361001

COMPLETION REPORT

WHELK #1

OR_347

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BASIC IGNEOUS ROCK FROM EXPLORATORY OIL WELL
PALYNOLOGY REPORT

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ESSO STANDARD OIL (AUSTRALIA) LTD.

COMPLETION REPORT

361003

I WELL DATA RECORD

Date 13-7-70

LOCATION

WELL NAME	STATE	PERMIT or LICENCE	GEOLOGICAL BASIN	FIELD
WHELK-1	Tasmania	TP/3	Otway	Wildcat

CO-ORDINATES	Lat.	Long.	X	Y	MAP PROJECTION	GEOGRAPHICAL DESCRIPTION
Surface	39° 53' 57.8" S.	143° 33' 20.9" E.	639057.80E	080593.96N	Transverse Mercator	Offshore King Is. Tasmania 15 miles west of King Is.
Bottom Hole	Straight hole.					

ELEVATIONS & DEPTHS

ELEVATIONS	WATER DEPTH	TOTAL DEPTH	Avg. Angle
Ground KB + 100' RT Braden Head Top Deck Platform	338'	M.D. 4810 T.V.D.	
	PLUG BACK DEPTH Plug 1 -1900' Plug 2 - 525'	REASONS FOR P.B. Abandonment	

DATES

MOVE IN	RIG UP	SPUDDED
2.3.70	5.3.70	6.3.70
RIG DOWN COMPLETE	RIG RELEASED	PROD.UNIT - Start Rigging Up
17.3.70	17.3.70	
PROD.UNIT - Rig Down Complete		I.P. ESTABLISHED

MISCELLANEOUS

OPERATOR	PERMITTEE or LICENCEE	ESSO INTEREST	OTHER INTEREST
Esso	Hematite Petroleum Pty.Ltd.	Well 100% Permit Nil	

CONTRACTOR	RIG NAME	EQUIPMENT TYPE
ODECO	Ocean Digger	Semi-Submersible Drilling Vessel.

TOTAL RIG DAYS	DRILLING AFE NO.	COMPLETION NO.	TYPE COMPLETION
14.7	237309		

LAHEE WELL CLASSIFICATION	Before Drilling	New field wildcat.
	After Drilling	Abandoned NFW

J.K. Davidson

Geologist

WELL WHELK-1

361004

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 Temper-ature		

NOT APPROVED

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

WELL WHELK #1

361005

IV	CASING - LINER - TUBING RECORD						
Type	Size	Weight	Grade	Thread	No. Joints	Amount	Depth
Conductor	30"x20"	Pile Joint		Vetco	1	40.48	
	20"	104	X55 L.P.	Vetco	11	462.96	934
Surface	13-3/8"	54.5		Butt.	1	39.08	
	9-5/8"	x 13-3/8" Butt Swage				1.60	
	9-5/8"	40	N-80	Butt.	39	1528.08	2003
Note: Salvage of Pile Joint was unsuccessful.							

V	CEMENT RECORD		
String	20"	9-5/8"	
Type of Cement	700 sx w/2% Gel 500 sx w/2% $CaCl_2$	600 sx neat plus 200 sx w/2% $CaCl_2$	
Number of FT^3	1717	952	
Average weight of slurry	13.7 / 15.5	15.5	
Cement Top	Sea Floor	1430' (Calc.)	
Casing Tested with	300 psi	1500 psi	
Number of Centralizers	0	6	
Number of Scratchers	0	0	
Stage Collar etc.	0	0	
Remarks	Gel Prehydrated	Cement top assumes 450' of 20" Hole.	

R.L. WOOD

Engineer

WELL WHELK-1

361006

VI SUBSURFACE COMPLETION EQUIPMENT

DATE COMPLETED _____

Schematic	Equipment Description	Length	Depth

361007

WELL WHELK-1

VII SAMPLES, CONVENTIONAL CORES, SW CORES

INTERVAL	TYPE	RECOVERED	INTERVAL	TYPE	RECOVERED
970-4238	Cuttings	Every 10'			
4278-4478	"	"			
4508-4800	"	"			
4238-68	Core No. 1	Cut 30' Rec. 29			
4478-4508	Core No. 2	Cut 30' Rec.27'			
991-1976	SWC	Shot 29. Rec.24 Misfires 2. No recovery 3.			
2060-4795	SWC	Shot 30 Rec.30.			

VIII WIRELINE LOGS AND SURVEYS (Incl. FIT)

Type & Scale	From	To	Type & Scale	From	To
IES 2" & 5"/100'	934	4810			
BHCS-GR 2" & 5"/100'	935	4800			
FDC-GR 2" & 5"/100'	2004	4810			
CDM 2" & 5"/100'	2004	4799			
Velocity Survey					

J.K. Davidson
Geologist

WELL WHELK-1

361008

IX	FORMATION TOPS/Zones					
NAME	Tops		Gross Interval (ft)	Net Pay (ft).		REMARKS
	M.D.	Sub-sea		Gas	Oil	
Heytesbury Grp. (Olig.-Miocene)	438	134m -338	742			
Wangerrip Grp. (Pal.-Eocene)	1180	360m -1080	1332			
Curdies (Upper Cret.)	2512	766m -2412	1684			
Paaratte (Upper Cret.)	4196	1279m -4096	99			
Waarre (Upper Cret.)	4295	1309m -4195	310			
Basement	4605	1404m -4505				

X GEOLOGIC ANALYSIS (Pre Drilling prognosis Vs actual results)

Prawn-1, 44 miles north of Whelk, penetrated 2350 feet of Waarre Equivalent. The section consisted of 288 feet of rhyolitic conglomerate at the base overlain by 2062 feet of fine to coarse grained sandstone interbedded with siltstone and shale. Measured porosities in this sandstone exceeded 20 percent and permeabilities ranged up to 235 mds.

Clam-1, 75 miles south of Whelk, penetrated 72 feet of Waarre Equivalent. The section consisted of sandy siltstone with only a few thin stringers, not exceeding 3 feet with porosities up to 20 percent.

Whelk-1 was drilled to test anticipated Waarre sandstones with good reservoir characteristics in the transition from coarse clastic in the source area to the north (as shown by Prawn-1) to very fine grained in the south (as evident in Clam-1).

The Waarre section was interpreted to be approximately 900 feet thick at the Whelk location.

A structure map on the top of the Waarre prior to drilling showed a single anticlinal closure with 300 feet of vertical closure and extending over 17 square miles areally.

The well penetrated 310 feet of this formation which was dominantly coarse to very coarse sandstone with a fine to medium grained sandstone and argillaceous matrix. Lithologic and well-log correlations and velocity survey information have placed the top of this unit 445 feet lower than anticipated. Pre drilling structural morphology of the top of the Waarre has not been invalidated, but drilling has lowered the structure by 445 feet.

The Belfast Formation which is widely distributed throughout the Otway Basin and with little variation, consists of light grey to medium grey brown silty shale was anticipated to overly the Waarre sequence and act as a seal. This lithologic unit was not encountered in drilling although silty sandstones and silty shales of Belfast time equivalence were encountered.

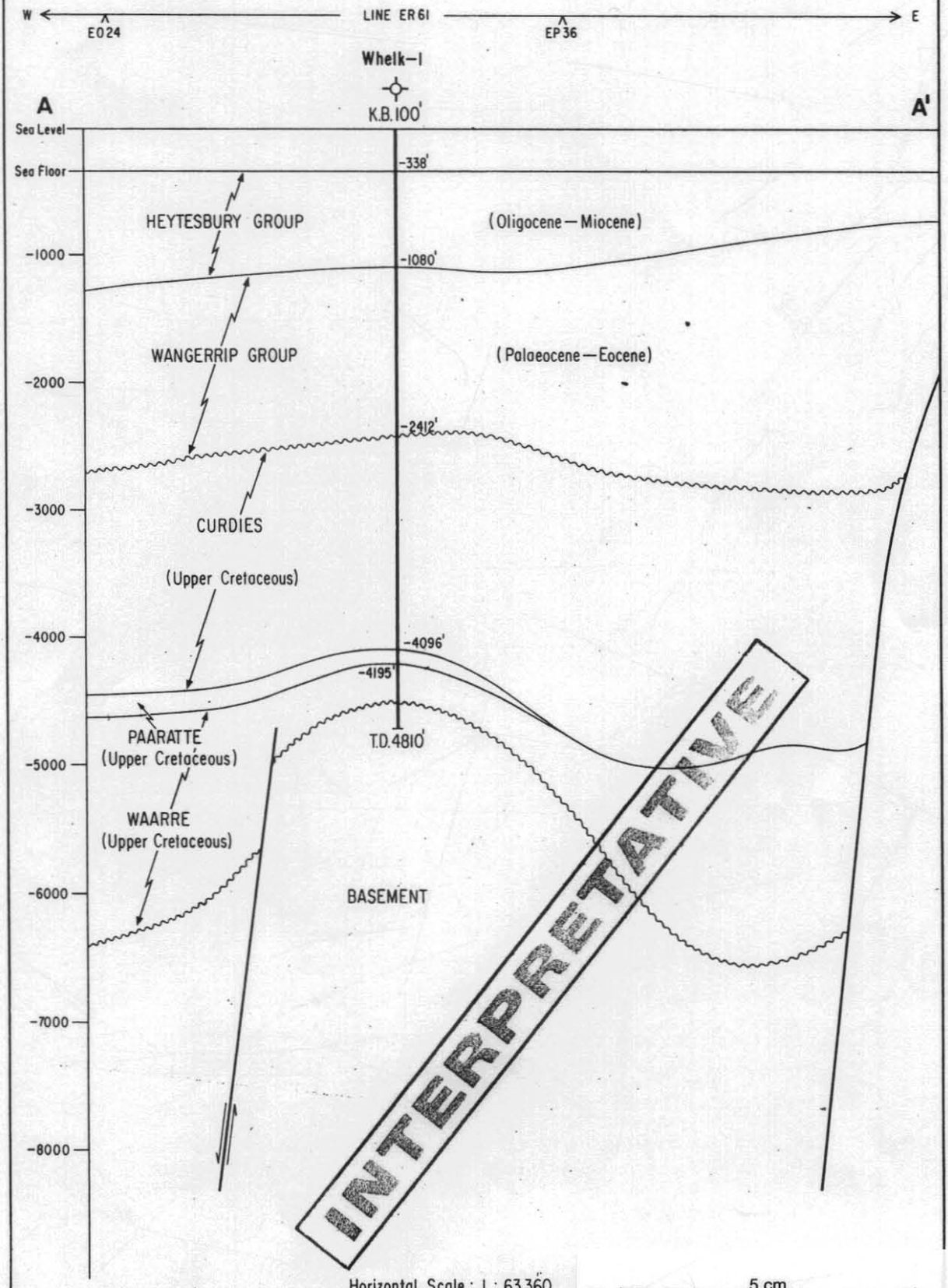
The reason for the well being dry could be ascribed to either lack of source for generation of hydrocarbons or the lack of adequate seal over the Waarre in this area for the trapping of hydrocarbons in the Whelk structure.

J.K. Davidson
Geologist

WELL WHELK 1

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CROSS SECTION OF AFTER DRILLING PICTURE



Horizontal Scale : 1 : 63,360

Vertical Scale : 1 : 12,000

5 cm

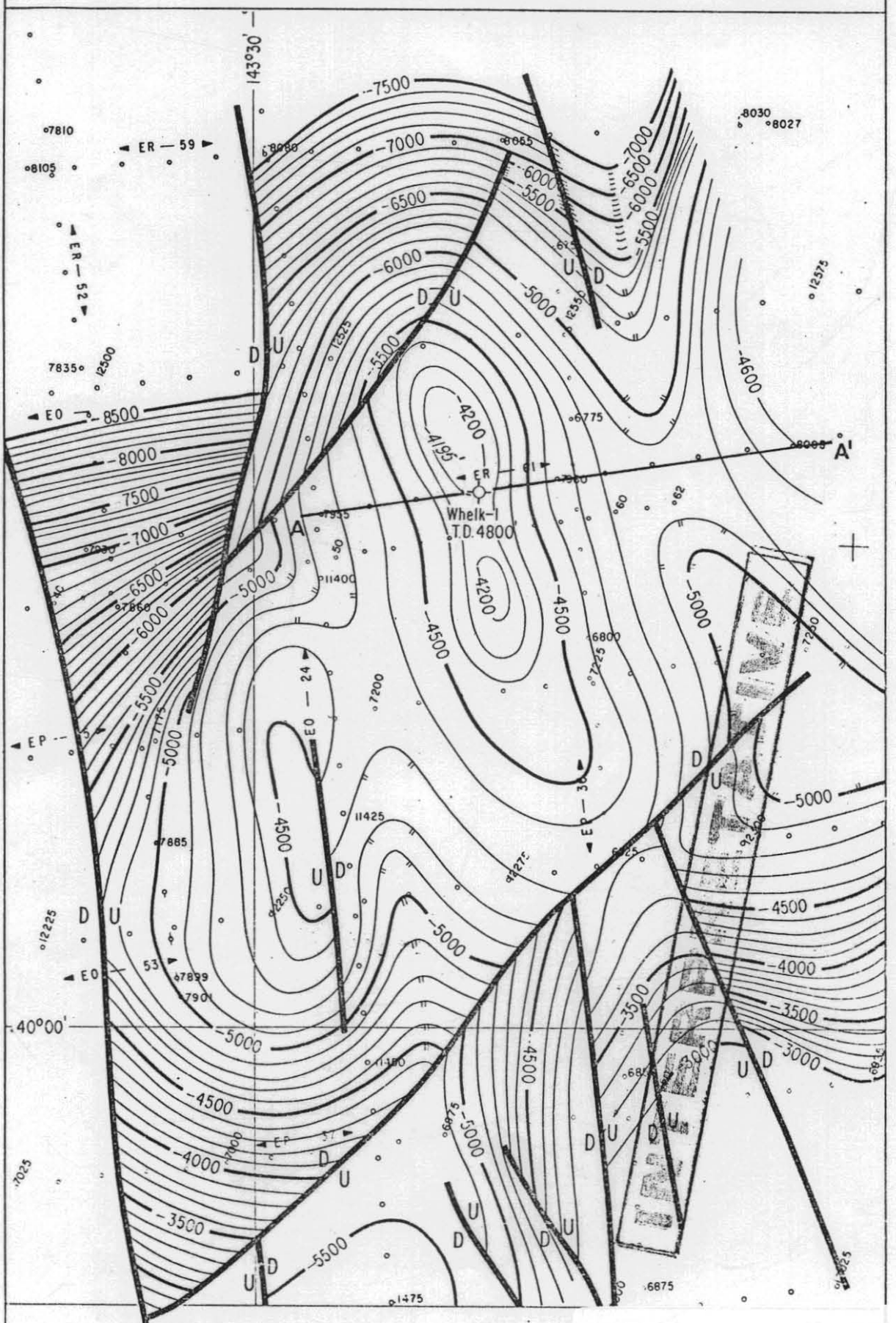
J.K. Davidson

Geologist

Dwg 1248/OP/7

Fig 1

GEOLOGIC MAP OF AFTER DRILLING PICTURE 361010



STRUCTURE MAP ON
TOP OF WAARRE—FLAXMANS

SCALE 1:100 000

2 1 0 2
MILES

CONTOUR INTERVAL: 100

DATUM: SEA LEVEL

5 cm

C.C. Horgan
J.K. Davidson

Dwg 1248/OP/5

Fig 2

361011

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. Whelk No. 1

DATE ANALYSIS COMPLETED October 28, 1970

Core No.	Sample Depth		Lithology	Average Effective Porosity two plugs (% Bulk Vol.	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
1	4240'2"	4240'9"	sst;f.gr to m.gr arg.	29	140	157	1.91	2.69	15	nil	n.d.	neg.	nil	
1	4245'3"	4245'10"	sst.m.gr arg.	32	358	531	1.87	2.73	25	nil	n.d.	neg.	nil	
1	4250'4"	4251'0"	sst;f.gr arg.carb pyr.	30	4.9	923	1.94	2.74	20	nil	n.d.	neg.	nil	
1	4259'6"	4260'0"	sst;f.gr shly.carb	25	0.23	0.23	2.04	2.79	53	nil	n.d.	neg.	nil	
2	4479'4"	4480'1"	sst;f.gr mic.	24	26	29	2.04	2.75	31	nil	n.d.	neg.	nil	
2	4481'4"	4481'9"	sst;f.gr sl.arg	25	44	60	2.03	2.74	59	nil	n.d.	neg.	nil	
2	4488'9"	4489'2"	sst;m.gr v.arg	27	143	144	2.02	2.78	45	nil	n.d.	neg.	nil	
2	4493'6"	4493'10"	sst;f.gr mic. arg	25	35	46	2.03	2.76	48	nil	n.d.	neg.	nil	

Remarks: -

General File No. 69/1414

Well File No.

361012

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. Whelk No. 1

DATE ANALYSIS COMPLETED October 28, 1970

Core No.	Sample Depth		Lithology	Average Effective Porosity two plugs (% Bulk Vol.	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
2	4496'9"	4497'4"	sst;m.gr arg. mic	21	8.7	22	2.10	2.73	48	nil	n.d.	neg.	nil	

Remarks: -

General File No. ~~69/1320~~ 69/1414
Well File No. _____

361013

D of M	S & A	C G	CC & M	D.S.M.E.
				Registrar
RECEIVED 15 MAR 1970				E & IL
ANSWERED DEPT. OF MINES				
REF. NO.				

HEMATITE PETROLEUM PROPRIETARY LIMITED

WEEKLY DRILLING REPORT

TENEMENT NUMBER: Tas/P3

OPERATOR: Esso Standard Oil (Australia) Ltd.

DRILLING UNIT: " ean Digger"

WELL: Whelk-1

DATE OF REPORT: 10th March, 1970

LOCATION: Latitude 39° 53' 58" South
Longitude 143° 33' 21" East

WATER DEPTH: 330 feet

PROGRESS:

Current	2047 feet
Previous	0 feet
Progress	2047 feet

OPERATIONS:

Whelk-1 was spudded at 0700 hours on 6th March, and a 20" casing string was set at 934 feet. 29 sidewall cores were shot, of which 24 were recovered, and IES and GR-Sonic logs were run. Currently running the 9 5/8" casing.

LITHOLOGY:

Interval (ft.)	
970-1010	10% Shale, dark grey, friable 90% Limestone, skeletal, detrital.
1010-1140	0-60% Limestone, as above. 0-100% Marl, fossiliferous
1140-1180	Sandstone, calcareous, angular to sub-rounded, poorly sorted.
1180-1300	Sandstone, granular to pebbly, no matrix.
1300-2047	Sandstone, poorly sorted quartzose and lithics, with three types of matrix : (1) Pyritic, calcareous and black mud. (2) Pyritic, calcareous, and white mud. (3) Slightly calcareous, brown mud.

GAS READINGS:

Interval (ft.)	Hot Wire Cuttings	Hot Wire	C1	C2	C3
970-2047	0	0-1	0-20	-	-

W.M. Lonie BC

W.M. LONIE

MES:YEF
Melbourne.

HEMATITE PETROLEUM PROPRIETARY LIMITED

WEEKLY DRILLING REPORT

TENEMENT NUMBER: Tas/P3.

OPERATOR: Esso Standard Oil (Australia) Ltd.

DRILLING UNIT: "Ocean Digger"

WELL: Whelk-1.

DATE OF REPORT: 16th March, 1970.

LOCATION: Latitude 39° 53' 58" South
Longitude 143° 33' 21" East

WATER DEPTH: 330 feet.

PROGRESS:

Current	4800 feet (T.D.)
Previous	2047 feet
Progress	2753 feet

OPERATIONS:

During the week two conventional cores were cut, with an aggregrate footage of 60 feet, and a recovery of 56 feet (93%). 30 SWC's were shot, all of which were recovered. A velocity survey was run and IES, Sonic, FDC and CDM logs were also run. Total depth of 4800 feet was reached on 15th March, and cement plugs have been set. The riser is currently being pulled preparatory to abandoning the location. "Ocean Digger" will be moved to the Pelican No.1 Well site in Permit TAS/P6.

CEMENT

Plug No.	Depth (ft.)	Cement
1	2620-1900	175 sacks neat cement plus 2% $CaCl_2$.
2	700-560	50 sacks neat cement.

20-inch and 9 5/8-inch casing head out.

GAS READINGS:

Interval (ft.)	Hot Wire Cuttings	Hot Wire	C1	C2	C3
2047-2930	0	2-4	40-200	-	-
2930-4004	0-6	1-4	4-40	-	-
4004-4221	0	trace	trace	-	-
4221-4610	trace	trace-1	1-13	-	-

LITHOLOGY:

Interval (ft.)	
2047-2290	Sand, coarse-grained, loose, well rounded, quartzose, trace lithics and quartzite, limonite stained, some muscovite, chlorite and pyrite.
2290-2510	Sand, as above, some Claystone, desegregated in the mud.
2510-2740	Claystone, light grey to brown, silty to sandy, calcareous, interbedded with Sandstone, medium brown, very fine grained, slightly conglomeratic, very calcareous.
2740-2820	Sand, as above.
2820-3260	Sand, coarse to very fine-grained, interbedded with light grey Claystone, silty to sandy, soft, slightly calcareous.
3260-3740	Claystone, light grey, silty to sandy interbedded with 10-30% Sandstone light brown, very fine to medium-grained, calcareous, argillaceous, pyritic.
3740-4060	Claystone, as above, slightly carbonaceous, with 10-30% Sandstone, very fine, carbonaceous, to medium-grained and some coarse-grained between 4000 and 4020 feet.
4060-4170	Claystone, as above, with up to 40% Sandstone, as above, and fine to coarse-grained Sand; 5-10% Coal.
4170-4238	Claystone, grey, silty, carbonaceous, interbedded with 30% Sandstone, fine to coarse-grained, trace Coal.

CORE NO.1.

