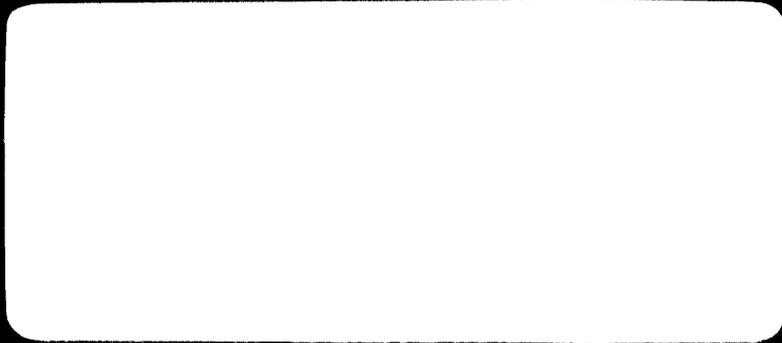




DEPT. NAT. RES & ENV

PE900924



PETROLEUM DIVISION
WELL COMPLETION REPORT
25 AUG 1995
PERCH-4

GIPPSLAND BASIN, VICTORIA

Compiled by: Ben Hayes
August 1995

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II. WELL DATA RECORD

LOCATION	Latitude: 038° 34' 14" S
	Longitude: 147° 19' 16" E
Surface Location	X= 527,991 E
	Y= 5,730,783 N
Primary Objective	X= 529,169 E
	Y= 5,730,484 N
	Map Projection: UTM Zone 55
	Geographical Location: Bass Strait, Victoria
	Field : PERCH
BLOCK	: VIC/L15
ELEVATION	: 37.0m
WATER DEPTH	: 41.3m
TOTAL DEPTH	: 2052.0 m (Driller) 1931.0 m (Logger)
	2055.0 m (Logger Extrap.)
COMPLETION:	: Cased and Suspended as a future oil producer from the N1 sand
MOVE IN	: 30/01/95
SPUDED	: 01/02/95
REACHED TD	: 11/02/95
RIG RELEASED	: 25/02/95
OPERATOR	: Esso Australia Resources Ltd.
PERMITEE OR LICENSEE	: BHP Petroleum (Australia) Pty Ltd and Esso Australia Resources Ltd.
ESSO INTEREST	: 50 %
OTHER INTEREST	: BHPP 50%
CONTRACTOR	: Reading and Bates
RIG NAME	: Harvey H Ward.
EQUIPMENT TYPE	: Jack Up
TOTAL RIG DAYS	: 29.7
DRILLING AFE NO	: L05014007
TYPE COMPLETION	: 7-3/4" casing, oil producer.
WELL CLASSIFICATION	: Production

II. OPERATIONS SUMMARY

Perch 4 was drilled as a production well through the Perch Monotower by the H.H. Ward drilling rig. The rig was positioned over the monotower on January 30th, 1995.

i. 17-1/2" Hole Section

Perch 4 was spudded at 9:00 hours, February 1st 1995. A 20" conductor was driven to 89m. The conductor was then washed out with a 17-1/2" bit and the hole deepened to 140m using a seawater drilling fluid. The hammer was then picked up and the 20" conductor driven a refusal at 149m. After laying down the hammer and the landing joint the 20" casing was cut and dressed and a 21-1/4" diverter nipples onto the wellhead.

ii. 13-1/2" Hole Section

The 20" hole section was drilled with flocculated seawater mud system. A 13-1/2" directional assembly and Hycalog DS-4OH bit and a Halliburton MWD tool assembly were picked up, function tested and the 20" casing cleaned out to 149m. The rest of the BHA was then picked up and the well was deepened and deviated in 13-1/2" hole. The hole angle was built by motor drilling with slide drilling operations, from 0.17° at 148.5 m to 37.4° with a constant 104° azimuth at 505m. A wiper trip was conducted at that depth to condition the hole with the bit pumped and back reamed to the 20" casing shoe. After running back into the hole the well was motor drilled, slide drilling 70-80% of each stand to 855m with the hole angle built to 63.7° on an azimuth of 104°. From 855m to 886m, slide drilling operations were reduced to 50% to reduce the angle of build. At 876.3m the hole was at 64.3° on an azimuth of 103.4°. The well was subsequently deepened by rotary drilling from 886m to 975m taking surveys every stand. A wiper trip was conducted at 975m to condition the hole. The bit was pumped and backreamed to the casing shoe prior to being run back into the hole. Soft fill was cleaned from the hole from 960-975m and the hole circulated to condition prior to running casing. The bit was then pulled from the hole and the 9-1/2" motor laid down. Prior to running the 10-3/4" casing, the diverter was nipped down and the casing cut, laying down the stub and casing flange. During cutting operations mud in the annulus dropped and was refilled with 20 barrels of sea water. Surface casing equipment was then rigged up and 80 joints of 40.5 lb/ft K-55 casing was run. The cement head was then rigged up and the casing cemented with a 875 sxs lead slurry and 300 tail cement. The 13-5/8" BOP and riser to the well head were then nipped up.

iii. 9-7/8" Hole Section:

After nipping up, the BOP's were successfully pressure tested to 200/3000 psi and 200/1600 psi. A 9-7/8" BHA was picked up and run into the hole with a DBS QP-19L bit. After drilling out the shoe track and cleaning the hole to 975m, the seawater gel mud system was displaced with a KCL/Glycol mud system which was circulated and conditioned. 3m of new formation was then drilled prior to conducting a pressure integrity test indicating an EMW of 16.01ppg. Further circulation of the mud continued while raising the glycol concentration to 3% and PHPA was added. The well was then deepened in 9-7/8" hole from 978m to 1345m taking MWD surveys after each stand. At 1345m the bit was pumped and backreamed in a wiper trip was conducted to the 10-3/4" casing shoe. After running back to bottom, the well was then deepened from 1345m to 1573m taking MWD surveys every stand. A wiper trip was then conducted with the bit pumped and backreamed to the 10-3/4" casing shoe. After running back to bottom, the well was deepened from 1573m to 1740m prior to pulling the bit from the hole.

II. OPERATIONS SUMMARY (cont.)

After pulling the bit from the hole the PDC bit and MWD tools were laid down and the Anadrill LWD tool assembly was picked up with a new Reed HP-51A 9-7/8" rock bit. The Halliburton MWD tools were then picked up, function tested and run into the hole. After slipping and cutting drill line at the casing shoe, the bit was run to 1720m prior to precautionary reaming to 1740m. The well was then deepened from 1740m to 1784m with a constant 25-33 klbs on the bit. From 1784m to 1890m, the well was deepened by controlled drilling at no greater than 15 metres/hour in an effort to optimise Anadrill LWD data. MWD surveys were conducted after every stand. The top Latrobe Formation, Coarse Clastics and N1 Coal were drilled out, prior to conducting a wiper trip to condition the hole at 1890m. The bit was backreamed and pumped to the casing shoe prior to being run back into the hole and precautionary reamed from 1861-1890m. The well was then deepened from 1890-1969m at normal penetration rates with MWD surveys conducted every stand. At 1969m, within the fractured top of the N2 coal, lost circulation was experienced with initial losses while circulating, running at 100 bbl/hr. To counter losses, a pill containing mica and kwikseal lost circulation material was spotted on bottom and allowed to soak while the bit was pulled to 5 stands from bottom and the hole circulated.

After curing lost circulation problems, the bit was run back to bottom and the well was deepened by controlled drilling from 1969-2052m conducting MWD surveys every stand. Rates of penetration were restricted to a maximum of 15m/hr to optimise the quality of the LWD log. A total depth of 2052m was reached at 20:30 hours on 11/02/95. A wiper trip to the casing shoe at 962m was conducted at that depth and the bit pulled from the hole. Tight hole and bridges were encountered during the course of the wiper trip.

At surface, the Anadrill tools were laid down and the data downloaded, and the Sperry Sun adjustable stabiliser and Halliburton MWD tool assembly laid down, prior to rigging up Schlumberger tools for logging suite #1. Logs attempted were; DLL-MSFL-AS-GR-CNL-LDL-AMS. In the event, the tools would not pass below the high angle hole within the casing at 860 m and after attempts at working them lower, they were pulled from the hole for assessment of the tool configuration. Three CMEZ centralisers were removed and the tool string was run back into the hole. On the second attempt, the tool string was unable to pass below 850m, and after attempting to work it deeper, was pulled from the hole and Schlumberger rigged down.

Anadrill's CDN and CDR tools were picked up and run into the hole in the BHA above the re-run Reed HP-51A bit and logging operations were conducted during reaming operations by that company. The logged interval was 1600-2052m with reaming speeds maintained below 60 m/hr in the main hole section and below 15 m/hr in the zones of interest from 1800-1850m, and 1935-2000m. On completion of logging operations the bit and LWD tools were pulled from the hole, laid down and the data downloaded. The surface casing equipment was rigged up prior to running 7-5/8" casing which comprised a total of 169 joints of 26.4# L-80 LTC grade. The cement head and surface lines were then rigged up, pressure tested, the cross over tightened and re pressure tested to 3000 psi and the casing cemented with 750 sacks of neat cement with 0.223 gallons/ sack of Halad 322 LS for lost circulation control. Surface pressures indicated possible lost circulation problems during displacement of the cement with seawater and subsequent attempts to bump the plug. Surface cementing equipment was rigged down, the well head cleaned and drillpipe laid down prior to commencing Schlumberger cased hole logs.

II. OPERATIONS SUMMARY (cont.)

Schlumberger cased hole logs comprised; AS-GR-CCL-AMS/ VSP. The top of the cement inside the 7-5/8" casing was tagged at 1572m and the Array sonic logged from that depth to 150m. There was no indication from the AMS temperature log of cement outside the casing above that depth. It was deemed necessary to drill out the cement and the drillpipe on deck had couplings with an OD in excess of the ID of the casing. Whilst waiting on replacement drillpipe. 112 stands of 5" drillpipe were laid down and the 4-1/2" tubing joints picked up and made into stands.

The BOPs were then tested to 200/3000 psi prior to making up a 6-1/2" PDC bit with a 7-5/8" casing scraper, 3-1/2" heavy weight drillpipe and 3-1/2" drillpipe and running into the hole. The top of the ratty cement was intersected at 1580 and drilled to 1592 m where hard cement was intersected. The seawater in the hole was displaced with mud at this point. Hard cement was then drilled from 1592-1930 m, prior to displacing the hole with seawater and pulling the bit from the hole for a second attempt at acquiring cased hole logs. Logs run were CET-CBL-GR-AMS. No cement was seen outside the casing above 1931m and logs were run up to 1700m. A gyro survey was then conducted by gyrodata on Schlumberger's wireline prior to rigging down. In the absence of cement bond no array sonic or seismic survey were conducted over this interval.

III. CASING DATA

SIZE (in)	WEIGHT (lb/ft)	GRADE	CONNECTION	INTERVAL (m MDRT)	SHOE DEPTH (m MDRT)
20	129	X-56	RL-45	24 - 149	149
10.75	40.5	K-55	BTC	23 - 962	962
7.625	26.4	L-80	LTC	23 - 2039	2039

IV. CEMENTING DATA

CASING (OD)	10.75"	7.625" Primary	7.625" Remedial
SETTING DEPTH (mMDRT)	962	2039	1854
LEAD SLURRY			
Volume Pumped (sx)	875		
Weight (ppg)	12.5		
Additives			
Econolite (gal/sk)	0.55		
Mixwater (FW) (gal/sk)	11.8		
Yield (ft³/sk)	2.05		
TAIL SLURRY			
Volume Pumped (sx)	300	750	500
Weight (ppg)	15.8	15.8	15.8
Additives			
Halad 322L (Fluid Loss) (gal/10bbl)		18	16
Mixwater (gal/sk)	5	5	5
Yield (ft³/sk)	1.15	1.15	1.15
BUMP PLUG?	Yes	No	----
CALCULATED TOC (mMDRT)	Surface	1968	1500
GROUT			
Volume (sx)	150		
Weight (ppg)	15.8		
CaCl (% BWOC)	2		

V. SAMPLES

Cuttings

Three Sets of washed and dried cuttings samples were collected at 10 metre intervals from 150 to 1650m MDRT and 5 metre intervals from 1650 to 2052m MDRT. Cuttings descriptions are contained in Appendix 4.

VI. LOGS AND SURVEYS

Due to high angle hole, wireline logging tools were unable to pass below the casing shoe and therefore no open hole wireline logs were acquired. Logging while drilling (LWD) and cased hole logs were run as follows;

Survey	Company	Top (m MDRT)	Bottom (m MDRT)
LWD			
MWD (Directional)	Halliburton	170.5	2007.7
CDR-CDN (Reaming)	Schlumberger/Anadrill	1600.0	2052.0
Cased Hole			
AS-GR-AMS	Schlumberger	150.0	1572.0
CET-CBL-GR-AMS	Schlumberger	1700.0	1931.0
Gyro (Directional)	Gyrodata	110.0	1915.0

No temperature plot was possible due to the inability to get wireline logging tools into the open hole.

V. FORMATION RESERVOIR TOPS

Formation/ Zone	m TVDSS			m MDRT	m TVT Net Oil Sand	
	Predicted	Actual*	Difference		Predicted	Actual
Top of Lakes Entrance	976	975.3	0.7 high	1510.0		
Top of Latrobe Group (TOL)	1094	1097.0	3.0 low	1768.0	11.5	10.5
Top of Coarse Clastics (TCC)	1120	1120.7	0.7 low	1814.5		
Original OWC	1132	1132.0		1835.9		
Total Depth		1256.5		2052.0		

VI. GEOLOGICAL ANALYSIS

Objectives

The proposed Perch-4 was a longreach well, located 1206m ESE of Perch-3 & Perch monotower and 171m ESE of Perch-2. The well was designed to produce from the N1 reservoir in the eastern fault block of Perch in a crestal position approximately 3m updip from Perch-2. Perch-2 intersected 12.5m gross sand with 8.8m net oil column and an original OWC of 1132mTVDSS, which is interpreted as the field OOWC common with the western fault block (encountered in Perch-1).

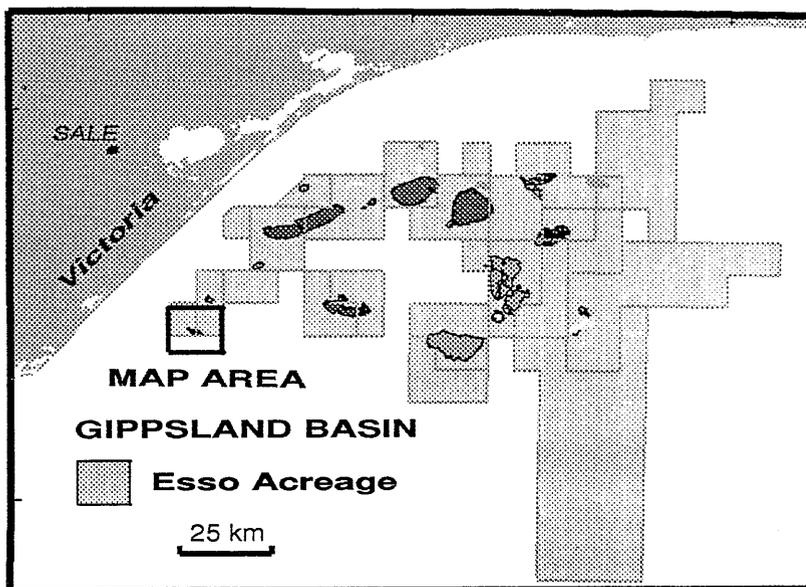
Cored N1 Sand in Perch-1 and 2 is quartzose, medium-very coarse grained, massive and containing glauconite. It is interpreted to be of upper shoreface facies and is of consistent quality and similar thickness in Perch-1, 2 and 3 with a slight thickening from Perch-3 and 2 off flank to Perch-1.

Results

Perch-4 intersected the TCC (top N1 Reservoir) 1120.5mTVDSS, 2.5m TVD updip of Perch-2, and 0.7m TVD low to prognosis. The well intersected 10.5m TVT gross sand with 10.5m TVT net oil column in the N1 reservoir. The upper 2.3m TVT is of poorer quality due to pyritisation and mixing of iron-rich glauconitic, silty Gurnard Fm, possibly due to localised subaerial exposure and bioturbation at the crest of the palaeo-high. The current OWC is within a 1m siltstone between a LPO at 1131.0m TVDSS and a HPW at 1132.0m TVDSS. The up to 1m rise in current OWC from the original OWC at 1132.0m TVDSS confirms that some oil from east Perch has been produced at Perch 3 via fault leak, as prognosed.

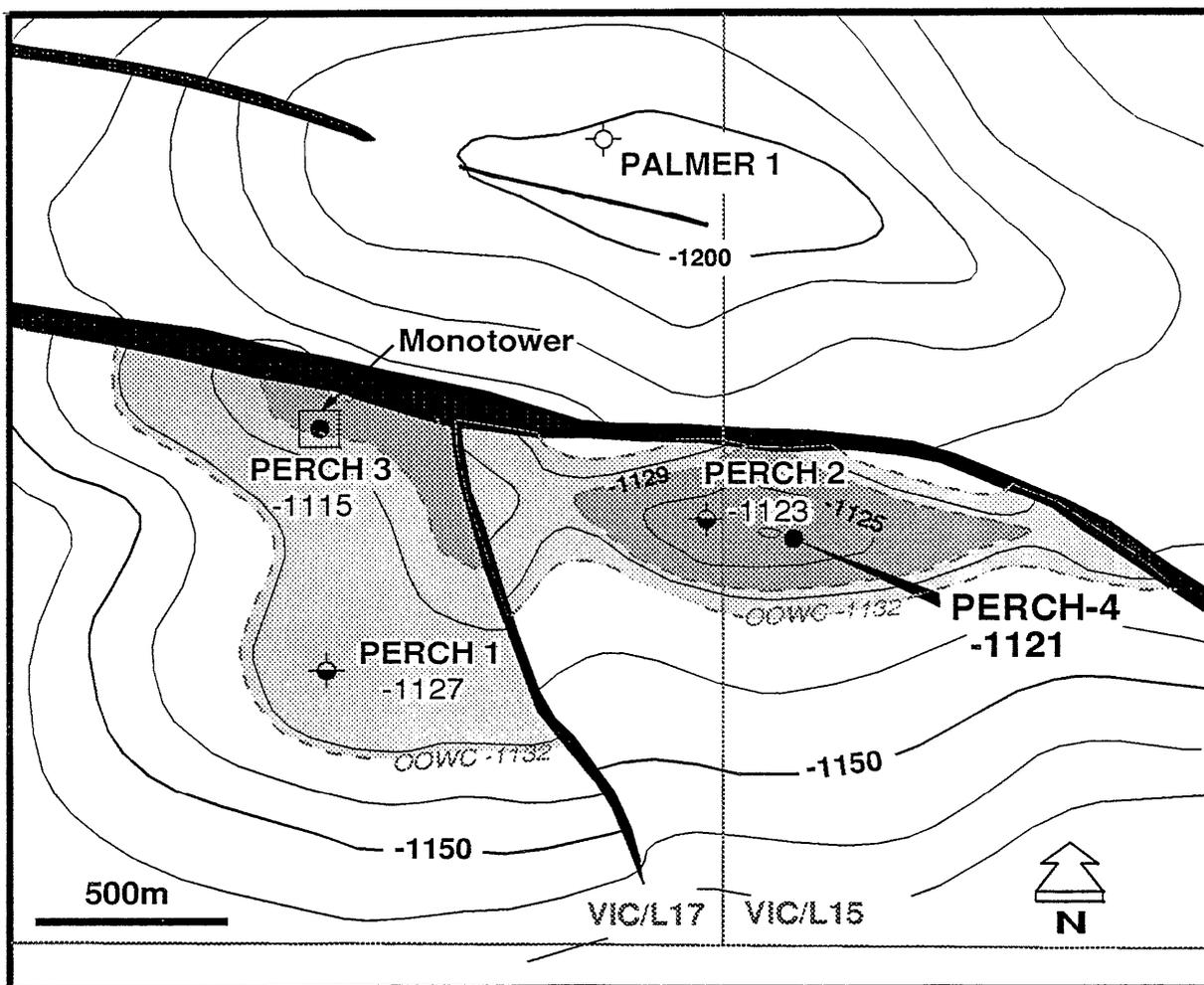
Reservoir quality was good with an average porosity of 31.0% below the upper mineralised zone and an Sw of 13.6%. The upper 2.3m thick, mineralised zone has an average porosity of 20.5% and an Sw of 39.9%.

Perch-4 was initially perforated over the interval 1811.5m to 1821.5mMDRT (1120.5m to 1125.2m TVDSS) and flowed at an initial rate of 8178 BOPD with 0% water cut and a THP of 167psi. Due to the comingling of produced oil from both Dolphin and Perch fields in the one flowline, the minimum pressure requirements for dual flowing of oil from both fields was not met by this initial flow pressure. Therefore, the N1 reservoir was re-perforated over a larger interval of the 31% porosity sand to increase PI and flowing pressure. Re-perforation over the interval 1815.5-1825.5mMD (1122.2-1127.2mTVDSS) resulted in a final flow rate of 6473BOPD at 19% water cut and 199psi THP, which met the flowline minimum requirements.



