clay, light brown, very soft, glauconitic.
	10	<u>Sandstone</u> , very fine grained, calcareous, dolomitic. Trace silty kaolin, white, coarse sand.
4530-4540	80	<u>Siltstone</u> , brown, carbonaceous.
	20	<u>Sandstone</u> , very fine, light brown, glauconitic, calcareous, dolomitic. Trace white kaolin, pyrite.
4540-4550	100	<u>Siltstone</u> , brown, carbonaceous, calcareous, soft. Trace sand coarse, rounded, polished grains.
4550-4560	70	<u>Siltstone</u> , brown, carbonaceous, calcareous, soft.
	30	Clay, silty, light brown, glauconitic. Trace, sandstone, dolomitic, pyrite, fossiliferous.
4560-4570	90	<u>Siltstone</u> , brown, carbonaceous, calcareous, soft.
	10	<u>Sandstone</u> to <u>siltstone</u> , light brown, calcareous, dolomitic. Trace sand, coarse, rounded, pyrite.
4570-4580	80	<u>Siltstone</u> , brown, carbonaceous, calcareous, soft.
	20	<u>Siltstone</u> , to <u>sandstone</u> , very fine, light to medium gray, very soft, with clay matrix to semi-consolidated.
		Trip for bit 4530'.
4580-4600	90	<u>Siltstone</u> , brown, carbonaceous, as above.
	10	<u>Siltstone</u> , buff, soft, as above Trace dolomitic <u>sandstone</u> .
4600-4620	80	<u>Siltstone</u> , dark brown, carbonaceous, as above
	20	<u>Siltstone</u> , to very fine <u>sandstone</u> , buff, slightly calcareous, soft, as above. Trace dolomitic <u>sandstone</u> .
4620-4640	80	<u>Siltstone</u> , dark brown, carbonaceous, as above
	20	<u>Siltstone</u> , to very fine <u>sandstone</u> , buff, soft as above
4640-4660	90	<u>Siltstone</u> , light grey, to light green, very slightly calcareous (?dolomitic), very hard.
	10	<u>Siltstone</u> , dark brown, carbonaceous, as above
4660-4680	100	<u>Siltstone</u> , dark brown, carbonaceous, as above Trace <u>siltstone</u> , light grey, dolomitic. Trace <u>siltstone</u> , buff, soft.
4680-4700	90	<u>Siltstone</u> , buff to brown, fairly compact, as <u>siltstone</u> , buff above
	10	<u>Siltstone</u> , dark brown, carbonaceous, as above.
4700-4720	60	<u>Siltstone</u> , buff to brown, compact as above.
	35	<u>Siltstone</u> , dark brown, carbonaceous, as above
	5	Pyrite, trace dolomitic sandstone, grain coal.
4720-4740	90	<u>Siltstone</u> , brown, compact as above.
	10	<u>Siltstone</u> , dark brown, carbonaceous as above
4740-4760	90	<u>Siltstone</u> , brown, compact as above
	5	<u>Siltstone</u> , dark brown, carbonaceous, as above
	5	Pyrite.

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DEPTH	%	DESCRIPTION
4760-4780	60	<u>Siltstone</u> , brown, compact, as above.
	40	<u>Siltstone</u> , dark brown, carbonaceous, as above.
4780-4800	60	<u>Siltstone</u> , brown, compact, as above
	40	<u>Siltstone</u> , dark brown, carbonaceous, as above
4800-4820	90	<u>Siltstone</u> , brown, compact as above
	10	<u>Siltstone</u> , dark brown, carbonaceous as above Trace <u>Sandstone</u> , very fine to fine, light green-light grey, tight, clay matrix, slightly calcareous.
4820-4840	60	<u>Siltstone</u> , brown, compact, as above.
	40	<u>Siltstone</u> , dark brown, carbonaceous, as above.
4840-4860	50	<u>Siltstone</u> , dark brown, carbonaceous, as above
	45	<u>Siltstone</u> , brown, compact, as above.
	5	<u>Siltstone</u> , light green-light grey, dolomitic, very hard, pyritic.
4860-4880	90	<u>Shale</u> , black, very carbonaceous to coal, shaley.
	5	<u>Siltstone</u> , brown, compact as above
	5	<u>Siltstone</u> , brown, platy fracture, micaceous, carbonaceous plates, parallel cleavage.
		Trace sandstone, light grey, calcareous, very fine to fine.
4880-4900	80	Carbonaceous <u>shale</u> to <u>coal</u> , as above
	10	<u>Siltstone</u> , brown, platy, micaceous, carbonaceous, as above
	5	<u>Siltstone</u> , brown, compact, as above
	5	<u>Siltstone</u> , dark brown, carbonaceous, as above
4900-4920	60	<u>Siltstone</u> , dark brown, carbonaceous, as above.
	30	<u>Siltstone</u> , brown, compact, as above
	5	<u>Shale</u> , very carbonaceous to coal
	5	<u>Sandstone</u> , light grey, calcareous, very fine to fine.
4920-4940	80	<u>Sandstone</u> , coarse to very coarse, friable, grains subangular to subrounded, clear, patches of dolomitic cement, well sorted, clear, No gas kick, no shows, no fluorescence.
	10	Carbonaceous <u>shale</u> to <u>coal</u> .
	10	<u>Siltstone</u> , brown, compact, as before, rare gas bubbles.
4940-4960	10	<u>Sandstone</u> , coarse to very coarse, friable, dolomitic patches, as above.
	85	<u>Siltstone</u> , dark brown, micaceous, carbonaceous, platy, slight bubbles.
	5	<u>Shale</u> , carbonaceous to <u>coal</u> . Cutting Gas 60 units.
4960-4980	90	<u>Siltstone</u> , dark brown, micaceous, carbonaceous, as above
	10	<u>Sandstone</u> , coarse to very coarse, friable, dolomitic. Trace <u>shale</u> , carbonaceous to <u>coal</u>
4980-4985		Mud Gas 55 units, Cutting gas 275 units (50 C ₂)
	100	<u>Shale</u> , very carbonaceous, black to <u>coal</u> , black dull.
4985-5000	100	<u>Coal</u> , black to <u>shale</u> , very carbonaceous, black
		Trace <u>siltstone</u> , dark brown, micaceous, carbonaceous.
		Trace <u>sandstone</u> , very coarse to coarse, friable.
5000-5020	100	<u>Coal</u> , black, dull and <u>shale</u> , very carbonaceous, black
		Trace <u>sandstone</u> , dolomitic, buff, fine to medium and <u>sandstone</u> friable, coarse to very coarse.
		Trace <u>siltstone</u> , dark brown, micaceous, carbonaceous.
5020-5040	50	<u>Coal</u> to carbonaceous <u>shale</u>
	50	<u>Siltstone</u> , dark brown, micaceous, carbonaceous. Trace <u>sandstone</u> , very coarse and sandstone, dolomitic
5040-5060	100	<u>Coal</u> to carbonaceous <u>shale</u> , often shaley and pyritic. Trace <u>sandstone</u> , very coarse.

DEPTH	%	DESCRIPTIONS
5060-5070	90 10	<u>Coal</u> to carbonaceous <u>shale</u> , as above <u>Siltstone</u> , dark brown, micaceous, pyritic.
5070-5080	80 10 10	<u>Sandstone</u> , coarse to very coarse, friable, as before. <u>Siltstone</u> , brown, micaceous, platy, pyritic, as above <u>Coal</u> , black, and <u>shale</u> , black carbonaceous.
5080-5089	80 20	<u>Sandstone</u> , coarse to very coarse, friable, as above <u>Siltstone</u> , brown, micaceous, platy, as above. Trace <u>coal</u> .
5089-5119		Core No. 1 Recd. 30' 100 <u>siltstone</u> interlaminted, very fine sandstone with 3" - 6" bands of dolomite.
5119-5140		Mixed sample after core run.
	30 30 10 30	Light brown <u>siltstone</u> to very fine dolomitic <u>sandstone</u> . Light grey very fine <u>sandstone</u> , calcareous. Sand, milky to clear, coarse quartz grains. <u>Siltstone</u> , brown carbonaceous Trace <u>Coal</u> , pyritic
5140-5160	50 25 25	<u>Siltstone</u> , light brown to buff, sandy, soft, carbonaceous. <u>Coal</u> , black to very carbonaceous <u>shale</u> . Sand, quartz, clear to milky subangular to subrounded, coarse, loose well sorted.
5160-5180	70 10 10 10	<u>Siltstone</u> , light brown to buff, sandy, soft as above. <u>Sandstone</u> , to <u>siltstone</u> , light grey, calcareous. <u>Coal</u> to very carbonaceous <u>shale</u> . Sandy quartz, coarse, subangular to rounded, loose.
5180-5200	80 10 10	<u>Siltstone</u> , light brown, buff, soft, dolomitic, carbonaceous <u>Coal</u> <u>Siltstone</u> , dark brown, carbonaceous Trace sand, coarser as above, dolomite.
5200-5220	90 5 5	<u>Siltstone</u> , light brown to buff, soft, carbonaceous, micaceous, as above. <u>Siltstone</u> , dark brown, carbonaceous. Sand, coarse, as above Trace <u>coal</u> .
5220-5240	80 10 5 5	<u>Siltstone</u> , light brown-buff, soft, carbonaceous, micaceous, as above. <u>Siltstone</u> , dark brown, carbonaceous Sand, coarse as above <u>Coal</u>
5240-5260	40 30 30	<u>Siltstone</u> , light brown to buff, soft, carbonaceous, micaceous. <u>Siltstone</u> , dark brown, carbonaceous. Sand quartz, white, subangular to rounded, coarse, loose. Trace pyrite, dolomite, red jasper.
5260-5280	70 20 10	Sand quartz, milky to clear, coarse, loose fairly sorted, subangular to rounded. <u>Siltstone</u> , light brown to buff, soft, carbonaceous <u>Siltstone</u> , dark brown, carbonaceous Trace <u>Coal</u>
5280-5300	70 20 10	<u>Sandstone</u> , light grey to cream, very fine to silt size. <u>Siltstone</u> , light brown to buff, carbonaceous Sand quartz, clear to white, coarse, subangular to subrounded, loose.
5300-5320	70 20 10	<u>Siltstone</u> , light brown to buff, carbonaceous <u>Sandstone</u> to <u>siltstone</u> , light grey to cream, slightly carbonaceous slightly calcareous. Sand quartz, coarse as above. Trace <u>Coal</u>