4238-4268	Cut 30 feet, recovered 29 feet.
4238-4240	Sandstone and Claystone, thinly interlaminated. Sandstone, light grey, very fined-grained, quartzose, green-black matrix, argillaceous, micaceous, carbonaceous, pyritic. Claystone, dark grey, very silty, micaceous, carbonaceous.
4240-4253	Sandstone, grey medium-grained, clear to frosted quartz, 5-10% green-black matrix, weathered Feldspar, micaceous, carbonaceous, pyritic

CORE NO.1 (contd.)

4253-4267	Sandstone and Claystone, thinly interlaminated. Sandstone, light grey, very fine-grained, quartzose, green-black matrix, argillaceous, micaceous, carbonaceous, pyritic. Claystone, dark grey, very silty, micaceous, carbonaceous. Sandstone modules in Claystone and vise versa.
4267-4268	Not recovered.
4268-4310	Claystone with 30% Sandstone, light grey, very fine-grained.
4310-4440	Sand, fine to medium-grained, and coarse 10% grey chert, jasper, quartzite , chlorite?, interbedded Claystone.
4440-4478	Sandstone, medium to coarse grained, quartzose.

CORE NO.2

4478-4508	Cut 30 feet, recovered 27 feet.
4478-4505	Sandstone, medium to coarse-grained, with 15-20% lithics and white kaolin matix.
4505-4508	Not recovered.
4508-4590	Sandstone, as above.
4590-4620	95% Sandstone, as above. 5% red Claystone.
4620-4670	90% Claystone, variegated 10% Sandstone No shows.
4670-4800	Decreasing red Claystone, increasing green chlorite schist and talc like material with veins of calcite.

CORE ANALYSIS:

Core No.	Depth (ft.)	Porosity (%)	Permeability (millidarcies)	Water Saturation %
1	4240	8.5	0	100
	4242	19.8	1730	100
	4245	11.5	1702	100
	4248	16.5	1437	100
	4251	15.6	432	100
	4254	8.2	0	100

CORE ANALYSIS (Contd.)

Core No.	Depth	Porosity (%)	Permeability (millidarcies)	Water Saturation %
2	4478-4508	23.31	10-266	100

W M Lonie BH

W.M. LONIE

MES:YEF
Melbourne.

361019

HEMATITE PETROLEUM PROPRIETARY LIMITED

WEEKLY DRILLING REPORT

TENEMENT NUMBER:	Tas/P3.
OPERATOR:	Esso Standard Oil (Australia) Ltd.
DRILLING UNIT:	"Ocean Digger".
WELL:	Whelk-1.
DATE OF REPORT:	23rd March, 1970.
LOCATION:	Latitude 39° 53' 58" South. Longitude: 143° 33' 21" East.
WATER DEPTH:	330 feet.
PROGRESS:	Current 4800 feet (T.D.) Previous 4800 feet Progress 0 feet

OPERATIONS:

Whelk-1 site was abandoned at 1300 hours on 17th March, "Ocean Digger" then moved to the Pelican-1 location in Permit TAS/P6. This is the final report.

W. M. Lonie

W.M. LONIE

MES:YEF
Melbourne.

Record of plugging program?

361020

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. 1

WELL: WHELK 1

Interval Cored 4238-68 ft., Cut 30 ft., Recovered 29 ft., (97 %) Fm. U.K. ?

Bit Type C-20 , Bit Size 8 5/16 in., Desc. by F.E.M. Date 12 MAR 70

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 8 6 4 2				
40				THINNLY INTERBDD SS & CLYSTN. SS IS LT GY, VFG., MOSTLY WH QTZ W/ 5-10% GN & BLK MAFICS, ARG., MICAC, SLI CARBON., SCATTERED PYRITE NODULES. CLYSTN IS DK GY, VERY SILTY GRADING TO SILTSTN, MICAC, SLI CARBON. CURRENT RIPPLES. SOME THIN BEDS OF SS DISRUPTED BY CURRENT W/ NODULES OF SS REWORKED INTO CLAYSTN.
45				SS, MED GY, MED GRDINED, MOSTLY CLR & FROSTED QTZ W/ 10% GN & BLK MAFICS, MICAC, ARGILL, WH CLY MATRIX APPEARS TO BE WEATHERED FELDSPAR, SCATTERED PYRITE NODULES, SCATTERED CARBON. CLYSTN LAMINAE SHOWING LOW ANGLE X BDDING & SOME MINOR CURRENT RIPPLES. LITTLE OR NO GRADATION IN GRAIN SIZE. TOP & BTM CONTACTS SLI GRADATIONAL
50				
55				
60				THINNLY INTERBDD SS & CLYSTN AS ABOVE, SEVERELY BURROWED IN PART, THIN BEDS OF BOTH SS & CLYSTN DISRUPTED BY CURRENT ACTION RESULTING IN NODULES OF SS IN CLYSTN & NODULES OF CLYSTN IN SS.
65				
68				

REMARKS:

5 cm

361021

ESSO STANDARD OIL (AUSTRALIA) LTD.

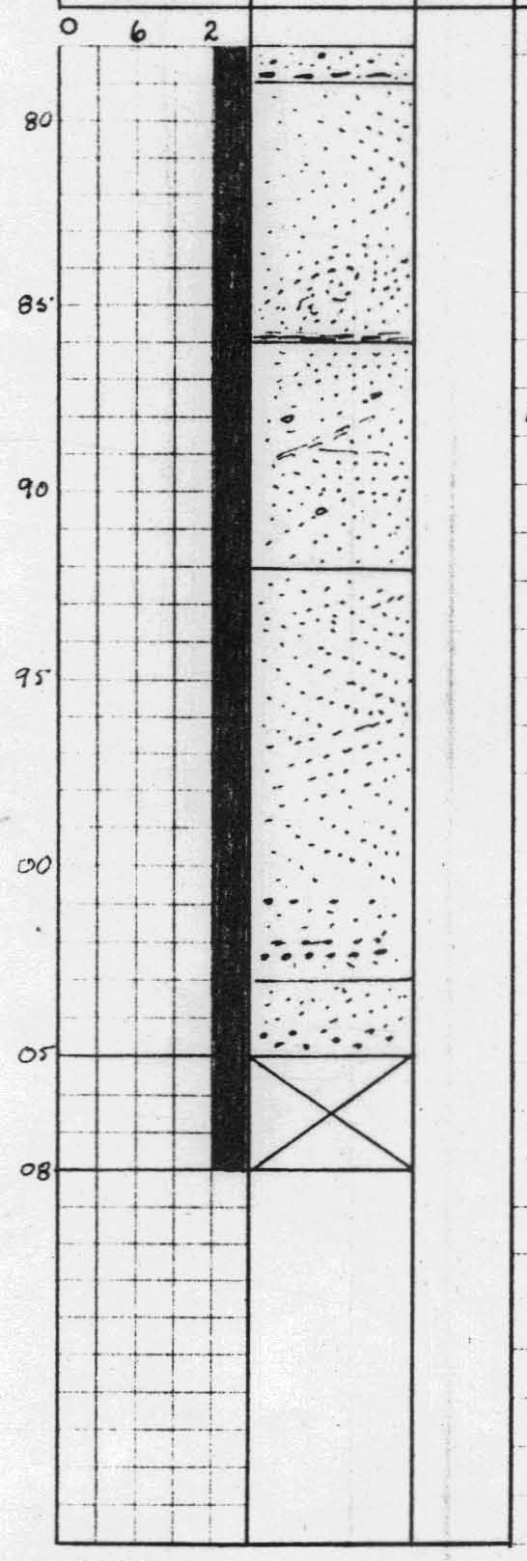
CORE DESCRIPTION

Core No. 2

WELL: WHELK 1

Interval Cored 4478-4508 ft., Cut 30 ft., Recovered 27 ft., (90 %) Fm. U.K. ?

Bit Type C20, Bit Size 8 5/16 in., Desc. by FEM Date 13 MAR 70



Shows	Interval (ft.)	Descriptive Lithology
	4478-79	SS LT GY-GN, MED - VCSE, SLL CGLATIC, PREDOM. ROD, FROSTED QTZ GRAINS WITH 5% MAFICS, 10% CHLORITE SCHIST & 5% WEATHERED FENOSPAR IN A MICRC WHITE KAOLIN MATRIX. GRANULES & PEBBLES OF SOFT, WAXY, LT GN CLAYSTN AT BASE. HIGH ANGLE CROSS BEDDING.
	4479-86	SS AS ABOVE, MED GRAINED, FAIRLY WELL SORTED, HIGH ANGLE CROSS BEDDING & SLUMP STRUCTURE. BTM 2" IS SLICKEN-SIDED ALONG A PROBABLE FAULT PLANE WHICH DIPS 40°.
	4486-92	SS, MED GY, MED AT TOP GRADING DOWNWARD TO CG, PREDOM. ROD, FROSTED QTZ WITH 15% DARK MAFICS, TR BRIGHT GREEN GRAINS & JASPER, SCATTERED GRANULES OF LT GN WAXY CLAYSTN, SCATTERED LAMINAE OF REWORKED COAL, MICAL WHITE KAOLIN MTX, MODERATE TO HIGH ANGLE X-BEDS. FAULT PLANE AT BASE DIPS 60° AND TRUNCATES CARBON. LAMINAE.
	4492-4503	SS AS ABOVE, MED AT TOP GRADING DOWNWARD TO VCSE - GRANULE WITH SOME PEBBLES OF LT GY-GN CLAYSTONE & GRANULES OF QTZ & WHITE FELOSPAR AT BASE.
	4503-05	AS ABOVE
	4505-08	NO RECOVERY

REMARKS:

5 cm

361022

EXPLORATION LOGGING OF AUSTRALIA, INC.

A Geological-Engineering Service

PERTH ADDRESS: 69 GREAT EASTERN HIGHWAY VICTORIA PARK WESTERN AUSTRALIA
PHONE: 61 4437 CABLE: EXLOGG. PERTH

CORE ANALYSIS REPORT

COMPANY ESSO-BHP
WELL WHELK #1
LOCATION/FIELD OFFSHORE/OTWAY BASIN
COUNTY KING ISLAND STATE TASMANIA
COUNTRY AUSTRALIA
REMARKS SANDST, LT-GRN, SPECKLED, MED TO CRSE, RD, FAIRLY WELL SRTD, ABUND KAO MTX, FAIRLY MASS W/ COM GRN CLYST PBLS & OCC CARB LAMINAE, QTZ & CHLOR, HIGH ANGLE X-BEDDING, NO SHOWS,

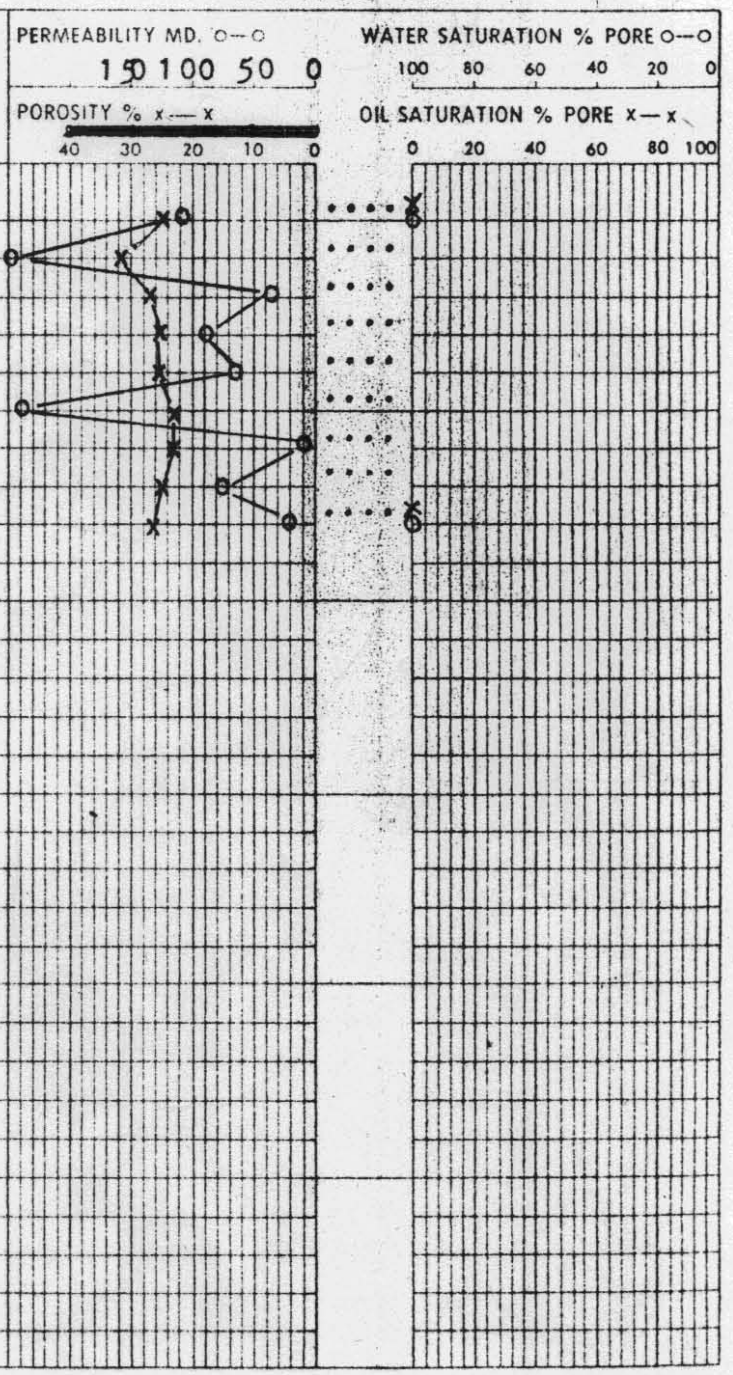
DATE MARCH 13, 1970
DEPTH 4478 TO 4508
GEO-ENGINEER CRAIG CLARKE
CORE: No. 2

SAND
SILTY SAND
SILTST.
SHALE
LIME
CONGL.

TABULAR DATA

SAMPLE NUMBER	DEPTH FEET	AIR PERM. MD.	POROSITY PERCENT	FLUID SATURATION % PORE VOLUME		DRY BULK DEN-SITY	TOTAL CL G/G	REMARKS
				OIL	WATER			
1	4480	109	25.4	0	100	2.08		
2	4483	266	31.5	–	–	1.93		
3	4486	31	27.1	–	–	2.12		
4	4489	85	26.3	–	–	2.02		
5	4492	62	26.2	–	–	1.92		
6	4495	238	23.2	–	–	1.98		
7	4498	10	23.6	–	–	2.03		
8	4501	75	24.9	–	–	2.09		
9	4504	22	27.3	0	100	2.03		

ANALYSIS GRAPH



5 cm

361023

CORE #1

EXPLORATION LOGGING OF AUSTRALIA, INC.

A Geological-Engineering Service

PERTH ADDRESS 69 GREAT EASTERN HIGHWAY VICTORIA PARK, WESTERN AUSTRALIA
PHONE 61 4437 CABLE EXLOGG, PERTH

CORE ANALYSIS REPORT

COMPANY ESSO-BHP
WELL "WHELK NO.1"
LOCATION/FIELD OFFSHORE/OTWAY BASIN
COUNTY KING ISLAND STATE TASMANIA
COUNTRY AUSTRALIA

DATE 13 MARCH 1970
DEPTH 4238 TO 4268
GEO-ENGINEER CRAIG; CLARKE

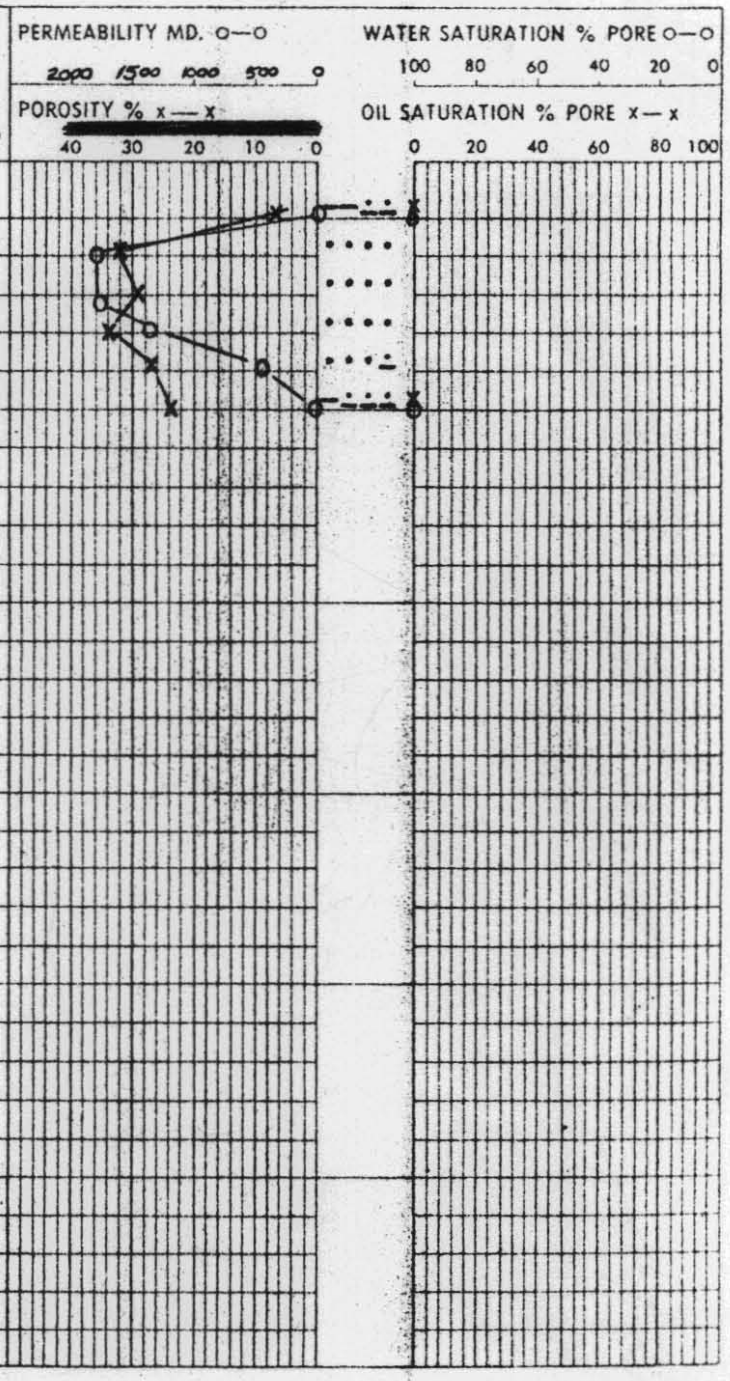
REMARKS RECD.29 FT. SANDST,LT-GY,ALT V FN & MED, MOSTLY SUBANG,LOCALLY SORTD,PT FROSTED,QTZ W/ ABUND MICA & FEMICS,CARB & PYR NODULES,DIPS TO 15°,X-BED,INTERLAMIN & REWORKED W/CLAYST,DK-GY, HD,SLTY,OCC SLICKENSIDED,RIPPLE MARKS. NO SHOWS.

SAND · SILTY SAND · SILTST. · SHALE · LIME · CONGL.