PERCH-4 Location Map

Depth Structure @ Top of Coarse Clastics



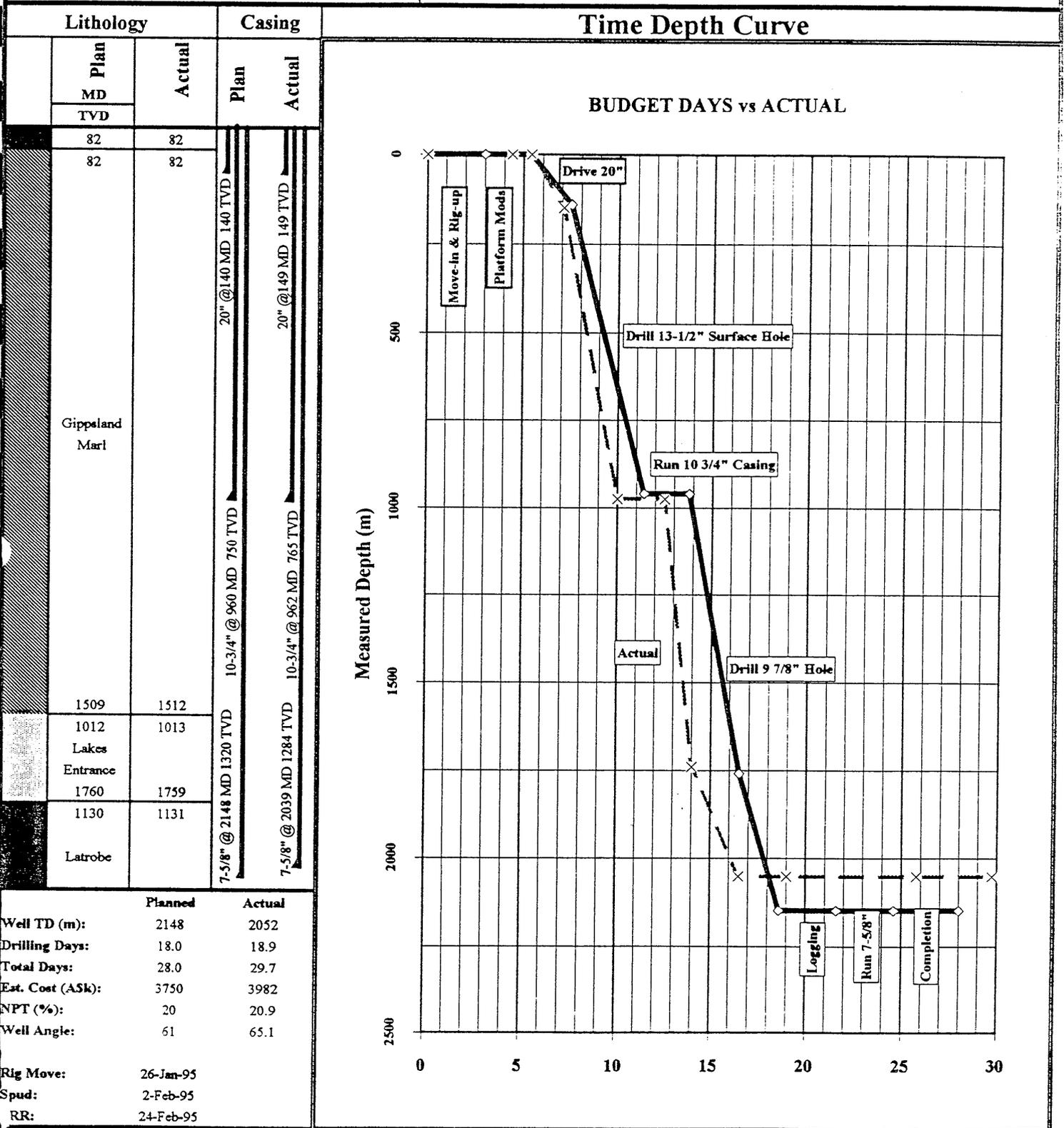


Figure 2

SCHEMATIC	DESCRIPTION	OD (In)	MIN ID (In)	LENGTH (m)	MDRT TOP(m)	TVDRT TOP(m)	
	Tubing Conn.: EUE unless marked other RT to top of tubinghead flange			23.00			
	1 Cooper 13-5/8" MC-2 Snapping Tubing Hanger, 645256-32-46	13.292	3.900	0.36	23.00		
	2 X-over pup joint 4-1/2" VAM ACE to 4-1/2" 12.75# EUE, J-55, PxP	4.500	3.958	1.71	23.36		
	3 2 Pup joints, 2.48m and 2.47m, 4-1/2" 12.75# J-55	4.500	3.958	4.95	25.07		
	4 Tubing, 4-1/2" 12.75#, J-55	4.500	3.958	266.04	30.02		
	5 2 Pup joints, 1.86m and 1.86m, 4-1/2" 12.75# J-55	4.500	3.958	3.72	296.06		
	6 Flow Coupling, 6ft, 4-1/2", 811FN38105	5.614	3.865	1.83	299.78		
	7 SSV Landing Nipple 4-1/2" Otis XXO, 711XXO38115	5.619	3.813	0.70	301.61	300	
	8 Flow Coupling, 6ft, 4-1/2", 811FN38105	5.614	3.865	1.83	302.31		
	9 Pup joint, 6ft, 4-1/2" 12.75# J-55	4.500	3.958	1.86	304.14		
	10 Tubing, 4-1/2" 12.75#, J-55	4.500	3.958	364.35	306.00		
	11 Pup joint, 6ft, 4-1/2" 12.75# J-55	4.500	3.958	1.85	670.35		
	12 Blast Joint, 10ft, 4-1/2", 811BN38101	5.560	3.970	2.98	672.20		
	13 Side Pocket Mandrel, Camco MMRG-2, 1-1/2" GLV, RK latch	6.625	3.833	2.81	675.18	614	
	14 Pup joint, 6ft, 4-1/2" 12.75# J-55	4.500	3.958	1.70	677.99		
	15 Tubing, 4-1/2" 12.75#, J-55	4.500	3.958	451.16	679.69		
	16 Pup joint, 6ft, 4-1/2" 12.75# J-55	4.500	3.958	1.85	1130.85		
	17 Blast Joint, 10ft, 4-1/2", 811BN38101	5.560	3.970	2.98	1132.70		
	18 Side Pocket Mandrel, Camco MMRG-2, 1-1/2" GLV, RK latch	6.625	3.833	2.81	1135.68	841	
	19 Pup joint, 6ft, 4-1/2" 12.75# J-55	4.500	3.958	1.71	1138.49		
	20 Tubing, 4-1/2" 12.75#, J-55	4.500	3.958	326.33	1140.20		
	21 Pup joint, 6ft, 4-1/2" 12.75# J-55	4.500	3.958	1.87	1466.53		
	22 Blast Joint, 10ft, 4-1/2", 811BN38101	5.560	3.970	2.98	1468.40		
	23 Side Pocket Mandrel, Camco MMRG-2, 1-1/2" GLV, RK latch	6.625	3.833	2.81	1471.38	995	
	24 Pup joint, 6ft, 4-1/2" 12.75# J-55	4.500	3.958	1.72	1474.19		
	25 Tubing, 4-1/2" 12.75#, J-55, 1 joint	4.500	3.958	9.60	1475.91		
	26 Landing Nipple, "R", 4-1/2", 3.688 pkg bore, 11R36826	5.619	3.688	0.33	1485.51	1001	
	27 Tubing, 4-1/2" 12.75#, J-55	4.500	3.958	287.11	1485.84		
	28 Xover 4-1/2" EUE box to 3-1/2" EUE pin	4.500	2.992	0.16	1772.95		
	29 Pup joint, 6ft, 3-1/2" 9.3# J-55 EUE	3.500	2.992	1.85	1773.11		
	30 X-over 3-1/2" EUE box to 3-1/2" VAM ACE pin	3.500	2.992	0.28	1774.96		
	31 BWD Packer Seal Stinger	4.470	2.970	0.18	1775.24		
	31A Straight Slot Locator, 212S40008-A	4.470	2.970	(0.5)			
	31B Seal Unit 212RTR40004-A, Seal Unit Extension 212X40000-A, Two Seal Units, Muleshoe Guide 212G40000-A	4.018	2.970	(2.38)			
	32 Wireline Set Packer, Otis BWD 7-5/8" by 3-1/2", 212BWD7540-A	6.375	4.000	0.94	1775.42	1138	
	33 Seal Bore Extension 4-3/4" 8 UN Pin by Pin, 212C7060	5.032	4.000	2.28	1776.36		
	34 Millout extension 4-3/4" 8 UN Box by Box, 812MOE40002	5.600	4.350	2.44	1778.64		
	35 Xover, 4-3/4" UN Pin by 3-1/2" EUE Pin, 892PPC43002	4.772	3.003	0.11	1781.08		
	36 Pup joint, 6ft, 3-1/2" 9.3# J-55 EUE	3.500	2.992	1.86	1781.19		
	37 Joint of tubing, 3-1/2" 9.3# J-55 EUE	3.500	2.992	9.62	1783.05		
	38 Landing Nipple, "XN", 2.75" pkg bore with 2.635" nogo			2.635	0.44	1792.67	1146
	39 12 foot Perforated Pup Joint, 3-1/2" 9.3# J-55 EUE	3.500	2.992	3.70	1793.11		
	40 Joint of tubing, 3-1/2" 9.3# J-55 EUE	3.500	2.992	9.59	1796.81		
	41 Xover, 3-1/2" EUE Box by 4-1/2" EUE Pin	4.500	2.992	0.23	1806.40		
	42 Pup joint, 6ft, 4-1/2" 12.75# J-55	4.500	3.958	1.87	1806.63		
43 Top of Schlumberger SAXR automatic gun release	5.200	4.000	0.70	1808.50	1155		
Bottom of completion					1809.20		
A PERFORATIONS 1811.5 to 1821.5 mdkb, Schlumberger 4-1/2" 5 spf TCP and 1815.5 to 1825.5 mdkb with 2-1/8" 6 spf Enerjets.					1811.50	1156	
44 Schlumberger TCP gun fish 15.01m. Bottom SAXR 2.21, 4-1/2" Spacer 2.56m, 4-1/2" Gun 10m, Roller/bullnose 0.24.	5.200		15.01				
45 Halliburton 7-5/8" EZSV Cement Retainer 0.804 m long, 802.351					1845.00	1174	
B Perforations for remedial cementing of production casing 1854 to 1854.6 mdkb, 3-3/8" 6 spf 60 deg. phasing Schlumberger HSD					1854.00		
Surface Casing, 10 3/4", 40.5 lb/ft, K-55 Butt 61 its	10.750	10.050	939.00	962.00	765		
Production Casing, 7 5/8", 26.4lb/ft, N-80.	7.625	6.875	2016.00	2039.00	1286		
Top of cement outside production casing, 1500 metres.							
PBTD 1930 mdkb							
ESSO	PERCH 4 Completion.	A ppr.	No.	Date	Revision	By	
			0	9/94	Proposed	GN	
	Wellhead	COMMENTS					
		Type:	Cooper, MC-2 Compact Wellhead				
		Xmas Tree Cap:	7-1/16" API 3000 psi WP R45				
		Xmas Tree Bore:	4-1/8"				
Back pressure valve:	4" Cameron Type H						
	Date Completed:	23rd February 1995.					
	Average angle:	50.7					
	Max. angle:	65.11 at 950 mdkb					
	Minimum I.D.:	2.635					

Note: The BWD packer was set on electricline at 1774.8 mdkb, this is 0.62 m above the tally depth.

Figure 4

APPENDIX I

APPENDIX 1

PERCH-4

Survey Data

A Gyrodata Directional Survey

for

ESSO AUSTRALIA LIMITED

HARVEY H. WARD, BLOCK VIC/L15, WELL PERCH 4

7 5/8" CASING SURVEY - DEFINITIVE RESULTS

Site Run: 19-FEB-95 00:51:24

Job Number: AU02956269

Surveyor: A.LINDIE/J.COLLINS

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 38.5700deg S

Azimuths Corrected .2010deg EAST to Grid North

Proposed Well Azimuth: 104.3600deg

Vertical Section Calculated from Well Head Location

Pressure Calculated from Well Head Location

Horizontal Coordinates Calculated from Local Horizontal Reference

A Gyrodata Directional Survey

AUSTRALIA LIMITED
 WARD, BLOCK VIC/L15, WELL PERCH 4
 3" CASING SURVEY - DEFINITIVE RESULTS
 Number: AU02956269

MEAS DEPTH	INCL deg	AZIMUTH deg	VERT DEPTH	HORIZONTAL COORDINATES meters		CLOSURE DISTANCE AZIMUTH		VERT SECTION	DOG-LEG SEVERITY deg/30
79.0	.00	.00	79.0	.00 N	.00 E	.0	.0	.0	.00
ASSUMED VERTICAL TO SEABED AT 79.0 METRES B.R.T.									
110.0	.03	64.62	110.0	.00 N	.01 E	.0	64.6	.0	.03
140.0	.08	114.86	140.0	.00 S	.04 E	.0	93.0	.0	.07
170.0	.28	140.21	170.0	.07 S	.10 E	.1	123.5	.1	.21
200.0	2.39	120.26	200.0	.44 S	.69 E	.8	122.5	.8	2.13
230.0	5.64	111.90	229.9	1.31 S	2.60 E	2.9	116.6	2.8	3.29
260.0	9.48	110.47	259.6	2.72 S	6.28 E	6.8	113.4	6.8	3.85
290.0	13.50	107.40	289.0	4.63 S	11.94 E	12.8	111.2	12.7	4.06
320.0	16.27	103.67	318.0	6.67 S	19.36 E	20.5	109.0	20.4	2.94
350.0	18.87	103.00	346.6	8.76 S	28.18 E	29.5	107.2	29.5	2.60
380.0	21.82	102.45	374.8	11.05 S	38.35 E	39.9	106.0	39.9	2.96
410.0	26.17	103.04	402.2	13.75 S	50.25 E	52.1	105.3	52.1	4.35
440.0	30.16	102.46	428.6	16.87 S	64.05 E	66.2	104.7	66.2	4.01
470.0	33.14	101.42	454.1	20.12 S	79.45 E	82.0	104.2	82.0	3.03
500.0	36.82	101.48	478.7	23.53 S	96.31 E	99.1	103.7	99.1	3.68
530.0	39.35	102.63	502.3	27.40 S	114.40 E	117.6	103.4	117.6	2.63
560.0	38.72	103.67	525.6	31.70 S	132.80 E	136.5	103.4	136.5	.91
590.0	38.36	102.98	549.1	36.00 S	150.99 E	155.2	103.4	155.2	.56
620.0	38.36	102.32	572.6	40.08 S	169.15 E	173.8	103.3	173.8	.41
650.0	41.11	102.02	595.7	44.12 S	187.90 E	193.0	103.2	193.0	2.75
680.0	46.09	102.07	617.4	48.44 S	208.13 E	213.7	103.1	213.6	4.98
710.0	47.77	103.96	637.9	53.38 S	229.48 E	235.6	103.1	235.5	2.17
740.0	50.75	103.03	657.5	58.68 S	251.58 E	258.3	103.1	258.3	3.06
770.0	54.54	102.03	675.7	63.85 S	274.85 E	282.2	103.0	282.1	3.86
800.0	58.01	102.00	692.3	69.04 S	299.25 E	307.1	102.9	307.0	3.47

A Gyrodata Directional Survey

350 AUSTRALIA LIMITED
 WARD, BLOCK VIC/L15, WELL PERCH 4
 CASING SURVEY - DEFINITIVE RESULTS
 Number: AU02956269

MEAS DEPTH	INCL deg	AZIMUTH deg	VERT DEPTH	HORIZONTAL COORDINATES meters		CLOSURE DISTANCE AZIMUTH		VERT SECTION	DOG-LEG SEVERITY deg/30
■			■			■	deg	■	
830.0	61.48	102.13	707.4	74.46 S	324.59 E	333.0	102.9	332.9	3.47
860.0	64.42	101.63	721.1	79.96 S	350.73 E	359.7	102.8	359.6	2.98
890.0	63.89	102.08	734.1	85.50 S	377.16 E	386.7	102.7	386.6	.67
920.0	64.43	101.67	747.2	91.06 S	403.58 E	413.7	102.7	413.6	.66
950.0	65.11	101.23	760.0	96.44 S	430.18 E	440.9	102.6	440.7	.78
980.0	64.80	101.74	772.7	101.85 S	456.81 E	468.0	102.5	467.8	.55
1010.0	64.17	102.42	785.6	107.52 S	483.29 E	495.1	102.5	494.9	.88
1040.0	63.39	102.15	798.9	113.24 S	509.58 E	522.0	102.5	521.7	.81
1070.0	63.65	102.61	812.3	119.00 S	535.81 E	548.9	102.5	548.6	.48
1100.0	63.77	102.78	825.6	124.91 S	562.05 E	575.8	102.5	575.5	.20
1130.0	63.60	103.09	838.9	130.93 S	588.26 E	602.7	102.5	602.4	.33
1160.0	62.98	103.28	852.3	137.05 S	614.35 E	629.5	102.5	629.1	.64
1190.0	63.47	103.72	865.9	143.30 S	640.40 E	656.2	102.6	655.9	.62
1220.0	63.09	103.49	879.3	149.60 S	666.44 E	683.0	102.6	682.7	.43
1250.0	62.75	103.72	893.0	155.88 S	692.40 E	709.7	102.6	709.4	.39
1280.0	62.96	103.69	906.7	162.20 S	718.34 E	736.4	102.7	736.1	.21
1310.0	62.72	103.59	920.4	168.50 S	744.28 E	763.1	102.7	762.8	.26
1340.0	62.56	103.74	934.2	174.80 S	770.17 E	789.8	102.7	789.5	.21
1370.0	63.08	104.06	947.9	181.21 S	796.07 E	816.4	102.8	816.1	.59
1400.0	63.10	104.25	961.5	187.75 S	822.01 E	843.2	102.8	842.9	.17
1430.0	62.41	104.02	975.2	194.26 S	847.88 E	869.8	102.9	869.6	.72
1460.0	62.13	104.32	989.1	200.76 S	873.62 E	896.4	102.9	896.1	.39
1490.0	62.43	104.40	1003.1	207.34 S	899.35 E	922.9	102.9	922.7	.31
1520.0	62.79	104.47	1016.9	213.99 S	925.14 E	949.6	103.0	949.3	.37
1550.0	62.44	104.68	1030.7	220.69 S	950.93 E	976.2	103.0	975.9	.40

A Gyrodata Directional Survey

AUSTRALIA LIMITED
 WARD, BLOCK VIC/L15, WELL PERCH 4
 3" CASING SURVEY - DEFINITIVE RESULTS
 Number: AU02956269

MEAS. DEPTH	INCL deg	AZIMUTH deg	VERT DEPTH	HORIZONTAL COORDINATES		CLOSURE		VERT SECTION	DOG-LEG SEVERITY deg/30
				meters		DISTANCE	AZIMUTH		
1580.0	62.09	104.54	1044.7	227.39 S	976.62 E	1002.7	103.1	1002.5	.37
1610.0	62.49	104.98	1058.6	234.15 S	1002.30 E	1029.3	103.1	1029.1	.56
1640.0	62.37	104.95	1072.5	241.02 S	1027.99 E	1055.9	103.1	1055.7	.12
1670.0	61.93	104.97	1086.5	247.87 S	1053.62 E	1082.4	103.2	1082.2	.44
1700.0	61.11	105.08	1100.8	254.70 S	1079.09 E	1108.7	103.2	1108.5	.83
1730.0	61.02	105.09	1115.3	261.54 S	1104.44 E	1135.0	103.3	1134.8	.09
1760.0	60.21	105.60	1130.1	268.45 S	1129.64 E	1161.1	103.3	1160.9	.92
1790.0	59.61	106.02	1145.1	275.52 S	1154.62 E	1187.0	103.4	1186.9	.71
1820.0	58.36	106.22	1160.6	282.66 S	1179.32 E	1212.7	103.4	1212.6	1.26
1850.0	56.56	106.67	1176.7	289.82 S	1203.57 E	1238.0	103.5	1237.8	1.83
1880.0	55.72	107.17	1193.4	297.08 S	1227.40 E	1262.8	103.6	1262.7	.94
1910.0	55.32	107.36	1210.4	304.42 S	1251.02 E	1287.5	103.6	1287.4	.43
1915.0	55.17	107.39	1213.2	305.64 S	1254.94 E	1291.6	103.6	1291.5	.88

Final Station Closure: 1291.6 meters 103.6880 degrees

GYRODATA FINAL REPORT
JOB NO. AU0295G269

EQUIPMENT REPORT

CLIENT

ESSO AUSTRALIA LIMITED

LOCATION: HARVEY H. WARD

WELL NO : PERCH 4, 7 5/8" CASING SURVEY

DATE : 19 FEBRUARY 1995

GRID CORRECTION : 0.2010 E TO GRID NORTH

REF. CO-ORDINATES : N = 0.00 Metres
E = 0.00 Metres

General Remarks

A Gyro Multi-shot Survey was performed in Well PERCH 4 in the 7 5/8" Casing. The survey was performed from a depth of 1915.0 metres RKB Harvey H. Ward and tied onto seabed at 79.0 metres.

Downhole Electronics

Surface Electronics

Primary

Tool No. 934

Gyro Section : A0005
Data Section : C0017
Power Section : C0010

Compaq : A0052
Power Supply : A0057
Printer : A0043

Backup

Tool No. 702

Gyro Section : A0016
Data Section : C0004
Power Section : C0002

Compaq : A0066
Power Supply : A0059
Printer : A0106

Running Gear

Pressure barrel, Heatshield, Sinker bars, Roller bars, Springbow, Wear bushings.