DEPTH	%	DESCRIPTION
5320-5340	50	<u>Siltstone</u> , light brown to buff, carbonaceous
	35	<u>Sandstone</u> to <u>siltstone</u> , light grey to cream calcareous.
	15	<u>Sand</u> <u>quartz</u> , coarse as above. <u>Sandstone</u> is fairly tight with clay matrix and calcareous cement.
5340-5360	90	<u>Siltstone</u> , light brown to buff, carbonaceous
	5	<u>Siltstone</u> , dark brown, carbonaceous.
	5	<u>Sand</u> , coarse, loose as above
5360-5380	60	<u>Siltstone</u> , light brown to buff, carbonaceous
	30	Very carbonaceous <u>shale</u> to <u>coal</u>
	10	<u>Sandstone</u> , light grey to cream and sand coarse as above
5380-5385	100	<u>Coal</u> , grading to carbonaceous <u>shale</u> . Bleeding gas weak fluorescence, very weak cut. Hot wire 55 C ₁ 8500.
5385-5400	100	<u>Coal</u>
5400-5420	70	<u>Coal</u> , as above
	20	<u>Siltstone</u> , light brown - buff, carbonaceous. Trace sand, coarse, sandstone, light grey, as above, amber
5420-5440	50	<u>Coal</u>
	30	<u>Siltstone</u> , light brown - buff, carbonaceous, as above
	20	<u>Siltstone</u> to very fine <u>sandstone</u> , light grey to cream
5440-5460	100	<u>Siltstone</u> , light brown, carbonaceous. Trace <u>coal</u> , sandy quartz, coarse.
5460-5480	90	<u>Siltstone</u> , light brown to buff, carbonaceous as above
	10	<u>Coal</u> Trace sand, coarse.
5480-5500	90	<u>Siltstone</u> to <u>claystone</u> , light brown to buff, soft.
	10	<u>Coal</u>
5500-5520	60	<u>Siltstone</u> , light brown-buff, carbonaceous grading to <u>claystone</u> in parts.
	40	<u>Coal</u>
5520-5537	90	<u>Coal</u> , bleeding gas slightly.
	10	<u>Siltstone</u> , light brown, as above
5537-5540	80	<u>Coal</u> , bleeding gas slightly.
	20	<u>Siltstone</u> , light brown as above
5540-5560	90	<u>Siltstone</u> , light brown, carbonaceous
	10	<u>Coal</u>
		5550-5560' Probable 5' ahead of true lag due to enlarged hole. Hot wire 125 C ₁ 6000 ppm. 100% Coal, bleeding gas slightly.
5560-5580	100	<u>Coal</u>
5580-5600	90	<u>Coal</u>
	10	<u>Siltstone</u> , light brown to buff, carbonaceous. Drilling break appeared 5643' circulated out at 5648'
5600-5620	70	<u>Siltstone</u> to <u>claystone</u> , light brown to buff, carbonaceous.
	30	<u>Coal</u>
5620-5648	40	<u>Sandstone</u> to <u>Siltstone</u> , very fine grained, calcareous, carbonaceous.
	30	<u>Siltstone</u> , light brown to buff, carbonaceous
	30	<u>Coal</u>
5648-5660	60	<u>Siltstone</u> , light brown to buff, carbonaceous grading to clay
	40	<u>Coal</u>

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DEPTH	%	DESCRIPTIONS
5660-5680		1st Sample after trip - generally as above.
5680-5700	90	<u>Coal</u> , black, bright.
	10	<u>Siltstone</u> , dark brown, carbonaceous, sandy, micaceous.
5700-5710	90	<u>Coal</u>
	5	<u>Siltstone</u> , dark brown, carbonaceous, sandy, micaceous.
	5	<u>Sandstone</u> , fine, buff, calcareous cement
5710-5720	80	<u>Siltstone</u> , light brown - buff, micaceous, carbonaceous
	20	<u>Coal</u>
		Trace <u>Sandstone</u> , coarse to very coarse
5720-5730	60	<u>Siltstone</u> , light brown - buff, micaceous, carbonaceous
	30	<u>Siltstone</u> , to <u>claystone</u> , olive.
	10	<u>Coal</u>
5730-5740	100	<u>Coal</u> , black, bright. Hot wire 100, C ₁ 6000
5740-5750	30	<u>Coal</u>
	30	<u>Sandstone</u> , very fine, buff, non-calcareous, clay matrix, micaceous.
	30	<u>Siltstone</u> , dark brown, micaceous, carbonaceous, platy.
	10	<u>Claystone</u> to <u>siltstone</u> , olive
5750-5760	40	<u>Claystone</u> to <u>Siltstone</u> , olive.
	10	<u>Coal</u>
	30	<u>Siltstone</u> , brown, micaceous, carbonaceous
	20	Sand, loose, coarse, grains angular to subrounded.
5760-5770	60	<u>Siltstone</u> , brown, micaceous, carbonaceous
	20	<u>Coal</u>
	10	Dolomite, brown, very hard
	10	<u>Claystone</u> to <u>siltstone</u> , olive
5770-5780	70	<u>Claystone</u> - <u>siltstone</u> , olive to buff
	25	<u>Siltstone</u> , dark brown, carbonaceous, very pyritic
	5	<u>Coal</u>
5780-5790		Hot Wire 100 C ₁ 15,000 C ₂ 200
	95	<u>Coal</u>
	5	<u>Claystone</u> to <u>Siltstone</u> , olive to buff..
5790-5800	60	<u>Claystone</u> to <u>Siltstone</u> , olive to buff.
	40	<u>Coal</u>
5800-5810		Hot Wire 230 C ₁ 23,000
	100	<u>Coal</u>
5810-5820	100	<u>Coal</u>
		Trace <u>claystone</u> to <u>siltstone</u> , olive to buff.
5820-5830	90	<u>Coal</u>
	10	Very carbonaceous black <u>shale</u>
		Trace <u>claystone</u> - <u>siltstone</u> , olive to buff
5830-5840	70	<u>Coal</u>
	20	<u>Siltstone</u> , dark brown, very carbonaceous, micaceous
	10	<u>Shale</u> , black, very carbonaceous
5840-5850	90	<u>Coal</u> , bleeding some gas
	10	<u>Siltstone</u> , dark brown, very carbonaceous, micaceous

DEPTH	%	DESCRIPTION
5850-5860	60	<u>Siltstone</u> , brown to <u>claystone</u>
	30	<u>Coal</u>
	10	<u>Sand</u> to <u>sandstone</u> , loose coarse to very fine, consolidated.
5860-5870	20	<u>Sandstone</u> , very fine, buff, clayey matrix.
	60	<u>Siltstone</u> , buff to dark brown, micaceous, carbonaceous
	20	<u>Coal</u>
5870-5880	100	<u>Coal</u> and very carbonaceous <u>shale</u> Trace <u>sandstone</u> , buff, very fine. Trace <u>Siltstone</u> , olive
5880-5890	50	<u>Coal</u> (Trace very carbonaceous <u>Shale</u>)
	50	<u>Siltstone</u> , buff, micaceous, carbonaceous
5890-5900	80	<u>Coal</u> , with some carbonaceous <u>shale</u> .
	15	<u>Sandstone</u> , buff, very fine, clayey, interlaminated with
	5	<u>Siltstone</u> , buff, light brown, micaceous, carbonaceous.
5900-5910	100	<u>Coal</u> Trace <u>Siltstone</u> , buff to olive
5910-5920	20	<u>Coal</u>
	60	<u>Sandstone</u> , very fine, white to buff, clayey, interlaminated with
	20	<u>Siltstone</u> , light brown, micaceous, carbonaceous.
5920-5930	80	<u>Sandstone</u> , fine to very fine, white to buff, clay matrix, tight.
	10	<u>Siltstone</u> , dark brown, micaceous, carbonaceous.
	10	<u>Coal</u> .
5930-5940	100	<u>Coal</u> Trace <u>Sandstone</u>
5940-5940	40	<u>Sandstone</u> , fine to very fine, white to buff, clay matrix,
	40	<u>Siltstone</u> , buff to olive
	20	<u>Coal</u>
5950-5960	40	<u>Sandstone</u> , very fine to fine, white to buff, tight as above
	10	<u>Siltstone</u> , buff to olive
	30	<u>Siltstone</u> , brown, carbonaceous, micaceous
	20	<u>Coal</u>
5960-5970	10	<u>Sandstone</u> , fine to very fine, white to buff, tight.
	70	<u>Siltstone</u> , brown, carbonaceous, micaceous.
	20	<u>Coal</u>
5970-5980	60	<u>Coal</u>
	30	<u>Siltstone</u> , brown, carbonaceous, micaceous
	10	<u>Sandstone</u> , very fine to fine, white to buff, tight.
5980-5990	70	<u>Claystone</u> to <u>siltstone</u> , brown, carbonaceous
	20	<u>Coal</u>
	10	<u>Sandstone</u> , very fine, light grey
5990-6000	80	<u>Siltstone</u> to <u>claystone</u> , light brown, micaceous, carbonaceous
	10	<u>Coal</u>
	10	<u>Sandstone</u> , light grey, very fine.
6000-6010	80	<u>Claystone</u> to <u>siltstone</u> , light brown, micaceous, carbonaceous
	10	<u>Siltstone</u> , dark brown, carbonaceous
	10	<u>Coal</u>
		Trace <u>sandstone</u> , light grey, very fine