TABULAR DATA

SAMPLE NUMBER	DEPTH FEET	AIR PERM. MD.	POROSITY PERCENT	FLUID SATURATION % PORE VOLUME OIL	FLUID SATURATION % PORE VOLUME WATER	GRAVITY OIL °API	TOTAL CL⁻ G/G	DRY BULK DENS.	REMARKS
1	4240	0	6.8	–	–	–		2.16	
2	4242	1730	32.2	0	100	–		1.82	
3	4245	1702	30.7	–	–	–		1.74	
4	4248	1437	33.7	–	–	–		1.81	
5	4251	432	26.6	0	100	–		1.96	
6	4254	0	23.5	–	–	–		2.04	

ANALYSIS GRAPH



5 cm

SIDEWALL CORE DESCRIPTIONS

WELL WHELK-1 | SCHLUMBERGER SERV.CO. | DATE 9-[illegible]-70 | LOG RUN NO. 1 | J. DAVIDSON GEOLOGIST

REF.# | FIELD OTWAY | STATE TASMANIA | ATT. 26 REC. 24 | PAGE 1 OF 1 PAGES

NO.	Feet DEPTH	in. REC	LITHOLOGY	COLOR	CLAY	CONS	CALC	ODOR	FIDO	FLUORESCENCE DIST	FLUORESCENCE INT	FLUORESCENCE COL	CUT QUAN	CUT COL	CUT FLUOR. INT	CUT FLUOR. COL	SHOW	PROB. PROD.
1	1976	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
2	1888	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
3	1842	3/4	Med. sandstone	brown yellow		fair	✓											
4	1804	1½	Fine sandstone	brown	✓	mod con	✓											
5	1759	1½	Fine sandstone	brown	✓	mod con	✓											
6	1712	1¾	Fine to granular sandstone	brown		mod con	✓											
7	1702	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
9	1606	2	Shale	brown	✓	poor												
10	1594	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
11	1552	2	Shale	brown	✓	poor	✓											
12	1501	2	Sandy siltstone - clay matrix	black brown	✓	poor	✓											
13	1486	2	Sandy siltstone - clay matrix	black brown	✓	poor	✓											
14	1462	2	Sandy siltstone - clay matrix	black brown	✓	poor	✓											
15	1428	2	Sandy siltstone - clay matrix	black brown	✓	poor	✓											
16	1385	1¾	Sandy siltstone - clay matrix	black brown	✓	poor	✓											
17	1289	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
19	1162	2	Shale	black	✓	poor	✓											
20	1125	2¼	Marl	brown	✓	poor	✓											
22	1068	3/4	Marl	grey brown	✓	poor	✓											
24	1110	1¾	Marl	brown	✓	poor	✓											
25	1062	2	Marl	brown	✓	poor	✓											
26	1042	2¼	Marl	lt. grey	✓	poor	✓											
27	1006	2¼	Marl	brown	✓	poor	✓											
29	991	2¼	Marl	lt. grey	✓	poor	✓											

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SIDEWALL CORE DESCRIPTIONS

WELL WHELK 1 | SERV. CO. SCHLUMB | DATE 15-3-70 | LOG RUN NO. 2 | GEOLOGIST FEM

REF.# | FIELD OTWAY | STATE TASMANIA | ATT. 30 | REC. 30 | PAGE 2 OF 2 PAGES

NO.	DEPTH	REC	LITHOLOGY	COLOR	DISS CLAY	CONS	CALC	ODOR	FIDO	FLUORESENCE DIST	FLUORESENCE INT	FLUORESENCE COL	CUT QUAN	CUT COL	CUT FLUOR. INT	CUT FLUOR. COL	SHOW	PROB. PROD.
18	3183	1½"	CLYSTN, SILTY, MICAC	GY														
19	3116	1½"	AS ABOVE, WEATHERED SHELL FRAG(?)	GY														
20	3015	1½"	AS IN 3183	GY														
21	2936	1½"	AS IN 3183	GY														
22	2732	1½"	AS IN 3183	GY														
23	2526	1½"	CLYSTN, SLI SDY, PYRITIC	GY														
24	2473	1½"	SS, VFG, VERY ARG.	LTGY														
25	2392	1½"	AS ABOVE	LTGY														
26	2319	1"	SS, MED, VERY FRIABLE	LTGY				NONE										
27	2250	1"	AS ABOVE	LTGY				NONE										
28	2179	1"	AS ABOVE	LTGY				NONE										
29	2126	1"	AS ABOVE	LTGY				NONE										
30	2060	1½"	SS, MED-CSE, VERY ARG	DKGY				NONE										

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SIDEWALL CORE DESCRIPTIONS | WELL WHELK 1 | SERV. CO. SCHLUMB | DATE 5-3-70 | LOG RUN NO. 2 | GEOLOGIST FEM

REF.# | FIELD OTWAY | STATE TASMANIA | ATT. 30 REC. 30 | PAGE 1 OF 2 PAGES

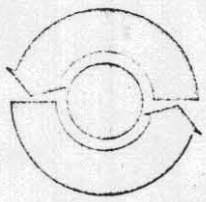
NO.	DEPTH	REC	LITHOLOGY	COLOR	DISS CLAY	CONS	CALC	ODOR	FIDO	FLUORESENCE DIST	FLUORESENCE INT	FLUORESENCE COL	CUT QUAN	CUT COL	CUT FLUOR. INT	CUT FLUOR. COL	SHOW	PROB. PROD.
1	4795	3/4"	SILTSTN, CALC, WITH CHLORITE GRANULES, VERY HARD, SLI. METAMORPHOSED(?)	GY														
2	4784	1½"	CLYSTN, VARIEGATED, GRAINS OF CHLORITE, WEATHERED FELDSPAR	RED/GY														
3	4706	1½"	CLAYSTN(?), VERY SOFT WAXY, METAMORPHOSED (?)	GN														
4	4637	1½"	CLYSTN, STICKY WITH CHLORITE(?) INCLUSIONS	DK RED														
5	4488	1"	SS, MED GR, ARG, MICAC.	LTGN				NONE										
6	4427	1½"	SAME AS 4488	LTGN				NONE										
7	4290	1½"	CLYSTN, SOFT, SILTY	GY														
8	4220	1½"	SS, MED, VERY ARG, MICAC	GY				NONE										
9	4123	1¼"	SS, MED W/ TR CGSE, ARG, MICAC, VERY FRIABLE	LTGY				NONE										
10	4089	1"	SS AS IN 4123	LTGY				NONE										
11	3964	1¼"	INTERLAM. CLYSTN & SILTSTN	LT-MK GY														
12	3856	1½"	SS, F-M, VERY ARG.	LTGY				NONE										
13	3861	1½"	SS AS IN 3856 & CLYSTN	LT-DK GY				NONE										
14	3597	1½"	INTERLAM. VFG SS & CLYSTN	LT-DK GY														
15	3434	1½"	CLYSTN, SOFT, FINELY MICAC	DKGY														
16	3389	1½"	SS, MED W SOME CGSE, ARG VERY FRIABLE	LTGY				NONE										
17	3297	1½"	INTERLAM. CLYSTN & SILTSTN	LT-DK GY														

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361027

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES



PLEASE ADDRESS ALL CORRESPONDENCE TO THE DIRECTOR.

OUR REFERENCE: MP 3/178/0
YOUR REFERENCE:

10th April, 1970.

The Geologist in Charge,
Esso Standard Oil (Australia) Ltd,
GPO Box 4047,
SYDNEY, N.S.W. 2001

REPORT MP 3595-70

YOUR REFERENCE:	Letter dated 1/4/70. 61/jnb.
MATERIAL:	One chip sample.
IDENTIFICATION:	S29 – Whalk I (4795)
DATE RECEIVED:	6/4/70
WORK REQUIRED:	Petrographic description.

Investigation and Report by: S. Whitehead.

Officer in Charge, Mineralogy/Petrology Section: Dr K. Henley.

K. J. Henley

for N. Draper
Director.

BASIC IGNEOUS ROCK FROM EXPLORATORY OIL WELL

WHELK-1 (4795')

Sample: S29: TS C5465.

Rock Name:
Altered analcite basalt.

Hand Specimen:
Small chips of fine grained, grey rock. Six fragments approximately 1 cm in size were mounted and sectioned.

Thin Section:
An optical estimate of the constituents gives the following:

	%
Clinopyroxene	25-30
Chlorite and micaceous alteration products	30-40
Analcite	20-25
Opaque grains (magnetite)	10-15

The rock is porphyritic and some minerals have been extensively altered.

It contains a few fractured remnants of pyroxene phenocrysts up to 1 mm in a finer grained rock now composed of crystals of almost colourless pyroxene (0.03-0.1 mm), crystals of a mineral completely replaced by chloritic minerals (possibly former olivine) and very small crystals of magnetite.

Analcite fills interstices and also occurs as crystals up to 0.1 mm in size with small inclusions of other minerals.

Some chlorite also occurs in interstices and some lines or fills former vesicles.

Minor amounts of late or secondary biotite occur in places, generally associated with iron oxide.

Conclusion:
The chips are probably from an altered basic lava flow.

jjp.1

361029

WHERRY I

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970 – 990 Skeletal-detrital ls. – off white to light grey, fragmentary remains of bryozoans (rod & plate forms), forams, pelecypods and echinoid spines (skeletal) and euhedral and broken calcite crystals (crystallized calcite and possible echinoid plates) & carbonaceous fragments (detritus) cemented in a calcite and minor clay matrix. 90% 10% dark grey shale.

990 – 1010 ↑

1010 – 1030 60% ls ↑, 40% marl, grey to dark grey, fragmentary ls with carbonaceous fragments (up to 30%) in a calcite and shale matrix (greater carbonaceous & shale contents than the ls with particles in the med to coarse sand grade range rather than with fossil fragments up to ½ cm).

1030 – 1050 100% marl, grey, fragmentary fossils (as in 970 – 990) & euhedral & rounded crystals and sub rounded rock fragments (dark shales & silts) in a calcite and dominantly clay matrix.

1050 – 1080 100% marl ↑ one fragment (1 cm) of vesicular basalt. black mineral in place of vesicles in some places – could be hornblende?

1080 – 1110 100% marl ↑

1110 – 1140 100% marl ↑

1140 – 1180 100% coarse sandstone in a calcite cement

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the calcite giving a dirty (tan)-pink colour-
mud in cuttings (small shale fragments)
probably indicates washout of the marls
above. - particles of quartz are sub angular
& sub rounded.

1180-1220 100% loose grains of quartz, clear, white
and lt brownish yellow, no matrix or
cement, dominantly granule size but a
high component of pebble size up to 7 mm.

~~1220-1180~~ most grains sub rounded but some are
~~are~~ sub angular and many rounded

1220-1260 as above - some grains are very
pale blue pale opaline topaz - occasional
groups of grains cemented by pyrite & minor
calcite

1260-1300 as above

1300-1340 80% granules as ↑ 20% dark brown to
black, very poorly sorted sandstone -
quartz grains & lithics vary from silt
to coarse sand size with a black
mud & calcite & pyritic matrix, extremely friable
crumbles in fingers like wet lignite.

1340-1380 80% coarse sandstone, loose ↑ varies
from med to granular & pyritic 20% sandstone
black ↑ (cemented).

1380-1440 Sandstone - coarse (med to granular)
3 types (1) black one above 10%. (pyritic
three (2) with white clay & calcite
cement (2&3) with brown clay & minor
calcite cement 50% (2 & 3) very poorly
sorted & ~~&~~ abundant pyrite (2) more
than (3). The abundance of loose grains

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USA/FEE

March 1970

...hiatus in the section has resulted from the bit plucking the granular quartz out & the clay & calcite being washed away during the washing of the cuttings.

1440-1500 sandstone (1) 10% ↑ (2) 10% ↑ (3) 20% ↑ 60% loose grains (quartz & lithics) & pyrite. (3) (brown) not unlike Fossil Bluff Sandstone. micaceous fossils ± cm long.

1500-1540 ~~[illegible]~~ Ss (2) 10% ↑ (3) 10% ↑ 80 loose grains & pyrite

1540-1570 Ss (1) 10% ↑ (2) 10% ↑ (3) 50% ↑ 30% loose quartz & lithics — sample v. muddy (mud washed away during sample preparation).

1570-1620 Ss (1) 10% (3) 60% 30% loose grains groups of pyrite cemented grains abundant, coral & pelecypod fragments.

1620-1670 Ss (1) 10% (3) 90%.

1670-1710 loose sand — v. coarse to pebbly still Tr of dark & light grey sh & Tr of coal (lignite).

1710-1770 ↑. no sh or coal

1770-1830 ↑ grains include quartz, black lithics, muscovite & molybdenite & celestite.

1830-1890 ↑

1890-1950 ↑ + biotite & phlogopite?

1950-2010 ↑

2010-2050 ↑

2050-80 ↑, + 70% CEMENT

2050-2290 SD, CSE-UCSE, TR PEBBLE, LOOSE GRAINS OF CLEAR TO FROSTED WELL RND QTZ WITH TRACE OF LITHICS, SOME MUSCOVITE & gg gn MICA (CHLORITE?)

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2290 - 2390 SD, CSE - UCSE WITH TR PEBBLE, LOOSE GRAINS OF CLEAR TO FROSTED QTZ WITH SOME LT. GY. QTZITE, WELL ROUNDED, SLIGHTLY LIMONITE STAINED IN PART, SOME MUSCOVITE AND GY-GN CHLORITE (?). NO MATRIX MATERIAL EVIDENT, BUT SLOWER DRILLING RATE INDICATES SAND IS BETTER CONSOLIDATED THAN THAT ABOVE OR POSSIBLY DRILLING IN CLAYSTN WHICH IS DISAGGREGATING IN MUD.

2390 - 2420 SD AA, NUMEROUS GRAINS COATED WITH PYRITE, SOME AGGREGATES CEMENTED WITH PYRITE.

2420 - 2480 SD AA, TR FG CALCAREOUS SS WHICH APPEARS TO BE MATRIX FOR COARSE SD, SOME PYRITE.

2480 - 2510 AA, TR GY-GN SILTY CLAYSTONE.

2510 - 2610 AA, WITH 40% CLAYSTN, LT GY TO GY-BRN, CALCAREOUS, VERY SILTY, GRADES TO VFG CALC SS IN PART, TR GLAUCONITE, CLAYSTN IS VERY SOFT TO SLI FIRM, MOST DISAGGREGATES IN THE MUD & DURING SAMPLE WASHING, TRACE RED CHERT (JASPER) GRANULES, SOME PYRITE -

2610 - 2640 40% SS, LT TO MED BRN, VFG, SLI CALCITIC IN PART, VERY CALCAREOUS, TR GLAUC & LITHIC FRAGMENTS, TR ~~ATOLLINE~~ CALCITE FROM RECRYSTALLIZED FOSSIL FRAGS.

30% SD AA

20% CLAYSTN AA

2640 - 2670 80% SS AA

10% CLAYSTN AA

10% SD AA

361033 WHELK 1

2670-2700 40% SS AA
30% SD AA
20% CLAYSTN AA

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2700-2730 CLAYSTN, LT GY-BRN, SLI SILTY, VERY SOFT, DISAGGREGATES IN MUD

2730-2790 85% SD, CSE-UCSE, LOOSE GRAINS OF WELL RDD FROSTED QTZ WITH TRACE GY CHERT & LITHICS, SOME PYRITE
10% SS AA
5% CLYSTN AA

2790-2850 CLAYSTN, GY, VERY SOFT, 10% SS.

2850-2890 CLAYSTN, GY, 25% SS.

2890-2920 CLAYSTN, GY, WITH 10% WELL RDD QTZ, TR PYRITE.

2920-3000 90% SD, CSE-UCSE, GRAINS OF CALCAREOUS CEMENTED FINE SS. PYRITE, ?GLAUCONITE, CHERT.

3000-3040 CLYSTN, LT GY, SILTY TO VERY SDY, SOFT, SLI CALCAREOUS.

3040-3080 SD, F-MED, LOOSE WELL RDD FROSTED QTZ GRAINS, (SAMPLE CAUGHT FROM BAFFLE THIS, NOTHING COMING OVER SHAKER. POSSIBLY DRILLING MOSTLY SOFT CLYSTN AA. WHICH IS COMPLETELY DISAGGREGATING.)

3080-3120 SD, F-MED, WITH RARE PEBBLES OF FROSTED QTZ

3120-3150 SD, F-MED, WITH TRACES MUSCOVITE, PYRITE

361034 WHELK 1

3150 - 3210 SD, F- MED, WITH MINOR MUSCOVITE, BIOTITE

3210 - 3230 CLYSTN, LT GY, SILTY TO SANDY, SOFT, SLI CALC

3230 - 3260 SD AA, UF - MED

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3260 - 3330 CLYSTN AA

3330 -60 CLYSTN AA W/ 30% SD AA

3360 - 3390 CLYSTN AA, 30% SD AA, 15% SS, LT BRN, UFG, CALC, ARG, MICAC, PYRITIC, POORLY SORTED, VERY FRIABLE

3390 - 3410 CLYSTN AA, 30% SS AA, VERY PYRITIC, 10% SD AA

3410 - SD CLYSTN AA, 40% SS AA, MED GRAIN, CALC, PYRITIC, 10% SD AA

3450 - 3610 CLYSTN AA, 20% SS AA, f- MED GRAIN, 10% SD AA

3610 - 3630 CLYSTN AA, 30% SS AA, MED GRAIN, PYRITIC, MUSCOVITE, BIOTITE, TR CHLORITE.

3630 - 3740 CLYSTN AA, 30% SS AA, MED GRAIN, PYRITIC, TR CHLORITE AND GRAY SHALE

3740 - 3760 CLYSTN, MED GY, SILTY, SLI CARBON., 20% SD, FA - UCSE, 10% SS, LT GY, UF - FG, CALC.

3760 - 3780 CLYSTN AA, SOFT, 30% UFG SS AA, 10% SD AA

3780 - 3820 CLYSTN AA, 40% SS, LT GY, UFG, SLI CGLATIC, MOSTLY QTZ WITH SOME GN & BLK LITHICS, CALCAREOUS, PYRITIC FRIABLE, 15% SD AA

361035 WHENK 1

3820 - 3850 CLYSTN AA, SILTY, SLI CARBONACEOUS, 20% SS AA, 10% SD AA

3850 - 3880 CLYSTN AA, MORE CARBONACEOUS, 40% SS AA F-M, SLI cglatic, SLI CALC, SALT, CARBON., PYRITIC, 10% SD, CSE TO UCSE -

3880 - 3940 CLYSTN AA, 40% SS AA, UF - FG, 10% SD AA

3940 3960 CLYSTN AA, 10% SS AA

3960 - 4000 CLYSTN AA, 20% SS AA

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4000 - 4020 CLYSTN AA, 10% SS AA, 30% SD, CSE TO U-CSE, WELL KOD, SOME ATTACHED DGGLEGNTES INDICATE VFG SS MTX -

4020 - 4040 CLYSTN AA, 30% SS AA, F-MED, 10% SD AA

4040 - 4060 CLYSTN AA, 20% SS AA, 20% SD AA

4060 - 4090 CLYSTN AA, 20% SS, WH, FG, FRIABLE, 10% COAL, BLK.

4090 - 4110 CLYSTN, MED GY, SILTY, MICAC, CARBON; 30% SD AA, MED TO CSE, 10% SS AA, VFG, 10% COAL

4110 - 4120 CLYSTN AA

4120 - 4140 CLYSTN AA, 40% SD, CSE TO UCSE, 10% SS AA, TR COAL

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4140-60 CLAYSTN AA, 10% SD AA, 5% SS AA, 5% COAL

4160-4210 CLYSTN AA, 20% SD, M-UCSE, 5% COAL

4210-4220 CLYSTN AA, 10% SS AA UF-FG, TR COAL

4220-4238 CLYSTN AA, 30% SS F-CSE, TR COAL

CORE # 1 4238-4268, REC. 29'

4268-4310 CLYSTN, MED GY, SILTY, GRADES TO SILTSTN IN PART, SLI CARBON, 30% SS, WH TO LT GY, UFG-MED, SLI CALC, MICAC., PYRITIC, 10% SD, CSE-UCSE, TR COAL

4310-4320 CLYSTN AA, 30% SD, VCSE, 15% SD, F-MED, TR-5% COAL, TR PYRITE, PINK JASPER

4320-40 SD, F-m(40%), CSE TO UCSE (60%), MOSTLY WELL RDD FROSTED QTZ WITH 10% GY CHERT, JASPER, LT GN QTZITE, CHLORITE? (APPEARS TO BE FROM REWORKED METAMORPHICS), MUSCOVITE, 30% CLYSTN AA

41340-4360 SD AA WITH 10% CLYSTN AA

4360-4380 SD AA, CSE (40%), UF-m (60%), 10% CLYSTN AA

4380-4420 SD AA, F-M (70%), CSE-UCSE (30%), 10% CLYSTN AA

4420-4440 SD AA, F-M (60%), CSE-VCSE (25%), 10% CLYSNM 5% CHLORITE

361037

WARKI

4440-4478 - SD AA, MED - UCSE, MORE CHLORITE & QTZITE. THAN ABOVE —

CORE #2 4478-4508, REC. 27'

4508-4530 SD, CSE TO UCSE IN A F-M ARG SS MATRIX, MOSTLY RDD, FROSTED QTZ GRAINS WITH 10% OR CHERT & OTHER MINERALS, JASPER, 5% CHLORITE SCHIST; 5% MED GY-BRN, SILTY, CARBON. CLAYSTONE, TR COAL, PYRITE, MUSCOVITE.

4530-4570 SD AA, PREDOM MED GRAINED

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4570-4590 SD AA PREDOM CSE GRAINED

4590-4620 SD AA WI 5% RED ARGILLACEOUS MATERIAL WHICH APPEARS TO BE FROM OXIDIZED ZONE AT TOP OF BASEMENT. A FEW FAIRLY LARGE ANGULAR PIECES OF CHLORITE SCHIST, SOME OF WHICH ARE PARTIALLY OXIDIZED. DRILLING RATE INDICATES BASEMENT MAY BE AT 4599.

4620-4630 SD AA WI 30% RED, BRN, GY VARIEGATED CLYSTN

4630-4650 CLYSTN AA WITH 30% SD AA

4650-4660 CLYSTN AA WITH 30% CHLORITE SCHIST, WEATHERED & OXIDIZED IN PART, 10% SD AA

4660-4710 CLYSTN AA 30% CHLORITE SCHIST, 10% SD, TR VEIN CALCITE

4710-4730 CLYSTN AA, 40% CHLORITE SCHIST, 10% SD AA TR VEIN CALCITE

361038

WHELK 1

4730 - 4790 60-80% ANGULAR FRAGMENTS (FINE SAND-SIZE TO VCSE. SAND-SIZE) GREEN, (?) TALC ROCK, MOST WITH NO SCHISTOSITY BUT RARELY SCHISTOSE (ASSOC. WITH CHLORITE). TR. (?) TALC - CHLORITE - QUARTZ GNEISS. 10-20% AA. BUT WEATHERED (RED) 5-10% M-F ANGULAR SAND-SIZE, CALCITE CRYSTALS, 5-10% ANGULAR SAND-SIZE QUARTZ, TR. PYRITIC SS., SHALE, MUSCOVITE, CLAYSTONE, WELL ROUNDED SAND-SIZE QUARTZ, FELDSPAR, JASPER.

4790 - 4800 (T.D.) AS ABOVE WITH SOME WEATHERED FELDSPAR, FIBROUS CALCITE FROM VEINLETS, PYRITE & WEATHERED

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361039

PALYNOLOGY OF ESSO WHELK NO. 1, OTWAY BASIN

by

P.R. Evans

Palyn. Rept. 1970/8

April 1970.

361040

INTRODUCTION

Samples of cores, sidewall cores and cuttings from Whelk No. 1 were received for palynological examination during March 1970. The following notes summarize the results of study up to 8th April 1970.

All sidewall cores received are listed in the summary of results below. All or a portion of those marked (*) were passed to D.J. Taylor for micropalaeontological examination. However, at the times of writing, Taylor reports that only those at 1606, 991, 1068 and 1125 feet contained microfaunas of significance to age determination.

The results of palynological examination are summarized below and a correlation of Whelk with sections encountered at Mussel to the north and Clam to the south, based on palynological data, is diagrammatically presented in the attached figure.