Total Length of Tool : 11.00 METRES

Maximum O.D. : 3.70 INCHES

WELL DETAILS

OPERATOR.....ESSO AUSTRALIA LIMITED
 INSTALLATION.....HARVEY H. WARD
 WELL NO.PERCH 4
 CASING SIZE.....7 5/8" CASING SURVEY

SURVEY DETAILS

DATE OF SURVEY.....19 FEBRUARY 1995
 ENGINEER.....A.LINDIE/J.COLLINS
 OTRUN SURVEY INTERVAL.....30 Metres
 MAXIMUM GYRO TEMPERATURE.....78.30 Deg. C
 MAXIMUM AMBIENT TEMPERATURE.....69.70 Deg. C
 MAXIMUM INCLINATION.....65.11 Deg. at 950 Metres
 AVERAGE AZIMUTH.....103.69 Deg
 SURVEY DEPTH.....1915.0 Metres.
 SURVEY TIED ONTO.....SEABED at 79.0 metres RKB
 Harvey H. Ward

WIRELINER DETAILS

WIRELINER COMPANY.....SCHLUMBERGER
 CABLE TYPE.....MULTI-CONDUCTOR
 CABLE SIZE.....15/32"
 WIRELINER COUNTER READING AT END
 OF SURVEY.....-1.5 METRES

CALIBRATION DETAILS

CALIBRATIONS USED FOR FIELD SURVEY... 21 JANUARY 1994
 CALIBRATIONS USED FOR DEFINITIVE
 SURVEY..... 21 JANUARY 1994

BOTTOM LINE COMPARISONS

	M.D.	INCL.	AZ.	TVD	N	E
GYRODATA	1915.0	55.17	107.39	1213.20	-305.64	1254.94
HES MWD (Interpltd)	1915.0	55.28	106.64	1211.12	-311.18	1254.70

LATERAL DIFFERENCE = 5.55 metres (2.89 M/K)

TVD DIFFERENCE = 2.08 metres (1.09 M/K)

APPENDIX 2

APPENDIX 2

PERCH-4

MD - TVD Data Listing

Perch-4 MD-TVD Survey Data Listing

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
0.0	0.0	0.0	0.0	-37.0	0.0	0.0	5730813.9	527973.0
5.0	0.0	0.1	5.0	-32.0	0.0	0.0	5730813.9	527973.0
10.0	0.0	0.3	10.0	-27.0	0.0	0.0	5730813.9	527973.0
15.0	0.0	0.4	15.0	-22.0	0.0	0.0	5730813.9	527973.0
20.0	0.0	0.6	20.0	-17.0	0.0	0.0	5730813.9	527973.0
25.0	0.0	0.7	25.0	-12.0	0.0	0.0	5730813.9	527973.0
30.0	0.1	0.9	30.0	-7.0	0.0	0.0	5730813.9	527973.0
35.0	0.1	1.0	35.0	-2.0	0.0	0.0	5730813.9	527973.0
40.0	0.1	1.2	40.0	3.0	0.0	0.0	5730813.9	527973.0
45.0	0.1	1.3	45.0	8.0	0.0	0.0	5730814.0	527973.0
50.0	0.1	1.4	50.0	13.0	0.0	0.0	5730814.0	527973.0
55.0	0.1	1.6	55.0	18.0	0.0	0.0	5730814.0	527973.0
60.0	0.1	1.7	60.0	23.0	0.1	0.0	5730814.0	527973.0
65.0	0.1	1.9	65.0	28.0	0.1	0.0	5730814.0	527973.0
70.0	0.1	2.0	70.0	33.0	0.1	0.0	5730814.0	527973.0
75.0	0.1	2.2	75.0	38.0	0.1	0.0	5730814.0	527973.0
80.0	0.1	33.8	80.0	43.0	0.1	0.0	5730814.0	527973.0
85.0	0.2	191.1	85.0	48.0	0.1	0.0	5730814.0	527973.0
90.0	0.2	348.5	90.0	53.0	0.1	0.0	5730814.0	527973.0
95.0	0.1	176.5	95.0	58.0	0.1	0.0	5730814.0	527973.0
100.0	0.1	4.6	100.0	63.0	0.1	0.0	5730814.1	527973.0
105.0	0.1	34.6	105.0	68.0	0.1	0.0	5730814.1	527973.0
110.0	0.0	64.6	110.0	73.0	0.2	0.0	5730814.1	527973.0
115.0	0.0	73.0	115.0	78.0	0.2	0.0	5730814.1	527973.0
120.0	0.1	81.4	120.0	83.0	0.2	0.0	5730814.1	527973.0
125.0	0.1	89.7	125.0	88.0	0.2	0.0	5730814.1	527973.0
130.0	0.1	98.1	130.0	93.0	0.2	0.0	5730814.1	527973.0
135.0	0.1	106.5	135.0	98.0	0.2	0.0	5730814.1	527973.0
140.0	0.1	114.9	140.0	103.0	0.1	0.0	5730814.1	527973.0
145.0	0.1	119.1	145.0	108.0	0.1	0.0	5730814.1	527973.0
150.0	0.2	123.3	150.0	113.0	0.1	0.0	5730814.1	527973.0
155.0	0.2	127.5	155.0	118.0	0.1	0.1	5730814.0	527973.1
160.0	0.2	131.8	160.0	123.0	0.1	0.1	5730814.0	527973.1
165.0	0.3	136.0	165.0	128.0	0.1	0.1	5730814.0	527973.1
170.0	0.3	140.2	170.0	133.0	0.1	0.1	5730814.0	527973.1
175.0	0.6	136.9	175.0	138.0	0.1	0.1	5730814.0	527973.1
180.0	1.0	133.6	180.0	143.0	0.0	0.2	5730813.9	527973.2
185.0	1.3	130.2	185.0	148.0	-0.1	0.3	5730813.9	527973.3
190.0	1.7	126.9	190.0	153.0	-0.1	0.4	5730813.8	527973.4
195.0	2.0	123.6	195.0	158.0	-0.2	0.5	5730813.7	527973.5
200.0	2.4	120.3	200.0	163.0	-0.3	0.7	5730813.6	527973.7
205.0	2.9	118.9	205.0	168.0	-0.4	0.9	5730813.5	527973.9
210.0	3.5	117.5	210.0	173.0	-0.5	1.1	5730813.4	527974.1
215.0	4.0	116.1	215.0	178.0	-0.7	1.4	5730813.2	527974.4
220.0	4.6	114.7	220.0	183.0	-0.8	1.8	5730813.1	527974.8
225.0	5.1	113.3	224.9	187.9	-1.0	2.2	5730812.9	527975.2
230.0	5.6	111.9	229.9	192.9	-1.2	2.6	5730812.8	527975.6
235.0	6.3	111.7	234.9	197.9	-1.4	3.1	5730812.6	527976.1
240.0	6.9	111.4	239.9	202.9	-1.6	3.6	5730812.4	527976.6
245.0	7.6	111.2	244.8	207.8	-1.8	4.2	5730812.1	527977.2
250.0	8.2	111.0	249.8	212.8	-2.0	4.8	5730811.9	527977.8
255.0	8.8	110.7	254.7	217.7	-2.3	5.5	5730811.6	527978.5
260.0	9.5	110.5	259.7	222.7	-2.6	6.3	5730811.3	527979.3
265.0	10.2	110.0	264.6	227.6	-2.9	7.1	5730811.1	527980.1
270.0	10.8	109.5	269.5	232.5	-3.2	7.9	5730810.7	527980.9
275.0	11.5	108.9	274.4	237.4	-3.5	8.8	5730810.4	527981.8
280.0	12.2	108.4	279.3	242.3	-3.8	9.8	5730810.1	527982.8
285.0	12.8	107.9	284.2	247.2	-4.2	10.8	5730809.8	527983.8
290.0	13.5	107.4	289.0	252.0	-4.5	11.9	5730809.4	527984.9
295.0	14.0	106.8	293.9	256.9	-4.8	13.1	5730809.1	527986.1
300.0	14.4	106.2	298.7	261.7	-5.2	14.2	5730808.7	527987.2
305.0	14.9	105.5	303.6	266.6	-5.5	15.5	5730808.4	527988.5
310.0	15.4	104.9	308.4	271.4	-5.9	16.7	5730808.1	527989.7
315.0	15.8	104.3	313.2	276.2	-6.2	18.0	5730807.7	527991.0
320.0	16.3	103.7	318.0	281.0	-6.5	19.4	5730807.4	527992.4
325.0	16.7	103.6	322.8	285.8	-6.9	20.7	5730807.1	527993.7
330.0	17.1	103.5	327.6	290.6	-7.2	22.2	5730806.7	527995.2
335.0	17.6	103.3	332.4	295.4	-7.6	23.6	5730806.4	527996.6

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
340.0	18.0	103.2	337.1	300.1	-7.9	25.1	5730806.0	527998.1
345.0	18.4	103.1	341.9	304.9	-8.3	26.6	5730805.7	527999.6
350.0	18.9	103.0	346.6	309.6	-8.6	28.2	5730805.3	528001.2
355.0	19.4	102.9	351.4	314.4	-9.0	29.8	5730804.9	528002.8
360.0	19.9	102.8	356.1	319.1	-9.4	31.4	5730804.6	528004.4
365.0	20.4	102.7	360.8	323.8	-9.7	33.1	5730804.2	528006.1
370.0	20.8	102.6	365.4	328.4	-10.1	34.8	5730803.8	528007.8
375.0	21.3	102.5	370.1	333.1	-10.5	36.6	5730803.4	528009.5
380.0	21.8	102.5	374.8	337.8	-10.9	38.3	5730803.0	528011.3
385.0	22.6	102.6	379.4	342.4	-11.3	40.2	5730802.6	528013.2
390.0	23.3	102.7	384.0	347.0	-11.7	42.1	5730802.2	528015.1
395.0	24.0	102.8	388.6	351.6	-12.2	44.0	5730801.7	528017.0
400.0	24.7	102.8	393.1	356.1	-12.6	46.1	5730801.3	528019.1
405.0	25.5	102.9	397.7	360.7	-13.1	48.1	5730800.8	528021.1
410.0	26.2	103.0	402.2	365.2	-13.6	50.2	5730800.3	528023.2
415.0	26.8	102.9	406.6	369.6	-14.1	52.4	5730799.8	528025.4
420.0	27.5	102.9	411.1	374.1	-14.6	54.6	5730799.3	528027.6
425.0	28.2	102.8	415.5	378.5	-15.1	56.9	5730798.8	528029.9
430.0	28.8	102.7	419.9	382.9	-15.7	59.2	5730798.3	528032.2
435.0	29.5	102.6	424.3	387.3	-16.2	61.6	5730797.7	528034.6
440.0	30.2	102.5	428.6	391.6	-16.7	64.1	5730797.2	528037.0
445.0	30.7	102.3	432.9	395.9	-17.3	66.5	5730796.7	528039.5
450.0	31.2	102.1	437.2	400.2	-17.8	69.0	5730796.1	528042.0
455.0	31.7	101.9	441.5	404.5	-18.4	71.6	5730795.6	528044.6
460.0	32.2	101.8	445.7	408.7	-18.9	74.2	5730795.0	528047.2
465.0	32.6	101.6	449.9	412.9	-19.4	76.8	5730794.5	528049.8
470.0	33.1	101.4	454.1	417.1	-20.0	79.5	5730794.0	528052.4
475.0	33.8	101.4	458.3	421.3	-20.5	82.2	5730793.4	528055.1
480.0	34.4	101.4	462.5	425.5	-21.1	84.9	5730792.8	528057.9
485.0	35.0	101.5	466.6	429.6	-21.6	87.7	5730792.3	528060.7
490.0	35.6	101.5	470.6	433.6	-22.2	90.5	5730791.7	528063.5
495.0	36.2	101.5	474.7	437.7	-22.8	93.4	5730791.1	528066.4
500.0	36.8	101.5	478.7	441.7	-23.4	96.3	5730790.5	528069.3
505.0	37.2	101.7	482.7	445.7	-24.0	99.3	5730789.9	528072.3
510.0	37.7	101.9	486.7	449.7	-24.6	102.2	5730789.3	528075.2
515.0	38.1	102.1	490.6	453.6	-25.3	105.2	5730788.7	528078.2
520.0	38.5	102.3	494.5	457.5	-25.9	108.3	5730788.0	528081.3
525.0	38.9	102.4	498.4	461.4	-26.6	111.3	5730787.4	528084.3
530.0	39.4	102.6	502.3	465.3	-27.3	114.4	5730786.7	528087.4
535.0	39.2	102.8	506.2	469.2	-28.0	117.5	5730786.0	528090.5
540.0	39.1	103.0	510.1	473.1	-28.7	120.6	5730785.3	528093.6
545.0	39.0	103.2	514.0	477.0	-29.4	123.6	5730784.6	528096.6
550.0	38.9	103.3	517.8	480.8	-30.1	126.7	5730783.8	528099.7
555.0	38.8	103.5	521.7	484.7	-30.8	129.8	5730783.1	528102.7
560.0	38.7	103.7	525.6	488.6	-31.6	132.8	5730782.4	528105.8
565.0	38.7	103.6	529.5	492.5	-32.3	135.8	5730781.6	528108.8
570.0	38.6	103.4	533.4	496.4	-33.0	138.9	5730780.9	528111.9
575.0	38.5	103.3	537.3	500.3	-33.7	141.9	5730780.2	528114.9
580.0	38.5	103.2	541.3	504.3	-34.5	144.9	5730779.5	528117.9
585.0	38.4	103.1	545.2	508.2	-35.2	148.0	5730778.8	528121.0
590.0	38.4	103.0	549.1	512.1	-35.9	151.0	5730778.1	528124.0
595.0	38.4	102.9	553.0	516.0	-36.6	154.0	5730777.4	528127.0
600.0	38.4	102.8	556.9	519.9	-37.2	157.0	5730776.7	528130.0
605.0	38.4	102.7	560.9	523.9	-37.9	160.1	5730776.0	528133.1
610.0	38.4	102.5	564.8	527.8	-38.6	163.1	5730775.3	528136.1
615.0	38.4	102.4	568.7	531.7	-39.3	166.1	5730774.6	528139.1
620.0	38.4	102.3	572.6	535.6	-39.9	169.2	5730774.0	528142.1
625.0	38.8	102.3	576.5	539.5	-40.6	172.2	5730773.3	528145.2
630.0	39.3	102.2	580.4	543.4	-41.3	175.3	5730772.7	528148.3
635.0	39.7	102.2	584.3	547.3	-41.9	178.4	5730772.0	528151.4
640.0	40.2	102.1	588.1	551.1	-42.6	181.5	5730771.3	528154.5
645.0	40.7	102.1	591.9	554.9	-43.3	184.7	5730770.6	528157.7
650.0	41.1	102.0	595.7	558.7	-44.0	187.9	5730769.9	528160.9
655.0	41.9	102.0	599.4	562.4	-44.7	191.1	5730769.3	528164.1
660.0	42.8	102.0	603.1	566.1	-45.4	194.4	5730768.6	528167.4
665.0	43.6	102.1	606.8	569.8	-46.1	197.8	5730767.8	528170.8
670.0	44.4	102.1	610.4	573.4	-46.8	201.2	5730767.1	528174.2
675.0	45.3	102.1	613.9	576.9	-47.6	204.6	5730766.4	528177.6
680.0	46.1	102.1	617.4	580.4	-48.3	208.1	5730765.6	528181.1
685.0	46.4	102.4	620.9	583.9	-49.1	211.7	5730764.9	528184.6
690.0	46.7	102.7	624.3	587.3	-49.9	215.2	5730764.1	528188.2

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
695.0	46.9	103.0	627.7	590.7	-50.7	218.7	5730763.3	528191.7
700.0	47.2	103.3	631.1	594.1	-51.5	222.3	5730762.4	528195.3
705.0	47.5	103.7	634.5	597.5	-52.4	225.9	5730761.6	528198.9
710.0	47.8	104.0	637.9	600.9	-53.2	229.5	5730760.7	528202.5
715.0	48.3	103.8	641.2	604.2	-54.1	233.1	5730759.8	528206.1
720.0	48.8	103.7	644.5	607.5	-55.0	236.7	5730758.9	528209.7
725.0	49.3	103.5	647.8	610.8	-55.9	240.4	5730758.0	528213.4
730.0	49.8	103.3	651.1	614.1	-56.8	244.1	5730757.1	528217.1
735.0	50.3	103.2	654.3	617.3	-57.7	247.8	5730756.3	528220.8
740.0	50.8	103.0	657.5	620.5	-58.5	251.6	5730755.4	528224.6
745.0	51.4	102.9	660.6	623.6	-59.4	255.4	5730754.5	528228.4
750.0	52.0	102.7	663.7	626.7	-60.3	259.2	5730753.6	528232.2
755.0	52.7	102.5	666.8	629.8	-61.1	263.1	5730752.8	528236.0
760.0	53.3	102.4	669.8	632.8	-62.0	266.9	5730751.9	528239.9
765.0	53.9	102.2	672.7	635.7	-62.9	270.9	5730751.1	528243.9
770.0	54.5	102.0	675.7	638.7	-63.7	274.8	5730750.2	528247.8
775.0	55.1	102.0	678.5	641.5	-64.6	278.8	5730749.4	528251.8
780.0	55.7	102.0	681.4	644.4	-65.4	282.9	5730748.5	528255.9
785.0	56.3	102.0	684.2	647.2	-66.3	286.9	5730747.6	528259.9
790.0	56.9	102.0	686.9	649.9	-67.1	291.0	5730746.8	528264.0
795.0	57.4	102.0	689.7	652.7	-68.0	295.1	5730745.9	528268.1
800.0	58.0	102.0	692.3	655.3	-68.9	299.2	5730745.0	528272.2
805.0	58.6	102.0	694.9	657.9	-69.8	303.4	5730744.1	528276.4
810.0	59.2	102.0	697.5	660.5	-70.7	307.6	5730743.2	528280.6
815.0	59.8	102.1	700.1	663.1	-71.6	311.8	5730742.4	528284.8
820.0	60.3	102.1	702.6	665.6	-72.5	316.0	5730741.4	528289.0
825.0	60.9	102.1	705.0	668.0	-73.4	320.3	5730740.5	528293.3
830.0	61.5	102.1	707.4	670.4	-74.3	324.6	5730739.6	528297.6
835.0	62.0	102.1	709.8	672.8	-75.2	328.9	5730738.7	528301.9
840.0	62.5	102.0	712.1	675.1	-76.2	333.2	5730737.8	528306.2
845.0	63.0	101.9	714.4	677.4	-77.1	337.6	5730736.9	528310.6
850.0	63.4	101.8	716.7	679.7	-78.0	341.9	5730735.9	528314.9
855.0	63.9	101.7	718.9	681.9	-78.9	346.3	5730735.0	528319.3
860.0	64.4	101.6	721.1	684.1	-79.8	350.7	5730734.1	528323.7
865.0	64.3	101.7	723.2	686.2	-80.7	355.1	5730733.2	528328.1
870.0	64.2	101.8	725.4	688.4	-81.6	359.6	5730732.3	528332.6
875.0	64.2	101.9	727.6	690.6	-82.6	364.0	5730731.4	528337.0
880.0	64.1	101.9	729.8	692.8	-83.5	368.4	5730730.4	528341.4
885.0	64.0	102.0	732.0	695.0	-84.4	372.8	5730729.5	528345.8
890.0	63.9	102.1	734.2	697.2	-85.4	377.2	5730728.6	528350.1
895.0	64.0	102.0	736.4	699.4	-86.3	381.5	5730727.6	528354.5
900.0	64.1	101.9	738.5	701.5	-87.2	385.9	5730726.7	528358.9
905.0	64.2	101.9	740.7	703.7	-88.2	390.3	5730725.8	528363.3
910.0	64.3	101.8	742.9	705.9	-89.1	394.7	5730724.8	528367.7
915.0	64.3	101.7	745.1	708.1	-90.0	399.2	5730723.9	528372.2
920.0	64.4	101.7	747.2	710.2	-90.9	403.6	5730723.0	528376.6
925.0	64.5	101.6	749.4	712.4	-91.8	408.0	5730722.1	528381.0
930.0	64.7	101.5	751.5	714.5	-92.7	412.4	5730721.2	528385.4
935.0	64.8	101.5	753.7	716.7	-93.6	416.9	5730720.3	528389.8
940.0	64.9	101.4	755.8	718.8	-94.5	421.3	5730719.4	528394.3
945.0	65.0	101.3	757.9	720.9	-95.4	425.7	5730718.5	528398.7
950.0	65.1	101.2	760.0	723.0	-96.3	430.2	5730717.6	528403.2
955.0	65.1	101.3	762.1	725.1	-97.2	434.6	5730716.7	528407.6
960.0	65.0	101.4	764.2	727.2	-98.1	439.1	5730715.8	528412.1
965.0	65.0	101.5	766.3	729.3	-99.0	443.5	5730714.9	528416.5
970.0	64.9	101.6	768.5	731.5	-99.9	447.9	5730714.0	528420.9
975.0	64.9	101.7	770.6	733.6	-100.8	452.4	5730713.1	528425.4
980.0	64.8	101.7	772.7	735.7	-101.7	456.8	5730712.2	528429.8
985.0	64.7	101.9	774.9	737.9	-102.6	461.2	5730711.3	528434.2
990.0	64.6	102.0	777.0	740.0	-103.6	465.7	5730710.4	528438.7
995.0	64.5	102.1	779.1	742.1	-104.5	470.1	5730709.4	528443.1
1000.0	64.4	102.2	781.3	744.3	-105.5	474.5	5730708.5	528447.5
1005.0	64.3	102.3	783.5	746.5	-106.4	478.9	5730707.5	528451.9
1010.0	64.2	102.4	785.6	748.6	-107.4	483.3	5730706.5	528456.3
1015.0	64.0	102.4	787.8	750.8	-108.3	487.7	5730705.6	528460.7
1020.0	63.9	102.3	790.0	753.0	-109.3	492.1	5730704.6	528465.1
1025.0	63.8	102.3	792.2	755.2	-110.3	496.4	5730703.7	528469.4
1030.0	63.7	102.2	794.4	757.4	-111.2	500.8	5730702.7	528473.8
1035.0	63.5	102.2	796.7	759.7	-112.2	505.2	5730701.8	528478.2
1040.0	63.4	102.2	798.9	761.9	-113.1	509.6	5730700.8	528482.6
1045.0	63.4	102.2	801.1	764.1	-114.1	513.9	5730699.9	528486.9