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DEPTH	%	DESCRIPTION
6010-6020	90	<u>Claystone to siltstone</u> , light brown, carbonaceous
	10	<u>Coal to sandstone</u>
6020-6030	100	<u>Claystone to siltstone</u> , light to medium brown, carbonaceous, pyritic. Trace <u>Coal</u> , <u>Sandstone</u> , light grey
6030-6040	100	<u>Siltstone to claystone</u> , light to medium brown, carbonaceous Trace <u>Coal</u>
6040-6050	100	<u>Siltstone to claystone</u> , light to medium brown, carbonaceous Trace <u>Coal</u>
6050-6060	90	<u>Siltstone</u> , light to medium brown, carbonaceous, bleeding slightly, gas kick.
	10	<u>Sandstone</u> , light grey, very fine, tight to slightly porous, inter- laminated granular quartz.
6060-6070	80	<u>Siltstone</u> , light to medium brown, carbonaceous, pyritic.
	20	<u>Sandstone</u> , light grey, very fine, fairly well sorted, subrounded, gas kick, some matrix, slight porosity.
6070-6080	90	<u>Siltstone</u> , light to medium brown, carbonaceous, laminated.
	10	<u>Sandstone</u> , light grey, very fine, as above, carbonaceous very slight fluorescence and cut.
6080-6090	90	<u>Siltstone</u> , light brown to medium brown, carbonaceous, laminated.
	10	<u>Coal</u>
6090-6100	80	<u>Siltstone</u> , light to medium brown, very carbonaceous, gas kick 112 units
	20	<u>Coal</u>
6100-6110	90	<u>Coal</u> , gas kick 300 units, C ₁ 28,000
	10	<u>Siltstone</u> , light to medium brown, carbonaceous. Trace <u>sandstone</u> , light grey, very fine
6110-6120	100	<u>Coal</u> , black, bright Trace <u>siltstone</u> , medium brown, carbonaceous
6120-6130	100	<u>Coal</u> , black, bright Trace <u>siltstone</u> , medium brown, carbonaceous
6130-6140	40	<u>Siltstone</u> , medium brown, carbonaceous, laminated, micaceous
	30	<u>Sandstone</u> , very fine, buff, tight
	30	<u>Coal</u>
6140-6150	100	<u>Coal</u> Trace <u>Siltstone</u> , brown, carbonaceous, micaceous
6150-6160	70	<u>Coal</u>
	30	<u>Siltstone</u> , brown, very carbonaceous
6160-6170	80	<u>Coal</u>
	20	<u>Siltstone</u> , brown, very carbonaceous
6170-6180	85	<u>Coal</u>
	10	<u>Siltstone</u> , brown, carbonaceous
	5	<u>Sandstone</u> , very fine, buff, clayey, tight
6180-6190	70	<u>Coal</u>
	30	<u>Siltstone</u> , brown, carbonaceous Trace <u>sandstone</u> , very fine, buff, tight
6190-6200	50	<u>Coal</u>
	50	<u>Siltstone</u> , brown, carbonaceous
6200-6210	60	<u>Siltstone</u> , brown, carbonaceous.
	30	<u>Coal</u>
	10	<u>Sandstone</u> , very fine, buff, tight

DEPTH	%	DESCRIPTION
6210-6220		As above, Trace dolomite, brown, argillaceous, micaceous
6220-6230	60	<u>Siltstone</u> , brown carbonaceous
	40	<u>Coal</u>
		Trace <u>sandstone</u> , very fine, buff, tight
6230-6240	90	<u>Siltstone</u> , brown, carbonaceous
	10	<u>Coal</u>
		Trace <u>sandstone</u> , very fine, buff, tight
6240-6250	90	<u>Siltstone</u> , brown, carbonaceous, very fine to <u>claystone</u> , as above
	10	<u>Coal</u>
		Trace <u>sandstone</u> , very fine, buff
6250-6255	50	<u>Coal</u>
	30	<u>Siltstone</u> , buff to <u>sandstone</u> , very fine, buff, sandy, micaceous, carbonaceous
	20	<u>Siltstone</u> , brown, carbonaceous to <u>claystone</u> , as above
		Trace <u>sandstone</u>
6250-6260		Hot wire 245. C ₁ 6000
	100	<u>Coal</u> , high resin content, good fluorescence, slight cut (from amber only).
6260-6270	100	<u>Coal</u>
6270-6280	50	<u>Siltstone</u> to <u>claystone</u> , brown
	30	<u>Siltstone</u> , buff to <u>sandstone</u> , buff, very fine, carbonaceous
	20	<u>Coal</u>
6280-6290	70	<u>Siltstone</u> to <u>claystone</u> , brown
	20	<u>Coal</u>
	10	<u>Siltstone</u> to <u>sandstone</u> , buff, very fine, carbonaceous
6290-6300	80	<u>Claystone</u> to <u>siltstone</u> , brown
	10	<u>Siltstone</u> , buff, carbonaceous
	5	<u>Siltstone</u> to <u>sandstone</u> , very fine, buff
	5	<u>Coal</u>
6300-6310	70	<u>Claystone</u> , brown
	20	<u>Coal</u>
	10	<u>Siltstone</u> , buff, carbonaceous
6310-6320	40	<u>Claystone</u> , brown
	40	<u>Siltstone</u> , buff, carbonaceous
	10	<u>Coal</u>
	10	<u>Sandstone</u> , very fine, buff, clayey, tight.
6320-6330	40	<u>Claystone</u> , brown
	40	<u>Siltstone</u> , buff, carbonaceous
	20	<u>Coal</u>
6330-6340	30	<u>Claystone</u> , brown
	40	<u>Siltstone</u> , buff, carbonaceous
	20	<u>Sandstone</u> , very fine to <u>siltstone</u> , buff
	10	<u>Coal</u>
6340-6350	75	<u>Siltstone</u> , buff, carbonaceous
	10	<u>Coal</u>
	10	<u>Claystone</u> , brown
	5	<u>Sandstone</u> , fine, white, grains, very well rounded, sorting very good, clean quartzose, porosity 15-20%.
6350-6360	70	<u>Siltstone</u> , buff to brown, carbonaceous
	20	<u>Coal</u>
	10	<u>Claystone</u> , brown
		Trace <u>Sandstone</u> , fine, white, porous.

DEPTH	%	DESCRIPTION
6360-6370	50	<u>Siltstone</u> , buff to brown, carbonaceous
	20	<u>Claystone</u> , brown
	30	<u>Coal</u>
		Trace <u>sandstone</u> , fine, white, porous
6370-6380	40	<u>Siltstone</u> , brown, carbonaceous, micaceous
	40	<u>Claystone</u> , Olive to brown
	15	<u>Coal</u> , black bright
	5	<u>Sandstone</u> , fine to very fine, tight, clayey.
6380-6390	50	<u>Siltstone</u> , brown, carbonaceous, micaceous.
	40	<u>Claystone</u> , olive to brown
	10	<u>Coal</u>
6390-6400	50	<u>Siltstone</u> , brown, carbonaceous, micaceous.
	40	<u>Claystone</u> , brown
	10	<u>Coal</u>
6400-6410	50	<u>Siltstone</u> , brown, carbonaceous, pyritic
	50	<u>Claystone</u> , brown
		Trace interlaminated <u>sandstone</u> , <u>coal</u>
6410-6420	50	<u>Siltstone</u> , brown, carbonaceous, bleeding gas
	30	<u>Claystone</u> to <u>mudstone</u> , brown
	20	<u>Coal</u>
6420-6430	90	<u>Coal</u> , black, dull, conchoidal fractured.
	10	<u>Siltstone</u> , brown, as above
6430-6440	50	<u>Coal</u> , as above
	25	<u>Siltstone</u> , brown, carbonaceous.
	25	<u>Claystone</u> to <u>mudstone</u> , brown
6440-6450	50	<u>Siltstone</u> , brown, carbonaceous
	40	<u>Claystone</u> to <u>mudstone</u> , brown
	10	<u>Coal</u>
		Trace <u>sandstone</u> , light grey, very fine, consolidated.
6450-6460	50	<u>Claystone</u> to <u>mudstone</u> , brown
	40	<u>Siltstone</u> , brown, carbonaceous
	10	<u>Coal</u>
6460-6470	50	<u>Coal</u> , dull
	50	<u>Siltstone</u> to <u>mudstone</u> , brown, carbonaceous
6470-6480	40	<u>Siltstone</u> to <u>mudstone</u> , brown, carbonaceous
	40	<u>Siltstone</u> , brown, carbonaceous
	20	<u>Coal</u>
6480-6490	50	<u>Claystone</u> to <u>mudstone</u> , brown
	30	<u>Siltstone</u> , brown, carbonaceous
	10	<u>Sandstone</u> , light grey, very fine consolidated
	10	<u>Coal</u> , dull
6490-6500	40	<u>Siltstone</u> , brown, carbonaceous
	40	<u>Claystone</u> to <u>mudstone</u> , brown
	10	<u>Sandstone</u> , light grey, very fine.
	10	<u>Coal</u>
6500-6510	50	<u>Claystone</u> to <u>Mudstone</u> , brown
	40	<u>Siltstone</u> , carbonaceous
	10	<u>Coal</u>
6510-6520	50	<u>Mudstone</u> to <u>claystone</u> , brown as above
	40	<u>Siltstone</u> , carbonaceous
	10	<u>Coal</u>
		Trace <u>sandstone</u> , light grey, very fine grained
6520-6530	70	<u>Mudstone</u> brown as above
	20	<u>Siltstone</u> , as above
	10	<u>Coal</u>

DEPTH	%	DESCRIPTION
6530-6540	60 30 10	<u>Mudstone</u> , brown, as above <u>Siltstone</u> , carbonaceous, pyritic. <u>Coal</u> , dull
6540-6550	70 20 10	<u>Mudstone</u> , brown, as above <u>Siltstone</u> , carbonaceous, brown <u>Coal</u> Trace <u>sandstone</u> , very fine, light grey
6550-6560	40 30 30	<u>Mudstone</u> , Brown, as above <u>Siltstone</u> , brown, carbonaceous <u>Coal</u> , dull
6560-6570	60 30 10	<u>Coal</u> , dull <u>Mudstone</u> , brown, as above <u>Siltstone</u> , carbonaceous, brown Trace <u>sandstone</u> , as above.
6570-6580	80 10 10	<u>Mudstone</u> , as above <u>Siltstone</u> , as above <u>Coal</u>
6580-6590	80 10 10	<u>Mudstone</u> , as above <u>Siltstone</u> , as above <u>Coal</u>
6590-6600	90 10	<u>Mudstone</u> , as above <u>Siltstone</u> , as above Trace <u>coal</u>
6600-6610	90 10	<u>Mudstone</u> , as above, pyritic <u>Siltstone</u> , as above Trace <u>Sandstone</u> , as above, <u>coal</u>
6610-6620	90 10	<u>Mudstone</u> , as above <u>Siltstone</u> , as above Trace <u>Sandstone</u> , as above
6620-6630	90 10	<u>Mudstone</u> , brown, pyritic, organic matter replaced by pyrite. <u>Siltstone</u> , as above
6630-6640	90 10	<u>Mudstone</u> , as above <u>Siltstone</u> , as above
6640-6650	90 10	<u>Claystone</u> , buff to light olive brown, pyrite (disseminated) <u>Siltstone</u> , brown, carbonaceous, slightly micaceous, slightly fissile Trace <u>coal</u> (cavings)
6650-6660	90 10	<u>Claystone</u> , buff to light olive brown, pyrite, sub-fissile <u>Siltstone</u> , brown, carbonaceous, slightly micaceous.
6660-6670	60 40	<u>Claystone</u> , buff, pyrite, sub-fissile <u>Siltstone</u> , brown, carbonaceous, micaceous
6670-6680	Hot wire 150 units C1 12,000 60 30 10	<u>Coal</u> , black, bright <u>Siltstone</u> , brown, carbonaceous, micaceous <u>Claystone</u> , buff to olive, pyritic, probably dolomitised. Trace dolomitic <u>shale</u> , dark brown.
6680-6690	40 30 30	<u>Claystone</u> , buff to olive, pyritic <u>Coal</u> <u>Siltstone</u> , brown, micaceous, carbonaceous
6690-6700	55 40 5	<u>Siltstone</u> , as above <u>Claystone</u> , as above. <u>Coal</u>