SUMMARY OF RESULTS

Sample	Depth (ft)	Age	Zone
swc 29*	991	Miocene	H (DJT ident.)
" 27*	1006		
" 26*	1042		
" 25*	1062		
" 22*	1068	Oligocene	I (")
" 24*	1110		
" 20*	1125	"	J (")
" 19*	1162	? Oligocene	late N. asperus
" 17*	1289	Eocene	early N. asperus
" 16*	1385	"	" " "
" 15*	1428	"	P. asperpolus
" 14*	1462	"	upper M. diversus
" 13*	1486	"	" " "
" 12*	1501	"	" " "
" 11*	1552	"	" " "
" 10*	1594	Late Paleocene	lower M. diversus
" 9*	1606	"	" " (also bears unit R benthonic faunas)
" 7*	1702	"	lower M. diversus
" 6*	1712	"	Not processed (sandstone)
" 5*	1759	"	Not processed (sandstone)
" 4*	1804	"	" "
" 3*	1842	"	" "
" 2*	1888	"	lower M. diversus
" 1*	1976	"	" " "
" 30	2060	Middle Paleocene	upper L. balmei
" 29*	2126	Paleocene undiff.	Not processed (sandstone)
" 28	2179	"	" "
" 27	2250	"	" "
" 26	2319	"	" "
" 25	2392	Early-Middle	L. balmei

(continued) .....

SUMMARY OF RESULTS (continued

		Paleocene	
swc	24	2473	" lower L. balmei
"	23	2526	Late Cretaceous T. lilliei
"	22	2732	" " "
"	21	2936	" " " Not processed
"	20	3015	" " "
"	19	3116	" " " Not processed
"	18	3183	" " "
"	17	3297	" N. senectus/ X. australis
"	16	3389	" " " (Sandstone - not processed)
"	15	3434	" " "
"	14	3597	" N. senectus or T. pachyexinus/N.aceras
"	12	3856	" Not processed (sandstone)
"	13	3861	" " "
"	11	3964	" T. pachyexinus/N.aceras
"	10	4089	" Not processed (sandstone)
"	9	4123	" " "
"	8	4220	" " "
Core	1	4248-50	" Probably C. triplex
swc	7	4290	" Close to border of C. triplex and A. distocarinatus.
"	6	4427	? Cretaceous Not processed (sandstone)
"	5	4488	" " "
Core	2	4492	" Fossils present: zone indeterminate
swc	4	4637	Indeterminate Not processed (red shale)
"			?pre Mesozoic
"	3	4706	" No fossils found.
"	2	4784	" Not processed (chloritic shale)
"	1	4795	" No fossils found.

COMMENT

Determination of the Miocene and Oligocene ages are based on foraminiferal data only.

The late N. asperus Zone at 1162 feet bears benthonic foraminifera and very rare dinoflagellates. The latter include Deflandrea phosphoritica. No distinctive Oligocene pollen or dinoflagellates were recognized, but neither were more typical Eocene forms such as S. meridionalis, S. cainozoicus and T. adelaidensis identified.

There appears to be a break between this portion of the N. goniatus Zone and the underlying early N. asperus Subzone, probably represented by most of the Late Eocene section encountered in Mussel (see figure).

The underlying Lower Tertiary is unusual since it provides the best sequence yet known from the early N. asperus Subzone to the L. balmei Zone. Spores and pollen are generally abundant and most samples bear dinoflagellates. The section from the N. asperus to the upper M. diversus Zones contains a sequence of dinoflagellates which appears to be parallel to one through the same interval in the Gippsland Basin. Further study of this interval in Whelk should provide additional means of correlating between the Otway and Gippsland Basins.

The Whelk section demonstrates the change between the lower and Zones. Whereas it has been and remains difficult to decide where to divide the M. diversus Zone, the reasoning applied to the labels "upper" and "lower" in this report is essentially that used for the Bass Basin (Palyn. Rept. 1970/3). On present knowledge the basal portion of the upper M. diversus Zone at Whelk is a correlate of the Princetown Member of the Dilwyn Formation in the outcropping Princetown section. There appears to be additional section above this horizon in Whelk, representing the younger portions of the upper M. diversus Zone, the P. asperopolus and basal N. asperus subzones which are not recognized in most of the Otway Basin.

The uppermost portion of the M. diversus Zone is characterized by distinctive dinoflagellates which previously have been identified at Flounder in the Lower Eocene of the Gippsland Basin (Palyn.Rept.1970/2). Samples of apparently comparable age were recognized in Clam No. 1 at 1809 feet (Palyn. Rept. 1969/15) and Mussel at 4208 feet (Palyn. Rept. 1969/18).

The L. balmei Zone is represented by few samples because it is largely a sandy unit, unsuitable for production of good assemblages. However, the upper and lower limits of the zone are satisfactorily identified.

Whelk at 2473 feet is placed in the basal L. balmei Zone to accord with conclusions drawn from a recent, detailed study of the T. lilliei/L. balmei boundary. The same study has shown that Clam No. 1, 2778 feet should also be referred to the basal L. balmei Zone, although previously it was placed at the top of the T. lilliei Zone (Palyn. Rept. 1969/15).

Spores and pollen from the T. lilliei and N. senectus Zones of the Upper Cretaceous were abundant. Dinoflagellates were present in both zones. A form provisionally referred to Defl. korojongensis, present in the T. lilliei Zone at 2526 feet compares

with a similar type reported from Mussel No. 1 4315 feet in

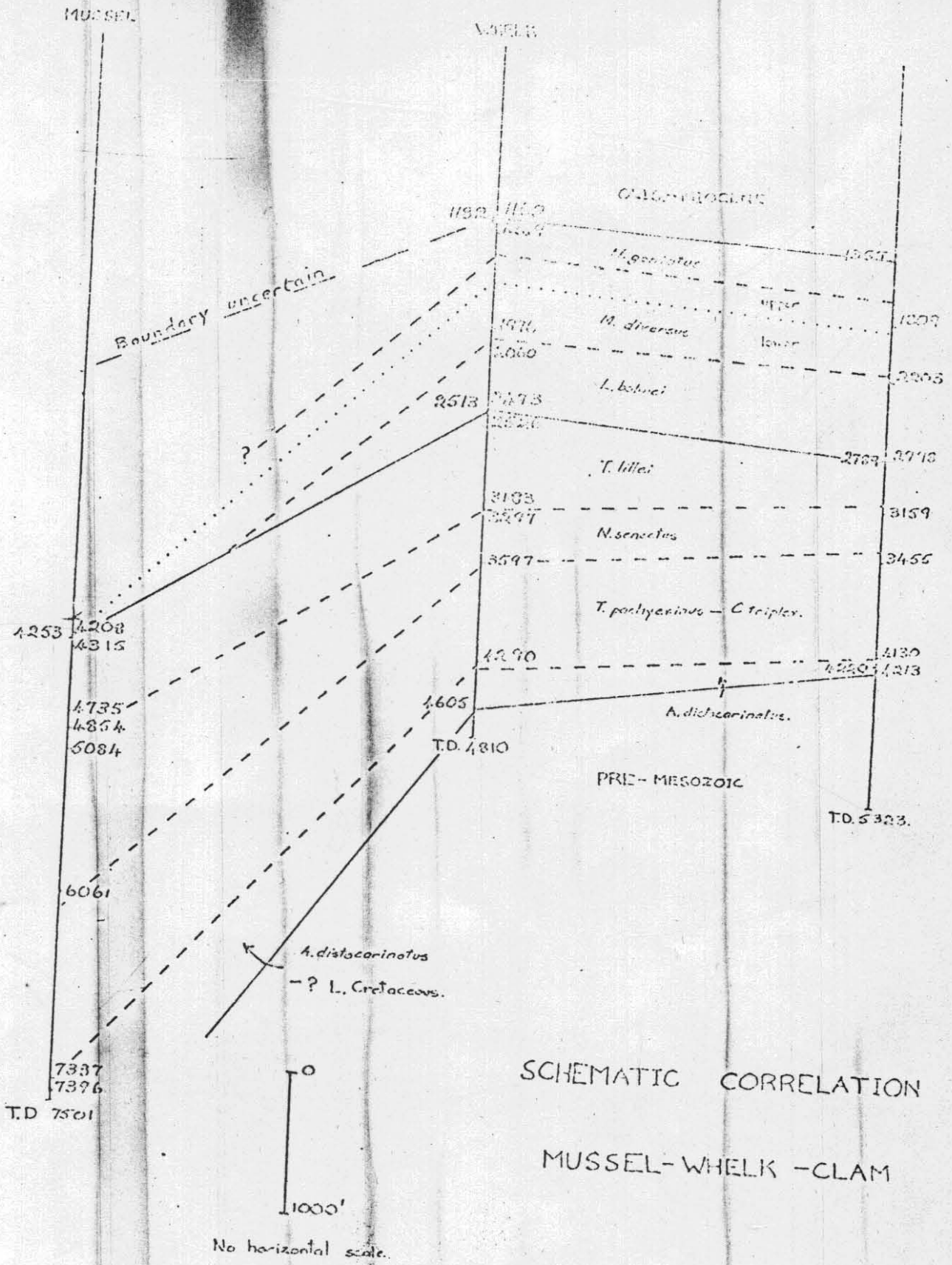
D. korojongensis was originally described from Campanian or Lower Maastrichtian of the Korojong Calcarenite of the Carnarvon Basin, Western Australia. Its probable presence in the Otway Basin at the top of the T. lilliei Zone may be further justiciation for confining the T. lilliei Zone (as presently amended) to the Cretaceous and perhaps for recognizing another dinoflagellate zone above the X. australis Zone and below the "D. pellucida" Zone.

The Late Cretaceous below the N. senectus Zone is less well defined. The dinoflagellate zone of Nelsoniella aceras extends at least as far down as 3954 feet. Thereafter the lack of suitable samples precludes determination of pre-N. aceras horizons with any precision. Horizons at 4248 feet and 4290 feet are probably in the C. triplex Zone.

The only available sample of the sandstone extracted as core 2 and which appeared likely to produce fossils was a plug from 4492 feet, cut for porosity tests and which contained carbonaceous shale fragments. However, the yield was mainly of woody tissue, while the few spores obtained were not definitive of any particular zone within the Upper Mesozoic. No angiosperm pollen were identified among the few fossils observed: the sample could therefore be older than the Upper Cretaceous, but confirmatory data are required.

The sidewall cores fro 4706 and 4795 feet yielded no spores or pollen, although translucent sheets of organic tissue were observed in the residue. Such tissues could be of either animal or vegetable origin of any, even Precambrian age. Their presence at least demonstrates that the degree of maturation was not unduly high.

361044



SCHEMATIC CORRELATION

MUSSEL-WHELK-CLAM

To Accompany Palyn. Rept. 1970/8

Fig 3

361045

ENCLOSURE 1

RAW DATA REPORT

WHELK #1

OR_347

CONTENTS

APPLICATION TO DRILL
NOTICE OF INTENTION TO DRILL
WEEKLY DRILLLING REPORTS
SIDEWALL CORE DESCRIPTIONS
COMPLETION REPORT
PALYNOLOGY REPORT
CORE ANALYSIS RESULTS
CORE DECRIPTION
CORE ANALYSIS REPORT

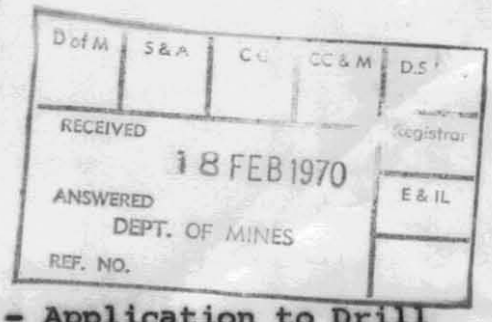
FIGURES

1.	STRUCTURE MAP WAARRE-FLAXMANS		1:100,000
2.	LINE ER61		
3.	GEOLOGIC MAP OF AFTER DRILLING PICTURE – STRUCTURE MAP ON TOP OF WAARRE-FLAXMANS		1:100,000
4.	CROSS SECTION OF AFTER DRILLING PICTURE	Horizontal scale	1:63,360
		Vertical scale	1:12,000
5.	SCHEMATIC CORRELATION MUSSEL-WHEL-CLAM		

361047 P8/2

MAR:YEF-H 11th February, 1970.

The Designated Authority,
C/o Director of Mines,
Department of Mines,
G.P.O. Box 124B,
HOBART, Tas., 7001



Dear Sir,

E03/1A, E04/1A - Application to Drill Two Wells in Permit T/P3

I enclose herewith Notices of Intention to drill two wells in Tasmanian Waters :

(1) the Whelk No.1 Well at the eastern end of the Otway Basin;

(2) the Cormorant No.1 Well east of King Island in the Bass Basin.

1. Whelk No.1 will be sixteen miles west of King Island, and 44 miles south-south-east of the Prawn A1 location. It will be drilled by the "Ocean Digger" on the completion of the Chama 1a Well currently being drilled in South Australian Waters. The objective is to test the Flaxmans-Waarre Formations in a structurally high position on the crest of a closed anticline formed in Upper Cretaceous time. Proposed total depth is 5000 feet.

The Whelk structure is in an area of regional north dip, but is on a rotated fault block which has developed south dip locally. The result is a simple anticline with about 300 feet of vertical closure at the top of the Flaxmans-Waarre Formations (undifferentiated) over an area of about 17 square miles. This is shown in the enclosed contour map and cross-section.

2.

Structural closure of less than 100 feet is also present on the base of the Tertiary, and although the beds below the Tertiary are thought to be porous Upper Cretaceous sandstone, no good seal is expected.

Regional correlations between Whelk and Prawn are difficult because of intervening faults and volcanic intrusions. However, seismic reflection characteristics and regional considerations provide evidence for the presence of Cretaceous clastics equivalent to the Flaxmans-Waarre Formations. (An alternative interpretation that these sands might be Lower Cretaceous Pretty Hill Formation equivalent was considered, but seismic interpretation shows no evidence of a major unconformity in the area).

Correlation between Whelk and Clam No.1 75 miles to the south is not possible because of a large shallow basement block which separates the two areas.

The Flaxmans-Waarre Formations are expected to be approximately 900 feet thick and to provide sandstone reservoirs. Good porosity and permeability were obtained in these formations in the Prawn No.1 Well to the north when they were 2350 feet thick. The equivalent section was much thinner (72 feet) in Clam No.1 and mainly sandy siltstone. However, it is expected that good reservoir characteristics will persist from the north to the Whelk area. Seal will be provided by a unit which is thought to be the Belfast Mudstone on the evidence that the Belfast Mudstone occurs to the north and south of the area.

The prognosis for Whelk No.1 is as follows :-

Depth (feet)	Formation
0-330	Water.
-500	Pleistocene-Recent.
-1300	Heytesbury Gp. equivalent.
-2270	Browns Creek - Wangerrip Gp. undiff.
-3500	Curdies - Paaratte undiff.
-3750	Belfast Fm.
-4650	Flaxmans-Waarre undiff.
-5000	Basement.

(Depths from Mean Sea Level - add 93 feet for Drill Depth)

2. Cormorant No.1 Well is east of King Island in the Bass Basin, 17.6 miles north-west of the abandoned Bass No.1 location. It will be drilled by "Glomar III" following the completion of current drilling commitments in the Gippsland Basin. The primary objective of the well is to test the uppermost sandstone beds of the Eastern View. Coal Measures below the Demons Bluff Formation siltstone seal in a northwest-southwest trending anticline. Secondary objectives are deeper sandstones within the Eastern View Section.

Vertical closure at the top of the Demons Bluff Formation in the Cormorant structure is about 485 feet over an area of 125 square miles, but closure decreases over horizons in younger formations. Structural growth probably began in early Oligocene time (post Demons Bluff Formation deposition) and continued throughout Miocene and Pliocene time.

The figures included herewith show

(1) a locality map of the site of Cormorant No.1;

(2) Figure 2: contours on the top of the Eocene (Demons Bluff Formation);

(3) contours on a good continuous seismic went within the Eastern View Coal Measures; vertical closure mapped on this deep reflector is about 150 feet;

(4) a cross-section from southwest to north-east.

The stratigraphic section to be encountered at the Cormorant prospect is expected to be similar to beds penetrated in the Bass 1 and Bass 3 Wells. The section above the Demons Bluff Formation is composed of calcarenite, marl and shale, and the Demons Bluff of marine siltstone and shale with both source rock and seal capability. Sandstone and other clastic sediments of the Eastern View Coal Measures are thought to be underlying part of a deltaic complex containing interbeds of shale and coal, and range in age from Upper Cretaceous to Eocene. Suitable reservoir conditions are considered to exist

within the Eastern View sandstone, and it is possible that shale beds within the section also form traps for hydrocarbon accumulation.

The prognosis for Cormorant No.1 is as follows :-

Depth (feet)	Formation
0-230	Water.
-3500	Torquay Group equivalent.
-4050	Demons Bluff Formation.
-10,000 T.D.	Eastern View Coal Measures.

(Depths from Mean Sea Level; for drill depth add 31 feet).

As advised by telephone on 10th February, the dates of the movements of vessels to the new localities was not yet finalised, but these will be advised as soon as they are available.

Yours faithfully,

W.M. Lonie MAR

W.M. Lonie, General Manager

Encls.

361051

COMMONWEALTH OF AUSTRALIA — Petroleum (Submerged Lands) Act 1967-68

STATE OF TASMANIA — Petroleum (Submerged Lands) Act 1967

NOTICE OF INTENTION TO DRILL

To the Designated Authority, State of Tasmania:
We, Hematite Petroleum Proprietary Limited, being the holder of Petroleum Exploration Permit No.T/3P herewith notify the intention to drill a well and request your permission to carry out the proposed operation :

1. Well: Whelk No.1

   Classification: Wildcat.

2. Operator: Esso Standard Oil (Australia) Ltd.,
   380 Lonsdale Street,
   MELBOURNE.

   Person in Charge:

   M. Bates,
   380 Lonsdale Street,
   MELBOURNE.
   Phone - 600401.

   Geological Supervision:

   A.C. Pierce,
   Esso Standard Oil (Australia) Ltd.,
   71-79 Macquarie Street,
   SYDNEY, N.S.W.
   Phone - 20557.

3. Drilling Contractor:

   Ocean Drilling & Exploration Co. (Australia) Ltd.,
   180 Russell Street,
   MELBOURNE.
   Phone - 6634041.

   Drilling rig: Ocean Digger.

   Date of commencement: on or about 23rd February, 1970.

4. Details of Operation:

   Location: Latitude 39° 53' 58" S.
   Longitude 143° 33' 21" E.

   Water Depth: 330 feet.

   Drilling datum: K.B. 93 feet above M.S.L.

   Casing programme: 20-inch at 930 feet.
   9 5/8-inch at 2000 feet.

4. Details of Operation (Contd.)

Logging programme: (1) Continuous mud logging from base 20-inch casing to T.D.

(2) At 9 5/8-inch casing point, IES and possibly run the CST (side-wall cores)

(3) At T.D. - IES, GRS, FDC, CDM, MLL, run a velocity survey, F.I.T.'s as required.

Samples: Catch 4 sets of cuttings at 10' intervals from base 20-inch casing to T.D.

Coring: Core all significant hydrocarbon shows. Two 30' cores in the Flaxmans-Waarre reservoir for stratigraphic control if no shows are encountered; one 10' core may be cut at T.D. for basement identification.

Proposed Total Depth: 5000 feet.

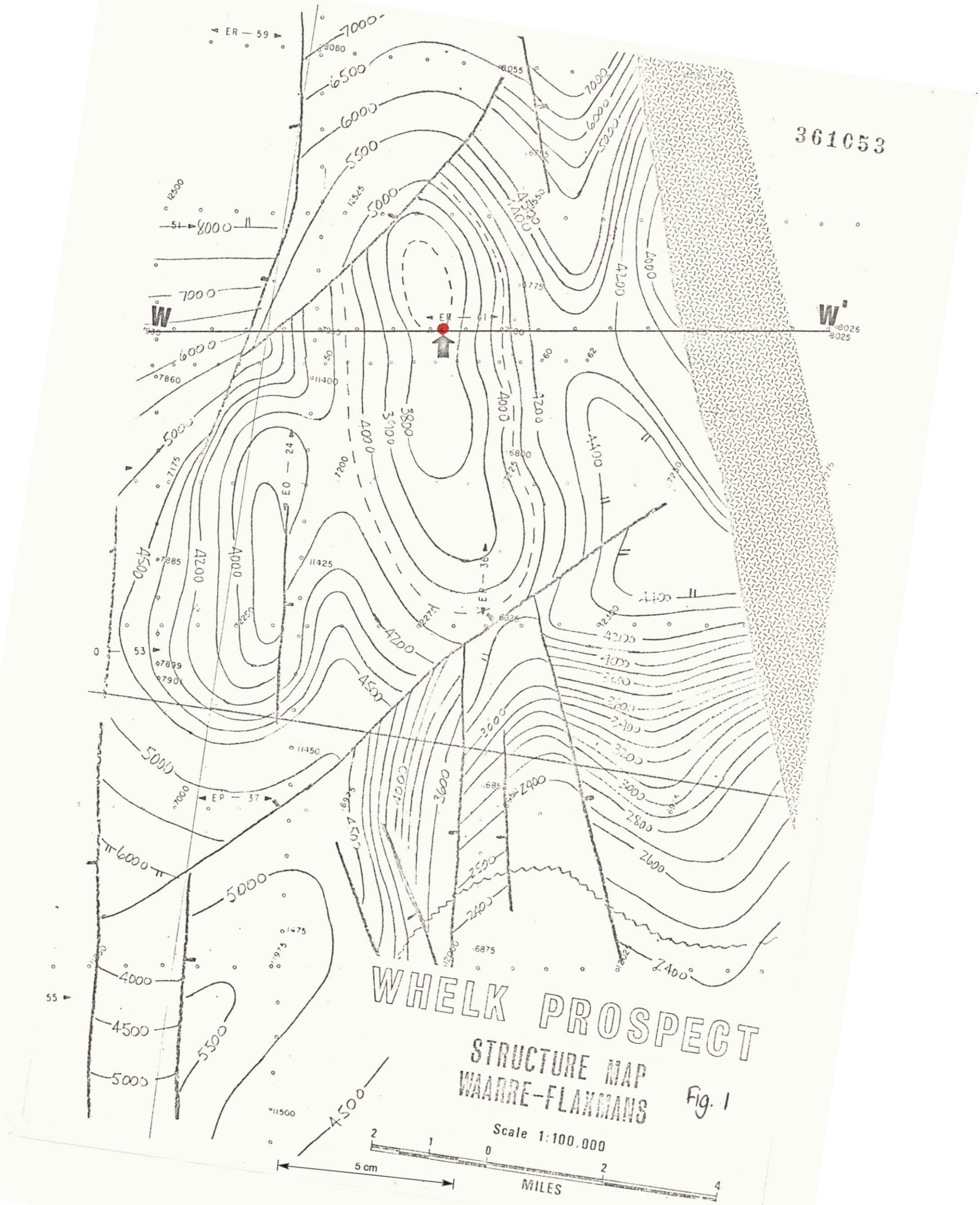
Notification Date: 11th February, 1970.