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
1050.0	63.5	102.3	803.4	766.4	-115.0	518.3	5730698.9	528491.3
1055.0	63.5	102.4	805.6	768.6	-116.0	522.7	5730698.0	528495.7
1060.0	63.6	102.5	807.8	770.8	-116.9	527.1	5730697.0	528500.1
1065.0	63.6	102.5	810.0	773.0	-117.9	531.4	5730696.0	528504.4
1070.0	63.7	102.6	812.3	775.3	-118.9	535.8	5730695.1	528508.8
1075.0	63.7	102.6	814.5	777.5	-119.8	540.2	5730694.1	528513.2
1080.0	63.7	102.7	816.7	779.7	-120.8	544.6	5730693.1	528517.5
1085.0	63.7	102.7	818.9	781.9	-121.8	548.9	5730692.1	528521.9
1090.0	63.7	102.7	821.1	784.1	-122.8	553.3	5730691.1	528526.3
1095.0	63.8	102.8	823.3	786.3	-123.8	557.7	5730690.1	528530.7
1100.0	63.8	102.8	825.6	788.6	-124.8	562.0	5730689.2	528535.0
1105.0	63.7	102.8	827.8	790.8	-125.8	566.4	5730688.2	528539.4
1110.0	63.7	102.9	830.0	793.0	-126.8	570.8	5730687.2	528543.8
1115.0	63.7	102.9	832.2	795.2	-127.8	575.2	5730686.2	528548.2
1120.0	63.7	103.0	834.4	797.4	-128.8	579.5	5730685.2	528552.5
1125.0	63.6	103.0	836.6	799.6	-129.8	583.9	5730684.1	528556.9
1130.0	63.6	103.1	838.9	801.9	-130.8	588.3	5730683.1	528561.3
1135.0	63.5	103.1	841.1	804.1	-131.8	592.6	5730682.1	528565.6
1140.0	63.4	103.2	843.3	806.3	-132.8	597.0	5730681.1	528570.0
1145.0	63.3	103.2	845.6	808.6	-133.8	601.3	5730680.1	528574.3
1150.0	63.2	103.2	847.8	810.8	-134.9	605.7	5730679.1	528578.7
1155.0	63.1	103.3	850.1	813.1	-135.9	610.0	5730678.0	528583.0
1160.0	63.0	103.3	852.3	815.3	-136.9	614.3	5730677.0	528587.3
1165.0	63.1	103.4	854.6	817.6	-137.9	618.7	5730676.0	528591.7
1170.0	63.1	103.4	856.9	819.9	-139.0	623.0	5730675.0	528596.0
1175.0	63.2	103.5	859.1	822.1	-140.0	627.4	5730673.9	528600.4
1180.0	63.3	103.6	861.4	824.4	-141.1	631.7	5730672.9	528604.7
1185.0	63.4	103.7	863.6	826.6	-142.1	636.0	5730671.8	528609.0
1190.0	63.5	103.7	865.9	828.9	-143.2	640.4	5730670.8	528613.4
1195.0	63.4	103.7	868.1	831.1	-144.2	644.7	5730669.7	528617.7
1200.0	63.3	103.6	870.3	833.3	-145.3	649.1	5730668.7	528622.1
1205.0	63.3	103.6	872.6	835.6	-146.3	653.4	5730667.6	528626.4
1210.0	63.2	103.6	874.8	837.8	-147.4	657.8	5730666.6	528630.8
1215.0	63.2	103.5	877.1	840.1	-148.4	662.1	5730665.5	528635.1
1220.0	63.1	103.5	879.3	842.3	-149.5	666.4	5730664.5	528639.4
1225.0	63.0	103.5	881.6	844.6	-150.5	670.8	5730663.4	528643.8
1230.0	63.0	103.6	883.9	846.9	-151.5	675.1	5730662.4	528648.1
1235.0	62.9	103.6	886.2	849.2	-152.6	679.4	5730661.3	528652.4
1240.0	62.9	103.6	888.4	851.4	-153.6	683.8	5730660.3	528656.8
1245.0	62.8	103.7	890.7	853.7	-154.7	688.1	5730659.2	528661.1
1250.0	62.8	103.7	893.0	856.0	-155.7	692.4	5730658.2	528665.4
1255.0	62.8	103.7	895.3	858.3	-156.8	696.7	5730657.1	528669.7
1260.0	62.8	103.7	897.6	860.6	-157.9	701.0	5730656.1	528674.0
1265.0	62.9	103.7	899.9	862.9	-158.9	705.4	5730655.0	528678.4
1270.0	62.9	103.7	902.1	865.1	-160.0	709.7	5730654.0	528682.7
1275.0	62.9	103.7	904.4	867.4	-161.0	714.0	5730652.9	528687.0
1280.0	63.0	103.7	906.7	869.7	-162.1	718.3	5730651.9	528691.3
1285.0	62.9	103.7	909.0	872.0	-163.1	722.7	5730650.8	528695.7
1290.0	62.9	103.7	911.2	874.2	-164.2	727.0	5730649.8	528700.0
1295.0	62.8	103.6	913.5	876.5	-165.2	731.3	5730648.7	528704.3
1300.0	62.8	103.6	915.8	878.8	-166.3	735.6	5730647.7	528708.6
1305.0	62.8	103.6	918.1	881.1	-167.3	740.0	5730646.6	528712.9
1310.0	62.7	103.6	920.4	883.4	-168.4	744.3	5730645.6	528717.3
1315.0	62.7	103.6	922.7	885.7	-169.4	748.6	5730644.5	528721.6
1320.0	62.7	103.6	925.0	888.0	-170.5	752.9	5730643.5	528725.9
1325.0	62.6	103.7	927.3	890.3	-171.5	757.2	5730642.4	528730.2
1330.0	62.6	103.7	929.6	892.6	-172.6	761.5	5730641.4	528734.5
1335.0	62.6	103.7	931.9	894.9	-173.6	765.9	5730640.3	528738.8
1340.0	62.6	103.7	934.2	897.2	-174.7	770.2	5730639.3	528743.2
1345.0	62.7	103.8	936.5	899.5	-175.7	774.5	5730638.2	528747.5
1350.0	62.7	103.9	938.8	901.8	-176.8	778.8	5730637.1	528751.8
1355.0	62.8	103.9	941.1	904.1	-177.8	783.1	5730636.1	528756.1
1360.0	62.9	104.0	943.3	906.3	-178.9	787.4	5730635.0	528760.4
1365.0	63.0	104.0	945.6	908.6	-180.0	791.7	5730633.9	528764.7
1370.0	63.1	104.1	947.9	910.9	-181.1	796.1	5730632.9	528769.1
1375.0	63.1	104.1	950.1	913.1	-182.2	800.4	5730631.8	528773.4
1380.0	63.1	104.1	952.4	915.4	-183.2	804.7	5730630.7	528777.7
1385.0	63.1	104.2	954.7	917.7	-184.3	809.0	5730629.6	528782.0
1390.0	63.1	104.2	956.9	919.9	-185.4	813.4	5730628.5	528786.4
1395.0	63.1	104.2	959.2	922.2	-186.5	817.7	5730627.4	528790.7
1400.0	63.1	104.3	961.5	924.5	-187.6	822.0	5730626.3	528795.0

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
1405.0	63.0	104.2	963.7	926.7	-188.7	826.3	5730625.2	528799.3
1410.0	62.9	104.2	966.0	929.0	-189.8	830.6	5730624.1	528803.6
1415.0	62.8	104.1	968.3	931.3	-190.9	835.0	5730623.0	528808.0
1420.0	62.6	104.1	970.6	933.6	-192.0	839.3	5730622.0	528812.3
1425.0	62.5	104.1	972.9	935.9	-193.1	843.6	5730620.9	528816.6
1430.0	62.4	104.0	975.2	938.2	-194.1	847.9	5730619.8	528820.9
1435.0	62.4	104.1	977.5	940.5	-195.2	852.2	5730618.7	528825.2
1440.0	62.3	104.1	979.8	942.8	-196.3	856.5	5730617.6	528829.5
1445.0	62.3	104.2	982.1	945.1	-197.4	860.8	5730616.6	528833.8
1450.0	62.2	104.2	984.5	947.5	-198.4	865.0	5730615.5	528838.0
1455.0	62.2	104.3	986.8	949.8	-199.5	869.3	5730614.4	528842.3
1460.0	62.1	104.3	989.1	952.1	-200.6	873.6	5730613.3	528846.6
1465.0	62.2	104.3	991.5	954.5	-201.7	877.9	5730612.2	528850.9
1470.0	62.2	104.4	993.8	956.8	-202.8	882.2	5730611.1	528855.2
1475.0	62.3	104.4	996.1	959.1	-203.9	886.5	5730610.0	528859.5
1480.0	62.3	104.4	998.5	961.5	-205.0	890.8	5730608.9	528863.8
1485.0	62.4	104.4	1000.8	963.8	-206.1	895.1	5730607.8	528868.0
1490.0	62.4	104.4	1003.1	966.1	-207.2	899.3	5730606.7	528872.3
1495.0	62.5	104.4	1005.4	968.4	-208.3	903.6	5730605.6	528876.6
1500.0	62.6	104.4	1007.7	970.7	-209.4	907.9	5730604.5	528880.9
1505.0	62.6	104.4	1010.0	973.0	-210.5	912.2	5730603.4	528885.2
1510.0	62.7	104.5	1012.3	975.3	-211.6	916.5	5730602.3	528889.5
1515.0	62.7	104.5	1014.6	977.6	-212.7	920.8	5730601.2	528893.8
1520.0	62.8	104.5	1016.9	979.9	-213.9	925.1	5730600.1	528898.1
1525.0	62.7	104.5	1019.2	982.2	-215.0	929.4	5730599.0	528902.4
1530.0	62.7	104.5	1021.5	984.5	-216.1	933.7	5730597.8	528906.7
1535.0	62.6	104.6	1023.8	986.8	-217.2	938.0	5730596.7	528911.0
1540.0	62.6	104.6	1026.1	989.1	-218.3	942.3	5730595.6	528915.3
1545.0	62.5	104.7	1028.4	991.4	-219.4	946.6	5730594.5	528919.6
1550.0	62.4	104.7	1030.7	993.7	-220.6	950.9	5730593.4	528923.9
1555.0	62.4	104.7	1033.0	996.0	-221.7	955.2	5730592.2	528928.2
1560.0	62.3	104.6	1035.3	998.3	-222.8	959.5	5730591.1	528932.5
1565.0	62.3	104.6	1037.7	1000.7	-223.9	963.8	5730590.0	528936.8
1570.0	62.2	104.6	1040.0	1003.0	-225.0	968.1	5730588.9	528941.1
1575.0	62.2	104.6	1042.3	1005.3	-226.1	972.3	5730587.8	528945.3
1580.0	62.1	104.5	1044.7	1007.7	-227.3	976.6	5730586.7	528949.6
1585.0	62.2	104.6	1047.0	1010.0	-228.4	980.9	5730585.6	528953.9
1590.0	62.2	104.7	1049.3	1012.3	-229.5	985.2	5730584.4	528958.2
1595.0	62.3	104.8	1051.7	1014.7	-230.6	989.5	5730583.3	528962.4
1600.0	62.4	104.8	1054.0	1017.0	-231.7	993.7	5730582.2	528966.7
1605.0	62.4	104.9	1056.3	1019.3	-232.9	998.0	5730581.0	528971.0
1610.0	62.5	105.0	1058.6	1021.6	-234.0	1002.3	5730579.9	528975.3
1615.0	62.5	105.0	1060.9	1023.9	-235.2	1006.6	5730578.8	528979.6
1620.0	62.5	105.0	1063.2	1026.2	-236.3	1010.9	5730577.6	528983.9
1625.0	62.4	105.0	1065.5	1028.5	-237.5	1015.1	5730576.5	528988.1
1630.0	62.4	105.0	1067.9	1030.9	-238.6	1019.4	5730575.3	528992.4
1635.0	62.4	105.0	1070.2	1033.2	-239.7	1023.7	5730574.2	528996.7
1640.0	62.4	105.0	1072.5	1035.5	-240.9	1028.0	5730573.0	529001.0
1645.0	62.3	105.0	1074.8	1037.8	-242.0	1032.3	5730571.9	529005.3
1650.0	62.2	105.0	1077.1	1040.1	-243.2	1036.5	5730570.8	529009.5
1655.0	62.2	105.0	1079.5	1042.5	-244.3	1040.8	5730569.6	529013.8
1660.0	62.1	105.0	1081.8	1044.8	-245.5	1045.1	5730568.5	529018.1
1665.0	62.0	105.0	1084.2	1047.2	-246.6	1049.4	5730567.3	529022.3
1670.0	61.9	105.0	1086.5	1049.5	-247.7	1053.6	5730566.2	529026.6
1675.0	61.8	105.0	1088.9	1051.9	-248.9	1057.9	5730565.1	529030.9
1680.0	61.7	105.0	1091.2	1054.2	-250.0	1062.1	5730563.9	529035.1
1685.0	61.5	105.0	1093.6	1056.6	-251.2	1066.4	5730562.8	529039.4
1690.0	61.4	105.0	1096.0	1059.0	-252.3	1070.6	5730561.6	529043.6
1695.0	61.3	105.1	1098.4	1061.4	-253.4	1074.9	5730560.5	529047.8
1700.0	61.1	105.1	1100.8	1063.8	-254.6	1079.1	5730559.4	529052.1
1705.0	61.1	105.1	1103.2	1066.2	-255.7	1083.3	5730558.2	529056.3
1710.0	61.1	105.1	1105.7	1068.7	-256.9	1087.5	5730557.1	529060.5
1715.0	61.1	105.1	1108.1	1071.1	-258.0	1091.8	5730555.9	529064.8
1720.0	61.1	105.1	1110.5	1073.5	-259.1	1096.0	5730554.8	529069.0
1725.0	61.0	105.1	1112.9	1075.9	-260.3	1100.2	5730553.7	529073.2
1730.0	61.0	105.1	1115.3	1078.3	-261.4	1104.4	5730552.5	529077.4
1735.0	60.9	105.2	1117.8	1080.8	-262.5	1108.7	5730551.4	529081.6
1740.0	60.8	105.3	1120.2	1083.2	-263.7	1112.9	5730550.2	529085.9
1745.0	60.6	105.4	1122.6	1085.6	-264.8	1117.1	5730549.1	529090.1
1750.0	60.5	105.4	1125.1	1088.1	-266.0	1121.3	5730547.9	529094.3
1755.0	60.3	105.5	1127.6	1090.6	-267.2	1125.5	5730546.8	529098.5

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
1760.0	60.2	105.6	1130.1	1093.1	-268.3	1129.6	5730545.6	529102.6
1761.0	60.2	105.6	1130.5	1093.5	-268.6	1130.5	5730545.4	529103.5
1762.0	60.2	105.6	1131.0	1094.0	-268.8	1131.3	5730545.1	529104.3
1763.0	60.2	105.6	1131.5	1094.5	-269.0	1132.1	5730544.9	529105.1
1764.0	60.1	105.7	1132.0	1095.0	-269.3	1133.0	5730544.7	529106.0
1765.0	60.1	105.7	1132.5	1095.5	-269.5	1133.8	5730544.4	529106.8
1766.0	60.1	105.7	1133.0	1096.0	-269.7	1134.7	5730544.2	529107.6
1767.0	60.1	105.7	1133.5	1096.5	-270.0	1135.5	5730544.0	529108.5
1768.0	60.1	105.7	1134.0	1097.0	-270.2	1136.3	5730543.7	529109.3
1769.0	60.0	105.7	1134.5	1097.5	-270.4	1137.2	5730543.5	529110.2
1770.0	60.0	105.7	1135.0	1098.0	-270.7	1138.0	5730543.3	529111.0
1771.0	60.0	105.8	1135.5	1098.5	-270.9	1138.8	5730543.0	529111.8
1772.0	60.0	105.8	1136.0	1099.0	-271.1	1139.7	5730542.8	529112.7
1773.0	60.0	105.8	1136.5	1099.5	-271.4	1140.5	5730542.6	529113.5
1774.0	59.9	105.8	1137.0	1100.0	-271.6	1141.3	5730542.3	529114.3
1775.0	59.9	105.8	1137.5	1100.5	-271.8	1142.2	5730542.1	529115.2
1776.0	59.9	105.8	1138.0	1101.0	-272.1	1143.0	5730541.9	529116.0
1777.0	59.9	105.8	1138.5	1101.5	-272.3	1143.8	5730541.6	529116.8
1778.0	59.9	105.9	1139.0	1102.0	-272.5	1144.7	5730541.4	529117.6
1779.0	59.8	105.9	1139.5	1102.5	-272.8	1145.5	5730541.1	529118.5
1780.0	59.8	105.9	1140.0	1103.0	-273.0	1146.3	5730540.9	529119.3
1781.0	59.8	105.9	1140.6	1103.6	-273.3	1147.1	5730540.7	529120.1
1782.0	59.8	105.9	1141.1	1104.1	-273.5	1148.0	5730540.4	529121.0
1783.0	59.8	105.9	1141.6	1104.6	-273.7	1148.8	5730540.2	529121.8
1784.0	59.7	105.9	1142.1	1105.1	-274.0	1149.6	5730540.0	529122.6
1785.0	59.7	106.0	1142.6	1105.6	-274.2	1150.5	5730539.7	529123.5
1786.0	59.7	106.0	1143.1	1106.1	-274.4	1151.3	5730539.5	529124.3
1787.0	59.7	106.0	1143.6	1106.6	-274.7	1152.1	5730539.2	529125.1
1788.0	59.7	106.0	1144.1	1107.1	-274.9	1153.0	5730539.0	529126.0
1789.0	59.6	106.0	1144.6	1107.6	-275.2	1153.8	5730538.8	529126.8
1790.0	59.6	106.0	1145.1	1108.1	-275.4	1154.6	5730538.5	529127.6
1791.0	59.6	106.0	1145.6	1108.6	-275.6	1155.4	5730538.3	529128.4
1792.0	59.5	106.0	1146.1	1109.1	-275.9	1156.3	5730538.1	529129.3
1793.0	59.5	106.0	1146.6	1109.6	-276.1	1157.1	5730537.8	529130.1
1794.0	59.4	106.1	1147.1	1110.1	-276.3	1157.9	5730537.6	529130.9
1795.0	59.4	106.1	1147.6	1110.6	-276.6	1158.8	5730537.3	529131.8
1796.0	59.4	106.1	1148.1	1111.1	-276.8	1159.6	5730537.1	529132.6
1797.0	59.3	106.1	1148.6	1111.6	-277.1	1160.4	5730536.9	529133.4
1798.0	59.3	106.1	1149.2	1112.2	-277.3	1161.2	5730536.6	529134.2
1799.0	59.2	106.1	1149.7	1112.7	-277.5	1162.1	5730536.4	529135.1
1800.0	59.2	106.1	1150.2	1113.2	-277.8	1162.9	5730536.2	529135.9
1801.0	59.2	106.1	1150.7	1113.7	-278.0	1163.7	5730535.9	529136.7
1802.0	59.1	106.1	1151.2	1114.2	-278.3	1164.5	5730535.7	529137.5
1803.0	59.1	106.1	1151.7	1114.7	-278.5	1165.4	5730535.4	529138.4
1804.0	59.0	106.1	1152.2	1115.2	-278.7	1166.2	5730535.2	529139.2
1805.0	59.0	106.1	1152.8	1115.8	-279.0	1167.0	5730535.0	529140.0
1806.0	58.9	106.1	1153.3	1116.3	-279.2	1167.8	5730534.7	529140.8
1807.0	58.9	106.1	1153.8	1116.8	-279.4	1168.7	5730534.5	529141.7
1808.0	58.9	106.1	1154.3	1117.3	-279.7	1169.5	5730534.2	529142.5
1809.0	58.8	106.2	1154.8	1117.8	-279.9	1170.3	5730534.0	529143.3
1810.0	58.8	106.2	1155.3	1118.3	-280.2	1171.1	5730533.8	529144.1
1811.0	58.7	106.2	1155.9	1118.9	-280.4	1171.9	5730533.5	529144.9
1812.0	58.7	106.2	1156.4	1119.4	-280.6	1172.8	5730533.3	529145.8
1813.0	58.7	106.2	1156.9	1119.9	-280.9	1173.6	5730533.1	529146.6
1814.0	58.6	106.2	1157.4	1120.4	-281.1	1174.4	5730532.8	529147.4
1815.0	58.6	106.2	1157.9	1120.9	-281.3	1175.2	5730532.6	529148.2
1816.0	58.5	106.2	1158.5	1121.5	-281.6	1176.0	5730532.3	529149.0
1817.0	58.5	106.2	1159.0	1122.0	-281.8	1176.9	5730532.1	529149.9
1818.0	58.4	106.2	1159.5	1122.5	-282.1	1177.7	5730531.9	529150.7
1819.0	58.4	106.2	1160.0	1123.0	-282.3	1178.5	5730531.6	529151.5
1820.0	58.4	106.2	1160.5	1123.5	-282.5	1179.3	5730531.4	529152.3
1821.0	58.3	106.2	1161.1	1124.1	-282.8	1180.1	5730531.2	529153.1
1822.0	58.2	106.3	1161.6	1124.6	-283.0	1181.0	5730530.9	529153.9
1823.0	58.2	106.3	1162.1	1125.1	-283.2	1181.8	5730530.7	529154.8
1824.0	58.1	106.3	1162.7	1125.7	-283.5	1182.6	5730530.4	529155.6
1825.0	58.1	106.3	1163.2	1126.2	-283.7	1183.4	5730530.2	529156.4
1826.0	58.0	106.3	1163.7	1126.7	-284.0	1184.2	5730530.0	529157.2
1827.0	57.9	106.3	1164.2	1127.2	-284.2	1185.0	5730529.7	529158.0
1828.0	57.9	106.3	1164.8	1127.8	-284.4	1185.8	5730529.5	529158.8
1829.0	57.8	106.4	1165.3	1128.3	-284.7	1186.6	5730529.3	529159.6