DEPTH	%	DESCRIPTION
6700-6710	80 15 5	<u>Siltstone</u> , brown, micaceous, carbonaceous <u>Claystone</u> , buff to olive, pyritic. <u>Coal</u>
6710-6720	60 30 10	<u>Siltstone</u> , as above <u>Coal</u> <u>Claystone</u> , buff to olive, pyrite
6720-6730	80 15 5	<u>Coal</u> <u>Siltstone</u> , as above <u>Claystone</u> , as above
		Hot wire 60 C ₁ 9,000
6730-6740	50 40 10	<u>Claystone</u> , as above <u>Siltstone</u> , as above <u>Coal</u> Trace <u>sandstone</u> , fine, white to buff, tight to porous
6740-6750	60 30 10	<u>Claystone</u> , as above <u>Siltstone</u> , as above <u>Coal</u> Trace <u>sandstone</u> , fine to very fine, white to buff, tight
6750-6760	60 30 5 5	<u>Claystone</u> , as above <u>Siltstone</u> , as above <u>Coal</u> <u>Sandstone</u> , fine to very fine, white to buff, tight.
6760-6770	90 5 5	<u>Coal</u> <u>Claystone</u> , as above. <u>Siltstone</u> , as above.
		Hot wire 150 C ₁ 21,000
6770-6780	90 5 5	<u>Coal</u> <u>Claystone</u> , as above <u>Siltstone</u> , as above
6780-6790	80 20	<u>Claystone</u> , as above <u>Siltstone</u> , as above Trace <u>coal</u>
6790-6800	80 15 5	<u>Claystone</u> , as above <u>Coal</u> <u>Siltstone</u> , as above
6800-6810	70 15 10 5	<u>Claystone</u> , as above <u>Siltstone</u> , as above <u>Sandstone</u> , fine, white (porous) to Buff, clayey (tight) <u>Coal</u>
6810-6820	70 25 5	<u>Coal</u> <u>Claystone</u> , as above <u>Siltstone</u> , as above Trace <u>sandstone</u> , white to buff, fine, porous to tight
6820-6830	50 30 20	<u>Claystone</u> , as above <u>Coal</u> <u>Siltstone</u> , as above Trace <u>sandstone</u> , buff, clayey, tight, very fine
6830-6840	95 5	<u>Claystone</u> , as above <u>Siltstone</u> , as above Trace <u>coal</u>
6840-6850	100	<u>Claystone</u> , as above Trace <u>coal</u>
6850-6860	90 10	<u>Claystone</u> , as above <u>Siltstone</u> , buff, micaceous, carbonaceous Trace <u>coal</u>

DEPTH	%	DESCRIPTION
6860-6890	80 20	<u>Claystone</u> , as above <u>Siltstone</u> , as above <u>Trace coal</u>
6870-6880	100	<u>Claystone</u> to <u>siltstone</u> , olive to buff, slightly micaceous, pyritic. <u>Trace coal</u>
6880-6890	100	<u>Claystone</u> to <u>siltstone</u> , olive to buff, slightly micaceous, pyritic carbonaceous. <u>Trace coal</u>
6890-6900	100	<u>Claystone</u> to <u>siltstone</u> , brown, pyritic, carbonaceous
6900-6910	30 10 10	<u>Siltstone</u> , dark brown, carbonaceous <u>Claystone</u> to <u>mudstone</u> , brown as above <u>Coal</u> , dull
6910-6920	90 10	<u>Siltstone</u> , as above <u>Coal</u> , dull
6920-6930	90 10	<u>Siltstone</u> , dark brown to medium brown, carbonaceous, with trace interlaminated sandstone, very fine, light grey. <u>Coal</u> , dull
6930-6940	90 10	<u>Siltstone</u> , dark brown, carbonaceous, micaceous. <u>Coal</u>
6940-6950	90 10	<u>Siltstone</u> , as above Interlaminated <u>sandstone</u> , light grey, very fine.
6950-6960	80 10 10	<u>Siltstone</u> , as above <u>Sandstone</u> , light grey, very fine, interlaminated. <u>Coal</u>
6960-6965	70 30	<u>Coal</u> , dull, bleeding gas. 95 units <u>Siltstone</u> , dark brown, carbonaceous
6965-6970	80 20	<u>Coal</u> , dull bleeding gas, 175 units, C ₁ 2100, C ₃ 100 <u>Siltstone</u> , as above <u>Trace sandstone</u> , light grey.
6970-6980	90 10	<u>Coal</u> <u>Siltstone</u> , dark brown, carbonaceous.
6980-6990	70 20 10	<u>Siltstone</u> , as above <u>Coal</u> , dull, bleeding gas <u>Sandstone</u> , light grey, very fine quartz, clay matrix, tight.
6990-7000	50 40 10	<u>Siltstone</u> , as above <u>Sandy siltstone</u> , medium brown with fine to coarse quartz grains. <u>Coal</u>
7000-7010	60 30 10	<u>Coal</u> <u>Siltstone</u> , as above <u>Sandstone</u> , light grey, fine interlaminated
7010-7020	70 20 10	<u>Claystone</u> to <u>mudstone</u> , medium brown <u>Siltstone</u> , as above <u>Coal</u>
7020-7030	80 10 10	<u>Mudstone</u> , medium brown <u>Siltstone</u> , as above <u>Coal</u>
7030-7040	90 10	<u>Mudstone</u> , as above <u>Siltstone</u> , as above <u>Trace coal</u>

DEPTH	%	DESCRIPTION
7040-7050	90	<u>Mudstone</u> , as above
	10	<u>Siltstone</u> , as above
		Trace <u>coal</u> , dolomitic clay
7050-7060	100	<u>Mudstone</u> , as above
		Trace <u>siltstone</u> , brown, <u>sandstone</u> , light grey, <u>coal</u>
7060-7070	90	<u>Mudstone</u> , as above
	10	<u>Siltstone</u> , as above
		Trace <u>sandstone</u> , light grey, <u>coal</u>
7070-7080	90	<u>Mudstone</u> , brown
	10	<u>Siltstone</u> , as above
7080-7090	90	<u>Mudstone</u> , brown, pyritic
	10	<u>Siltstone</u> , as above
		Trace <u>Coal</u>
7090-7100	90	<u>Mudstone</u> , as above
	10	<u>Siltstone</u> , as above
		Trace <u>Coal</u>
7100-7110	90	<u>Mudstone</u> , as above
	10	<u>Siltstone</u> , as above
		Trace <u>coal</u>
7110-	60	<u>Coal</u>
	30	<u>Mudstone</u> , as above
	10	<u>Siltstone</u> , as above
		On bottom 7112'
7110-7120	60	<u>Mudstone</u> , brown
	30	<u>Siltstone</u> , as above
	10	<u>Coal</u> , dull
		Trace <u>sandstone</u> , light grey, dolomite, brown
7120-7130	60	<u>Mudstone</u> , brown
	30	<u>Siltstone</u> , as above
	5	<u>Sandstone</u> , light grey, very fine quartz, rare angular, coarse
	5	<u>Coal</u>
7130-7140	60	<u>Siltstone</u> , dark brown, carbonaceous, bleeding gas
	30	<u>Mudstone</u> , brown
	10	<u>Coal</u> , bleeding gas
7140-7150	80	<u>Siltstone</u> , dark brown, carbonaceous
	10	<u>Mudstone</u> , brown
	10	<u>Coal</u>
7150-7160	90	<u>Siltstone</u> , dark brown, carbonaceous, very micaceous
	5	<u>Coal</u>
	5	<u>Mudstone</u> , olive to brown
7160-7170	100	<u>Siltstone</u> , as above
		Trace <u>Coal</u> , <u>mudstone</u>
7170-7173	85	<u>Coal</u>
	15	<u>Siltstone</u> , as above
7170-7180	60	<u>Siltstone</u> , as above
	40	<u>Coal</u>
7180-7190		Hot Wire 165 C ₁ 19,000 C ₂ 300 C ₃ 200
	95	<u>Coal</u>
	5	<u>Siltstone</u> , dark brown, carbonaceous, micaceous.