W. M. Lonie MAR

W.M. Lonie, General Manager

MAR:YEF
11.2.70
Melbourne.

361053


W
W'
ER — 59
ER — 61
EO — 24
ER — 36
EP — 37
51
53
55
WHELK PROSPECT
STRUCTURE MAP
WAARRE-FLAXMANS
Fig. 1
Scale 1:100,000
5 cm
2 1 0 2 4
MILES

LINE ER 61

361054

W — E

WHELK PROSPECT

W — W'

S.L.

1000'

2000'

3000'

4000'

5000'

6000'

7000'

8000'

9000'

10,000'

PLIOCENE - RECENT

TERTIARY

MIOCENE - OLIGOCENE

EOCENE - PALEOCENE

UPPER CRETACEOUS

CURDIES - PAARATTE UNDIFF.

BELFAST

WAARRE - FLAXMANS

MIOCENE - OLIGOCENE
marl

EOCENE - PALEOCENE
sandstone & mudstone

CURDIES - PAARATTE
sandstone & interbedded sandstone & shale

BELFAST
shale

FLAXMANS - WAARRE
sandstone & interbedded sandstone & shale

BASEMENT
(Granitic ?)

WHELK PROSPECT
OTWAY BASIN
(WEST KING ISLAND)

0 1 2 3 4
Scale in Miles

5 cm

Vert Exagg. 5.3 : 1

C.H. MORGAN & C.K. LUNT Jan. 1970

Fig 2.

361055

DofM | S&A | CG | CC&M | D.S.M.E. | Registrar | E&IL
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HEMATITE PETROLEUM PROPRIETARY LIMITED

WEEKLY DRILLING REPORT

TENEMENT NUMBER: Tas/P3

OPERATOR: Esso Standard Oil (Australia) Ltd.

DRILLING UNIT: "Ocean Digger"

WELL: Whelk-1

DATE OF REPORT: 10th March, 1970

LOCATION: Latitude 39° 53' 58" South
Longitude 143° 33' 21" East

WATER DEPTH: 330 feet

PROGRESS:

Current	2047 feet
Previous	0 feet
Progress	2047 feet

OPERATIONS:

Whelk-1 was spudded at 0700 hours on 6th March, and a 20" casing string was set at 934 feet. 29 sidewall cores were shot, of which 24 were recovered, and IES and GR-Sonic logs were run. Currently running the 9 5/8" casing.

LITHOLOGY:

Interval (ft.)	
970-1010	10% Shale, dark grey, friable 90% Limestone, skeletal, detrital.
1010-1140	0-60% Limestone, as above. 0-100% Marl, fossiliferous
1140-1180	Sandstone, calcareous, angular to sub-rounded, poorly sorted.
1180-1300	Sandstone, granular to pebbly, no matrix.
1300-2047	Sandstone, poorly sorted quartzose and lithics, with three types of matrix : (1) Pyritic, calcareous and black mud. (2) Pyritic, calcareous, and white mud. (3) Slightly calcareous, brown mud.

GAS READINGS:

Interval (ft.)	Hot Wire Cuttings	Hot Wire	C1	C2	C3
970-2047	0	0-1	0-20	-	-

W.M. Lonie BB

W.M. LONIE

MES:YEF
Melbourne.

HEMATITE PETROLEUM PROPRIETARY LIMITED

WEEKLY DRILLING REPORT

TENEMENT NUMBER: Tas/P3.

OPERATOR: Esso Standard Oil (Australia) Ltd.

DRILLING UNIT: "Ocean Digger"

WELL: Whelk-1.

DATE OF REPORT: 16th March, 1970.

LOCATION: Latitude 39° 53' 58" South
Longitude 143° 33' 21" East

WATER DEPTH: 330 feet.

PROGRESS: Current 4800 feet (T.D.)
Previous 2047 feet
Progress 2753 feet

OPERATIONS:

During the week two conventional cores were cut, with an aggregrate footage of 60 feet, and a recovery of 56 feet (93%). 30 SWC's were shot, all of which were recovered. A velocity survey was run and IES, Sonic, FDC and CDM logs were also run. Total depth of 4800 feet was reached on 15th March, and cement plugs have been set. The riser is currently being pulled preparatory to abandoning the location. "Ocean Digger" will be moved to the Pelican No.1 Well site in Permit TAS/P6.

CEMENT

Plug No.	Depth (ft.)	Cement
1	2620-1900	175 sacks neat cement plus 2% $CaCl_2$.
2	700-560	50 sacks neat cement.

20-inch and 9 5/8-inch casing head out.

GAS READINGS:

Interval (ft.)	Hot Wire Cuttings	Hot Wire	C1	C2	C3
2047-2930	0	2-4	40-200	-	-
2930-4004	0-6	1-4	4-40	-	-
4004-4221	0	trace	trace	-	-
4221-4610	trace	trace-1	1-13	-	-

361058

LITHOLOGY:

Interval (ft.)	
2047-2290	Sand, coarse-grained, loose, well rounded, quartzose, trace lithics and quartzite, limonite stained, some muscovite, chlorite and pyrite.
2290-2510	Sand, as above, some Claystone, desegregated in the mud.
2510-2740	Claystone, light grey to brown, silty to sandy, calcareous, interbedded with Sandstone, medium brown, very fine grained, slightly conglomeratic, very calcareous.
2740-2820	Sand, as above.
2820-3260	Sand, coarse to very fine-grained, interbedded with light grey Claystone, silty to sandy, soft, slightly calcareous.
3260-3740	Claystone, light grey, silty to sandy interbedded with 10-30% Sandstone light brown, very fine to medium-grained, calcareous, argillaceous, pyritic.
3740-4060	Claystone, as above, slightly carbonaceous, with 10-40% Sandstone, very fine, carbonaceous, to medium-grained and some coarse-grained between 4000 and 4020 feet.
4060-4170	Claystone, as above, with up to 40% Sandstone, as above, and fine to coarse-grained Sand; 5-10% Coal.
4170-4238	Claystone, grey, silty, carbonaceous, interbedded with 30% Sandstone, fine to coarse-grained, trace Coal.

CORE NO.1.

4238-4268	Cut 30 feet, recovered 29 feet.
4238-4240	Sandstone and Claystone, thinly interlaminated. Sandstone, light grey, very fined-grained, quartzose, green-black matrix, argillaceous, micaceous, carbonaceous, pyritic. Claystone, dark grey, very silty, micaceous, carbonaceous.
4240-4253	Sandstone, grey medium-grained, clear to frosted quartz, 5-10% green-black matrix, weathered Feldspar, micaceous, carbonaceous, pyritic.

CORE NO.1 (contd.)

4253-4267	Sandstone and Claystone, thinly interlaminated. Sandstone, light grey, very fine-grained, quartzose, green-black matrix, argillaceous, micaceous, carbonaceous, pyritic. Claystone, dark grey, very silty, micaceous, carbonaceous. Sandstone modules in Claystone and vise versa.
4267-4268	Not recovered.
4268-4310	Claystone with 30% Sandstone, light grey, very fine-grained.
4310-4440	Sand, fine to medium-grained, and coarse 10% grey chert, jasper, quartzite , chlorite?, interbedded Claystone.
4440-4478	Sandstone, medium to coarse grained, quartzose.

CORE NO.2

4478-4508	Cut 30 feet, recovered 27 feet.
4478-4505	Sandstone, medium to coarse-grained, with 15-20% lithics and white kaolin matix.
4505-4508	Not recovered.
4508-4590	Sandstone, as above.
4590-4620	95% Sandstone, as above. 5% red Claystone.
4620-4670	90% Claystone, variegated 10% Sandstone No shows.
4670-4800	Decreasing red Claystone, increasing green chlorite schist and talc like material with veins of calcite.

CORE ANALYSIS:

Core No.	Depth (ft.)	Porosity (%)	Permeability (millidarcies)	Water Saturation %
1	4240	8.5	0	100
	4242	19.8	1730	100
	4245	11.5	1702	100
	4248	16.5	1437	100
	4251	15.6	432	100
	4254	8.2	0	100

CORE ANALYSIS (Contd.)

Core No.	Depth	Porosity (%)	Permeability (millidarcies)	Water Saturation %
2	4478-4508	23.31	10-266	100

W.M. Lonie

W.M. LONIE

MES:YEF
Melbourne.

361061

HEMATITE PETROLEUM PROPRIETARY LIMITED

WEEKLY DRILLING REPORT

TENEMENT NUMBER:	Tas/P3.
OPERATOR:	Esso Standard Oil (Australia) Ltd.
DRILLING UNIT:	"Ocean Digger".
WELL:	Whelk-1.
DATE OF REPORT:	23rd March, 1970.
LOCATION:	Latitude 39° 53' 58" South. Longitude: 143° 33' 21" East.
WATER DEPTH:	330 feet.
PROGRESS:	Current 4800 feet (T.D.) Previous 4800 feet Progress 0 feet

OPERATIONS:

Whelk-1 site was abandoned at 1300 hours on 17th March, "Ocean Digger" then moved to the Pelican-1 location in Permit TAS/P6. This is the final report.

W.M. Lonie

W.M. LONIE

MES:YEF
Melbourne.

Record of plugging program?

SIDEWALL CORE DESCRIPTIONS

WELL WHELK-1 | SCHLUMBERGER SERV. CO. | DATE 9-[illegible]-70 | LOG RUN NO. 1 | J. DAVIDSON GEOLOGIST

REF.# | FIELD OTWAY | STATE TASMANIA | ATT. 26 REC. 24 | PAGE 1 OF 1 PAGES

NO.	feet DEPTH	in. REC	LITHOLOGY	COLOR	CLAY	CONS	CALC	ODOR	FIDO	FLUORESCENCE DIST	FLUORESCENCE INT	FLUORESCENCE COL	CUT QUAN	CUT COL	CUT FLUOR. INT	CUT FLUOR. COL	SHOW	PROB. PROD.
1	1976	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
2	1888	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
3	1842	3/4	Med. sandstone	brown yellow		fair	✓											
4	1804	1½	Fine sandstone	brown	✓	uncon	✓											
5	1759	1½	Fine sandstone	brown	✓	uncon	✓											
6	1712	1¾	Fine to granular sandstone	brown		uncon	✓											
7	1702	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
9	1606	2	Shale	brown	✓	poor												
10	1594	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
11	1552	2	Shale	brown	✓	poor	✓											
12	1501	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
13	1486	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
14	1462	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
15	1428	2	Sandy siltstone - clay matrix	black brown	✓	poor	✓											
16	1385	1¾	Sandy siltstone - clay matrix	black brown	✓	poor	✓											
17	1289	2	Sandy siltstone - clay matrix	black	✓	poor	✓											
19	1162	2	Shale	black	✓	poor	✓											
20	1125	2¼	Marl	brown	✓	poor	✓											
22	1068	3/4	Marl	grey brown	✓	poor	✓											
24	1110	1¾	Marl	brown	✓	poor	✓											
25	1062	2	Marl	brown	✓	poor	✓											
26	1042	2¼	Marl	lt. grey	✓	poor	✓											
27	1006	2¼	Marl	brown	✓	poor	✓											
29	991	2¼	Marl	lt. grey	✓	poor	✓											

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3616662

SIDEWALL CORE DESCRIPTIONS | WELL WHELK-1 | SERV. CO. SCHL 4MB | DATE [illegible]-70 | LOG RUN NO. 2 | GEOLOGIST FEM

REF.* | FIELD OTWAY | STATE TASMANIA | ATT. 30 REC. 30 | PAGE 1 OF 2 PAGES

NO.	DEPTH	REC	LITHOLOGY	COLOR	DISS CLAY	CONS	CALC	ODOR	FIDO	FLUORESENCE DIST	FLUORESENCE INT	FLUORESENCE COL	CUT QUAN	CUT COL	CUT FLUOR. INT	CUT FLUOR. COL	SHOW	PROB. PROD.
1	4795	3/4"	SILTSTN, CALC, WITH CHLORITE GRANULES, VERY HARD, SLI. METAMORPHOSED(?)	GY														
2	4784	1½"	CLYSTN, VARIEGATED, GRAINS OF CHLORITE, WEATHERED FELDSPAR	RED/GY														
3	4706	1½"	(CLAYSTN.?), VERY SOFT WAXY, METAMORPHOSED (?)	GN														
4	4637	1½"	CLYSTN, STICKY WITH CHLORITE(?) INCLUSIONS	DK RED														
5	4488	1"	SS, MED GR, ARG, MICAC.	LTGN				NONE										
6	4427	1½"	SAME AS 4488	LTGN				NONE										
7	4290	1½"	CLYSTN, SOFT, SILTY	GY														
8	4220	1½"	SS, MED, VERY ARG, MICAC	GY				NONE										
9	4123	1¼"	SS, MED W/ TR UCSE, ARG, MICAC, VERY FRIABLE	LTGY				NONE										
10	4089	1"	SS AS IN 4123	LTGY				NONE										
11	3964	1¼"	INTERLAM. CLYSTN & SILTSTN	LT-DK GY														
12	3856	1½"	SS, F-M, VERY ARG.	LTGY				NONE										
13	3861	1½"	SS AS IN 3856 & CLYSTN	LT-DK GY				NONE										
14	3597	1½"	INTERLAM. VFG SS & CLYSTN	LT-DK GY														
15	3434	1½"	CLYSTN, SOFT, FINELY MICAC	DKGY														
16	3389	1½"	SS, MED W/ SOME UCSE, ARG VERY FRIABLE	LTGY				NONE										
17	3297	1½"	INTERLAM. CLYSTN & SILTSTN	LT-DK GY														

3610G3

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SIDEWALL CORE DESCRIPTIONS

WELL WHELK 1 | SERV. CO. SCHLUMB | DATE 15-3-70 | LOG RUN NO. 2 | GEOLOGIST FEM

REF. # | FIELD OTWAY | STATE TASMANIA | ATT. 30 | REC. 30 | PAGE 2 OF 2 PAGES

NO.	DEPTH	REC	LITHOLOGY	COLOR	DISS CLAY	CONS	CALC	ODOR	FIDO	FLUORESENCE DIST	FLUORESENCE INT	FLUORESENCE COL	CUT QUAN	CUT COL	CUT FLUOR. INT	CUT FLUOR. COL	SHOW	PROB. PROD.
18	3183	1½"	CLYSTN, SILTY, MICAC	GY														
19	3116	1½"	AS ABOVE, WEATHERED SHELL FRAG(?)	GY														
20	3015	1½"	AS IN 3183	GY														
21	2936	1½"	AS IN 3183	GY														
22	2732	1½"	AS IN 3183	GY														
23	2526	1½"	CLYSTN, SLI SDY, PYRITIC	GY														
24	2473	1½"	SS, V FG, VERY ARG.	LT GY														
25	2392	1½"	AS ABOVE	LT GY														
26	2319	1"	SS, MED, VERY FRIABLE	LT GY				NONE										
27	2250	1"	AS ABOVE	LT GY				NONE										
28	2179	1"	AS ABOVE	LT GY				NONE										
29	2126	1"	AS ABOVE	LT GY				NONE										
30	2060	1½"	SS, MED-CSE, VERY ARG	DEGY				NONE										

3611064

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361065

COMPLETION REPORT

I WELL DATA RECORD

Date 13-7-70

LOCATION

WELL NAME	STATE	PERMIT or LICENCE	GEOLOGICAL BASIN	FIELD
WHELK-1	Tasmania	TP/3	Otway	Wildcat

CO-ORDINATES	Lat.	Long.	X	Y	MAP PROJECTION	GEOGRAPHICAL DESCRIPTION
Surface	39° 53' 57.8" S.	143° 33' 20.9" E.	639057.80E	080598.96N	Transverse Mercator	Offshore King Is. Tasmania 15 miles west of King Is.
Bottom Hole	Straight hole.					

ELEVATIONS & DEPTHS

ELEVATIONS	WATER DEPTH	TOTAL DEPTH	Avg. Angle
Ground KB + 100' RT Braden Head Top Deck Platform	338'	M.D. 4810 T.V.D.	
	PLUG BACK DEPTH Plug 1 -1900' Plug 2 - 525'	REASONS FOR P.B. Abandonment	

DATES

MOVE IN	RIG UP	SPUDDED
2.3.70	5.3.70	6.3.70
RIG DOWN COMPLETE	RIG RELEASED	PROD.UNIT - Start Rigging Up
17.3.70	17.3.70	
PROD.UNIT - Rig Down Complete		I.P. ESTABLISHED

MISCELLANEOUS

OPERATOR	PERMITTEE or LICENCEE	ESSO INTEREST	OTHER INTEREST
Esso	Hematite Petroleum Pty.Ltd.	Well 100% Permit Nil	

CONTRACTOR	RIG NAME	EQUIPMENT TYPE
ODECO	Ocean Digger	Semi-Submersible Drilling Vessel.

TOTAL RIG DAYS	DRILLING AFE NO.	COMPLETION NO.	TYPE COMPLETION
14.7	237309		

LAHEE WELL CLASSIFICATION	Before Drilling	New field wildcat.
	After Drilling	Abandoned NFW

J.K. Davidson

Geologist

BASIC

WELL WHELK-1

361066

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			

NOT APPLICABLE

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

_____
Engineer

WELL WHELK #1

361067

IV	CASING - LINER - TUBING RECORD						
Type	**Size**	**Weight**	**Grade**	**Thread**	**No. Joints**	**Amount**	**Depth**
Conductor	30"x20"	Pile Joint		Vetco	1	40.48	
	20"	104	X55 L.P.	Vetco	11	462.96	934
Surface	13-3/8"	54.5		Butt.	1	39.08	
	9-5/8"	x 13-3/8" Butt Swage				1.60	
	9-5/8"	40	N-80	Butt.	39	1528.08	2003
Note: Salvage of Pile Joint was unsuccessful.							

V	CEMENT RECORD		
String	20"	9-5/8"	
Type of Cement	700 sx w/2% Gel 500 sx w/2% $CaCl_2$	600 sx neat plus 200 sx w/2% $CaCl_2$	
Number of FT^3	1717	952	
Average weight of slurry	13.7 / 15.5	15.5	
Cement Top	Sea Floor	1430' (Calc.)	
Casing Tested with	300 psi	1500 psi	
Number of Centralizers	0	6	
Number of Scratchers	0	0	
Stage Collar etc.	0	0	
Remarks	Gel Prehydrated	Cement top assumes 450' of 20" Hole.	

BASIC

R.L. WOOD

Engineer

WELL WHELK-1

361068

VI

SUBSURFACE COMPLETION EQUIPMENT

DATE COMPLETED _____

Schematic	Equipment Description	Length	Depth

NOT APPLICABLE

361069

WELL WHELK-1

VII SAMPLES, CONVENTIONAL CORES, SW CORES

INTERVAL	TYPE	RECOVERED	INTERVAL	TYPE	RECOVERED
970-4238	Cuttings	Every 10'			
4278-4478	"	"			
4508-4800	"	"			
4238-68	Core No. 1	Cut 30' Rec. 29'			
4478-4508	Core No. 2	Cut 30' Rec.27'			
991-1976	SWC	Shot 29. Rec.24 Misfires 2. No recovery 3.			
2060-4795	SWC	Shot 30 Rec.30.			

VIII WIRELINE LOGS AND SURVEYS (Incl. FIT)

Type & Scale	From	To	Type & Scale	From	To
IES 2" & 5"/100'	934	4810			
BHCS-GR 2" & 5"/100'	935	4800			
FDC-GR 2" & 5"/100'	2004	4810			
CDM 2" & 5"/100'	2004	4799			
Velocity Survey					

BASIC

J.K. Davidson
Geologist

WELL WHELK-1

361070

IX	FORMATION TOPS/Zones					
NAME	Tops		Gross Interval (ft)	Net Pay (ft).		REMARKS
	M.D.	Sub-sea		Gas	Oil	
Heytesbury Grp. (Olig.-Miocene)	438 134m	-338	742			
Wangerrip Grp. (Pal.-Eocene)	1180 360m	-1080	1332			
Curdies (Upper Cret.)	2512 766m	-2412	1684			
Paaratte (Upper Cret.)	4196 1279m	-4096	99			
Waarre (Upper Cret.)	4295 1309m	-4195	310			
Basement	4605 1404m	-4505				

INTERPRETATIVE

X GEOLOGIC ANALYSIS (Pre Drilling prognosis Vs actual results)

Prawn-1, 44 miles north of Whelk, penetrated 2350 feet of Waarre Equivalent. The section consisted of 288 feet of rhyolitic conglomerate at the base overlain by 2062 feet of fine to coarse grained sandstone interbedded with siltstone and shale. Measured porosities in this sandstone exceeded 20 percent and permeabilities ranged up to 235 mds.

Clam-1, 75 miles south of Whelk, penetrated 72 feet of Waarre Equivalent. The section consisted of sandy siltstone with only a few thin stringers, not exceeding 3 feet with porosities up to 20 percent.

Whelk-1 was drilled to test anticipated Waarre sandstones with good reservoir characteristics in the transition from coarse clastic in the source area to the north (as shown by Prawn-1) to very fine grained in the south (as evident in Clam-1).