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
1830.0	57.8	106.4	1165.8	1128.8	-284.9	1187.5	5730529.0	529160.5
1831.0	57.7	106.4	1166.4	1129.4	-285.2	1188.3	5730528.8	529161.3
1832.0	57.6	106.4	1166.9	1129.9	-285.4	1189.1	5730528.5	529162.1
1833.0	57.6	106.4	1167.4	1130.4	-285.6	1189.9	5730528.3	529162.9
1834.0	57.5	106.4	1168.0	1131.0	-285.9	1190.7	5730528.1	529163.7
1835.0	57.5	106.5	1168.5	1131.5	-286.1	1191.5	5730527.8	529164.5
1836.0	57.4	106.5	1169.1	1132.1	-286.3	1192.3	5730527.6	529165.3
1837.0	57.3	106.5	1169.6	1132.6	-286.6	1193.1	5730527.3	529166.1
1838.0	57.3	106.5	1170.1	1133.1	-286.8	1193.9	5730527.1	529166.9
1839.0	57.2	106.5	1170.7	1133.7	-287.1	1194.7	5730526.9	529167.7
1840.0	57.2	106.5	1171.2	1134.2	-287.3	1195.5	5730526.6	529168.5
1841.0	57.1	106.5	1171.8	1134.8	-287.5	1196.4	5730526.4	529169.3
1842.0	57.0	106.6	1172.3	1135.3	-287.8	1197.2	5730526.2	529170.2
1843.0	57.0	106.6	1172.8	1135.8	-288.0	1198.0	5730525.9	529171.0
1844.0	56.9	106.6	1173.4	1136.4	-288.3	1198.8	5730525.7	529171.8
1845.0	56.9	106.6	1173.9	1136.9	-288.5	1199.6	5730525.4	529172.6
1846.0	56.8	106.6	1174.5	1137.5	-288.7	1200.4	5730525.2	529173.4
1847.0	56.7	106.6	1175.0	1138.0	-289.0	1201.2	5730525.0	529174.2
1848.0	56.7	106.6	1175.6	1138.6	-289.2	1202.0	5730524.7	529175.0
1849.0	56.6	106.7	1176.1	1139.1	-289.5	1202.8	5730524.5	529175.8
1850.0	56.6	106.7	1176.7	1139.7	-289.7	1203.6	5730524.2	529176.6
1851.0	56.5	106.7	1177.2	1140.2	-289.9	1204.4	5730524.0	529177.4
1852.0	56.5	106.7	1177.8	1140.8	-290.2	1205.2	5730523.8	529178.2
1853.0	56.5	106.7	1178.3	1141.3	-290.4	1206.0	5730523.5	529179.0
1854.0	56.5	106.7	1178.9	1141.9	-290.6	1206.8	5730523.3	529179.8
1855.0	56.4	106.8	1179.4	1142.4	-290.9	1207.6	5730523.0	529180.6
1856.0	56.4	106.8	1180.0	1143.0	-291.1	1208.4	5730522.8	529181.4
1857.0	56.4	106.8	1180.6	1143.6	-291.4	1209.2	5730522.6	529182.2
1858.0	56.3	106.8	1181.1	1144.1	-291.6	1210.0	5730522.3	529183.0
1859.0	56.3	106.8	1181.7	1144.7	-291.9	1210.8	5730522.1	529183.7
1860.0	56.3	106.8	1182.2	1145.2	-292.1	1211.5	5730521.8	529184.5
1861.0	56.3	106.9	1182.8	1145.8	-292.3	1212.3	5730521.6	529185.3
1862.0	56.2	106.9	1183.3	1146.3	-292.6	1213.1	5730521.4	529186.1
1863.0	56.2	106.9	1183.9	1146.9	-292.8	1213.9	5730521.1	529186.9
1864.0	56.2	106.9	1184.4	1147.4	-293.1	1214.7	5730520.9	529187.7
1865.0	56.1	106.9	1185.0	1148.0	-293.3	1215.5	5730520.6	529188.5
1866.0	56.1	106.9	1185.6	1148.6	-293.5	1216.3	5730520.4	529189.3
1867.0	56.1	107.0	1186.1	1149.1	-293.8	1217.1	5730520.1	529190.1
1868.0	56.1	107.0	1186.7	1149.7	-294.0	1217.9	5730519.9	529190.9
1869.0	56.0	107.0	1187.2	1150.2	-294.3	1218.7	5730519.7	529191.7
1870.0	56.0	107.0	1187.8	1150.8	-294.5	1219.5	5730519.4	529192.5
1871.0	56.0	107.0	1188.3	1151.3	-294.8	1220.3	5730519.2	529193.3
1872.0	55.9	107.0	1188.9	1151.9	-295.0	1221.1	5730518.9	529194.1
1873.0	55.9	107.1	1189.5	1152.5	-295.2	1221.9	5730518.7	529194.9
1874.0	55.9	107.1	1190.0	1153.0	-295.5	1222.7	5730518.4	529195.7
1875.0	55.9	107.1	1190.6	1153.6	-295.7	1223.5	5730518.2	529196.4
1876.0	55.8	107.1	1191.2	1154.2	-296.0	1224.2	5730518.0	529197.2
1877.0	55.8	107.1	1191.7	1154.7	-296.2	1225.0	5730517.7	529198.0
1878.0	55.8	107.1	1192.3	1155.3	-296.5	1225.8	5730517.5	529198.8
1879.0	55.8	107.2	1192.8	1155.8	-296.7	1226.6	5730517.2	529199.6
1880.0	55.7	107.2	1193.4	1156.4	-296.9	1227.4	5730517.0	529200.4
1881.0	55.7	107.2	1194.0	1157.0	-297.2	1228.2	5730516.7	529201.2
1882.0	55.7	107.2	1194.5	1157.5	-297.4	1229.0	5730516.5	529202.0
1883.0	55.7	107.2	1195.1	1158.1	-297.7	1229.8	5730516.3	529202.8
1884.0	55.7	107.2	1195.7	1158.7	-297.9	1230.6	5730516.0	529203.6
1885.0	55.7	107.2	1196.2	1159.2	-298.2	1231.4	5730515.8	529204.3
1886.0	55.6	107.2	1196.8	1159.8	-298.4	1232.1	5730515.5	529205.1
1887.0	55.6	107.2	1197.3	1160.3	-298.6	1232.9	5730515.3	529205.9
1888.0	55.6	107.2	1197.9	1160.9	-298.9	1233.7	5730515.0	529206.7
1889.0	55.6	107.2	1198.5	1161.5	-299.1	1234.5	5730514.8	529207.5
1890.0	55.6	107.2	1199.0	1162.0	-299.4	1235.3	5730514.5	529208.3
1891.0	55.6	107.2	1199.6	1162.6	-299.6	1236.1	5730514.3	529209.1
1892.0	55.6	107.3	1200.2	1163.2	-299.9	1236.9	5730514.1	529209.9
1893.0	55.6	107.3	1200.7	1163.7	-300.1	1237.7	5730513.8	529210.7
1894.0	55.5	107.3	1201.3	1164.3	-300.4	1238.4	5730513.6	529211.4
1895.0	55.5	107.3	1201.9	1164.9	-300.6	1239.2	5730513.3	529212.2
1896.0	55.5	107.3	1202.4	1165.4	-300.8	1240.0	5730513.1	529213.0
1897.0	55.5	107.3	1203.0	1166.0	-301.1	1240.8	5730512.8	529213.8
1898.0	55.5	107.3	1203.6	1166.6	-301.3	1241.6	5730512.6	529214.6
1899.0	55.5	107.3	1204.1	1167.1	-301.6	1242.4	5730512.3	529215.4
1900.0	55.5	107.3	1204.7	1167.7	-301.8	1243.2	5730512.1	529216.2

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
1901.0	55.4	107.3	1205.3	1168.3	-302.1	1244.0	5730511.9	529216.9
1902.0	55.4	107.3	1205.8	1168.8	-302.3	1244.7	5730511.6	529217.7
1903.0	55.4	107.3	1206.4	1169.4	-302.6	1245.5	5730511.4	529218.5
1904.0	55.4	107.3	1207.0	1170.0	-302.8	1246.3	5730511.1	529219.3
1905.0	55.4	107.3	1207.5	1170.5	-303.1	1247.1	5730510.9	529220.1
1906.0	55.4	107.3	1208.1	1171.1	-303.3	1247.9	5730510.6	529220.9
1907.0	55.4	107.3	1208.7	1171.7	-303.5	1248.7	5730510.4	529221.7
1908.0	55.4	107.4	1209.2	1172.2	-303.8	1249.5	5730510.1	529222.4
1909.0	55.3	107.4	1209.8	1172.8	-304.0	1250.2	5730509.9	529223.2
1910.0	55.3	107.4	1210.4	1173.4	-304.3	1251.0	5730509.6	529224.0
1911.0	55.3	107.4	1211.0	1174.0	-304.5	1251.8	5730509.4	529224.8
1912.0	55.3	107.4	1211.5	1174.5	-304.8	1252.6	5730509.2	529225.6
1913.0	55.2	107.4	1212.1	1175.1	-305.0	1253.4	5730508.9	529226.4
1914.0	55.2	107.4	1212.7	1175.7	-305.3	1254.2	5730508.7	529227.2
1915.0	55.2	107.4	1213.2	1176.2	-305.5	1254.9	5730508.4	529227.9
1916.0	55.2	107.3	1213.8	1176.8	-305.8	1255.7	5730508.2	529228.7
1917.0	55.2	107.2	1214.4	1177.4	-306.0	1256.5	5730507.9	529229.5
1918.0	55.2	107.2	1214.9	1177.9	-306.2	1257.3	5730507.7	529230.3
1919.0	55.2	107.1	1215.5	1178.5	-306.5	1258.1	5730507.4	529231.1
1920.0	55.2	107.0	1216.1	1179.1	-306.7	1258.9	5730507.2	529231.9
1921.0	55.2	106.9	1216.7	1179.7	-307.0	1259.6	5730507.0	529232.6
1922.0	55.2	106.8	1217.2	1180.2	-307.2	1260.4	5730506.7	529233.4
1923.0	55.2	106.8	1217.8	1180.8	-307.4	1261.2	5730506.5	529234.2
1924.0	55.2	106.8	1218.4	1181.4	-307.7	1262.0	5730506.3	529235.0
1925.0	55.1	106.8	1218.9	1181.9	-307.9	1262.8	5730506.0	529235.8
1926.0	55.1	106.8	1219.5	1182.5	-308.1	1263.6	5730505.8	529236.6
1927.0	55.1	106.8	1220.1	1183.1	-308.4	1264.4	5730505.5	529237.4
1928.0	55.1	106.8	1220.7	1183.7	-308.6	1265.1	5730505.3	529238.1
1929.0	55.1	106.8	1221.2	1184.2	-308.9	1265.9	5730505.1	529238.9
1930.0	55.0	106.8	1221.8	1184.8	-309.1	1266.7	5730504.8	529239.7
1931.0	55.0	106.8	1222.4	1185.4	-309.3	1267.5	5730504.6	529240.5
1932.0	55.0	106.8	1223.0	1186.0	-309.6	1268.3	5730504.4	529241.3
1933.0	55.0	106.8	1223.5	1186.5	-309.8	1269.1	5730504.1	529242.1
1934.0	55.0	106.8	1224.1	1187.1	-310.0	1269.9	5730503.9	529242.8
1935.0	54.9	106.8	1224.7	1187.7	-310.3	1270.6	5730503.7	529243.6
1936.0	54.9	106.8	1225.2	1188.2	-310.5	1271.4	5730503.4	529244.4
1937.0	54.9	106.8	1225.8	1188.8	-310.8	1272.2	5730503.2	529245.2
1938.0	54.9	106.8	1226.4	1189.4	-311.0	1273.0	5730502.9	529246.0
1939.0	54.9	106.8	1227.0	1190.0	-311.2	1273.8	5730502.7	529246.8
1940.0	54.8	106.8	1227.6	1190.6	-311.5	1274.6	5730502.5	529247.5
1941.0	54.8	106.8	1228.1	1191.1	-311.7	1275.3	5730502.2	529248.3
1942.0	54.8	106.8	1228.7	1191.7	-311.9	1276.1	5730502.0	529249.1
1943.0	54.8	106.8	1229.3	1192.3	-312.2	1276.9	5730501.8	529249.9
1944.0	54.8	106.8	1229.9	1192.9	-312.4	1277.7	5730501.5	529250.7
1945.0	54.7	106.8	1230.4	1193.4	-312.6	1278.5	5730501.3	529251.5
1946.0	54.7	106.8	1231.0	1194.0	-312.9	1279.2	5730501.1	529252.2
1947.0	54.7	106.8	1231.6	1194.6	-313.1	1280.0	5730500.8	529253.0
1948.0	54.7	106.8	1232.2	1195.2	-313.3	1280.8	5730500.6	529253.8
1949.0	54.7	106.8	1232.7	1195.7	-313.6	1281.6	5730500.3	529254.6
1950.0	54.6	106.8	1233.3	1196.3	-313.8	1282.4	5730500.1	529255.4
1951.0	54.6	106.8	1233.9	1196.9	-314.1	1283.1	5730499.9	529256.1
1952.0	54.6	106.8	1234.5	1197.5	-314.3	1283.9	5730499.6	529256.9
1953.0	54.6	106.8	1235.1	1198.1	-314.5	1284.7	5730499.4	529257.7
1954.0	54.6	106.8	1235.6	1198.6	-314.8	1285.5	5730499.2	529258.5
1955.0	54.6	106.8	1236.2	1199.2	-315.0	1286.3	5730498.9	529259.3
1956.0	54.6	106.8	1236.8	1199.8	-315.2	1287.0	5730498.7	529260.0
1957.0	54.6	106.8	1237.4	1200.4	-315.5	1287.8	5730498.5	529260.8
1958.0	54.6	106.9	1238.0	1201.0	-315.7	1288.6	5730498.2	529261.6
1959.0	54.5	106.9	1238.5	1201.5	-315.9	1289.4	5730498.0	529262.4
1960.0	54.5	106.9	1239.1	1202.1	-316.2	1290.2	5730497.7	529263.2
1961.0	54.5	106.9	1239.7	1202.7	-316.4	1290.9	5730497.5	529263.9
1962.0	54.5	106.9	1240.3	1203.3	-316.7	1291.7	5730497.3	529264.7
1963.0	54.5	106.9	1240.9	1203.9	-316.9	1292.5	5730497.0	529265.5
1964.0	54.5	106.9	1241.4	1204.4	-317.1	1293.3	5730496.8	529266.3
1965.0	54.5	106.9	1242.0	1205.0	-317.4	1294.1	5730496.6	529267.1
1966.0	54.5	106.9	1242.6	1205.6	-317.6	1294.8	5730496.3	529267.8
1967.0	54.5	106.9	1243.2	1206.2	-317.8	1295.6	5730496.1	529268.6
1968.0	54.5	106.9	1243.8	1206.8	-318.1	1296.4	5730495.9	529269.4
1969.0	54.5	106.9	1244.3	1207.3	-318.3	1297.2	5730495.6	529270.2
1970.0	54.5	106.9	1244.9	1207.9	-318.5	1298.0	5730495.4	529271.0
1971.0	54.5	106.9	1245.5	1208.5	-318.8	1298.7	5730495.1	529271.7

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
1972.0	54.5	107.0	1246.1	1209.1	-319.0	1299.5	5730494.9	529272.5
1973.0	54.4	107.0	1246.7	1209.7	-319.3	1300.3	5730494.7	529273.3
1974.0	54.4	107.0	1247.3	1210.3	-319.5	1301.1	5730494.4	529274.1
1975.0	54.4	107.0	1247.8	1210.8	-319.7	1301.8	5730494.2	529274.8
1976.0	54.4	107.0	1248.4	1211.4	-320.0	1302.6	5730494.0	529275.6
1977.0	54.4	107.0	1249.0	1212.0	-320.2	1303.4	5730493.7	529276.4
1978.0	54.4	107.0	1249.6	1212.6	-320.4	1304.2	5730493.5	529277.2
1979.0	54.4	107.0	1250.2	1213.2	-320.7	1305.0	5730493.2	529278.0
1980.0	54.4	107.0	1250.7	1213.7	-320.9	1305.7	5730493.0	529278.7
1981.0	54.3	107.1	1251.3	1214.3	-321.2	1306.5	5730492.8	529279.5
1982.0	54.3	107.1	1251.9	1214.9	-321.4	1307.3	5730492.5	529280.3
1983.0	54.3	107.1	1252.5	1215.5	-321.6	1308.1	5730492.3	529281.1
1984.0	54.2	107.2	1253.1	1216.1	-321.9	1308.8	5730492.1	529281.8
1985.0	54.2	107.2	1253.7	1216.7	-322.1	1309.6	5730491.8	529282.6
1986.0	54.2	107.3	1254.2	1217.2	-322.4	1310.4	5730491.6	529283.4
1987.0	54.1	107.3	1254.8	1217.8	-322.6	1311.2	5730491.3	529284.2
1988.0	54.1	107.3	1255.4	1218.4	-322.8	1311.9	5730491.1	529284.9
1989.0	54.1	107.4	1256.0	1219.0	-323.1	1312.7	5730490.8	529285.7
1990.0	54.0	107.4	1256.6	1219.6	-323.3	1313.5	5730490.6	529286.5
1991.0	54.0	107.5	1257.2	1220.2	-323.6	1314.3	5730490.4	529287.3
1992.0	54.0	107.5	1257.8	1220.8	-323.8	1315.0	5730490.1	529288.0
1993.0	53.9	107.5	1258.4	1221.4	-324.0	1315.8	5730489.9	529288.8
1994.0	53.9	107.6	1258.9	1221.9	-324.3	1316.6	5730489.6	529289.6
1995.0	53.9	107.6	1259.5	1222.5	-324.5	1317.3	5730489.4	529290.3
1996.0	53.8	107.7	1260.1	1223.1	-324.8	1318.1	5730489.1	529291.1
1997.0	53.8	107.7	1260.7	1223.7	-325.0	1318.9	5730488.9	529291.9
1998.0	53.7	107.7	1261.3	1224.3	-325.3	1319.6	5730488.7	529292.6
1999.0	53.7	107.8	1261.9	1224.9	-325.5	1320.4	5730488.4	529293.4
2000.0	53.7	107.8	1262.5	1225.5	-325.8	1321.2	5730488.2	529294.2
2001.0	53.6	107.8	1263.1	1226.1	-326.0	1321.9	5730487.9	529294.9
2002.0	53.6	107.9	1263.7	1226.7	-326.3	1322.7	5730487.7	529295.7
2003.0	53.6	107.9	1264.3	1227.3	-326.5	1323.5	5730487.4	529296.5
2004.0	53.5	108.0	1264.9	1227.9	-326.8	1324.2	5730487.2	529297.2
2005.0	53.5	108.0	1265.5	1228.5	-327.0	1325.0	5730486.9	529298.0
2006.0	53.5	108.0	1266.1	1229.1	-327.2	1325.8	5730486.7	529298.8
2007.0	53.4	108.1	1266.7	1229.7	-327.5	1326.5	5730486.4	529299.5
2008.0	53.4	108.1	1267.2	1230.2	-327.7	1327.3	5730486.2	529300.3
2009.0	53.4	108.1	1267.8	1230.8	-328.0	1328.1	5730485.9	529301.1
2010.0	53.4	108.1	1268.4	1231.4	-328.2	1328.8	5730485.7	529301.8
2011.0	53.4	108.1	1269.0	1232.0	-328.5	1329.6	5730485.4	529302.6
2012.0	53.4	108.1	1269.6	1232.6	-328.7	1330.4	5730485.2	529303.3
2013.0	53.4	108.1	1270.2	1233.2	-329.0	1331.1	5730484.9	529304.1
2014.0	53.4	108.1	1270.8	1233.8	-329.2	1331.9	5730484.7	529304.9
2015.0	53.4	108.1	1271.4	1234.4	-329.5	1332.6	5730484.4	529305.6
2016.0	53.4	108.1	1272.0	1235.0	-329.7	1333.4	5730484.2	529306.4
2017.0	53.4	108.1	1272.6	1235.6	-330.0	1334.2	5730483.9	529307.2
2018.0	53.4	108.1	1273.2	1236.2	-330.2	1334.9	5730483.7	529307.9
2019.0	53.4	108.1	1273.8	1236.8	-330.5	1335.7	5730483.4	529308.7
2020.0	53.4	108.1	1274.4	1237.4	-330.7	1336.5	5730483.2	529309.5
2021.0	53.4	108.1	1275.0	1238.0	-331.0	1337.2	5730482.9	529310.2
2022.0	53.4	108.1	1275.6	1238.6	-331.2	1338.0	5730482.7	529311.0
2023.0	53.4	108.1	1276.2	1239.2	-331.5	1338.7	5730482.4	529311.7
2024.0	53.4	108.1	1276.8	1239.8	-331.7	1339.5	5730482.2	529312.5
2025.0	53.4	108.1	1277.4	1240.4	-332.0	1340.3	5730481.9	529313.3
2026.0	53.4	108.1	1278.0	1241.0	-332.2	1341.0	5730481.7	529314.0
2027.0	53.4	108.1	1278.6	1241.6	-332.5	1341.8	5730481.4	529314.8
2028.0	53.4	108.1	1279.2	1242.2	-332.7	1342.6	5730481.2	529315.6
2029.0	53.4	108.1	1279.8	1242.8	-333.0	1343.3	5730480.9	529316.3
2030.0	53.4	108.1	1280.4	1243.4	-333.2	1344.1	5730480.7	529317.1
2031.0	53.4	108.1	1281.0	1244.0	-333.5	1344.9	5730480.4	529317.8
2032.0	53.4	108.1	1281.6	1244.6	-333.7	1345.6	5730480.2	529318.6
2033.0	53.4	108.1	1282.2	1245.2	-334.0	1346.4	5730479.9	529319.4
2034.0	53.4	108.1	1282.8	1245.8	-334.2	1347.1	5730479.7	529320.1
2035.0	53.4	108.1	1283.3	1246.3	-334.5	1347.9	5730479.4	529320.9
2036.0	53.4	108.1	1283.9	1246.9	-334.7	1348.7	5730479.2	529321.7
2037.0	53.4	108.1	1284.5	1247.5	-335.0	1349.4	5730478.9	529322.4
2038.0	53.4	108.1	1285.1	1248.1	-335.2	1350.2	5730478.7	529323.2
2039.0	53.4	108.1	1285.7	1248.7	-335.5	1351.0	5730478.5	529324.0
2040.0	53.4	108.1	1286.3	1249.3	-335.7	1351.7	5730478.2	529324.7
2041.0	53.4	108.1	1286.9	1249.9	-336.0	1352.5	5730478.0	529325.5
2042.0	53.4	108.1	1287.5	1250.5	-336.2	1353.2	5730477.7	529326.2