DEPTH	%	DESCRIPTION
7190-7200	60 40	<u>Siltstone</u> , dark brown, carbonaceous, micaceous <u>Coal</u>
7200-7210	70 20 10	<u>Coal</u> 7205' HW 130 <u>Siltstone</u> , very fine, light brown to buff, micaceous <u>Siltstone</u> , dark brown, carbonaceous, micaceous
7210-7220	70 20 10	<u>Coal</u> <u>Siltstone</u> , dark brown. <u>Siltstone</u> , light brown
7220-7230	60 10 30	<u>Siltstone</u> , dark brown, very argillaceous, carbonaceous flecks. <u>Coal</u> <u>Sandstone</u> , interbedded with <u>siltstone</u> , brown, very fine, subangular fairly well sorted, tight, in part coaly, <u>very faint fluorescence fair cut</u> . (Good C1/C3 gas kick at 7227') <u>bleeding gas, oil show</u> .
7230-7240	70 10 20	<u>Siltstone</u> <u>Coal</u> <u>Sandstone</u> , interlaminated with <u>siltstone</u> , no show
7240-7250	90 5 5	<u>Siltstone</u> <u>Coal</u> <u>Sandstone</u> , interlaminated, fluorescence, cut, as above
7250-7260	90 10 Tr.	<u>Siltstone</u> <u>Coal</u> <u>Sandstone</u> , as above, with fluorescence and cut, as above
7260-7270	80 20	<u>Siltstone</u> , brown, argillaceous, carbonaceous, coaly <u>Sandstone</u> , very fine, tight, hard, in part coaly, interlaminted with <u>siltstone</u> , no show. Trace <u>Coal</u> , bleeding gas, as above
7270-7280	80 20	<u>Siltstone</u> , brown, argillaceous, micaceous, carbonaceous <u>Sandstone</u> , very fine to very coarse, (basically very fine to fine matrix with rare coarse to very coarse granules), tight, no shows. Trace <u>Coal</u>
7280-7290	70 20 10	<u>Siltstone</u> , brown, as above. <u>Mudstone</u> , brown, subfissile <u>Sandstone</u> , fine to very fine, tight, faint fluorescence as before.
7290-7300	60 30 10	<u>Sandstone</u> , fine to very fine, clayey, tight, no fluorescence. <u>Siltstone</u> , dark brown, micaceous, carbonaceous <u>Coal</u>
7300-7310	80 15 5	<u>Siltstone</u> , brown, carbonaceous <u>Sandstone</u> , very fine to fine, light grey to cream, micaceous, lithic, clay matrix 10-15% intergranular, porosity 1 grain with faint fluorescence and cut. <u>Coal</u>
7310-7320	95 5	<u>Siltstone</u> , brown, carbonaceous. <u>Sandstone</u> , very fine to fine, light grey to cream as above
7322-7325	100	<u>Coal</u> , dull, bleeding gas, HW 225, no fluorescence, good cut.
7323-7325	90 10	<u>Coal</u> , dull, bleeding gas, as above <u>Siltstone</u> , brown, carbonaceous, <u>sandstone</u> , very fine, cream. No fluorescence, good cut.
7325-7332	50 50	<u>Coal</u> , as above <u>Siltstone</u> , as above, no fluorescence, bright blue cut.
7330-7340	90 10	<u>Siltstone</u> , brown, carbonaceous <u>Coal</u> Trace <u>sandstone</u> , light grey to cream, very fine to fine. Fluorescence, some faint cut on coal

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DEPTH	%	DESCRIPTION
7340-7356	90 10	<u>Siltstone</u> , brown, carbonaceous <u>Coal</u> Trace <u>Sandstone</u> , light grey to cream, very fine to fine, bright blue-white. Fluorescence and good cut. 10-15% porosity.
7356-7358	60 40	<u>Sandstone</u> , light grey to cream, very fine to fine, fairly well sorted, quartz, minor lithics, angular to subrounded, 10-15% porosity, white clay mica, carbonaceous, slightly calcareous. Slight golden fluorescence, good cut. HW 55, C1 8000, C2 700, C3 1700, C4 400. <u>Siltstone</u> , brown, carbonaceous <u>Trace Coal</u>
7358-7360	60 40	<u>Sandstone</u> , light grey to cream, as above, with golden fluorescence and bright blue cut. <u>Siltstone</u> , brown, carbonaceous
7360-7370	50 50	<u>Sandstone</u> , light grey to cream, very fine to fine, fairly well sorted, subangular to subrounded quartz, minor lithics, carbonaceous matter, white kaolin matrix, slight porosity, golden yellow to rare bright blue fluorescence. <u>Siltstone</u> , brown, micaceous, carbonaceous. <u>Trace Coal</u>
7370-7380	70 30	<u>Siltstone</u> , brown, carbonaceous, micaceous. <u>Sandstone</u> , cream. as above, golden yellow with rare bright blue fluorescence, bright blue cut.
7380-7390	90 5 5	<u>Siltstone</u> , brown, carbonaceous as above <u>Mudstone</u> , brown <u>Sandstone</u> , cream very fine to fine, golden yellow fluorescence.
7390-7400	70 30	<u>Mudstone</u> , brown <u>Siltstone</u> , brown, carbonaceous, micaceous Trace, <u>Sandstone</u> , as above, bright fluorescence
7400-7402	90 10	<u>Mudstone</u> brown <u>Siltstone</u> , brown, carbonaceous, micaceous Trace <u>sandstone</u> very fine to fine cream golden yellow, fluorescence
7402-7410	90 10	<u>Mudstone</u> , to <u>siltstone</u> , brown <u>Siltstone</u> , brown, carbonaceous, micaceous. Trace <u>sandstone</u> , light grey to cream, very fine to fine, fluorescence slight cut.
7410-7420	90 10	<u>Mudstone</u> to <u>siltstone</u> , brown, pyritic <u>Siltstone</u> , brown, micaceous, carbonaceous Trace <u>sandstone</u> , as above No fluorescence, no cut.
7420-7430	95 5	<u>Mudstone</u> to <u>siltstone</u> , brown <u>Coal</u> Trace <u>sandstone</u> as above, golden yellow fluorescence New <u>Siltstone</u> , very glauconitic with apple green glauconite <u>siltstone</u> is fairly coarse.
7430-7440	100	<u>Mudstone</u> to <u>siltstone</u> , brown, carbonaceous, micaceous. Trace <u>sandstone</u> , cream, very fine to fine, golden fluorescence. Rare trace <u>siltstone</u> , glauconite.
7440-7450	100	<u>Mudstone</u> , brown, micaceous, pyrite to <u>siltstone</u> , brown, micaceous carbonaceous, pyritic. Trace glauconitic <u>siltstone</u> , <u>coal</u> .
7450-7460	100	<u>Mudstone</u> grading to <u>siltstone</u> , brown, carbonaceous Trace <u>sandstone</u> , <u>coal</u>

SAMPLE DESCRIPTION

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28.1.74

DEPTH	%	SAMPLE DESCRIPTION
7460-7450	100	<u>Mudstone</u> to <u>Siltstone</u> , brown, carbonaceous, micaceous, pyritic.
7470-7480	95 5	<u>Mudstone</u> to <u>Siltstone</u> , brown, carbonaceous, micaceous, pyritic <u>Coal</u>
7480-7490	100	<u>Mudstone</u> to <u>Siltstone</u> , brown, carbonaceous, very pyritic
7490-7500	100	<u>Mudstone</u> <u>Trace Coal</u>
7500-7510	100	<u>Mudstone</u> to <u>Siltstone</u> , brown, carbonaceous, abundant pyrite, micaceous <u>Trace Coal</u>
7510-7520	100	<u>Mudstone</u> to <u>siltstone</u> , brown, carbonaceous, pyritic <u>Trace Coal</u>
7520-7530	100	<u>Mudstone</u> to <u>Siltstone</u> , brown, carbonaceous, pyritic, micaceous <u>Trace Coal</u>
7530-7540	100	<u>Mudstone</u> to <u>Siltstone</u> , as above <u>Trace Coal</u>
7540-7550	100	<u>Mudstone</u> to <u>Siltstone</u> , as above <u>Trace Coal</u>
7550-7560	100	<u>Siltstone</u> , brown to <u>mudstone</u> <u>Trace Coal</u> , brittle, resinous, vitrite
7560-7570	100	<u>Siltstone</u> to <u>Mudstone</u> , brown, pyritic <u>Trace Coal</u> , <u>Sandstone</u> , very fine to fine, cream, yellow fluorescence and cut
7570-7580	100	<u>Siltstone</u> to <u>Mudstone</u> , brown, pyritic <u>Trace Coal</u> , <u>Sandstone</u> , very fine to fine, cream, yellow fluorescence, weak cut
7580-7590	100	<u>Siltstone</u> to <u>Mudstone</u> , brown <u>Trace Coal</u> , dolomite, brown <u>Sandstone</u> , cream, minor fluorescence and cut
7590-7600	100	<u>Siltstone</u> , brown <u>Trace Coal</u> , dolomite, <u>sandstone</u>
7600-7610	100	<u>Siltstone</u> , medium dark grey, +5% brown, carbonaceous, micaceous. <u>Trace Coal</u>
7610-7620	100	<u>Siltstone</u> , medium dark grey, as above <u>Trace Coal</u> , <u>sandstone</u> , very fine
7620-7630	100	<u>Siltstone</u> , as above <u>Trace Coal</u>
7630-7640	100	<u>Siltstone</u> , medium dark grey to brown <u>Trace Coal</u>
7640-7650	100	<u>Siltstone</u> , medium dark grey to brown
7650-7660	90 10	Poor quality sample after wiper trip. <u>Mudstone</u> to <u>siltstone</u> , brown to grey <u>Coal</u>
7660-7670	100	<u>Mudstone</u> to <u>Siltstone</u> , brown, micaceous, pyritic, carbonaceous <u>Trace Coal</u>
7670-7680	100	<u>Mudstone</u> to <u>siltstone</u> , brown, as above <u>Trace Coal</u> , buff, <u>mudstone</u>
7680-7688	100	<u>Mudstone</u> to <u>siltstone</u> , as above <u>Trace Coal</u>