The Waarre section was interpreted to be approximately 900 feet thick at the Whelk location.

A structure map on the top of the Waarre prior to drilling showed a single anticlinal closure with 300 feet of vertical closure and extending over 17 square miles areally.

The well penetrated 310 feet of this formation which was dominantly coarse to very coarse sandstone with a fine to medium grained sandstone and argillaceous matrix. Lithologic and well-log correlations and velocity survey information have placed the top of this unit 445 feet lower than anticipated. Pre drilling structural morphology of the top of the Waarre has not been invalidated, but drilling has lowered the structure by 445 feet.

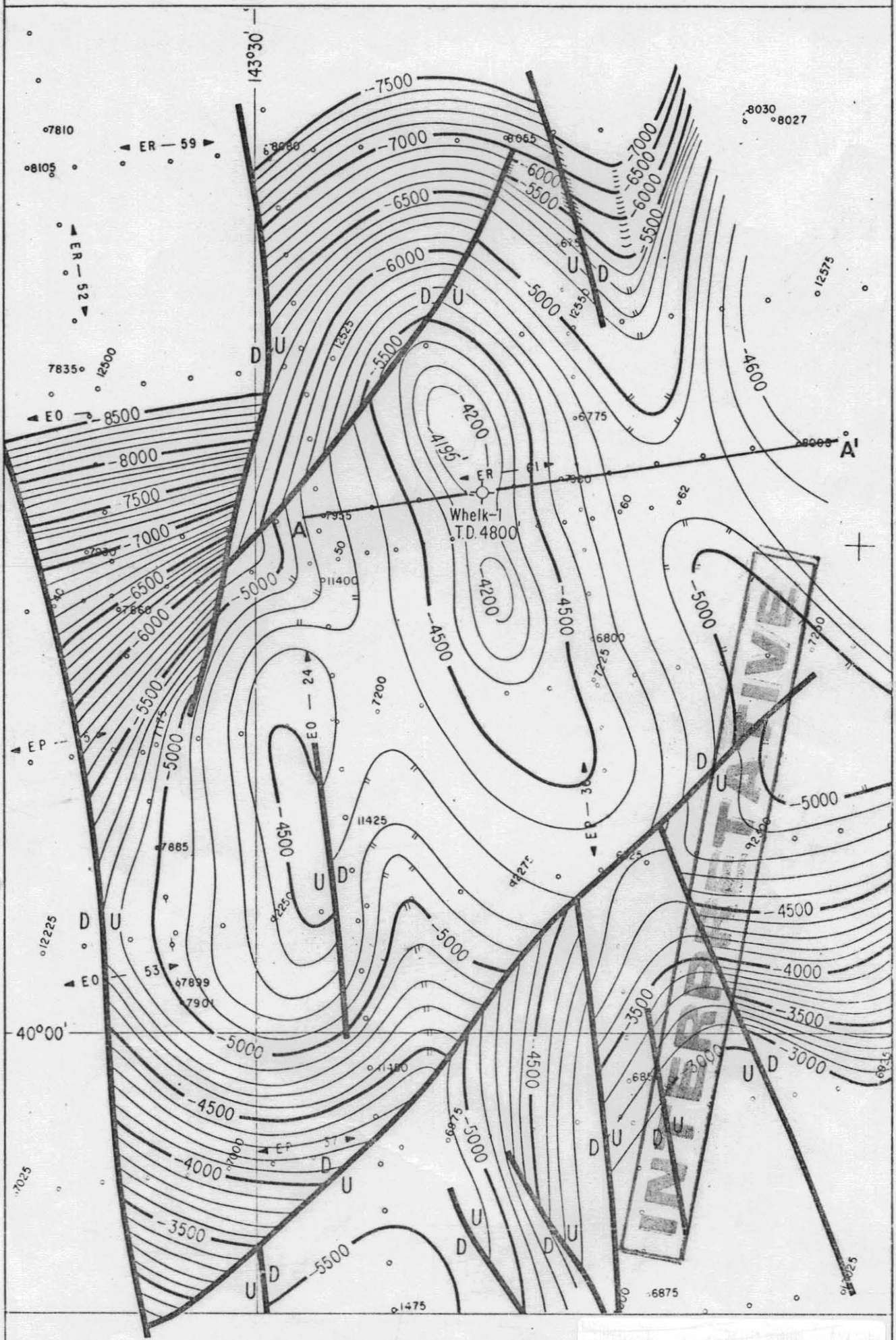
The Belfast Formation which is widely distributed throughout the Otway Basin and with little variation, consists of light grey to medium grey brown silty shale was anticipated to overly the Waarre sequence and act as a seal. This lithologic unit was not encountered in drilling although silty sandstones and silty shales of Belfast time equivalence were encountered.

The reason for the well being dry could be ascribed to either lack of source for generation of hydrocarbons or the lack of adequate seal over the Waarre in this area for the trapping of hydrocarbons in the Whelk structure.

J.K. Davidson
Geologist

WELL: WHELK-1

GEOLOGIC MAP OF AFTER DRILLING PICTURE 361071



STRUCTURE MAP ON
TOP OF WAARRE—FLAXMANS

5 cm

SCALE 1:100000

2 1 0 2
MILES

CONTOUR INTERVAL: 100

DATUM: SEA LEVEL

C.C. Horgan
J.K. Davidson

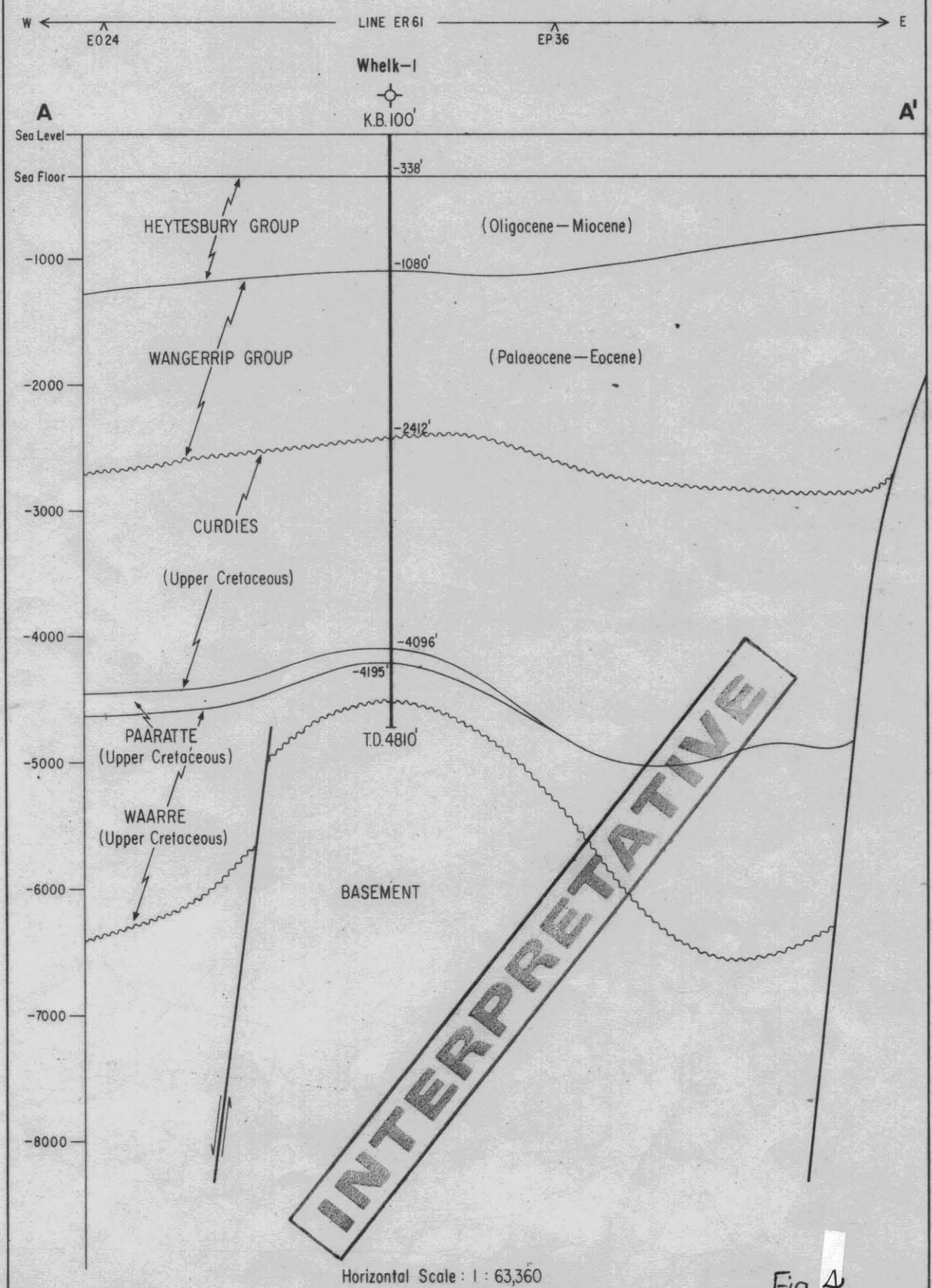
Fig 3

Dwn 1248/OP/5

WELL: Whelk-1

CROSS SECTION OF AFTER DRILLING PICTURE

361072



Horizontal Scale : 1 : 63,360

Vertical Scale : 1 : 12,000

5 cm

Fig. 4

J.K. Davidson

Geologist

Dwg 1248/OP/7

361073

PALYNOLOGY OF ESSO WHELK NO. 1, OTWAY BASIN

by

P.R. Evans

Palyn. Rept. 1970/8

April 1970.

361074

INTRODUCTION

Samples of cores, sidewall cores and cuttings from Whelk No. 1 were received for palynological examination during March 1970. The following notes summarize the results of study up to 8th April 1970.

All sidewall cores received are listed in the summary of results below. All or a portion of those marked (*) were passed to D.J. Taylor for micropalaeontological examination. However, at the times of writing, Taylor reports that only those at 1606, 991, 1068 and 1125 feet contained microfaunas of significance to age determination.

The results of palynological examination are summarized below and a correlation of Whelk with sections encountered at Mussel to the north and Clam to the south, based on palynological data, is diagrammatically presented in the attached figure.

SUMMARY OF RESULTS

Sample	Depth (ft)	Age	Zone
swc 29*	991	Miocene	H (DJT ident.)
" 27*	1006		
" 26*	1042		
" 25*	1062		
" 22*	1068	Oligocene	I (")
" 24*	1110		
" 20*	1125	"	J (")
" 19*	1162	? Oligocene	late N. asperus
" 17*	1289	Eocene	early N. asperus
" 16*	1385	"	" " "
" 15*	1428	"	P. asperpolus
" 14*	1462	"	upper M. diversus
" 13*	1486	"	" " "
" 12*	1501	"	" " "
" 11*	1552	"	" " "
" 10*	1594	Late Paleocene	lower M. diversus
" 9*	1606	"	" " (also bears unit R benthonic faunas)
" 7*	1702	"	lower M. diversus
" 6*	1712	"	Not processed (sandstone)
" 5*	1759	"	Not processed (sandstone)
" 4*	1804	"	" "
" 3*	1842	"	" "
" 2*	1888	"	lower M. diversus
" 1*	1976	"	" " "
" 30	2060	Middle Paleocene	upper L. balmei
" 29*	2126	Paleocene undiff.	Not processed (sandstone)
" 28	2179	"	" "
" 27	2250	"	" "
" 26	2319	"	" "
" 25	2392	Early-Middle	L. balmei

(continued) .....

SUMMARY OF RESULTS (continued

		Paleocene	
swc	24	2473	" lower L. b[illegible]
"	23	2526	Late Cretaceous T. lilliei
"	22	2732	" "
"	21	2936	" " Not processed
"	20	3015	" "
"	19	3116	" " Not processed
"	18	3183	" "
"	17	3297	" N. senectus/ X. australis
"	16	3389	" " (Sandstone - not processed)
"	15	3434	" "
"	14	3597	" N. senectus or T. pachyexinus/N.aceras
"	12	3856	" Not processed (sandstone)
"	13	3861	" "
"	11	3964	" T. pachyexinus/N.aceras
"	10	4089	" Not processed (sandstone)
"	9	4123	" "
"	8	4220	" "
Core	1	4248-50	" Probably C. triplex
swc	7	4290	" Close to border of C. triplex and A. distocarinatus.
"	6	4427	? Cretaceous Not processed (sandstone)
"	5	4488	" "
Core	2	4492	" Fossils present: zone indeterminate
swc	4	4637	Indeterminate Not processed (red shale)
"			?pre Mesozoic
"	3	4706	" No fossils found.
"	2	4784	" Not processed (chloritic shale)
"	1	4795	" No fossils found.

COMMENT

Determination of the Miocene and Oligocene ages are based on foraminiferal data only.

The late N. asperus Zone at 1162 feet bears benthonic foraminifera and very rare dinoflagellates. The latter include Deflandrea phosphoritica. No distinctive Oligocene pollen or dinoflagellates were recognized, but neither were more typical Eocene forms such as S. meridionalis, S. cainozoicus and T. adelaidensis identified.

There appears to be a break between this portion of the N. goniatus Zone and the underlying early N. asperus Subzone, probably represented by most of the Late Eocene section encountered in Mussel (see figure).

The underlying Lower Tertiary is unusual since it provides the best sequence yet known from the early N. asperus Subzone to the L. balmei Zone. Spores and pollen are generally abundant and most samples bear dinoflagellates. The section from the N. asperus to the upper M. diversus Zones contains a sequence of dinoflagellates which appears to be parallel to one through the same interval in the Gippsland Basin. Further study of this interval in Whelk should provide additional means of correlating between the Otway and Gippsland Basins.

The Whelk section demonstrates the change between the lower and Zones. Whereas it has been and remains difficult to decide where to divide the M. diversus Zone, the reasoning applied to the labels "upper" and "lower" in this report is essentially that used for the Bass Basin (Palyn. Rept. 1970/3). On present knowledge the basal portion of the upper M. diversus Zone at Whelk is a correlate of the Princetown Member of the Dilwyn Formation in the outcropping Princetown section. There appears to be additional section above this horizon in Whelk, representing the younger portions of the upper M. diversus Zone, the P. asperopolus and basal N. asperus subzones which are not recognized in most of the Otway Basin.

The uppermost portion of the M. diversus Zone is characterized by distinctive dinoflagellates which previously have been identified at Flounder in the Lower Eocene of the Gippsland Basin (Palyn.Rept.1970/2). Samples of apparently comparable age were recognized in Clam No. 1 at 1809 feet (Palyn. Rept. 1969/15) and Mussel at 4208 feet (Palyn. Rept. 1969/18).

The L. balmei Zone is represented by few samples because it is largely a sandy unit, unsuitable for production of good assemblages. However, the upper and lower limits of the zone are satisfactorily identified.

Whelk at 2473 feet is placed in the basal L. balmei Zone to accord with conclusions drawn from a recent, detailed study of the T. lilliei/L. balmei boundary. The same study has shown that Clam No. 1, 2778 feet should also be referred to the basal L. balmei Zone, although previously it was placed at the top of the T. lilliei Zone (Palyn. Rept. 1969/15).

Spores and pollen from the T. lilliei and N. senectus Zones of the Upper Cretaceous were abundant. Dinoflagellates were present in both zones. A form provisionally referred to Defl. korojongensis, present in the T. lilliei Zone at 2526 feet compares

with a similar type reported from Mussel No. 1 4315 feet in [redacted]

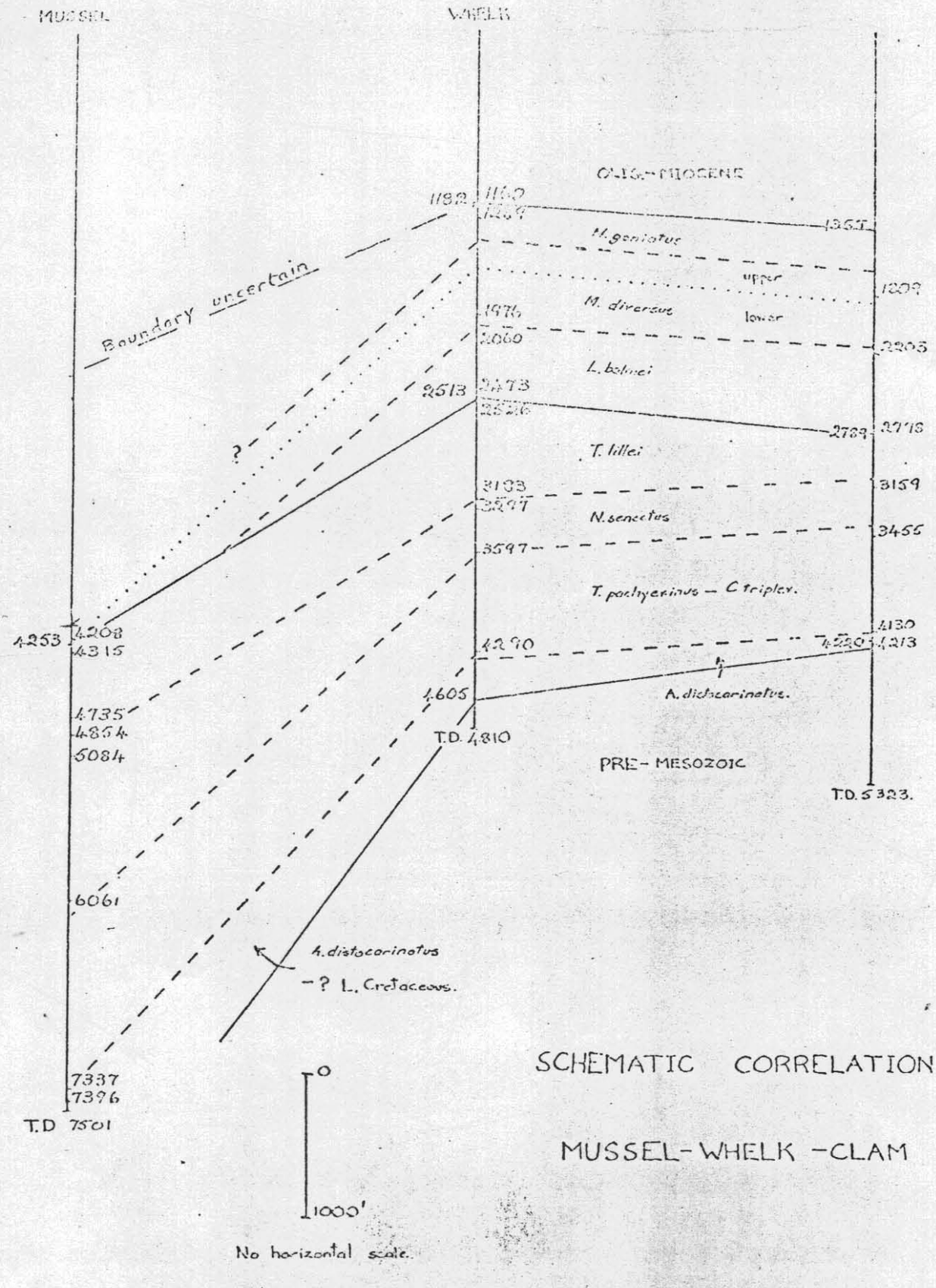
D. korojongensis was originally described from Campanian or Lower Maastrichtian of the Korojong Calcarenite of the Carnarvon Basin, Western Australia. Its probable presence in the Otway Basin at the top of the T. lilliei Zone may be further justiciation for confining the T. lilliei Zone (as presently amended) to the Cretaceous and perhaps for recognizing another dinoflagellate zone above the X. australis Zone and below the "D. pellucida" Zone.

The Late Cretaceous below the N. senectus Zone is less well defined. The dinoflagellate zone of Nelsoniella aceras extends at least as far down as 3954 feet. Thereafter the lack of suitable samples precludes determination of pre-N. aceras horizons with any precision. Horizons at 4248 feet and 4290 feet are probably in the C. triplex Zone.

The only available sample of the sandstone extracted as core 2 and which appeared likely to produce fossils was a plug from 4492 feet, cut for porosity tests and which contained carbonaceous shale fragments. However, the yield was mainly of woody tissue, while the few spores obtained were not definitive of any particular zone within the Upper Mesozoic. No angiosperm pollen were identified among the few fossils observed: the sample could therefore be older than the Upper Cretaceous, but confirmatory data are required.

The sidewall cores fro 4706 and 4795 feet yielded no spores or pollen, although translucent sheets of organic tissue were observed in the residue. Such tissues could be of either animal or vegetable origin of any, even Precambrian age. Their presence at least demonstrates that the degree of maturation was not unduly high.

361078



SCHEMATIC CORRELATION

MUSSEL-WHELK-CLAM

To Accompany Palyn. Rept. 1970/8

5 cm

Fig 5

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

361079

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. Whelk No. 1

DATE ANALYSIS COMPLETED October 28, 1970

Core No.	Sample Depth		Lithology	Average Effective Porosity two plugs (% Bulk Vol.	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
1	4240'2"	4240'9"	sst;f.gr to m.gr arg.	29	143	157	1.91	2.69	15	nil	n.d.	neg.	nil	
1	4245'3"	4245'10"	sst.m.gr arg.	32	358	531	1.87	2.73	25	nil	n.d.	neg.	nil	
1	4250'4"	4251'0"	sst;f.gr arg.carb pyr	30	4.9	923	1.94	2.74	20	nil	n.d.	neg.	nil	
1	4259'6"	4260'0"	sst;f.gr shly.carb	25	0.23	0.23	2.04	2.79	53	nil	n.d.	neg.	nil	
2	4479'4"	4480'1"	sst;f.gr mic.	24	26	29	2.04	2.75	31	nil	n.d.	neg.	nil	
2	4481'4"	4481'9"	sst;f.gr sl.arg	25	44	60	2.03	2.74	59	nil	n.d.	neg.	nil	
2	4488'9"	4489'2"	sst;m.gr v.arg	27	143	144	2.02	2.78	45	nil	n.d.	neg.	nil	
2	4493'6"	4493'10"	sst;f.gr mic. arg	25	35	46	2.03	2.76	48	nil	n.d.	neg.	nil	

Remarks: -

General File No. ~~69/1414~~ 69/1414

Well File No.