MD	Angle	Direction	TVDRT	TVDSS	DNorth	DEast	Northing	Easting
2043.0	53.4	108.1	1288.1	1251.1	-336.5	1354.0	5730477.5	529327.0
2044.0	53.4	108.1	1288.7	1251.7	-336.7	1354.8	5730477.2	529327.8
2045.0	53.4	108.1	1289.3	1252.3	-337.0	1355.5	5730477.0	529328.5
2046.0	53.4	108.1	1289.9	1252.9	-337.2	1356.3	5730476.7	529329.3
2047.0	53.4	108.1	1290.5	1253.5	-337.5	1357.1	5730476.5	529330.1
2048.0	53.4	108.1	1291.1	1254.1	-337.7	1357.8	5730476.2	529330.8
2049.0	53.4	108.1	1291.7	1254.7	-338.0	1358.6	5730476.0	529331.6
2050.0	53.4	108.1	1292.3	1255.3	-338.2	1359.4	5730475.7	529332.3
2051.0	53.4	108.1	1292.9	1255.9	-338.5	1360.1	5730475.5	529333.1
2052.0	53.4	108.1	1293.5	1256.5	-338.7	1360.9	5730475.2	529333.9

APPENDIX 3

APPENDIX 3

PERCH-4

Petrophysics Evaluation Summary

Esso Australia Ltd
Exploration Department

PERCH 4
Quantitative Formation Evaluation

Petrophysicist: J.M. Phillips
August 1995

Prepared by: *J.M. Phillips*

Reviewed by: *A. J. ...*

PERCH 4 QUANTITATIVE FORMATION EVALUATION

The Perch 4 well is an oil development well designed to access the Perch N-1 reservoir in a crestal location within the eastern fault block of the Perch field (Vic/L17 - Vic/L15). The N-1 reservoir was proposed to be intersected some 3m structurally higher than the adjacent Perch 2 well.

Perch 1 (drilled in 1968) and Perch 2 (drilled 1985) are plugged and abandoned exploration wells whilst the Perch 3 well was drilled from the Perch monotower facility in 1989, and until now has been the only producing well in the Perch field. Perch 3 lies some 1.2km to the northwest of the Perch 4 N-1 reservoir penetration.

Perch 2 provides the nearest correlation point (some 190m to the NW) at the target horizon and wireline log data from this well has been used as a check of the Perch 4 log data and subsequent analysis.

The top of Latrobe Group was intersected in Perch 4 at 1769m MDKB (1097.5m TVDSS), some 9m high to prognosis, whilst the primary objective N-1 reservoir sand was encountered at 1814.4m MDKB (1120.6m TVDSS), some 2.7m updip of the Perch 2 well, and is 10.5m (True Vertical Thickness) thick.

Perch 4 was drilled from the Perch Monotower Facility using the Harvey Ward jack up drilling rig. The well was deviated (59°@ 106°T) to reach the primary target within the eastern fault block.

DATA

Logs Acquired

Anadrill LWD: CDR, 1740m to 2070m MDKB
 CDN, 1600m to 2052m MDKB

Schlumberger CSU: GR-CBL-VDL-CCL to 1930m MDKB

Log Quality

Attempts to run an openhole suite of wireline logs proved unsuccessful due to an inability to pass 860m MDKB in the 59° well bore. Consequently the only wireline logs in Perch 4 were obtained in cased hole (GR, CBL, VDL, CCL) and only down to 1930m MDKB (This was due to operational cementing problem leaving cement inside casing which was subsequently drilled out down to 1930m MDKB). LWD measurements were, however, obtained from Anadrill CDR and CDN tools which were run in two modes. Firstly, the CDR (Compensated Dual Resistivity) was used to record data whilst drilling the section from 1740m MDKB to 2070m MDKB. (ie gamma ray and resistivity data available for this section of hole). Once it was established that no open hole wireline logs could be acquired a second pass of the LWD tools was made. This run included the CDR and CDN (Compensated Density Neutron) in a reaming pass from 1600m to 2052m MDKB at a speed of less than 15m/hr over the objective N-1 Reservoir interval (1800-1850m MDKB).

Log Processing

The wireline Gamma Ray, recorded in cased hole with the CCL-CBL-VDL-GR run was considered to represent the correct depth measurement down to 1930m MDKB. Consequently the LWD gamma ray (which covered the section from TOL to TD was depth aligned (by 2m) to match the wireline gamma ray and was used in this analysis.

The two passes of LWD resistivity curves were spliced below the N-1 reservoir to provide a curve composed of maximum real time data over the zone of interest and bottom hole section. No correction was made to the composite resistivity curve. As both phase shift resistivity (PSR) and attenuation resistivity (ATR) obtained with the LWD were strongly affected by invasion the ATR, which was the highest resistivity measurement, was used to represent R_t (despite this, saturations are recognised as probably being pessimistic).

Comparison of bulk density logs from the Perch 2 (wireline logs) and Perch 4 (LWD logs) wells over the N-1 reservoir section revealed the LWD density measurements in Perch 4 to be consistently lower in similar facies/quality section as a result of tool calibration error. Accordingly a bulk shift of +0.1gm/cc was applied to the Perch 4 density measurements to gain a good match with the Perch 2 wireline data, over the main reservoir interval (see Figure 1).

A two porosity unit negative bulk shift correction was applied to the LWD neutron data in Perch 4 to better fit the clean nature of the N-1 reservoir sand observed in Perch 2.

INTERPRETATION

Logs Used

GR, RHOB, NPHI, ATR, PSR (Anadrill LWD)

Analysis Parameters

a	1
m	1.85
n	2
Apparent Shale Porosity (PHISH)	0.25
Shale Resistivity (RSH)	15 ohmm
Formation Water Resistivity (RW)	0.14 ohmm above 1835m MDKB
Formation Water Resistivity (RW)	0.8 ohmm below 1835m MDKB
Bottom Hole Temperature	80 DEGC

Porosity

Total porosity was derived from the density-neutron using the LOGIC program XPL. Effective porosity was derived from total porosity using a gamma ray derived VSH.

Shale Volume

Shale volume was derived from the gamma ray using the LOGIC program VSH with the Clavier option and a gamma ray minimum and maximum of 60 API and 180 API respectively.

Free Formation Water Resistivity

In the N-1 oil zone Rw has been based on regional data as it is interpreted to be more saline than the underlying aquifer which has been flushed by fresh water. Below the N-1 oil, free formation water resistivity was derived from RWA calculations in clean water sands.

Water Saturations

Total water saturation was calculated using density-neutron total porosity in the Dual Water programme DWGP. Effective porosity and effective water saturation were calculated using gamma ray VSH.

Water saturation was set to 1 and porosity set to 0 in coals and carbonaceous shales.

RESULTS

1. The top of the primary objective (N-1 reservoir) was intersected at 1814.4m MDKB (1120.6m TVDSS) 1m low to prognosis. The sand was described from cuttings as coarse to very coarse grained, well sorted loose and of fair to good visual porosity. A total gross sand thickness of 19.8m measured thickness was intersected. The upper 4.6m (measured thickness) of the N-1 reservoir displayed relatively poorer average porosity than the lower 15.1m (measured thickness).
2. The base of porosity within the N-1 reservoir at Perch 4 is interpreted to be 1834.2m MDKB, immediately above a probable thin coal interval. This indicates a level of lowest known oil of 1834.2m MDKB (1131.1m TVDSS) in this well which is 0.9m TVD above the Original Oil Water Contact for the Perch field.
3. A total of 19.6m (measured thickness) (10.5m TVT) of net pay with average porosity of 29% and average Sw of 19% is calculated for the N-1 Perch 4 reservoir.
4. A thin sand below the Field OOWC from 1836.5m MDKB to 1837.9m MDKB exhibits an average porosity of 27% and an average Sw of 79% but is not considered to be net pay.
5. All other reservoir section below 1837.9m MDKB is interpreted to be water saturated.

Attached are the following presentations of results:

Table 1 - Summary of Results

Table 2 - Log Analysis Listing

Figure 1 - Density-Neutron Crossplot

Attachment 1 - Log Analysis Depthplot

TABLE 1

PERCH_4

ANALYSIS SUMMARY (Depths are Measured Depth KB)

Net porosity cut-off.....: 0.120 volume per volume

Net water saturation cut-off...: 0.500 volume per volume

Net Porous Interval based on Porosity cut-off only.

GROSS INTERVAL (metres MDKB) (top) -(base)	Gross Metres	NET POROUS INTERVAL				Mean (Std.) (Dev.)	Mean (Std.) (Dev.)	Mode (Dev.)	Mean (Dev.)	Sw	
		Net Metres	Net to Gross	Mean Vsh	Porosity						
1814.4-1819.0	4.6	4.5	97 %	0.08	(0.062)	0.210	(0.022)	0.200	0.39	OIL ZONE	
1819.1-1834.2	15.1	15.1	100 %	0.00	(0.002)	0.310	(0.014)	0.310	0.13	OIL ZONE	
1836.5-1837.9	1.4	1.4	100 %	0.19	(0.099)	0.270	(0.041)	0.280	0.79	WATER ZONE	

** Lowest Known Oil calculated at 1834.2 m MDKB (-1132m TVDSS)**

Total Net Pay = 19.6m Measured Thickness (10.5m True Vertical Thickness)

Av Porosity = 29%

Av Sw = 19%

PERCH 4

WELL DATA LISTING

(Table 2)

PERCH_4

Well Data Listing

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1800.0	141	1.6	2.060	0.528	0.477	0.000	1.000
1800.2	137	1.6	1.927	0.535	0.446	0.000	1.000
1800.4	136	1.7	1.898	0.566	0.433	0.000	1.000
1800.6	138	1.8	1.909	0.539	0.449	0.000	1.000
1800.8	138	1.7	1.955	0.503	0.456	0.000	1.000
1801.0	136	1.8	1.970	0.482	0.432	0.000	1.000
1801.2	134	1.8	1.987	0.460	0.413	0.000	1.000
1801.4	131	1.8	2.013	0.426	0.394	0.000	1.000
1801.6	131	1.7	2.090	0.414	0.390	0.000	1.000
1801.8	137	1.7	2.185	0.413	0.442	0.000	1.000
1802.0	138	1.8	2.260	0.404	0.449	0.000	1.000
1802.2	133	1.8	2.321	0.381	0.407	0.000	1.000
1802.4	127	1.7	2.390	0.370	0.361	0.000	1.000
1802.6	123	1.7	2.473	0.351	0.331	0.000	1.000
1802.8	119	1.6	2.521	0.319	0.300	0.000	1.000
1803.0	115	1.7	2.511	0.308	0.269	0.000	1.000
1803.2	114	1.8	2.505	0.308	0.263	0.000	1.000
1803.4	114	1.9	2.511	0.308	0.263	0.000	1.000
1803.6	114	2.0	2.500	0.296	0.267	0.000	1.000
1803.8	113	2.1	2.497	0.288	0.257	0.000	1.000
1804.0	110	2.0	2.503	0.296	0.242	0.000	1.000
1804.2	110	2.0	2.497	0.313	0.238	0.000	1.000
1804.4	114	1.9	2.484	0.333	0.265	0.000	1.000
1804.6	118	1.9	2.467	0.353	0.293	0.000	1.000
1804.8	119	1.9	2.436	0.367	0.302	0.000	1.000
1805.0	120	1.9	2.422	0.369	0.305	0.000	1.000
1805.2	123	1.9	2.445	0.354	0.328	0.000	1.000
1805.4	132	1.9	2.485	0.342	0.396	0.000	1.000
1805.6	138	1.8	2.509	0.342	0.453	0.000	1.000
1805.8	134	1.8	2.514	0.352	0.418	0.000	1.000
1806.0	124	1.8	2.522	0.372	0.339	0.000	1.000
1806.2	122	1.7	2.531	0.367	0.321	0.000	1.000
1806.4	124	1.7	2.491	0.345	0.337	0.000	1.000
1806.6	129	1.6	2.419	0.328	0.378	0.000	1.000
1806.8	130	1.7	2.394	0.338	0.385	0.000	1.000
1807.0	127	1.9	2.389	0.343	0.358	0.000	1.000
1807.2	129	2.0	2.384	0.318	0.374	0.000	1.000
1807.4	132	2.2	2.360	0.297	0.403	0.000	1.000
1807.6	134	2.3	2.323	0.293	0.420	0.000	1.000
1807.8	134	2.7	2.314	0.293	0.417	0.000	1.000
1808.0	133	2.9	2.318	0.297	0.409	0.000	1.000
1808.2	135	3.2	2.294	0.303	0.425	0.000	1.000
1808.4	138	3.6	2.252	0.325	0.449	0.000	1.000
1808.6	142	3.9	2.260	0.347	0.485	0.000	1.000
1808.8	146	4.3	2.272	0.336	0.525	0.000	1.000
1809.0	148	4.6	2.268	0.325	0.548	0.000	1.000
1809.2	152	4.6	2.287	0.316	0.586	0.000	1.000
1809.4	158	4.7	2.306	0.305	0.660	0.000	1.000
1809.6	161	4.9	2.309	0.299	0.704	0.000	1.000
1809.8	162	5.0	2.323	0.289	0.716	0.000	1.000
1810.0	160	5.1	2.357	0.288	0.689	0.000	1.000
1810.2	154	5.0	2.394	0.281	0.616	0.000	1.000
1810.4	150	4.9	2.394	0.268	0.573	0.000	1.000
1810.6	156	4.8	2.372	0.272	0.632	0.000	1.000

PERCH_4 (page 2 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
1810.8	167	5.1	2.361	0.302	0.776	0.000	1.000
1811.0	175	5.0	2.358	0.320	0.909	0.000	1.000
1811.2	180	5.0	2.378	0.325	1.000	0.000	1.000
1811.4	185	4.9	2.379	0.340	1.000	0.000	1.000
1811.6	194	4.6	2.360	0.339	1.000	0.000	1.000
1811.8	202	4.2	2.351	0.322	1.000	0.000	1.000
1812.0	209	4.0	2.338	0.328	1.000	0.000	1.000
1812.2	210	3.9	2.336	0.357	1.000	0.000	1.000
1812.4	204	4.1	2.340	0.375	1.000	0.000	1.000
1812.6	196	3.8	2.346	0.388	1.000	0.000	1.000
1812.8	193	3.8	2.361	0.399	1.000	0.000	1.000
1813.0	194	4.0	2.378	0.391	1.000	0.000	1.000
1813.2	192	4.0	2.404	0.368	1.000	0.000	1.000
1813.4	187	4.0	2.394	0.360	1.000	0.000	1.000
1813.6	183	4.0	2.360	0.364	1.000	0.000	1.000
1813.8	177	4.1	2.360	0.366	0.951	0.000	1.000
1814.0	166	4.5	2.371	0.345	0.765	0.000	1.000
1814.2	152	4.8	2.384	0.312	0.594	0.000	1.000
1814.4	139	5.0	2.402	0.284	0.457	0.054	0.874
1814.6	121	5.2	2.403	0.262	0.318	0.141	0.698
1814.8	106	5.7	2.395	0.256	0.213	0.167	0.633
1815.0	95	6.4	2.388	0.269	0.153	0.190	0.559
1815.2	87	7.5	2.372	0.264	0.109	0.203	0.505
1815.4	83	8.1	2.375	0.253	0.092	0.201	0.497
1815.6	82	8.4	2.360	0.252	0.088	0.206	0.481
1815.8	80	9.3	2.334	0.251	0.077	0.216	0.441
1816.0	78	9.8	2.342	0.242	0.069	0.211	0.442
1816.2	78	10.4	2.358	0.236	0.068	0.204	0.442
1816.4	76	11.3	2.364	0.230	0.060	0.201	0.433
1816.6	77	11.6	2.374	0.235	0.067	0.199	0.426
1816.8	79	13.4	2.381	0.239	0.073	0.198	0.392
1817.0	77	13.8	2.379	0.229	0.067	0.195	0.394
1817.2	76	15.8	2.358	0.205	0.062	0.190	0.377
1817.4	75	16.6	2.359	0.209	0.057	0.193	0.364
1817.6	73	19.2	2.370	0.230	0.049	0.202	0.328
1817.8	70	21.2	2.352	0.242	0.039	0.216	0.299
1818.0	69	24.7	2.327	0.240	0.035	0.223	0.269
1818.2	69	24.9	2.319	0.236	0.032	0.224	0.268
1818.4	68	30.3	2.315	0.242	0.031	0.228	0.238
1818.6	67	31.7	2.319	0.242	0.025	0.229	0.236
1818.8	66	39.2	2.301	0.246	0.022	0.237	0.206
1819.0	65	40.7	2.249	0.252	0.018	0.258	0.189
1819.2	62	49.1	2.195	0.262	0.008	0.285	0.161
1819.4	59	53.5	2.163	0.266	0.000	0.301	0.151
1819.6	58	52.2	2.167	0.260	0.000	0.297	0.154
1819.8	60	61.7	2.187	0.258	0.000	0.289	0.146
1820.0	61	63.1	2.182	0.262	0.002	0.292	0.142
1820.2	60	73.0	2.161	0.270	0.001	0.303	0.128
1820.4	61	65.9	2.153	0.269	0.002	0.306	0.133
1820.6	62	72.5	2.147	0.262	0.006	0.304	0.126
1820.8	61	80.3	2.152	0.266	0.002	0.305	0.121
1821.0	61	77.7	2.164	0.270	0.003	0.301	0.123
1821.2	62	75.2	2.156	0.264	0.007	0.301	0.124
1821.4	60	70.4	2.139	0.259	0.001	0.308	0.128
1821.6	59	67.7	2.135	0.271	0.000	0.314	0.129
1821.8	60	71.0	2.128	0.283	0.000	0.321	0.124