SAMPLE DESCRIPTIONS

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DEPTH	%	SAMPLE DESCRIPTION
7688-7690		As above.
7690-7700	100	<u>Mudstone</u> to <u>siltstone</u> , brown, micaceous, pyritic, carbonaceous Trace <u>Coal</u>
7700-7710	100	<u>Mudstone</u> to <u>siltstone</u> , brown, micaceous, pyritic, carbonaceous Trace <u>Coal</u>
7710-7720	100	<u>Mudstone</u> to <u>Siltstone</u> , brown to grey, micaceous, carbonaceous, disseminated pyrite.
7720-7730	100	<u>Mudstone</u> to <u>Siltstone</u> , dark brown to grey, micaceous, very carbonaceous pyrite.
7730-7740	100	<u>Mudstone</u> to <u>Siltstone</u> , as above
7740-7750	100	<u>Mudstone</u> to <u>Siltstone</u> , as above
7750-7760	100	<u>Mudstone</u> to <u>Siltstone</u> , as above
77 7770	100	<u>Mudstone</u> , to <u>Siltstone</u> , as above Trace <u>Mudstone</u> , light brown, subfissile, pyritic Rare pyrite, calcareous, benthonic forams.
7770-7780	100	<u>Mudstone</u> , <u>siltstone</u> , as above Trace <u>mudstone</u> , light brown, subfissile, pyrite.
7780-7785 C.O.	100	<u>Mudstone</u> to <u>Siltstone</u> , as above Trace <u>Mudstone</u> , light brown, subfissile, pyrite
7785-7790	100	<u>Mudstone</u> to <u>Siltstone</u> , as above Trace <u>Mudstone</u> , buff, subfissile
7790-7800	100	<u>Mudstone</u> to <u>Siltstone</u> , as above, very dark grey
7800-7810	100	<u>Mudstone</u> to <u>Siltstone</u> , as above Trace <u>Mudstone</u> , buff, subfissile, pyrite
7810-7820	100	<u>Mudstone</u> to <u>Siltstone</u> , as above
7820-7830	100	<u>Siltstone</u> , dark grey
7830-7840	100	<u>Siltstone</u> , dark grey
7840-7850	100	<u>Siltstone</u> , dark grey
7850-7860		As above, contaminated sample after trip at 7869'
7860-7870		As above. " " " " " "
7870-7880 !	100	<u>Siltstone</u> , dark brown to dark grey, pyrite, carbonaceous, micaceous Trace <u>Mudstone</u> , buff, pyritic
7880-7890	90	<u>Siltstone</u> , as above
	10	<u>Mudstone</u> , as above
7890-7900	80	<u>Siltstone</u> , mid to dark grey, micaceous carbonaceous
	20	<u>Mudstone</u> , as above
		Changed bit XDG drilled on metal probably on cores lost earlier. J22 on bottom 7909' at 8.00 hr.
7900-7910	100	Contaminated sample after trip <u>Siltstone</u> , as above

DEPTH	%	SAMPLE DESCRIPTION
7785-7790	100	<u>Mudstone-Siltstone</u> , as above Trace mudstone, buff slightly fissile
7790-7800	100	<u>Mudstone-siltstone</u> , as above, very dark grey
7800-7810	100	<u>Mudstone-siltstone</u> , as above Trace <u>mudstone</u> , buff, slightly fissile pyrite
7810-7820	100	<u>Mudstone-siltstone</u> , as above
7820-7830	100	<u>Siltstone</u> , dark grey
7830-7840	100	<u>Siltstone</u> , dark grey
7840-7850	100	<u>Siltstone</u> , dark grey
7850-7860		As above contaminated sample after trip at 7869'
7860-7870		As above contaminated sample after trip at 7869'
7870-7880	100	<u>Siltstone</u> , dark brown to dark grey, pyrite, carbonaceous, micaceous Trace <u>mudstone</u> , buff, pyrite
7880-7890	90	<u>Siltstone</u> , as above
	10	<u>Mudstone</u> , as above
7890-7900	80	<u>Siltstone</u> , medium to dark grey, micaceous, carbonaceous
	20	<u>Mudstone</u> , as above
7900-7910	100	Contaminated sample after trip <u>Siltstone</u> , as above
7910-7920	100	<u>Siltstone</u> , medium dark grey, micaceous, pyritic Trace <u>mudstone</u> dark, contaminated brown mudstone
7920-7930	100	<u>Siltstone</u> , dark grey, micaceous, pyritic, Trace <u>mudstone</u> dark
7930-7940	70	<u>Siltstone - Mudstone</u> , medium to dark grey silty rock, as below
	30	<u>Siltstone</u> , dark grey
7940-7950	90	<u>Siltstone-Mudstone</u> , medium to dark grey light to dark spotted, possible weathered fine grained igneous?
	10	<u>Siltstone</u> , dark grey
7950-7960	100	Silicious rock, light grey salt and pepper spotted, very fine grained, light colour being very fine grained silty matrix, the dark spots are angular to slightly rounded grains. Possible weathered plagioclase laths. Soft to medium to hard, strongly weathered.
960-7970	100	Light grey rock as above, less spotted, Trace of grained mottled rock with disseminated pyrite, tuf? -
970-7980	100	Light grey veryfine grained silty rock, with trace of fine mottled rock as above, calcedony, slightly koalinised.
980-7990	100	Light grey rock, as above
990-8000	100	Light grey rock, as above
800-8002	95	Light grey to greenish grey intrusive rock of quartz, feldspar, biotite, hornblende composition, pyrite altered koalinised chloritized. 35 unit HW
	5	Light grey silty rock as above
807-8010	100	Amphybolite, white to green, brown mottled feldspar amphybole, koalinised, chloritised; pyritic thinning on plagioclase. 47
810-8020	100	Amphybolite, white in places, koalinised plagioclase matrix, brown to chloritised green hornblende amphybole matrix

DEPTH	%	SAMPLE DESCRIPTION
8020-8030	100	<u>Amphibolite</u> as above more chloritised
8030-8040	100	<u>Amphibolite</u> chloritised as above, pyrite
8040-8050	100	<u>Amphibolite</u> chloritised pyritic
8050-8060	100	<u>Amphibolite</u> chloritic quartz
8060-8070	100	<u>Amphibolite</u> chloritic as above, slightly coarser
8070-8080	100	<u>Amphibolite</u> , as above
8080-8090	100	<u>Amphibolite</u> , as above
8090-8100	100	<u>Amphibolite</u> , as above
8100-8110	100	<u>Amphibolite</u> , as above
8110-8120	100	<u>Amphibolite</u> , as above, pyritic
8120-8130	100	<u>Amphibolite</u> , as above, pyritic, strong trace brown <u>mudstone</u> , pyritic, finely disseminated
8130-8140	100	<u>Amphibolite</u> , as above, pyritic, strong trace of brown mudstone, pyritic
8140-8150	100	<u>Amphibolite</u> , as above
8150-8160	100	<u>Amphibolite</u> , as above
8160-8170	100	<u>Amphibolite</u> , as above
8170-8180	100	<u>Amphybolite</u> , as above
8180-8190	100	<u>Amphybolite</u> , as above, possible slight alteration, orange colour to some green grains, white
8190-8200		As above
8200-8210		<u>Amphibolite</u> , as above, trace green grains, light trace green <u>talc</u> (?)
8210-8220		As above
8220-8230		As above, no talc (?)
8230-8240		As above
8240-8250		As above, approximately 50% <u>Feldspar</u> , 40% <u>hornblende</u> (?), 10% light green mineral
8250-8260		As above
8260-8270		As above 50% hornblende 40% Feldspar 10% light green mineral
8270-8280		<u>Amphibolite feldspar</u> , hornfels, chloritised
8280-8290		<u>Amphibolite</u> , as above
8290-8292	70	<u>Amphibolite</u>
	20	<u>Coal</u> HW. 240 units
	10	<u>Siltstone</u> , light grey to brown grey
8292-8295	90	<u>Amphibolite</u> , as above
	10	<u>Coal</u> marbled high grade
		Trace <u>siltstone</u> siliceous, light grey to light brown contact metamorphic
8295-8300	90	<u>Amphibolite</u>
	10	<u>Coal</u> , high grade
		Trace <u>Siltstone</u> siliceous grey to brown mottled

DEPTH	%	SAMPLE DESCRIPTION
8300-8310	70 30	<u>Amphibolite</u> , as above <u>Siltstone</u> , light grey Trace <u>coal</u> , as above dolerite
8310-8320	80 20	<u>Sandstone</u> , light grey very fine to fine grained quartz, siliceous, tight <u>Amphibolite</u>
8320-8330	50 40 10	<u>Sandstone</u> , light grey very fine to fine grained quartz, secondary siliceous tight <u>Amphibolite</u> <u>Siliceous rock</u> , light grey mottled
8330-8340	50 40 10	<u>Sandstone</u> , light grey, fine to very fine, tight, overgrown, as above <u>Siltstone</u> , light grey, mottled, as above <u>Amphibolite</u>
8340-8350	50 30 20	<u>Sandstone</u> , light grey to slight green grey, very fine to fine fairly to poorly sorted, kaolinized matrix to secondary quartz, tight. <u>Amphibolite</u> Grey mottled <u>siliceous rock</u>
8350-8360	60 20 20	<u>Sandstone</u> , light grey to fine quartz kaoline matrix Mottled <u>siliceous rock</u> <u>Amphibolite</u>
8360-8370	60 20 20	<u>Siliceous rock</u> grading to <u>siltstone</u> medium grey <u>Sandstone</u> , light grey <u>Amphibolite</u>
8370-8380	50 40 10	<u>Siltstone</u> , grey to mottled <u>Amphibolite</u> <u>Sandstone</u>
8380-8390	60 30 10	<u>Siltstone</u> , as above, grey to brown pyritic <u>Amphibolite</u> <u>Sandstone</u>
8390-8400	60 35 5	<u>Siltstone</u> , as above, grey to brown micaceous, pyritic <u>Amphibolite</u> <u>Sandstone</u>
8400-8410	70 30	<u>Amphibolite</u> , as above, chloritic <u>Siltstone</u> , grey to brown pyritic micaceous grading to contact rock
8410-8420	70 30	<u>Amphibolite</u> <u>Siltstone</u> , grey to brown, pyritic, micaceous Trace <u>Sandstone</u> , light grey
8420-8430	80 20	<u>Amphibolite</u> <u>Siltstone</u> , grey soft brown harder <u>mica</u> Trace <u>Coal</u>
8430-8440	70 30	<u>Amphibolite</u> feldspar hornblende, chloritised <u>Siltstone</u> , predominately grey soft some brown pyritic Trace <u>sandstone</u> , very fine, white tight
8440-8450	65 35	<u>Amphibolite</u> <u>Siltstone</u> , medium to dark grey, soft, pyritic, some brown, fissile Trace <u>sandstone</u> , white, tight
8450-8460	70 30	<u>Siltstone</u> , medium to dark grey, medium soft, some brown, also light grey and mottled, lamination, pyritic <u>Amphibolite</u>
8460-8470	50 50	<u>Siltstone</u> , medium to dark grey, moderately soft, some light grey <u>pyrite</u> <u>Amphibolite</u> Trace <u>pyrite</u>