361080

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. Whelk No. 1

DATE ANALYSIS COMPLETED October 28, 1970

Core No.	Sample Depth		Lithology	Average Effective Porosity two plugs (% Bulk Vol.	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
2	4496'9"	4497'4"	sst;m.gr arg. mic	21	8.7	22	2.10	2.73	48	nil	n.d.	neg.	nil	

Remarks: -

General File No. ~~69/1524~~ 69/1414

Well File No. _____

ESSO STANDARD OIL (AUSTRALIA) LTD.

361081

CORE DESCRIPTION

Core No. 1

WELL: WHELK 1

Interval Cored 4238-68 ft., Cut 30 ft., Recovered 29 ft., (97 %) Fm. U.K. ?

Bit Type C-20 , Bit Size 8 5/6 in., Desc. by F.E.M. Date 12 MAR 70

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 8 6 4 2				
40				THINNLY INTERBDD SS & Clystn. SS IS LT GY, VFG, MOSTLY WH QTZ W/ 5-10% GN & BLK MAFICS, ARG., MICAC, SLI CARBON., SCATTERED PYRITE NODULES. CLYSTN IS DK GY, VERY SILTY GRADING TO SILTSTN, MICAC, SLI CARBON. CURRENT RIPPLES. SOME THIN BEDS OF SS DISRUPTED BY CURRENT W/ NODULES OF SS REWORKED INTO CLAYSTN.
45				SS, MED GY, MED GRAINED, MOSTLY CLR & FROSTED QTZ W/ 10% GN & BLK MAFICS, MICAC, ARGILL, WH CLY MATRIX APPEARS TO BE WEATHERED FELDSPAR, SCATTERED PYRITE NODULES, SCATTERED CARBON. CLYSTN LAMINAE SHOWING LOW ANGLE X BDDING & SOME MINOR CURRENT RIPPLES. LITTLE OR NO GRADATION IN GRAIN SIZE. TOP & BTM CONTACTS SLI GRADATIONAL
50				
55				THINNLY INTERBDD SS & CLYSTN AS ABOVE, SEVERELY BURROWED IN PART, THIN BEDS OF BOTH SS & CLYSTN DISRUPTED BY CURRENT ACTION RESULTING IN NODULES OF SS IN CLYSTN & NODULES OF CLYSTN IN SS.
60				
65				
68				

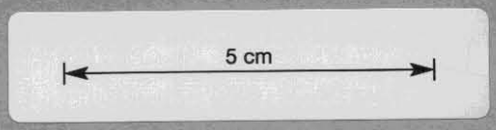
5 cm

REMARKS:

361082

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION



Core No. 2

WELL: WHELK 1

Interval Cored 4478-4508 ft., Cut 30 ft., Recovered 27 ft., (90 %) Fm. U.K. ?

Bit Type C20, Bit Size 8 5/16 in., Desc. by FEM Date 13 MAR 70

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 6 2			4478-79	SS LT GY-GN, MED - VCSE, SLI CGLATIC, PREDOM. ROD, FROSTED QTZ GRAINS WITH 5% MAFICS, 10% CHLORITE SCHIST & 5% WEATHERED FELDSPAR IN A MICAL WHITE KAOLIN MATRIX. GRANULES & PEBBLES OF SOFT, WAXY, LT GN CLAYSTN AT BASE. HIGH ANGLE CROSS BEDDING.
80			4479-86	SS AS ABOVE, MED GRAINED, FAIRLY WELL SORTED, HIGH ANGLE CROSS BEDDING & SLUMP STRUCTURE. BTM 2" IS SLICKEN-SIDED ALONG A PROBABLE FAULT PLANE WHICH DIPS 40°
85				
90			4486-92	SS, MED GY, MED AT TOP GRADING DOWNWARD TO CG, PREDOM. ROD, FROSTED QTZ WITH 15% DARK MAFICS, TR BRIGHT GREEN GRAINS & JASPER, SCATTERED GRANULES OF LT GN WAXY CLAYSTN, SCATTERED LAMINAE OF REWORKED COAL, MICAL WHITE KAOLIN MTX, MODERATE TO HIGH ANGLE X-BEDS. FAULT PLANE AT BASE DIPS 60° AND TRUNCATES CARBON. LAMINAE
95				
00				
05			4492-4503	SS AS ABOVE, MED AT TOP GRADING DOWNWARD TO VCSE - GRANULE WITH SOME PEBBLES OF LT GY-GN CLAYSTONE & GRANULES OF QTZ & WHITE FELDSPAR AT BASE.
08			4503-05	AS ABOVE
			4505-08	NO RECOVERY

REMARKS:

361083

CORE #1

EXPLORATION LOGGING OF AUSTRALIA, INC.

A Geological-Engineering Service

PERTH ADDRESS 69 GREAT EASTERN HIGHWAY VICTORIA PARK WESTERN AUSTRALIA
PHONE 61 4437 CABLE EXLOGG, PERTH

CORE ANALYSIS REPORT

COMPANY ESSO-BHP
WELL "WHELK NO.1"
LOCATION/FIELD OFFSHORE/OTWAY BASIN
COUNTY KING ISLAND STATE TASMANIA
COUNTRY AUSTRALIA

DATE 13 MARCH 1970
DEPTH 4238 TO 4268
GEO-ENGINEER CRAIG; CLARKE

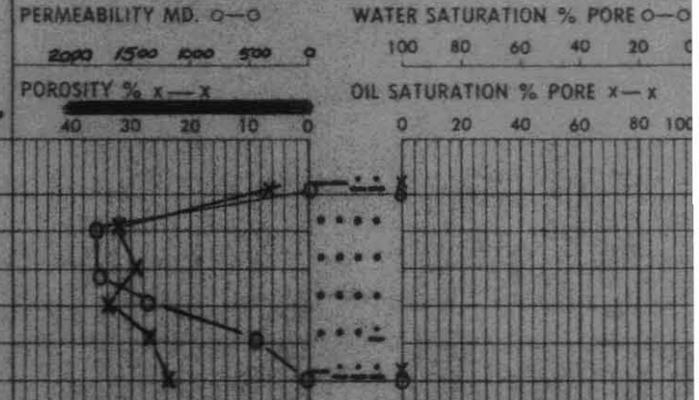
REMARKS RECD.29 FT. SANDST,LT-GY,ALT V FN & MED, MOSTLY SUBANG,LOCALLY SORTD,PT FROSTED,QTZ W/ ABUND MICA & FEMICS,CARB & PYR NODULES,DIPS TO 15°,X-BED,INTERLAMIN & REWORKED W/CLAYST,DK-GY, HD,SLTY,OCC SLICKENSIDED,RIPPLE MARKS. NO SHOWS.

SAND
SILTY SAND
SILTST.
SHALE
LIME
CONGL.

TABULAR DATA

SAMPLE NUMBER	DEPTH FEET	AIR PERM. MD.	POROSITY PERCENT	FLUID SATURATION % PORE VOLUME		GRAVITY OIL °API	TOTAL CL' G/G	DRY BULK DENS.	REMARKS
				OIL	WATER				
1	4240	0	6.8	-	-	-		2.16	
2	4242	1730	32.2	0	100	-		1.82	
3	4245	1702	30.7	-	-	-		1.74	
4	4248	1437	33.7	-	-	-		1.81	
5	4251	432	26.6	0	100	-		1.96	
6	4254	0	23.5	-	-	-		2.04	

ANALYSIS GRAPH



361084

5 cm

EXPLORATION LOGGING OF AUSTRALIA, INC.

A Geological-Engineering Service

PERTH ADDRESS 69 GREAT EASTERN HIGHWAY VICTORIA PARK WESTERN AUSTRALIA
PHONE 61 4437 CABLE EXLOGG PERTH

CORE ANALYSIS REPORT

COMPANY ESSO-BHP
WELL WHELK #1
LOCATION/FIELD OFFSHORE/OTWAY BASIN
COUNTY KING ISLAND STATE TASMANIA
COUNTRY AUSTRALIA
REMARKS SANDST, LT-GRN, SPECKLED, MED TO CRSE, RD, FAIRLY WELL SRTD, ABUND KAO MTX, FAIRLY MASS W/ COM GRN CLYST PBLS & OCC CARB LAMINAE, QTZ & CHLOR, HIGH ANGLE X-BEDDING, NO SHOWS,

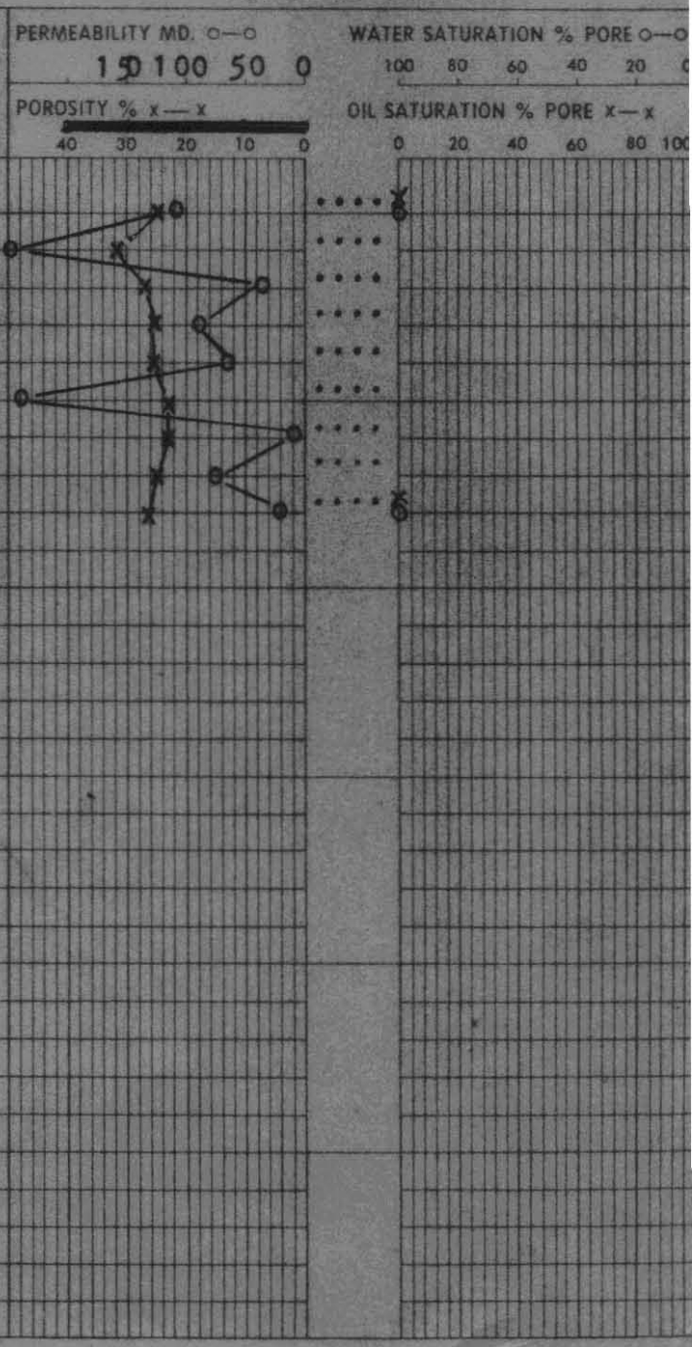
DATE MARCH 13, 1970
DEPTH 4478 TO 4508
GEO-ENGINEER CRAIG CLARKE
CORE: No. 2

SAND
SILTY SAND
SILTST.
SHALE
LIME
CONGL.

TABULAR DATA

SAMPLE NUMBER	DEPTH FEET	AIR PERM. MD.	POROSITY PERCENT	FLUID SATURATION % PORE VOLUME		DRY BULK DENSITY	TOTAL Cl⁻ G/O	REMARKS
				OIL	WATER			
1	4480	109	25.4	0	100	2.08		
2	4483	266	31.5	–	–	1.93		
3	4486	31	27.1	–	–	2.12		
4	4489	85	26.3	–	–	2.02		
5	4492	62	26.2	–	–	1.92		
6	4495	238	23.2	–	–	1.98		
7	4498	10	23.6	–	–	2.03		
8	4501	75	24.9	–	–	2.09		
9	4504	22	27.3	0	100	2.03		

ANALYSIS GRAPH



OP 397

Enclosure 1

361655

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

WELL COMPLETION LOG

WHELK - 1

CONCESSION: STATE: TASMANIA BASIN: OTWAY

LOCATION: Lat. 39° 51' 51.9" Long. 142° 31' 33.9"

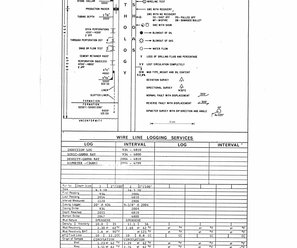
ELEVATION: G.L. 0 ' AMSL K.B. 1038' WATER DEPTH: 338'

SPUDDED: 5.3.79 COMPLETED: 21.3.79 DRILLED BY: ODECO

CLASSIFICATION: GAS AND CO2 EQUIPOT STATUS: PLUGGED AND ABANDONED

TOTAL DEPTH: 1812' PLUGGED BACK T.D.: 707'

CASING AND TUBING				PLUGS			PERFORATIONS	
SIZE	WGT. WT/IN.	GR/T	FORMATION	FROM	TO	SX. CMT.	FROM	TO	No. FT.
20"	94lb	1200	Pelletier	1042'	2042'	115			
9-5/8"	36lb	K55	Paaratte	537'	787'	80			



WIRE LINE LOGGING SERVICES

LOG	INTERVAL	LOG	INTERVAL
DIRECTIONAL SURV	0 - 1812		
SONIC-GAMMA RAY	706 - 1802		
DENSITY-GAMMA RAY	1706 - 1810		
CORRELOG - CBL/VDL	1706 - 1810		

Run No.	One	Two	Three	Four	Five	Six
Date	5.3.79	13.3.79	20.3.79			
First Reading	1812	1812	1812			
Last Reading	0	706	1706			
Feet Logged	1812	1106	106			
Casing Depth	1812	1812	1812			
Bit Size	12.25	8.5	8.5			
Drilling Fluid Type	GEL	GEL	GEL			
Source Sample	CIRC	CIRC	CIRC			
Rm @ Meas. Temp.	0.19 @ 70°F	0.19 @ 70°F	0.19 @ 70°F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	0.16 @ 70°F	0.16 @ 70°F	0.16 @ 70°F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	0.24 @ 70°F	0.24 @ 70°F	0.24 @ 70°F	@ °F	@ °F	@ °F
Rm @ BHT	0.12 @ 140 °F	0.12 @ 140 °F	0.12 @ 140 °F	@ °F	@ °F	@ °F
Time	0.5 hr.	4 hr.	4 hr.	hr.	hr.	hr.
Max. Rec. Temp.	140 °F	140 °F	140 °F	°F	°F	°F
Equipment No.	3-1	3-1	3-1			
Location	W.H.S.	W.H.S.	W.H.S.			
Recorded By	J. HOLMES	J. HOLMES	J. HOLMES			
Witnessed By	J. MCCLEAN	J. MCCLEAN	J. MCCLEAN			

	LOGGED DATA		EXTRACT DATA	
Top	1812		1812	706
Base	706		1106	706
Thickness	1106		106	1000

SPONTANEOUS POTENTIAL millivolts

RESISTIVITY ohms m²/m

CONDUCTIVITY millimhos/m

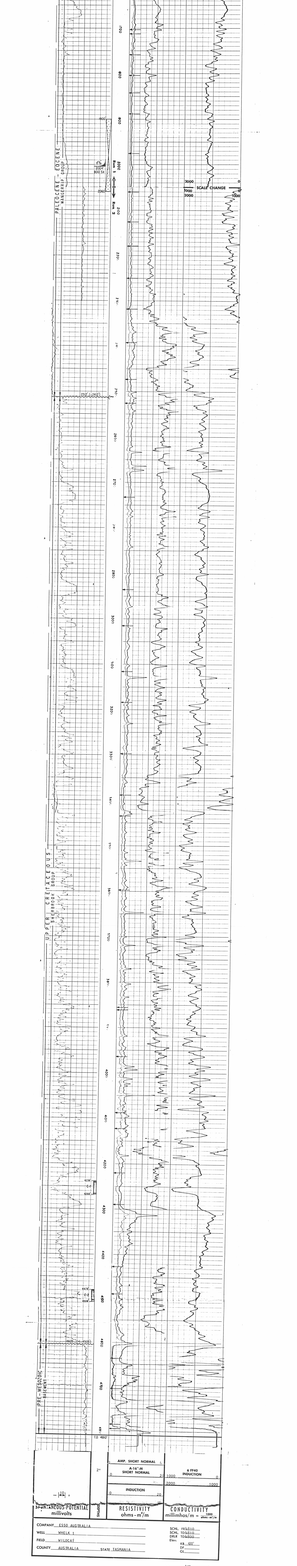
DEPTHS

16" NORMAL

INDUCTION

INDUCTION

6" AMP. SHORT NORMAL


SPONTANEOUS POTENTIAL millivolts
RESISTIVITY ohms m²/m
CONDUCTIVITY millimhos/m
DEPTHS
16" NORMAL
INDUCTION
INDUCTION
6" AMP. SHORT NORMAL
SCALE CHANGE
SCALE CHANGE
SCALE CHANGE

OR 347

361656 Enclosure 3

EXPLORATION LOGGING INC.

A PROGRESTAL EVALUATIONS SERVICE CO.

REMARKS

DRILLING CONTRACTOR: DECO — RIG NO.
MUD TYPE: Ocean Driller — MUD DATA: @ 6,970 ft — TIME MUD: 24 HRS @ 6,970 ft

CASING RECORD

20" @ 278 ft — 13⅜ @ 978 ft — 9⅝ @ — ft

HOLE SIZE

17½" — 12¼" — 8½" — 6"

SYMBOLS: ■ INDICATES TOP OF 10' LITHOLOGICAL INTERVAL AND APPROPRIATE PERCENTAGE OF INDICATED LITHOLOGY.

ABBREVIATIONS

A ANHYDRITE — ANH ANHYDRITE — BIT BIT — BNT BENTONITE — C CHERT — CA CALCITE — CALC CALCAREOUS — CEMT CEMENT — CHT CHERT — CLST CLOSED WITH TRIP — CMT CEMENT — CONGLOM CONGLOMERATE — DST DRILL STEM TEST — DTD DRILLING — G GAS — GYP GYPSUM — HC HYDROCARBON — HYD HYDRITE — I INTERBEDDED — LIM LIMESTONE — LOST LOSTCIRC — MUD MUDSTONE — NO SHOW NO SHOW — OIL OIL — P PYRITE — PRESS PRESSURE — SAL SALT — SD SAND — SH SHALE — SHOW SHOW — SLTST SILTSTONE — SS SANDSTONE — STK STICK — TR TRACE — TRIP TRIP — W WATER — WC WATER CUT — WTR WATER

LITHOLOGY SYMBOLS

SHALE — SILTSTONE — SANDSTONE — LIMESTONE — DOLOMITE — ANHYDRITE — SALT — COAL — CHERT — CONGLOMERATE — GYPSUM — BENTONITE — CALCAREOUS — CARBONACEOUS — FOSSILIFEROUS — GLAUCONITIC — PYRITIC — SILTY — SHALY — SANDY

COMPANY	ESSO-SHP
WELL	SHELF 1
FIELD	OTWAY BASIN
LOCATION	OFFSHORE
COUNTY, STATE	KING ISLAND, AUSTRALIA
API WELL INDEX NO.	
ELEVATION	RT: Levell 9.4, 99 ft
DATE	From March 7, 1970 to
DEPTH	From 970 ft to
UNIT NO.	25
LOGGING GEOLOGISTS	Chaney Meane

5 cm

ESSO-SHP Shelf #1 — Offshore/Otway Basin — King Island, Australia

EXPLORATION LOGGING — DRILLING RATE AND DATA — 5 MIN/IN — 100 FT/IN

LITHOLOGY

DRILLING MUD — CONTAMINOS STICK GAS — CHROMATOGRAPHIC ANALYSIS — Units — Methane — Ethane — Propane — Butane — Pentane — Hexane

CUTTINGS — GAS — TOTAL GAS (UNITS) — CHROMATOGRAPHIC ANALYSIS (PPM)

REMARKS AND LITHOLOGY DESCRIPTION

DRILLED 20" HOLE TO 278 FT.