PERCH_4 (page 3 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
1822.0	61	74.4	2.124	0.278	0.004	0.320	0.119
1822.2	60	79.8	2.139	0.278	0.001	0.315	0.118
1822.4	59	82.1	2.144	0.286	0.000	0.316	0.117
1822.6	59	83.3	2.151	0.290	0.000	0.314	0.116
1822.8	62	91.1	2.162	0.291	0.006	0.309	0.110
1823.0	62	101.2	2.168	0.288	0.007	0.305	0.105
1823.2	60	86.2	2.168	0.283	0.002	0.305	0.117
1823.4	61	87.2	2.161	0.280	0.002	0.306	0.115
1823.6	61	110.1	2.158	0.278	0.002	0.307	0.102
1823.8	60	120.9	2.148	0.275	0.000	0.310	0.098
1824.0	59	114.7	2.147	0.278	0.000	0.312	0.100
1824.2	58	113.7	2.158	0.293	0.000	0.312	0.100
1824.4	57	113.8	2.156	0.298	0.000	0.315	0.099
1824.6	57	145.0	2.153	0.284	0.000	0.312	0.089
1824.8	56	120.7	2.167	0.274	0.000	0.302	0.100
1825.0	58	109.0	2.165	0.263	0.000	0.299	0.106
1825.2	60	136.8	2.152	0.257	0.000	0.302	0.094
1825.4	61	123.5	2.143	0.269	0.003	0.310	0.096
1825.6	59	115.5	2.139	0.283	0.000	0.316	0.098
1825.8	59	142.7	2.140	0.287	0.000	0.317	0.088
1826.0	59	112.6	2.137	0.291	0.000	0.320	0.098
1826.2	59	105.2	2.139	0.296	0.000	0.321	0.102
1826.4	58	109.6	2.153	0.296	0.000	0.315	0.101
1826.6	56	100.2	2.158	0.285	0.000	0.310	0.107
1826.8	54	98.1	2.168	0.286	0.000	0.306	0.110
1827.0	55	103.8	2.176	0.298	0.000	0.307	0.106
1827.2	55	110.5	2.166	0.300	0.000	0.312	0.102
1827.4	54	116.1	2.159	0.284	0.000	0.309	0.100
1827.6	55	107.2	2.147	0.288	0.000	0.315	0.102
1827.8	55	106.0	2.124	0.303	0.000	0.329	0.099
1828.0	57	115.0	2.130	0.300	0.000	0.326	0.096
1828.2	60	118.4	2.140	0.304	0.000	0.323	0.095
1828.4	62	133.2	2.123	0.307	0.006	0.330	0.086
1828.6	62	144.3	2.102	0.299	0.006	0.335	0.081
1828.8	61	115.4	2.101	0.284	0.003	0.331	0.093
1829.0	60	112.7	2.104	0.285	0.001	0.331	0.095
1829.2	59	116.3	2.123	0.300	0.000	0.329	0.095
1829.4	58	108.8	2.137	0.306	0.000	0.325	0.099
1829.6	58	113.2	2.138	0.291	0.000	0.320	0.098
1829.8	57	117.3	2.149	0.272	0.000	0.309	0.100
1830.0	57	121.2	2.147	0.272	0.000	0.310	0.098
1830.2	56	109.2	2.124	0.287	0.000	0.324	0.099
1830.4	55	123.4	2.114	0.307	0.000	0.335	0.091
1830.6	56	93.1	2.110	0.310	0.000	0.337	0.103
1830.8	57	92.1	2.116	0.310	0.000	0.335	0.104
1831.0	58	105.5	2.126	0.323	0.000	0.335	0.098
1831.2	58	82.9	2.111	0.341	0.000	0.347	0.107
1831.4	58	53.8	2.102	0.336	0.000	0.349	0.132
1831.6	58	51.5	2.120	0.318	0.000	0.336	0.139
1831.8	56	63.9	2.134	0.300	0.000	0.324	0.129
1832.0	54	49.2	2.143	0.279	0.000	0.313	0.152
1832.2	53	43.4	2.162	0.255	0.000	0.297	0.169
1832.4	53	34.9	2.169	0.235	0.000	0.287	0.194
1832.6	52	26.9	2.159	0.235	0.000	0.291	0.219
1832.8	51	21.9	2.154	0.253	0.000	0.300	0.236
1833.0	52	18.7	2.163	0.264	0.000	0.301	0.255

PERCH_4 (page 4 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1833.2	53	15.1	2.169	0.274	0.000	0.301	0.283
1833.4	53	12.0	2.182	0.281	0.000	0.299	0.320
1833.6	53	10.8	2.192	0.269	0.000	0.291	0.345
1833.8	55	10.0	2.190	0.249	0.000	0.284	0.366
1834.0	57	10.1	2.178	0.252	0.000	0.290	0.359
1834.2	58	9.5	2.127	0.273	0.000	0.318	0.340
1834.4	69	9.7	2.056	0.297		Coal	
1834.6	124	10.5	1.967	0.342		Coal	
1834.8	183	11.6	1.905	0.405		Coal	
1835.0	203	11.6	1.923	0.449		Coal	
1835.2	201	10.9	2.018	0.501		Coal	
1835.4	198	10.1	2.116	0.571		Coal	
1835.6	195	9.7	2.181	0.604	1.000	0.000	0.000
1835.8	192	9.8	2.216	0.553	1.000	0.000	0.000
1836.0	183	10.0	2.241	0.470	1.000	0.000	0.000
1836.2	172	10.4	2.269	0.448	0.857	0.000	0.000
1836.4	151	10.2	2.196	0.415	0.580	0.000	1.000
1836.6	116	10.3	2.156	0.369	0.280	0.273	0.665
1836.8	89	9.0	2.189	0.324	0.120	0.283	0.833
1837.0	82	8.8	2.179	0.299	0.086	0.285	0.867
1837.2	84	8.8	2.142	0.298	0.099	0.296	0.828
1837.4	92	9.1	2.126	0.314	0.135	0.299	0.779
1837.6	104	8.7	2.113	0.338	0.203	0.295	0.754
1837.8	123	8.9	2.135	0.344	0.332	0.256	0.730
1838.0	148	9.4	2.163	0.364	0.544	0.006	1.000
1838.2	169	10.2	2.190	0.422	0.804	0.000	1.000
1838.4	176	10.8	2.182	0.507	0.928	0.000	1.000
1838.6	180	11.7	2.121	0.558	1.000	0.000	1.000
1838.8	189	12.0	2.051	0.560	1.000	0.000	1.000
1839.0	206	12.5	2.037	0.555	1.000	0.000	1.000
1839.2	222	12.6	2.071	0.507	1.000	0.000	1.000
1839.4	231	12.4	2.140	0.462	1.000	0.000	1.000
1839.6	231	12.4	2.197	0.439	1.000	0.000	1.000
1839.8	225	12.3	2.268	0.415	1.000	0.000	1.000
1840.0	216	11.7	2.291	0.419	1.000	0.000	1.000
1840.2	207	11.8	2.274	0.417	1.000	0.000	1.000
1840.4	199	11.8	2.252	0.429	1.000	0.000	1.000
1840.6	199	12.0	2.170	0.483	1.000	0.000	1.000
1840.8	197	12.1	2.105	0.509	1.000	0.000	1.000
1841.0	191	12.3	2.087	0.490	1.000	0.000	1.000
1841.2	189	12.7	2.057	0.501		Coal	
1841.4	191	12.3	1.957	0.554		Coal	
1841.6	191	12.5	1.845	0.603		Coal	
1841.8	184	12.8	1.780	0.623		Coal	
1842.0	178	12.5	1.820	0.604		Coal	
1842.2	177	12.8	1.922	0.550		Coal	
1842.4	180	13.1	2.087	0.488	1.000	0.000	1.000
1842.6	183	12.8	2.244	0.465	1.000	0.000	1.000
1842.8	185	12.5	2.260	0.487	1.000	0.000	1.000
1843.0	187	12.2	2.211	0.524	1.000	0.000	1.000
1843.2	190	11.9	2.131	0.575	1.000	0.000	1.000
1843.4	191	11.7	1.992	0.577		Coal	
1843.6	187	12.3	1.820	0.543		Coal	
1843.8	182	12.5	1.802	0.560		Coal	
1844.0	179	12.4	1.862	0.586		Coal	
1844.2	178	12.6	1.932	0.571		Coal	

PERCH_4 (page 5 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
1844.4	179	11.9	1.938	0.538		Coal	
1844.6	181	11.7	1.922	0.557		Coal	
1844.8	184	11.4	1.982	0.594		Coal	
1845.0	183	12.0	2.009	0.541		Coal	
1845.2	183	11.5	1.967	0.493		Coal	
1845.4	185	11.9	1.948	0.501		Coal	
1845.6	181	11.0	1.939	0.518		Coal	
1845.8	176	11.5	1.962	0.502		Coal	
1846.0	173	11.4	2.031	0.482	0.878	0.000	1.000
1846.2	173	12.2	2.127	0.482	0.876	0.000	1.000
1846.4	176	12.1	2.219	0.501	0.916	0.000	1.000
1846.6	175	12.3	2.287	0.479	0.911	0.000	1.000
1846.8	169	13.6	2.311	0.448	0.807	0.000	1.000
1847.0	166	14.5	2.279	0.444	0.765	0.000	1.000
1847.2	171	12.9	2.242	0.426	0.842	0.000	1.000
1847.4	178	12.5	2.207	0.421	0.958	0.000	1.000
1847.6	183	12.1	2.206	0.447	1.000	0.000	1.000
1847.8	187	11.5	2.132	0.484	1.000	0.000	1.000
1848.0	186	12.1	1.991	0.502		Coal	
1848.2	184	12.4	1.989	0.504		Coal	
1848.4	179	12.3	2.108	0.512	0.986	0.000	1.000
1848.6	174	11.9	2.182	0.513	0.890	0.000	1.000
1848.8	171	11.5	2.226	0.488	0.839	0.000	1.000
1849.0	170	11.4	2.253	0.422	0.829	0.000	1.000
1849.2	173	11.9	2.258	0.368	0.880	0.000	1.000
1849.4	179	11.9	2.235	0.355	0.981	0.000	1.000
1849.6	187	11.5	2.191	0.381	1.000	0.000	1.000
1849.8	190	11.7	2.120	0.451	1.000	0.000	1.000
1850.0	188	11.4	2.012	0.505		Coal	
1850.2	185	11.2	1.869	0.519		Coal	
1850.4	185	11.2	1.764	0.496		Coal	
1850.6	179	10.8	1.736	0.530		Coal	
1850.8	170	10.9	1.784	0.642		Coal	
1851.0	166	10.9	1.842	0.734		Coal	
1851.2	167	10.2	1.864	0.731		Coal	
1851.4	171	10.2	1.899	0.643		Coal	
1851.6	176	10.0	1.978	0.538		Coal	
1851.8	177	10.1	2.071	0.508	0.941	0.000	1.000
1852.0	175	10.6	2.076	0.519	0.898	0.000	1.000
1852.2	171	10.7	1.989	0.532		Coal	
1852.4	169	10.9	1.972	0.538		Coal	
1852.6	168	10.8	2.057	0.519	0.793	0.000	1.000
1852.8	168	10.8	2.156	0.501	0.788	0.000	1.000
1853.0	170	11.3	2.213	0.482	0.822	0.000	1.000
1853.2	174	11.4	2.212	0.438	0.890	0.000	1.000
1853.4	174	11.3	2.139	0.444	0.883	0.000	1.000
1853.6	169	11.2	2.066	0.506	0.802	0.000	1.000
1853.8	164	11.3	2.064	0.527	0.740	0.000	1.000
1854.0	165	11.2	2.111	0.474	0.752	0.000	1.000
1854.2	171	11.5	2.181	0.460	0.846	0.000	1.000
1854.4	179	12.3	2.218	0.471	0.974	0.000	1.000
1854.6	180	12.4	2.177	0.444	1.000	0.000	1.000
1854.8	177	12.2	2.160	0.408	0.949	0.000	1.000
1855.0	176	11.7	2.165	0.399	0.931	0.000	1.000
1855.2	182	11.6	2.178	0.397	1.000	0.000	1.000
1855.4	187	11.6	2.241	0.374	1.000	0.000	1.000

PERCH_4 (page 6 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1855.6	188	11.7	2.282	0.367	1.000	0.000	1.000
1855.8	185	11.1	2.269	0.341	1.000	0.000	1.000
1856.0	182	11.5	2.258	0.316	1.000	0.000	1.000
1856.2	178	10.5	2.257	0.309	0.957	0.000	1.000
1856.4	175	10.3	2.307	0.326	0.906	0.000	1.000
1856.6	176	10.1	2.252	0.379	0.919	0.000	1.000
1856.8	179	10.4	2.224	0.446	0.978	0.000	1.000
1857.0	182	11.0	2.287	0.446	1.000	0.000	1.000
1857.2	184	10.5	2.315	0.390	1.000	0.000	1.000
1857.4	183	10.1	2.319	0.352	1.000	0.000	1.000
1857.6	182	10.1	2.309	0.360	1.000	0.000	1.000
1857.8	185	10.0	2.288	0.348	1.000	0.000	1.000
1858.0	185	9.6	2.262	0.350	1.000	0.000	1.000
1858.2	179	9.6	2.163	0.436		Coal	
1858.4	174	9.7	2.015	0.529		Coal	
1858.6	169	9.3	1.988	0.566	0.815	0.000	1.000
1858.8	167	9.5	2.146	0.502	0.786	0.000	1.000
1859.0	172	9.7	2.243	0.407	0.848	0.000	1.000
1859.2	178	9.8	2.213	0.350	0.958	0.000	1.000
1859.4	179	10.0	2.135	0.398	0.973	0.000	1.000
1859.6	177	10.0	1.990	0.484	0.937	0.000	1.000
1859.8	175	10.1	1.842	0.530	0.910	0.000	1.000
1860.0	175	10.1	1.696	0.539		Coal	
1860.2	175	10.1	1.587	0.565		Coal	
1860.4	170	11.6	1.520	0.586		Coal	
1860.6	160	12.2	1.480	0.595		Coal	
1860.8	151	12.2	1.445	0.640		Coal	
1861.0	141	13.5	1.416	0.721		Coal	
1861.2	126	14.5	1.424	0.770		Coal	
1861.4	110	15.7	1.445	0.805		Coal	
1861.6	98	17.4	1.448	0.857		Coal	
1861.8	100	18.9	1.439	0.873		Coal	
1862.0	100	25.1	1.419	0.812		Coal	
1862.2	94	29.3	1.409	0.740		Coal	
1862.4	90	32.7	1.413	0.755		Coal	
1862.6	89	36.6	1.414	0.879		Coal	
1862.8	89	42.0	1.409	1.039		Coal	
1863.0	87	42.9	1.401	0.931		Coal	
1863.2	83	42.4	1.409	0.730		Coal	
1863.4	78	50.4	1.420	0.714		Coal	
1863.6	77	49.5	1.415	0.886		Coal	
1863.8	79	51.5	1.407	0.962		Coal	
1864.0	81	56.1	1.390	0.919		Coal	
1864.2	82	66.5	1.383	0.899		Coal	
1864.4	82	73.4	1.392	0.843		Coal	
1864.6	81	64.5	1.396	0.827		Coal	
1864.8	79	63.7	1.382	0.916		Coal	
1865.0	76	59.7	1.374	1.000		Coal	
1865.2	74	67.6	1.383	1.006		Coal	
1865.4	71	63.7	1.391	1.030		Coal	
1865.6	69	62.3	1.391	1.004		Coal	
1865.8	67	70.1	1.375	0.917		Coal	
1866.0	65	62.9	1.345	0.821		Coal	
1866.2	64	73.3	1.351	0.781		Coal	
1866.4	65	69.9	1.373	0.720		Coal	
1866.6	68	62.7	1.382	0.655		Coal	

PERCH_4 (page 7 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
1866.8	70	68.6	1.384	0.681		Coal	
1867.0	72	68.0	1.369	0.848		Coal	
1867.2	73	77.2	1.354	0.858		Coal	
1867.4	75	69.4	1.356	0.702		Coal	
1867.6	83	61.4	1.361	0.661		Coal	
1867.8	102	59.1	1.381	0.669		Coal	
1868.0	122	56.7	1.477	0.624		Coal	
1868.2	138	51.2	1.695	0.542		Coal	
1868.4	151	48.0	2.017	0.497		Coal	
1868.6	163	43.6	2.230	0.419		Coal	
1868.8	167	40.4	2.297	0.326	0.783	0.000	1.000
1869.0	155	37.4	2.424	0.266	0.624	0.000	1.000
1869.2	134	30.8	2.539	0.217	0.419	0.038	0.875
1869.4	120	24.5	2.621	0.164	0.305	0.039	1.000
1869.6	119	19.6	2.647	0.115	0.302	0.007	1.000
1869.8	124	18.8	2.649	0.089	0.336	0.001	1.000
1870.0	127	18.8	2.673	0.085	0.357	0.001	1.000
1870.2	127	20.2	2.680	0.088	0.356	0.001	1.000
1870.4	126	25.4	2.688	0.084	0.350	0.001	1.000
1870.6	124	35.5	2.686	0.079	0.340	0.001	1.000
1870.8	120	42.0	2.714	0.080	0.311	0.001	1.000
1871.0	115	48.4	2.732	0.087	0.273	0.001	1.000
1871.2	110	55.3	2.696	0.097	0.243	0.001	1.000
1871.4	111	55.6	2.511	0.124	0.244	0.000	1.000
1871.6	116	56.6	2.195	0.170	0.280	0.000	0.000
1871.8	127	59.3	1.994	0.243		Coal	
1872.0	139	58.7	1.924	0.341		Coal	
1872.2	154	55.4	1.960	0.444		Coal	
1872.4	165	39.1	2.094	0.497	0.751	0.000	0.000
1872.6	167	27.1	2.162	0.503	0.784	0.000	1.000
1872.8	167	21.2	2.080	0.542	0.778	0.000	1.000
1873.0	167	15.4	1.942	0.587		Coal	
1873.2	170	11.9	1.935	0.581		Coal	
1873.4	171	8.4	2.023	0.548	0.845	0.000	0.000
1873.6	168	7.1	2.051	0.496	0.791	0.000	1.000
1873.8	160	7.4	2.074	0.484	0.681	0.000	1.000
1874.0	147	6.3	2.063	0.514	0.534	0.024	1.000
1874.2	128	5.5	2.075	0.501	0.365	0.303	0.808
1874.4	105	5.7	2.262	0.444	0.211	0.286	0.988
1874.6	87	4.5	2.346	0.397	0.110	0.269	1.000
1874.8	76	4.2	2.298	0.362	0.063	0.280	1.000
1875.0	75	4.3	2.280	0.327	0.058	0.271	1.000
1875.2	79	4.5	2.283	0.297	0.076	0.253	1.000
1875.4	84	4.9	2.316	0.271	0.098	0.226	1.000
1875.6	86	5.3	2.306	0.250	0.108	0.216	1.000
1875.8	85	5.8	2.293	0.231	0.102	0.213	1.000
1876.0	80	5.8	2.311	0.213	0.080	0.205	1.000
1876.2	77	5.6	2.297	0.207	0.066	0.212	1.000
1876.4	77	5.1	2.294	0.226	0.064	0.220	1.000
1876.6	79	6.0	2.306	0.257	0.072	0.228	1.000
1876.8	79	6.6	2.309	0.261	0.073	0.229	1.000
1877.0	76	5.8	2.311	0.248	0.060	0.225	1.000
1877.2	73	4.9	2.313	0.233	0.047	0.221	1.000
1877.4	73	4.2	2.311	0.231	0.048	0.221	1.000
1877.6	74	3.4	2.309	0.236	0.055	0.221	1.000
1877.8	77	3.0	2.313	0.238	0.064	0.219	1.000

PERCH_4 (page 8 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1878.0	80	2.9	2.318	0.231	0.077	0.211	1.000
1878.2	86	3.2	2.306	0.227	0.105	0.206	1.000
1878.4	92	4.0	2.262	0.234	0.138	0.217	1.000
1878.6	96	4.9	2.271	0.241	0.156	0.212	1.000
1878.8	96	5.5	2.332	0.242	0.156	0.192	1.000
1879.0	95	5.4	2.325	0.248	0.151	0.198	1.000
1879.2	95	5.1	2.287	0.256	0.151	0.214	1.000
1879.4	95	4.6	2.288	0.247	0.151	0.209	1.000
1879.6	94	4.8	2.300	0.239	0.149	0.202	1.000
1879.8	96	5.2	2.273	0.251	0.155	0.215	1.000
1880.0	100	5.4	2.255	0.260	0.177	0.220	1.000
1880.2	105	6.1	2.277	0.259	0.208	0.204	1.000
1880.4	107	7.0	2.324	0.275	0.223	0.193	1.000
1880.6	107	6.7	2.371	0.296	0.219	0.190	1.000
1880.8	106	6.5	2.377	0.304	0.216	0.193	1.000
1881.0	104	6.4	2.341	0.304	0.203	0.207	1.000
1881.2	98	6.1	2.317	0.280	0.167	0.212	1.000
1881.4	89	6.3	2.312	0.243	0.120	0.208	1.000
1881.6	83	7.1	2.298	0.227	0.093	0.212	1.000
1881.8	81	7.7	2.328	0.218	0.083	0.201	1.000
1882.0	81	8.1	2.374	0.203	0.082	0.179	1.000
1882.2	81	8.1	2.418	0.189	0.082	0.160	1.000
1882.4	81	8.0	2.461	0.175	0.082	0.141	1.000
1882.6	81	7.9	2.410	0.163	0.082	0.150	1.000
1882.8	81	7.4	2.343	0.176	0.082	0.178	1.000
1883.0	81	7.1	2.352	0.189	0.082	0.181	1.000
1883.2	81	6.5	2.346	0.180	0.082	0.179	1.000
1883.4	81	5.5	2.304	0.172	0.082	0.191	1.000
1883.6	81	5.7	2.291	0.170	0.081	0.195	1.000
1883.8	77	6.5	2.269	0.172	0.067	0.208	1.000
1884.0	76	6.6	2.261	0.176	0.059	0.214	1.000
1884.2	77	6.5	2.271	0.180	0.064	0.211	1.000
1884.4	77	5.6	2.260	0.179	0.066	0.214	1.000
1884.6	77	5.6	2.250	0.178	0.065	0.218	1.000
1884.8	83	6.1	2.219	0.190	0.092	0.228	1.000
1885.0	89	6.3	2.246	0.204	0.119	0.216	1.000
1885.2	87	6.4	2.252	0.208	0.110	0.217	1.000
1885.4	83	6.6	2.240	0.227	0.091	0.234	1.000
1885.6	78	6.7	2.206	0.253	0.070	0.262	1.000
1885.8	75	6.9	2.203	0.264	0.056	0.271	1.000
1886.0	75	7.0	2.210	0.259	0.059	0.265	1.000
1886.2	82	7.2	2.222	0.242	0.088	0.247	1.000
1886.4	89	7.3	2.237	0.232	0.119	0.231	1.000
1886.6	89	7.5	2.229	0.239	0.120	0.236	1.000
1886.8	86	7.6	2.209	0.241	0.105	0.248	1.000
1887.0	81	6.3	2.198	0.250	0.085	0.261	1.000
1887.2	76	5.4	2.200	0.263	0.061	0.270	1.000
1887.4	72	5.0	2.223	0.257	0.044	0.264	1.000
1887.6	73	5.1	2.235	0.261	0.048	0.260	1.000
1887.8	74	5.3	2.207	0.275	0.053	0.274	1.000
1888.0	74	5.4	2.197	0.274	0.052	0.278	1.000
1888.2	73	5.4	2.222	0.260	0.050	0.264	1.000
1888.4	73	5.4	2.227	0.257	0.050	0.261	1.000
1888.6	73	5.8	2.215	0.251	0.050	0.263	1.000
1888.8	73	6.4	2.200	0.246	0.048	0.267	1.000
1889.0	72	6.9	2.209	0.244	0.043	0.265	1.000