DEPTH	%	SAMPLE DESCRIPTION
8470-8480	60 40	<u>Siltstone</u> , medium to dark grey, soft, fissile. Some brown & light grey, pyritic <u>Amphibolite</u>
8480-8490	60 40	<u>Siltstone</u> , medium to dark grey, soft, fissile, pyritic. Some brown <u>Amphibolite</u>
8490-8500	65 35	<u>Siltstone</u> , medium to dark grey, soft, pyritic, micaceous, some brown <u>Amphibolite</u>
8500-8510	70 30	<u>Siltstone</u> , as above <u>Amphibolite</u> Trace <u>pyrite</u>
8510-8520	80 20	<u>Siltstone</u> , medium to dark grey, soft, pyritic. Some brown <u>Amphibolite</u> Trace <u>Pyrite</u>
8520-8530	80 20	<u>Siltstone</u> , as above <u>Amphibolite</u>
8530-8540	80 20	<u>Siltstone</u> , dark to medium grey, very fine, micaceous, soft, fissile <u>Amphibolite</u> Trace <u>Sandstone</u>
8540-8550	80 20	<u>Siltstone</u> , medium to dark grey, very fine, micaceous? pyritic, moderately soft, fissile <u>Amphibolite</u>
8550-8560	50 50	<u>Siltstone</u> , very fine grained, as above <u>Amphibolite</u> Trace <u>Pyrite</u>
8560-8570	70 30	<u>Siltstone</u> , very fine, as above <u>Amphibolite</u> Trace <u>Sandstone</u>
8570-8580	80 20	<u>Siltstone</u> , very fine, as above, possibly metamorphosed <u>Amphibolite</u>
8580-8590	80 20	<u>Siltstone</u> , as above, very fine <u>Amphibolite</u> Trace <u>Siliceous white mottled rock</u> , trace <u>pyrite</u>
8590-8600	80 20	<u>Siltstone</u> , very fine, medium grey, micaceous, pyritic, moderately soft, fissile More brown siltstone <u>Amphibolite</u>
8600-8610		As above
8610-8620	65 35	<u>Siltstone</u> , as above <u>Amphibolite</u> Trace <u>coal</u> - bright, brittle, trace <u>pyrite</u>
8620-8630	40 60	<u>Amphibolite</u> <u>Siltstone</u> , dark grey, sericitic, in part <u>pyritic</u> , fissile, argillaceous, medium soft, some grades to brown
8630-8640	50 50	<u>Amphibolite</u> <u>Siltstone</u>
8650-8660	70 30	<u>Siltstone/Shale</u> <u>Amphibolite</u>
8660-8670	60 40	<u>Siltstone/Shale</u> becoming dark grey to brown <u>Amphibolite</u> (?)
8670-8680	70 30	<u>Siltstone</u> , very argillaceous, dark grey to brown, as above <u>Amphibolite</u> (?) Trace <u>Coal</u> , black, vitreous

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DEPTH	%	SAMPLE DESCRIPTION
8680-8690		As above
8690-8700	50	<u>Siltstone</u> , very argillaceous
	50	<u>Amphibolite</u> (?)
8700-8710		As above
		Trace <u>Coal</u>
8710-8720	70	<u>Siltstone/Shale</u> , dark brown to grey as above
	20	<u>Amphibolite</u>
	10	<u>Coal</u> , hard brittle conchoidal fractured
		Trace <u>Siltstone</u> to very fine sandstone, grey feldspathic lithic
8720-8730	70	<u>Siltstone/Shale</u> , dark brown, pyritic, micaceous
	30	<u>Amphibolite</u>
		Trace <u>Coal</u>
8730-8740	60	<u>Siltstone/Shale</u> , dark brown to grey, pyritic, micaceous
	40	<u>Amphibolite</u>
		Trace <u>Coal</u>
874 750	60	<u>Siltstone/Shale</u> , dark brown, pyritic, micaceous
	40	<u>Amphibolite</u>
8750-8760	50	<u>Siltstone/Shale</u> , dark brown
	50	<u>Amphibolite</u>
8760-8770	70	<u>Siltstone/Shale</u> , dark brown
	30	<u>Amphibolite</u>
8770-8780	70	<u>Siltstone/Shale</u> , dark brown
	30	<u>Amphibolite</u>
8780-8790	70	<u>Siltstone</u> , as above
	30	<u>Amphibolite</u> , as above
8790-8800	70	<u>Siltstone to shale</u> , dark brown, pyritic
	30	<u>Amphibolite feldspar</u> , <u>hornblende</u> , <u>biotite</u> , minor quartz, chloritized
880 8810	60	<u>Amphibolite</u>
	40	<u>Siltstone</u> , brown pyritic
8810-8820	60	<u>Amphibolite</u>
	40	<u>Siltstone</u> , dark brown to grey, soft, pyritic, micaceous
8820-8830	60	<u>Siltstone</u> , as above
	40	<u>Amphibolite</u>
		Trace <u>pyrite</u>
8830-8840	60	<u>Siltstone</u> , as above
	40	<u>Amphibolite</u>
		Trace shiny black <u>coal</u>
8840-8850	75	<u>Siltstone</u> , as above
	25	<u>Amphibolite</u>
		Trace <u>coal</u>
8850-8860	70	<u>Siltstone</u> , medium to dark grey to brown, soft, pyritic, micaceous
	30	<u>Amphibolite</u>
8860-8870	70	<u>Siltstone</u> , medium to dark grey
	30	<u>Amphibolite</u>
8870-8880	70	<u>Siltstone</u> , as above
	30	<u>Amphibolite</u>
		Trace <u>coal</u> , <u>pyrite</u>

Toolka I
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DEPTH	%	SAMPLE DESCRIPTION
8880-8890	80 20	<u>Siltstone</u> , as above <u>Amphibolite</u>
8890-8900	70 30	<u>Siltstone</u> , as above <u>Amphibolite</u>
8900-8907	80 20	<u>Siltstone</u> <u>Amphibolite</u>
<u>T.D. 8907</u>		

WELL COMPLETION REPORT

TOOLKA-1A

APPENDIX IV

CORE DESCRIPTIONS

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. ONE (1)

WELL: TOOLKA-1 Bass Basin

Interval Cored 5089 - 5119 ft., Cut 30 ft., Recovered 30 ft., (100 %) Fm. Eastern View

Bit Type C-20, Bit Size 8 15/32 in., Desc. by G.125, Date 24.1.74

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 5 10				
5089			5089'0" - 5089'2"	Sst, v.f. buff, micaceous, with thin interbed of
5090	mm mm			sst coarse to v. coarse, quartzose.
	mm mm	20	5089'3" - 5095'0"	Sst, v.f., buff, mic., to sst, buff, mic, pyritic.
	mm mm			Thinly interbedded with sst, dk brn, carb,
	mm mm			pyr. Wavy boundaries, poss. load casts.
5095	mm mm	Shows		Borrowed (mainly horiz/sub-horiz), infilled
	mm mm			with car. mat'l + pyrite.
	mm mm		5095'0" - 5098'0"	Claystone, dk grey, rare rootlets infilled with
	mm mm	1		pinkish clay +/or pyrite. Thinly laminated,
5100	mm mm			no silt.
	mm mm	NO	5098'0" - 5110'6"	Siltstone, buff, micaceous, to sandstone v.f.,
	mm mm			buff, micaceous; thinly interbedded with
5105	mm mm			sst, dk gy. mic, carb. Wavy, discontinuous
	mm mm	FLUORESCENCE		bedding.
	mm mm		5110'6" - 5112'0"	Shale, dolomitic, red-brn, v. hard, conc.
	mm mm			fracture, non-bedded.
5110	mm mm		5112'0" - 5119'0"	Claystone, dk gy, carb, conchoidal fracture,
	mm mm			non-bedded, with thin laminae of
	mm mm			sst, buff, in lowest 1'6". Bedding
	mm mm			irregular + discontinuous.
5115	mm mm			
	mm mm			
5119	mm mm			
	END OF CORE			

REMARKS: core point picked on drilling break, but just missed base of sand.

X

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COPY.

WELL COMPLETION REPORT

TOOLKA-1A

BASS BASIN, TASMANIA, AUSTRALIA

(5)

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ESSO STANDARD OIL (AUSTRALIA) LTD.

COMPLETION REPORT

I WELL DATA RECORD

Date May 15, 1974

LOCATION

WELL NAME	STATE	PERMIT or LICENCE	GEOLOGICAL BASIN	FIELD
TOOLKA-1A	TASMANIA	T/3P	BASS	---
CO-ORDINATES		MAP PROJECTION	GEOGRAPHICAL DESCRIPTION	
	Lat. Long. X Y	AMG	OFFSHORE TASMANIA (FOURTEE MILES N.W. OF CORMORANT-1)	
Surface	39°24' 35.678"S 145°23' 45.108"	ZONE 55		
Bottom	x = 361,896 m.E. y = 5,636,491 m.N.			