SET 20" CSG AT 978 FT

DRILLING 17½" HOLE

LIMESTONE, WHITE, FINE-MEDIUM GRAINED, FOSSILIFEROUS, SOFT

MARL, LIGHT-MEDIUM GREY, SLIGHTLY FOSSILIFEROUS

C = 22m at 1070 ft

SAND, YELLOW, BROWN, WHITE, LOOSE, MOSTLY COARSE-GRANULE SIZE, TRACE PYRITE

W 9,9
V 50
Fk 11,2
Pr 15,0
Qu 1100
SB 2

SANDSTONE, DARK BROWN TO BLACK, VERY HARD, SILICEOUS, PYRITIC, ASSOCIATED WITH SAND AS ABOVE

SANDSTONE, WHITE, LOOSE, GRAIN-MEDIUM-GRANULE SIZE, VERY CLEAN, SUBROUNDED, MOSTLY QUARTZOSE, SLIGHTLY GLAUCONITIC

SANDSTONE, DARK BROWN TO BLACK, VERY HARD, SILICEOUS, PYRITIC, BLACK WATER

W 10,0
V 50

SANDSTONE, AS ABOVE, SOFT TYPE

DRILLED 12¼" HOLE TO 2087 ft

RAN SCHLUMBERGER IES, LDT-CNL AND SHDT

SET 9⅝" CASING AT 2087 ft

DRILLING AHEAD WITH 8½" BIT

SANDSTONE, VERY FINE GRADE, SILICEOUS, POORLY CONSOLIDATED, LIGHT GREY, POORLY SORTED, MOSTLY ANGULAR QUARTZ

W 13,4
V 50

SANDSTONE, MEDIUM TO COARSE GRAIN, MEDIUM TO WELL SORTED, SUBROUNDED TO ROUNDED, LIGHT GREY, SILICEOUS, CALCITIC, WITH TRACE GLAUCONITE

W 12,4
V 60
Fk 35,6
Pr 11
Qu 1500

CLAYSTONE, MEDIUM GREY, SOFT, SILTY, SLIGHTLY CALCAREOUS

W 11,2
V 56

SAND, FROSTED QUARTZ, FINE TO MEDIUM GRAIN, WELL SORTED, INTERBEDDED WITH CLAYSTONE, AS ABOVE

SAND, WHITE-FROSTED QUARTZ, FINE-MEDIUM, LOOSE, TRACE PYRITE

W 11,2
V 63

INTERBEDDED SAND, AS ABOVE, AND CLAYSTONE, LIGHT GREY, SOFT-FIRM, SILTY TO SANDY

W 11,0
V 38

CLAYSTONE & SAND, AS ABOVE, AND SANDSTONE, LIGHT BROWN, VERY FINE GRAIN, VERY SILTY, CALCAREOUS

CLAYSTONE, LIGHT GREY, SOFT, SILTY, VERY SILTY, VERY SANDY, CALCAREOUS, INTERBEDDED WITH FINE-MEDIUM, LOOSE SANDSTONE, LIGHT GREY, VERY FINE GRAIN, VERY PYRITIC

ABUNDANT PYRITE AS WELL SAMPLES

CLAY & CLAYSTONE, AS LATE ARRIVING CHIPS, IS DEEPLY GUNKY.

SAND, CLR, PVT, FAIR-GOOD VIS, F-VF GRADING TO MED-VF GRADING TO COARSE-GRANULE SIZED FROSTED GRAINS, MOSTLY SUBROUNDED TO ROUNDED, LOOSE TO ALL SAMPLES, CLAY MATRIX, SLIGHTLY CALC, NO VISIBLE POROSITY, NO STAINING, NO FLUORESCENCE, NO CUT, NO SHOWS, FROSTED QUARTZ, NO FOSSILS, PYRITE, SLIGHTLY CALC, NO HYDROCARBON SHOWS AT 3070 FEET.

C = 11m at 3570

W 11,3
V 50
Fk 11,6
Pr 13,5
Qu 930

SAND, AS LAST, AND AS ABOVE, SOFT, FRIABLE, FAIR TO GOOD VISIBLE POROSITY, SLIGHTLY CALCAREOUS, SLIGHTLY SILTY, LOCALLY, MODERATELY CEMENTED TO CHERT SAND.

CLAYSTONE, MEDIUM GREY, SOFT, SILTY, SLIGHTLY CALCAREOUS, MODERATELY TO VERY SILTY, NO POROSITY, MEDIUM TO LARGE GRAIN SANDSTONE, WHITE, FINE GRAIN, FRIABLE

CORE #1: 4273-4303
Cut 30 ft Rec 29 ft

ORG FM OLIGOCENOSED SHALE.

SHALE, AS ABV, MEDIUM TO DARK GREY, SOFT, FINE GRADING TO SILTSTONE, MULTICOLORED, FRIABLE, SLIGHTLY CALCAREOUS, SLIGHTLY SILTY, LOCALLY, MODERATELY CEMENTED, NO HYDROCARBON SHOWS.

SILTSTONE, AS ABV, MEDIUM TO DARK GRAY, FIRM, SLIGHTLY CALCAREOUS, SLIGHTLY SILTY, LOCALLY, MODERATELY CEMENTED, NO HYDROCARBON SHOWS.

SD GRADING FROM CHERT, BECOMING UNCONSOLIDATED.

CORE #2: 4307-4337
Cut 30ft Rec 27ft

W 11,1
V 50
Fk 7,1
Pr 12,0
PP 10,5
Qu 620
SB 3,4

CLAY & CLAYST., MED-DK GRY, SFT-FRM, LOC SLTY, MICA, SLIGHT TO MOD REACTIVE FROM WEATHERED LITHOL FRAGS, LOCALLY FIRM TO HARD FLINTY, SLIGHTLY CALC, NO VISIBLE POROSITY, NO SHOWS.

SDSTN, AS ABV, MED-DK GRY, FRM-HD, SLTY, CLY MTRX

ONE WAY TIME BELOW SEA LEVEL

05 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19

TWO WAY TIME BELOW SEA LEVEL

DEPTH IN FEET BELOW SEA LEVEL

500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000

Top of Eocene -1080'

TIME DEPTH CURVE

Top of U.Cretaceous -2234'

INTERVAL VELOCITY CURVE

AVERAGE VELOCITY CURVE

Top of Paaratte - 4096'

Top of Waarre - 4195'

Basement "Red Beds" - 4505'

6000 7000 8000 9000 10000 11000 12000

AVERAGE AND INTERVAL VELOCITY - FEET PER SECOND

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

WHELK - 1

TIME DEPTH CURVE

DATUM: Sea Level

AUTHOR: D.I.McEvoy

CO ORDINATES:
39° 53' 58" S
143° 33' 21" E

K.B. 99'

T.D. 4701'

LEGEND

⊙ Check Shots

⊡ Sonic Picks Extrapolated from Deepest Check Shot

338' Water Depth

Date of Survey : 15-3-70

Date Drafted : 13-4-70

Drafted by : A.M. Thompson.

5 cm

Dwg: 1248/OP/1

L89193 OR 347

ENCLOSURE 4

SCHLUMBERGER

INTERVAL VELOCITY

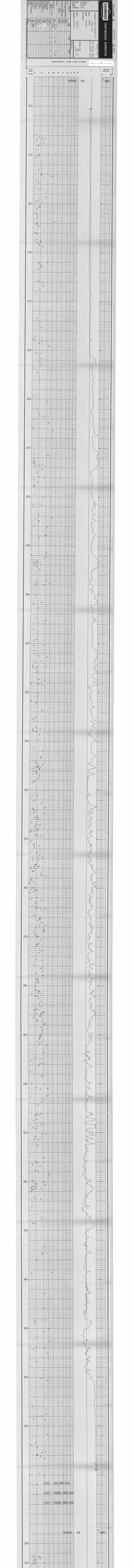
RUN 1

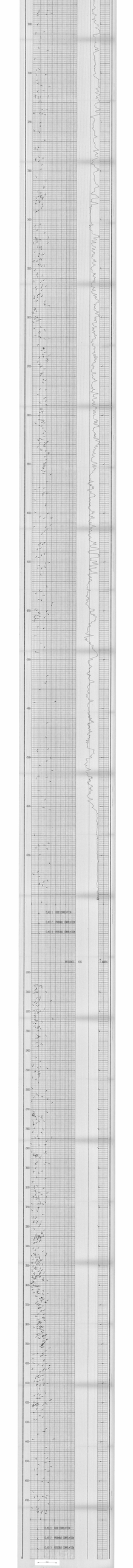
DEPTH

CORRELATION CURVES

CALIPER




CARDIOGRAPH SPECIFIER
Cardiograph
Date of Test 2013-08-30
Time of Test 10:57:00
Patient ID 1
Name
Age
Sex
Height
Weight
Medication
Comments
Test Type
Test Duration
Test Status
Test Result
Cardiograph Chart - 1 Lead 3 Part 5 Results
Lead I
Lead II
Lead III
Normal
Abnormal
LEAD I: SUBCOMPUTER
LEAD I: PRIMARY COMPUTER
LEAD I: PRIMARY COMPUTER


TEST 1 - DOE COMPLETION
TEST 2 - PROBABLE COMPLETION
TEST 3 - POSSIBLE COMPLETION
DEPARTURE - 4216
TEST 1 - DOE COMPLETION
TEST 2 - PROBABLE COMPLETION
TEST 3 - POSSIBLE COMPLETION

Schlumberger 26600

OFFSHORE 71

COMPENSATED FORMATION DENSITY LOG
Gamma Ray-Density

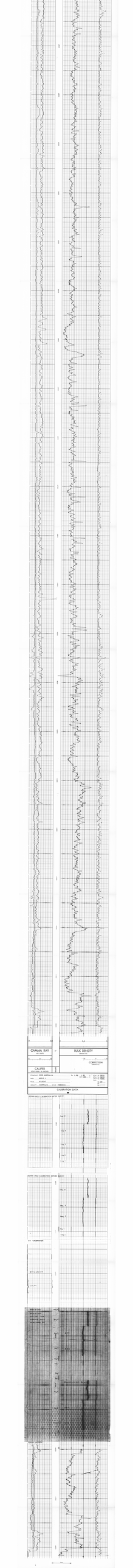
COUNTY AUSTRALIA
FIELD or LOCATION WILDCAT
WELL WHELK NO. 1
COMPANY ESSO

SCHLUMBERGER

COMPANY ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.
WELL WHELK 1 ON AUSTRALIA 1966
FIELD WILDCAT
COUNTY AUSTRALIA STATE TASMANIA
Location: Other Services: DIL, BHC, CDM, CNL, CDM, CNL, CDM, CNL


SCHLUMBERGER
FORMATION DENSITY LOG
CALIPER
GAMMA RAY
BULK DENSITY
CORRECTION


CALIPER
GAMMA RAY
BULK DENSITY
CORRECTION


GAMMA RAY
API UNITS
CALIPER
INCHES IN HOLE
BULK DENSITY
GM/CC
CORRECTION
GM/CC
CALIBRATION DATA
CALIBRATION DATA

COMPANY, AUSTRALIA
WELL or
LOCATION: WILLICE
FIELD
COUNTY
COMPANY ESSO

SCHLUMBERGER INDUCTION ELECTRICAL LOG

COMPANY ESSO AUSTRALIA LTD.
WELL WILLICE 1
FIELD
COUNTY GIPPSLAND STATE AUSTRALIA

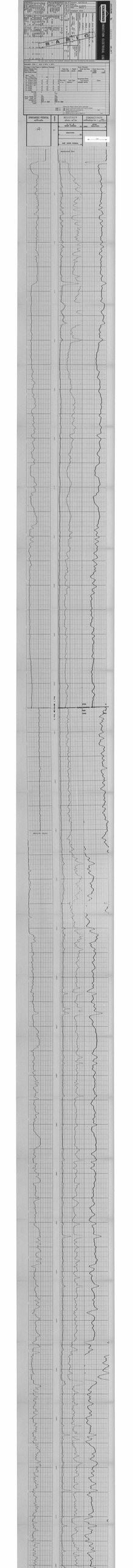
Other Services: BHC

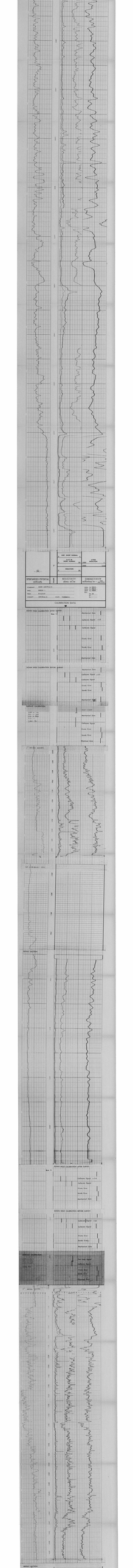
Permanent Datum: GROUND LEVEL
Elevation: 0 ft
Log Measured From: KELLY BUSHING
6 ft Above Perm. Datum
Drilling Measured From: KELLY BUSHING

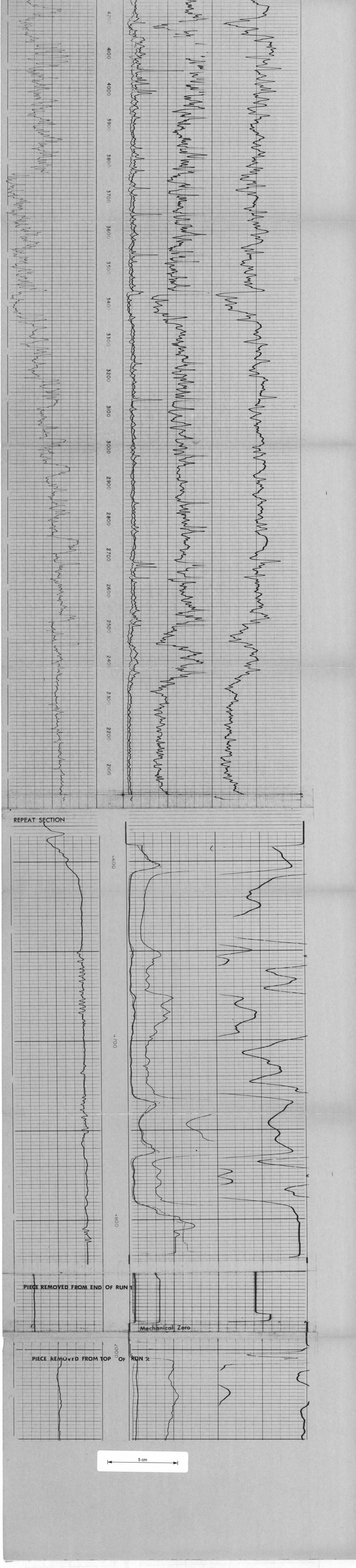
Date: 3-4-63
Run No.: ONE
Depth-Driller: 10992 ft
Depth-Logger: 10988 ft
Bottom Logged Interval: 10988 ft
Top Logged Interval: 1000 ft
Type Fluid in Hole: GYPSO
Salinity: 9.2 ppg
Density: 9.2 lb/gal
Level: FULL
Max. Rec. Temp.: 200 °F
Equipment No.: 1
Location: 1
Recorded By: R. FIFE
Witnessed By: MR. BRIGHT

Run No.: ONE
Bit Size: 12¼ in
Type Fluid in Hole: GYPSO
Density: 9.2 lb/gal
Level: FULL
Max. Rec. Temp.: 200 °F
Equipment No.: 1
Location: 1
Recorded By: R. FIFE
Witnessed By: MR. BRIGHT

Run No.: ONE
Bit Size: 8½






REPEAT SECTION
PIECE REMOVED FROM END OF RUN 1
Mechanical Zero
PIECE REMOVED FROM TOP OF RUN 2
5 cm

COUNTY ELDORADO
FIELD or
WELL ALBERT
SEC. 11 TWP. 9N RGE. 8E

COMPANY EXXON

RUN	DATE	DEPTH DRILLER	DEPTH LOGGER	BTM. LOG INTERVAL	TOP LOG INTERVAL	CASING DRILLER	CASING LOGGER	BIT SIZE	TYPE FLUID IN HOLE	DENS.	VISC.	PH	FLUID LOSS	SOURCE OF SAMPLE	RM @ MEAS. TEMP.	RMF @ MEAS. TEMP.	RMC @ MEAS. TEMP.	SOURCE RMF	SOURCE RMC	RM @ BHT	TIME SINCE CIRC.	MAX. REC. TEMP.	EQUIP. LOCATION	RECORDED BY	WITNESSED BY
ONE	6-15-61	10,000	10,000	10,000	0		10,000	7 7/8																	

SCHLUMBERGER

BOREHOLE COMPENSATED SONIC LOG - GAMMA RAY

BASIC

Date and Time Well Drilled, Number and Manufacturer of Drill Collars, Type and Length of Drill Pipe or Tubing, Type of Surface Equipment, Rig Number, Name of Drilling Contractor, Remarks, Etc.

REMARKS

Changes in Mud Type or Additional Samples		Type Log	Depth	Scale Changes Scale Up Hole	Scale Down Hole
Depth - Driller		CASING SHOE	2222	0to 120	10014
Depth - Logger		BIT	2222	10968	10
Type Fluid in Hole					

Max. Rec. Temp.		°F							
Source of Sample						Equipment Data			
Rm @ Meas. Temp.	@	°F	@	°F	Run No.	Tool Type	Tool Pos.	Other	
Rmf @ Meas. Temp.	@	°F	@	°F	1	SSC	2.5(9761)-11.5		
Rmc @ Meas. Temp.	@	°F	@	°F	1	BHC	2.5(9761)-13.5		
Rm @ BHT	@	°F							
Rmf @ BHT	@	°F							
Rmc @ BHT	@	°F							
Source Rmf Rmc		RMF	RMC						
Rmf, Rmc at Meas. Temp.		0.23	0.32						
		RMF@ 90	RMC@ 90						

CALIBRATION	RECORDED	DAILY CHECK	BEFORE TAPE	BEFORE TAPE	TIME	RECORDING
	TIME	BEFORE LOGGING	AFTER LOGGING	AFTER LOGGING	SINCE CIRC.	SPEED (ft./min.)
Gamma Activ.	20	9:15	9:30	9:00	4	20

Velocity (feet per second) = 1,000,000
Interval Transit Time (microseconds per foot)

GAMMA RAY
API UNITS

0 150

Spontaneous potential
MILLIVOLTS
-50+

CALIPER
HOLE DIAM. IN INCHES
6" 16"

INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT
140 to 40
1 in/min
5 in/min

Gamma Ray
SCALE CHANGE
Spontaneous Potential

CALIPER
HOLE DIAM. IN INCHES
6" 16"

PSEUDONORMAL POTENTIAL
Ohms/m²/m
0 80

M. A. R. A.
140 90
40 190

GAMMA RAY
API UNITS
0 150

INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT

COMPANY EXXON U.S.A.INC.
well MIDCAT 1
FIELD WILDCAT
COUNTY HUMBOLDT STATE TEXCARO

SCHL. 14 8000
SCHL. 15 8000
SCHL. 16 8000
Elev.:
KB 83
DF
GL

Company: AMERADA HESS CORPORATION
Well: BASIC 1
Field: WILDCAT
County: MCKENZIE
State: NORTH DAKOTA

Other Services: DIPMETER

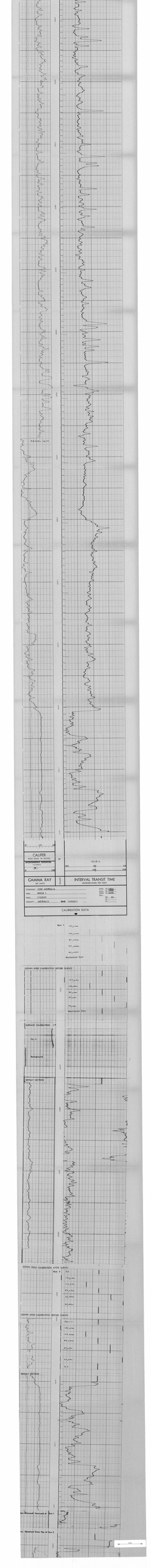
Permanent Datum: GROUND LEVEL
Elev.: 2,000 ft
Log Measured From: KELLY BUSHING
2,020 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

Date: 10-10-80
Run No.: ONE
Depth-Driller: 10,000 ft
Depth-Logger: 10,000 ft
Bottom Logged Interval: 9,998 ft
Top Logged Interval: 1,000 ft
Type Fluid in Hole: LIGNOSULFONATE
Salinity, PPM Cl: 1,000
Density: 9.2 lb/gal
Level: FULL
Max. Rec. Temp.: 180 °F
Equipment No. & Location: 1234 MINOT
Recorded By: J. SMITH
Witnessed By: R. JONES

Run No. | Bit No. | From | To | Size | Type Fluid | Density | Viscosity | Fluid Loss | Source of Sample | Rm @ Meas. Temp. | Rmf @ Meas. Temp. | Rmc @ Meas. Temp. | Source of Rmf / Rmc | Rm @ BHT | Time Since Circ. | Max. Rec. Temp. | Equip. No. & Location | Recorded By | Witnessed By
ONE | 1 | 1,000 | 10,000 | 8.5 | LIGNOSULFONATE | 9.2 | 45 | 6.0 | MUD PIT | 1.20 @ 180°F | 1.10 @ 180°F | 1.35 @ 180°F | MEASURED / CALCULATED | 0.85 @ 180°F | 12 HRS | 180 °F | 1234 MINOT | J. SMITH | R. JONES

Remarks: RUN AND MEASURED AS REQUESTED BY MR. JOHN DOE. THANK YOU FOR USING SCHLUMBERGER.

Run No. | Bit No. | Depth Drlr. | Depth Log. | Top Log Int. | Btm. Log Int. | Casing Driller Size @ Depth | Casing Logger Size @ Depth | Bit Size | Type Fluid in Hole | Density | Viscosity | Fluid Loss | Source of Sample | Rm @ Meas. Temp. | Rmf @ Meas. Temp. | Rmc @ Meas. Temp. | Source of Rmf / Rmc | Rm @ BHT | Time Since Circ. | Max. Rec. Temp. | Equip. No. & Location | Recorded By | Witnessed By
ONE | 1 | 10,000 | 10,000 | 1,000 | 9,998 | 9.625" @ 1,000 | 9.625" @ 1,000 | 8.5 | LIGNOSULFONATE | 9.2 | 45 | 6.0 | MUD PIT | 1.20 @ 180°F | 1.10 @ 180°F | 1.35 @ 180°F | MEASURED / CALCULATED | 0.85 @ 180°F | 12 HRS | 180 °F | 1234 MINOT | J. SMITH | R. JONES


CALIPER
MAGNETIC SUSCEPTIBILITY
GAMMA RAY
INTERVAL TRANSIT TIME
CALIBRATION DATA
Run 1
Mechanical Zero
DOWN HOLE CALIBRATION (BEFORE SURVEY)
SURFACE CALIBRATION
Background
REPEAT SECTION
DOWN HOLE CALIBRATION (AFTER SURVEY)
Run 2
DOWN HOLE CALIBRATION (BEFORE SURVEY)
REPEAT SECTION
Run Recorded Outward of Run 1
Run Recorded From Top of Run 2