ELEVATIONS & DEPTHS

ELEVATIONS	WATER DEPTH	TOTAL DEPTH	Avg. Angle
Ground	258'	M.D. 8907'	STRAIGHT HOLE
KB 32'		T.V.D.	
RT	PLUG BACK DEPTH	REASONS FOR P.B.	
Braden Head	365'	ABANDONMENT	
Top Deck Platform			

DATES

MOVE IN	RIG UP	SPUDED
JANUARY 12, 1974.	JANUARY 14, 1974	JANUARY 16, 1974.
RIG DOWN COMPLETE	RIG RELEASED	PROD. UNIT - Start Rigging Up
FEBRUARY 5, 1974.	FEBRUARY 5, 1974.	
PROD. UNIT - Rig Down Complete	I.P. ESTABLISHED	

MISCELLANEOUS

OPERATOR	PERMITTEE or LICENCEE	ESSO INTEREST	OTHER INTEREST
ESSO AUSTRALIA LTD.,	HEMATITE PETROLEUM PTY. LTD	100%	NIL
CONTRACTOR	RIG NAME	EQUIPMENT TYPE	
GLOBAL MARINE AUSTRALASIA P/L	"GLOMAR CONCEPTION"	FLOATING DRILLING VESSEL	
TOTAL RIG DAYS	DRILLING AFE NO.	COMPLETION NO.	TYPE COMPLETION
23.38	234-001		
LAHEE WELL	Before Drilling	NEW FIELD WILDCAT	
CLASSIFICATION	After Drilling	UNSUCCESSFUL NEW FIELD WILDCAT	

B A S S

J.S. ISOM 56

Geologist

WELL: TOOEKA-1a

IV CASING-LINER-TUBING RECORD							
Type	Size	Weight	Grade	Thread	No. Joints	Amount	Depth
KB ELEVATION ABOVE CASING HEAD						281.00	281.00
24" PILE JOINT						38.85	319.85
	20"	94#	X-52	JV-CC	1	22.35	342.20
	20"	92#	X-52	JV	9 + FLOAT SHOE	361.83	704.03
KB ELEVATION ABOVE HANGER						287.00	287.00
	13-3/8"	68#	K-55	BUTT	CSG HANGER + 61 JTS + FLOAT COLLAR	2464.74	2751.74
	13-3/8"	68#	K-55	BUTT	1 + FLOAT SHOE	38.33	2790.07

V CEMENT RECORD			
String	20"	13-3/8"	
Type of Cement	650 sx Aust N + 350 sx Aust N + 2% CaCl ₂	900 sx Aust N + 1% CaCl ₂	
Number of FT ³	1180	1062	
Average Weight of Slurry	15.6 ppg	15.6 ppg	
Cement Top	Sea Floor	770' (theoretical)	
Casing Tested with	-	1500	
Number of Centralizers	0	10	
Number of Scratchers			
Stage Collar, etc.			
Remarks		Tested formation with 13.8 ppg equivalent mud.	

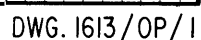
R. W. Oliver
Engineer

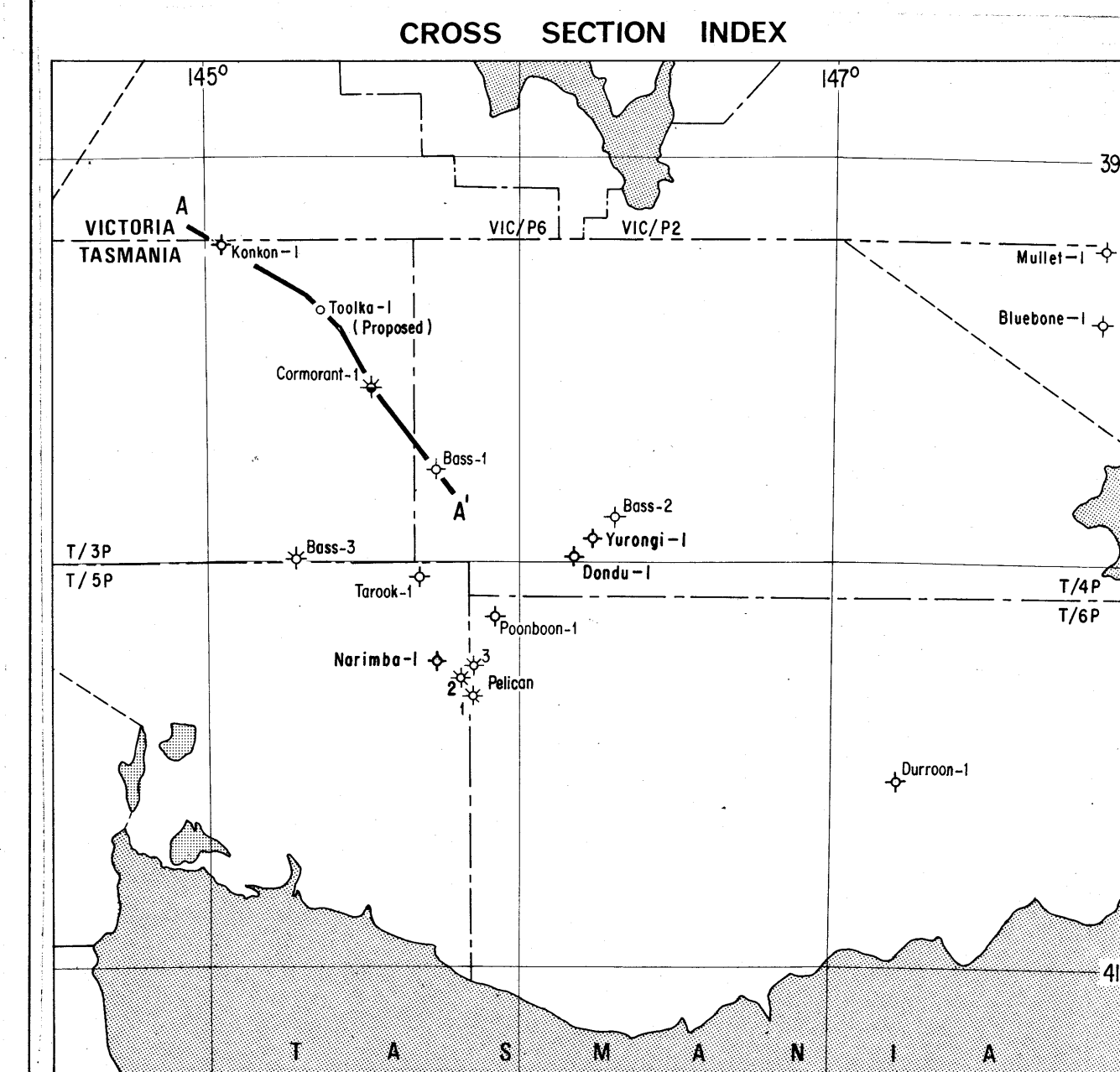
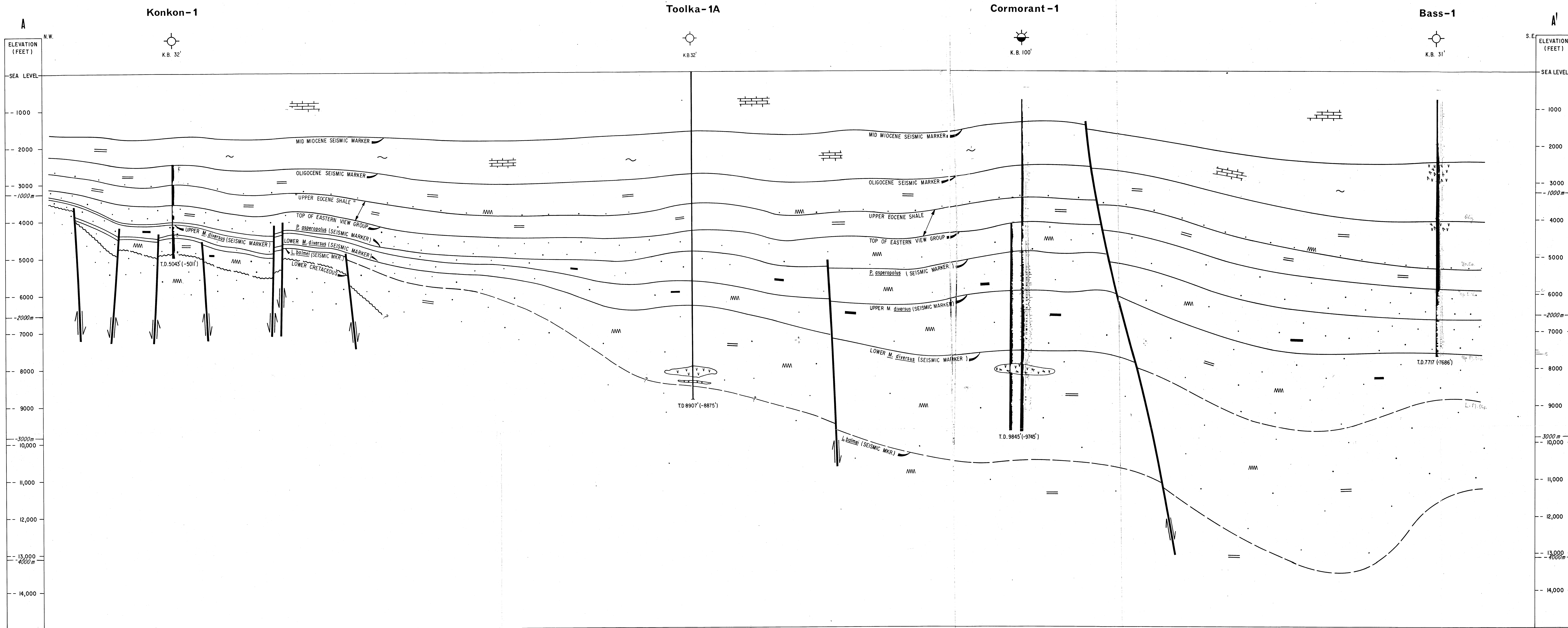
WELL TOOLKA-1A

VII SAMPLES, CONVENTIONAL CORES, SW CORES					
INTERVAL	TYPE	RECOVERED	INTERVAL	TYPE	RECOVERED
780'-8807'	Cuttings (Washed & Dried)	Five sets every 10'-30'			
780'-8807'	Cuttings (Unwashed)	One every 10'-30'			
780'-8807'	Cuttings (Canned Sample)	Composite every 100'			
5089'-5119'	Conventional Core #1	Cut 30', Recovered 30'			
4505'-8896'	C.S.T. Gun #1	Recovered 29; Shot 30			

VIII WIRELINE LOGS AND SURVEYS Incl. FIT)			
Type & Scale	From To	Type & Scale	From To
ISF	2790'-8896'		
CNL/FDC	2790'-8892'		
GR	290'-8892'		
HDT	2790'-8889'		
BHC	2790'-8894'		
Velocity Survey	3300'-8800'		
FIT #1	7361'		
FIT #2	7224.50'		

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Geologist





- MARL, LIMESTONE
- SANDSTONE
- SILTSTONE
- SHALE
- VOLCANICS
- COAL

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

BASS BASIN

VICTORIA-TASMANIA

GEOLOGICAL CROSS SECTION A-A'

PSLA NO: 74102

Vertical Scale 1in. = 1000 Feet
Horizontal Scale 1:100,000

2 0 2 4 Miles
2 0 4 8 Km.

AUTHOR: R. J. COPPIN, V.A. ROBINSON

DRAFTED BY: J. SCHMIDT, HOWICK

TO ACCOMPANY: WELL COMPLETION REPORT
TOOLKA-1A

DATE: JUNE 10, 1974

PLATE II