PERCH_4 (page 9 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
1889.2	70	7.2	2.243	0.244	0.035	0.254	1.000
1889.4	68	7.3	2.263	0.244	0.029	0.248	1.000
1889.6	67	7.9	2.259	0.244	0.026	0.250	1.000
1889.8	68	9.5	2.264	0.243	0.028	0.247	0.994
1890.0	68	7.7	2.262	0.235	0.030	0.244	1.000
1890.2	68	5.7	2.255	0.224	0.028	0.243	1.000
1890.4	67	5.9	2.257	0.223	0.026	0.243	1.000
1890.6	67	6.1	2.277	0.232	0.026	0.239	1.000
1890.8	66	6.2	2.307	0.238	0.023	0.231	1.000
1891.0	65	6.0	2.305	0.248	0.020	0.237	1.000
1891.2	66	5.3	2.277	0.261	0.021	0.251	1.000
1891.4	67	4.8	2.231	0.264	0.025	0.268	1.000
1891.6	69	4.0	2.185	0.261	0.033	0.282	1.000
1891.8	73	4.0	2.176	0.249	0.048	0.278	1.000
1892.0	77	4.5	2.181	0.245	0.064	0.270	1.000
1892.2	78	4.4	2.189	0.246	0.072	0.266	1.000
1892.4	77	3.9	2.182	0.241	0.064	0.268	1.000
1892.6	74	4.9	2.219	0.238	0.052	0.256	1.000
1892.8	73	5.8	2.262	0.235	0.049	0.240	1.000
1893.0	75	5.7	2.278	0.225	0.055	0.228	1.000
1893.2	75	5.5	2.295	0.203	0.055	0.214	1.000
1893.4	72	5.2	2.306	0.187	0.043	0.206	1.000
1893.6	71	4.7	2.296	0.184	0.042	0.209	1.000
1893.8	75	5.4	2.316	0.182	0.059	0.197	1.000
1894.0	80	5.7	2.324	0.181	0.078	0.189	1.000
1894.2	82	5.9	2.309	0.188	0.086	0.195	1.000
1894.4	80	5.7	2.304	0.200	0.079	0.203	1.000
1894.6	79	5.4	2.326	0.207	0.073	0.199	1.000
1894.8	77	5.2	2.272	0.204	0.067	0.220	1.000
1895.0	76	5.3	2.128	0.190		Coal	
1895.2	74	5.4	2.015	0.178		Coal	
1895.4	73	5.4	1.977	0.187		Coal	
1895.6	71	5.2	1.981	0.201		Coal	
1895.8	69	5.0	2.036	0.206		Coal	
1896.0	70	5.1	2.083	0.236	0.037	0.000	0.000
1896.2	67	6.2	2.133	0.280	0.025	0.311	1.000
1896.4	62	6.7	2.167	0.321	0.006	0.318	0.964
1896.6	60	5.9	2.179	0.343	0.001	0.324	1.000
1896.8	62	5.9	2.173	0.327	0.008	0.318	1.000
1897.0	62	6.1	2.170	0.311	0.007	0.312	1.000
1897.2	61	5.0	2.182	0.290	0.005	0.301	1.000
1897.4	60	5.0	2.199	0.269	0.000	0.288	1.000
1897.6	58	5.3	2.190	0.243	0.000	0.282	1.000
1897.8	57	5.3	2.200	0.237	0.000	0.276	1.000
1898.0	59	5.1	2.224	0.255	0.000	0.274	1.000
1898.2	61	5.1	2.228	0.276	0.003	0.279	1.000
1898.4	62	4.4	2.227	0.278	0.007	0.279	1.000
1898.6	60	3.9	2.269	0.265	0.000	0.261	1.000
1898.8	56	3.7	2.274	0.257	0.000	0.256	1.000
1899.0	56	3.7	2.261	0.264	0.000	0.263	1.000
1899.2	56	3.8	2.272	0.272	0.000	0.264	1.000
1899.4	55	3.7	2.260	0.279	0.000	0.271	1.000
1899.6	54	3.6	2.230	0.294	0.000	0.287	1.000
1899.8	56	3.7	2.223	0.289	0.000	0.287	1.000
1900.0	60	3.8	2.215	0.269	0.000	0.282	1.000
1900.2	64	3.8	2.230	0.256	0.016	0.268	1.000

PERCH_4 (page 10 of data listing)							
DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
1900.4	69	4.0	2.246	0.258	0.032	0.259	1.000
1900.6	71	4.1	2.221	0.262	0.042	0.267	1.000
1900.8	72	4.3	2.202	0.247	0.045	0.268	1.000
1901.0	74	4.9	2.212	0.253	0.052	0.264	1.000
1901.2	78	4.9	2.218	0.289	0.069	0.271	1.000
1901.4	83	4.5	2.232	0.293	0.094	0.262	1.000
1901.6	88	5.0	2.231	0.287	0.114	0.255	1.000
1901.8	88	5.5	2.209	0.304	0.118	0.268	1.000
1902.0	85	5.6	2.173	0.282	0.103	0.277	1.000
1902.2	82	4.9	2.170	0.258	0.087	0.274	1.000
1902.4	79	4.0	2.172	0.267	0.074	0.279	1.000
1902.6	77	3.8	2.151	0.274	0.063	0.293	1.000
1902.8	75	3.9	2.155	0.267	0.056	0.291	1.000
1903.0	77	4.0	2.200	0.271	0.064	0.273	1.000
1903.2	83	4.4	2.213	0.282	0.094	0.264	1.000
1903.4	91	5.1	2.188	0.275	0.129	0.263	1.000
1903.6	94	5.4	2.175	0.280	0.148	0.265	1.000
1903.8	95	5.4	2.205	0.304	0.154	0.261	1.000
1904.0	95	5.2	2.188	0.308	0.152	0.269	1.000
1904.2	94	5.1	2.133	0.281	0.147	0.281	1.000
1904.4	89	5.1	2.144	0.271	0.121	0.280	1.000
1904.6	86	5.1	2.177	0.291	0.108	0.278	1.000
1904.8	90	5.2	2.218	0.322	0.126	0.271	1.000
1905.0	94	5.4	2.228	0.319	0.145	0.262	1.000
1905.2	92	6.4	2.197	0.306	0.138	0.268	1.000
1905.4	87	7.2	2.153	0.284	0.111	0.284	0.946
1905.6	78	7.8	2.165	0.246	0.071	0.275	0.964
1905.8	76	8.3	2.185	0.221	0.062	0.261	0.992
1906.0	77	8.4	2.191	0.216	0.067	0.255	0.999
1906.2	75	8.0	2.185	0.237	0.056	0.268	0.989
1906.4	74	7.9	2.176	0.250	0.053	0.277	0.967
1906.6	74	8.0	2.166	0.248	0.054	0.280	0.955
1906.8	71	7.9	2.154	0.259	0.042	0.292	0.930
1907.0	70	7.7	2.165	0.286	0.039	0.297	0.930
1907.2	72	8.0	2.173	0.306	0.044	0.300	0.900
1907.4	74	8.6	2.163	0.304	0.053	0.301	0.858
1907.6	76	8.3	2.157	0.307	0.063	0.302	0.863
1907.8	80	7.5	2.155	0.311	0.077	0.301	0.904
1908.0	85	6.4	2.180	0.297	0.100	0.280	1.000
1908.2	90	4.9	2.197	0.283	0.126	0.263	1.000
1908.4	94	3.7	2.172	0.279	0.148	0.265	1.000
1908.6	98	3.2	2.172	0.278	0.168	0.260	1.000
1908.8	100	3.5	2.214	0.281	0.181	0.241	1.000
1909.0	101	4.6	2.226	0.291	0.185	0.241	1.000
1909.2	101	5.6	2.239	0.290	0.184	0.236	1.000
1909.4	104	4.5	2.234	0.276	0.205	0.226	1.000
1909.6	111	4.3	2.197	0.268	0.244	0.228	1.000
1909.8	113	4.8	2.174	0.278	0.257	0.237	1.000
1910.0	112	5.3	2.176	0.294	0.250	0.243	1.000
1910.2	112	5.5	2.179	0.308	0.253	0.246	1.000
1910.4	112	5.2	2.170	0.314	0.250	0.253	1.000
1910.6	109	4.8	2.169	0.316	0.236	0.257	1.000
1910.8	107	4.7	2.163	0.294	0.221	0.256	1.000
1911.0	107	4.1	2.182	0.269	0.219	0.240	1.000
1911.2	109	3.4	2.185	0.267	0.235	0.234	1.000
1911.4	114	4.5	2.205	0.281	0.265	0.224	1.000

PERCH_4 (page 11 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1911.6	116	5.4	2.228	0.296	0.280	0.218	1.000
1911.8	117	4.8	2.180	0.289	0.287	0.231	1.000
1912.0	119	4.1	2.138	0.297	0.299	0.247	1.000
1912.2	121	3.6	2.140	0.316	0.311	0.250	1.000
1912.4	119	3.6	2.159	0.303	0.297	0.241	1.000
1912.6	115	3.9	2.175	0.264	0.275	0.227	1.000
1912.8	120	5.5	2.205	0.255	0.310	0.203	1.000
1913.0	129	5.7	2.246	0.269	0.375	0.154	1.000
1913.2	135	5.8	2.285	0.287	0.423	0.102	1.000
1913.4	140	6.2	2.241	0.295	0.466	0.070	1.000
1913.6	146	6.7	2.241	0.307	0.528	0.017	1.000
1913.8	153	7.1	2.262	0.336	0.603	0.000	1.000
1914.0	159	6.0	2.272	0.326	0.671	0.000	1.000
1914.2	169	5.6	2.271	0.303	0.804	0.000	1.000
1914.4	178	5.9	2.257	0.310	0.957	0.000	1.000
1914.6	181	6.0	2.240	0.333	1.000	0.000	1.000
1914.8	185	6.3	2.236	0.321	1.000	0.000	1.000
1915.0	190	6.8	2.281	0.295	1.000	0.000	1.000
1915.2	188	7.5	2.376	0.301	1.000	0.000	1.000
1915.4	184	7.6	2.426	0.327	1.000	0.000	1.000
1915.6	179	7.4	2.449	0.333	0.978	0.000	1.000
1915.8	178	7.4	2.444	0.320	0.952	0.000	1.000
1916.0	182	7.7	2.430	0.324	1.000	0.000	1.000
1916.2	187	7.5	2.419	0.336	1.000	0.000	1.000
1916.4	183	7.3	2.429	0.352	1.000	0.000	1.000
1916.6	175	7.5	2.408	0.355	0.903	0.000	1.000
1916.8	169	7.9	2.380	0.336	0.806	0.000	1.000
1917.0	170	8.2	2.377	0.352	0.818	0.000	1.000
1917.2	171	8.2	2.376	0.422	0.832	0.000	1.000
1917.4	167	8.3	2.379	0.482	0.785	0.000	1.000
1917.6	167	8.4	2.367	0.509	0.779	0.000	1.000
1917.8	171	8.3	2.212	0.560		Coal	
1918.0	176	8.6	1.965	0.609		Coal	
1918.2	180	8.9	1.891	0.610		Coal	
1918.4	182	8.6	1.949	0.582		Coal	
1918.6	176	8.0	2.003	0.546		Coal	
1918.8	168	7.1	1.833	0.528		Coal	
1919.0	165	6.7	1.631	0.527		Coal	
1919.2	166	6.4	1.556	0.539		Coal	
1919.4	160	6.3	1.551	0.566		Coal	
1919.6	147	5.5	1.586	0.590		Coal	
1919.8	142	5.2	1.640	0.602		Coal	
1920.0	138	6.6	1.722	0.600		Coal	
1920.2	121	9.4	1.853	0.569		Coal	
1920.4	105	13.4	1.992	0.518		Coal	
1920.6	110	18.5	2.079	0.479		Coal	
1920.8	139	19.3	2.116	0.468	0.458	0.128	0.661
1921.0	169	9.8	2.123	0.471	0.812	0.000	1.000
1921.2	196	7.9	2.127	0.477	1.000	0.000	1.000
1921.4	216	7.1	2.133	0.488	1.000	0.000	1.000
1921.6	225	9.6	2.139	0.503	1.000	0.000	1.000
1921.8	217	9.9	2.155	0.511	1.000	0.000	1.000
1922.0	205	7.3	2.179	0.514	1.000	0.000	1.000
1922.2	192	6.0	2.195	0.530	1.000	0.000	1.000
1922.4	172	6.0	2.186	0.536	0.850	0.000	1.000
1922.6	155	6.7	2.167	0.550	0.623	0.000	1.000

PERCH_4 (page 12 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1922.8	151	10.0	2.164	0.611	0.576	0.000	1.000
1923.0	157	9.8	2.184	0.689	0.654	0.000	1.000
1923.2	163	14.2	2.201	0.677	0.724	0.000	1.000
1923.4	166	14.8	2.207	0.617	0.762	0.000	1.000
1923.6	155	13.8	2.218	0.549	0.625	0.000	1.000
1923.8	140	14.9	2.229	0.502	0.469	0.103	0.746
1924.0	134	15.7	2.230	0.469	0.420	0.165	0.607
1924.2	140	15.4	2.226	0.467	0.466	0.102	0.738
1924.4	147	12.0	2.230	0.483	0.538	0.014	1.000
1924.6	153	10.5	2.229	0.491	0.605	0.000	1.000
1924.8	159	12.1	2.203	0.516	0.669	0.000	1.000
1925.0	163	17.9	2.124	0.564	0.729	0.000	1.000
1925.2	165	16.0	2.052	0.575		Coal	
1925.4	161	16.7	2.030	0.536		Coal	
1925.6	157	18.7	2.083	0.538		Coal	
1925.8	153	18.7	2.115	0.556		Coal	
1926.0	147	20.6	1.994	0.547		Coal	
1926.2	141	22.4	1.762	0.534		Coal	
1926.4	136	22.7	1.560	0.568		Coal	
1926.6	131	14.9	1.441	0.625		Coal	
1926.8	126	9.0	1.379	0.631		Coal	
1927.0	122	6.8	1.403	0.626		Coal	
1927.2	118	6.2	1.542	0.648		Coal	
1927.4	114	6.6	1.731	0.597		Coal	
1927.6	110	7.1	1.984	0.493		Coal	
1927.8	108	6.9	2.207	0.413		Coal	
1928.0	109	6.4	2.244	0.364	0.232	0.255	1.000
1928.2	112	6.0	2.204	0.330	0.251	0.248	1.000
1928.4	115	6.1	2.210	0.290	0.271	0.224	1.000
1928.6	118	6.6	2.248	0.262	0.292	0.194	1.000
1928.8	121	7.1	2.288	0.243	0.312	0.167	1.000
1929.0	124	7.4	2.319	0.233	0.340	0.146	1.000
1929.2	131	7.3	2.320	0.243	0.389	0.111	1.000
1929.4	138	7.1	2.295	0.272	0.451	0.071	1.000
1929.6	145	6.9	2.268	0.293	0.517	0.024	1.000
1929.8	155	6.8	2.247	0.300	0.627	0.000	1.000
1930.0	165	6.5	2.232	0.295	0.756	0.000	1.000
1930.2	169	5.8	2.247	0.306	0.812	0.000	1.000
1930.4	172	5.4	2.292	0.331	0.859	0.000	1.000
1930.6	183	5.0	2.351	0.355	1.000	0.000	1.000
1930.8	201	4.6	2.386	0.352	1.000	0.000	1.000
1931.0	214	4.4	2.403	0.334	1.000	0.000	1.000
1931.2	209	4.6	2.379	0.296	1.000	0.000	1.000
1931.4	180	4.9	2.373	0.253	0.999	0.000	1.000
1931.6	145	5.2	2.368	0.221	0.517	0.013	1.000
1931.8	116	5.6	2.316	0.201	0.282	0.148	1.000
1932.0	97	6.0	2.269	0.197	0.162	0.194	1.000
1932.2	86	6.5	2.268	0.198	0.105	0.209	1.000
1932.4	80	7.1	2.279	0.207	0.080	0.215	1.000
1932.6	76	7.8	2.273	0.210	0.063	0.222	1.000
1932.8	73	8.2	2.262	0.199	0.049	0.226	1.000
1933.0	76	9.0	2.253	0.197	0.060	0.225	1.000
1933.2	79	9.6	2.290	0.203	0.075	0.210	1.000
1933.4	82	9.7	2.345	0.206	0.089	0.188	1.000
1933.6	89	9.2	2.400	0.215	0.123	0.168	1.000
1933.8	102	5.9	2.397	0.233	0.188	0.162	1.000

PERCH_4 (page 13 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1934.0	120	6.5	2.350	0.249	0.304	0.153	1.000
1934.2	137	9.2	2.301	0.258	0.439	0.077	1.000
1934.4	141	8.3	2.300	0.272	0.479	0.048	1.000
1934.6	141	5.7	2.346	0.284	0.479	0.046	1.000
1934.8	140	5.9	2.409	0.292	0.468	0.048	1.000
1935.0	144	7.8	2.462	0.307	0.508	0.020	1.000
1935.2	152	11.9	2.494	0.304	0.590	0.000	1.000
1935.4	155	13.7	2.509	0.279	0.626	0.000	1.000
1935.6	151	13.4	2.487	0.249	0.579	0.000	1.000
1935.8	148	13.1	2.448	0.240	0.546	0.001	1.000
1936.0	149	12.2	2.426	0.246	0.563	0.000	1.000
1936.2	152	11.9	2.409	0.247	0.589	0.000	1.000
1936.4	151	11.3	2.380	0.248	0.582	0.000	1.000
1936.6	148	9.5	2.338	0.253	0.548	0.001	1.000
1936.8	140	7.1	2.297	0.252	0.471	0.051	1.000
1937.0	131	6.1	2.277	0.252	0.395	0.120	1.000
1937.2	127	6.7	2.268	0.271	0.357	0.170	1.000
1937.4	132	8.5	2.221	0.305	0.396	0.151	0.912
1937.6	141	11.0	2.200	0.358	0.477	0.075	0.853
1937.8	147	12.8	2.223	0.415	0.536	0.015	1.000
1938.0	145	13.4	2.237	0.404	0.518	0.032	0.991
1938.2	136	12.0	2.276	0.343	0.432	0.110	0.797
1938.4	123	10.2	2.287	0.302	0.327	0.191	0.865
1938.6	115	8.2	2.261	0.285	0.269	0.206	1.000
1938.8	108	7.2	2.257	0.278	0.230	0.213	1.000
1939.0	102	7.4	2.237	0.274	0.193	0.227	1.000
1939.2	101	7.7	2.204	0.270	0.186	0.240	0.991
1939.4	102	7.1	2.196	0.275	0.191	0.244	1.000
1939.6	103	6.0	2.210	0.296	0.198	0.245	1.000
1939.8	105	5.3	2.237	0.286	0.207	0.229	1.000
1940.0	107	6.2	2.277	0.253	0.223	0.197	1.000
1940.2	110	8.2	2.321	0.226	0.237	0.168	1.000
1940.4	113	8.9	2.350	0.201	0.261	0.142	1.000
1940.6	120	9.0	2.375	0.180	0.304	0.113	1.000
1940.8	124	10.0	2.394	0.172	0.337	0.095	1.000
1941.0	126	10.2	2.415	0.171	0.351	0.084	1.000
1941.2	129	9.5	2.423	0.168	0.374	0.065	1.000
1941.4	133	9.7	2.412	0.163	0.412	0.046	1.000
1941.6	143	10.6	2.395	0.156	0.497	0.013	1.000
1941.8	152	11.0	2.406	0.144	0.592	0.000	1.000
1942.0	154	13.3	2.435	0.134	0.611	0.000	1.000
1942.2	140	15.2	2.425	0.123	0.468	0.013	1.000
1942.4	123	15.1	2.452	0.116	0.331	0.053	1.000
1942.6	109	15.5	2.507	0.105	0.232	0.055	1.000
1942.8	98	15.4	2.522	0.086	0.166	0.058	1.000
1943.0	90	15.6	2.531	0.074	0.127	0.059	1.000
1943.2	87	18.0	2.580	0.064	0.114	0.042	1.000
1943.4	86	22.4	2.608	0.051	0.105	0.029	1.000
1943.6	83	33.0	2.626	0.040	0.093	0.022	1.000
1943.8	81	39.3	2.644	0.033	0.081	0.015	1.000
1944.0	80	45.5	2.657	0.028	0.077	0.010	1.000
1944.2	81	74.8	2.673	0.025	0.083	0.003	1.000
1944.4	82	94.3	2.673	0.024	0.089	0.001	1.000
1944.6	80	98.1	2.662	0.026	0.077	0.008	1.000
1944.8	77	99.7	2.671	0.025	0.066	0.008	1.000
1945.0	75	87.4	2.677	0.021	0.057	0.006	1.000

PERCH_4 (page 14 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1945.2	76	149.0	2.692	0.018	0.059	0.001	1.000
1945.4	76	151.5	2.732	0.018	0.063	0.001	1.000
1945.6	76	129.2	2.741	0.017	0.059	0.001	1.000
1945.8	74	128.4	2.717	0.015	0.051	0.001	1.000
1946.0	72	145.2	2.709	0.014	0.043	0.001	1.000
1946.2	71	184.1	2.711	0.013	0.040	0.001	1.000
1946.4	70	146.2	2.744	0.013	0.038	0.001	1.000
1946.6	71	163.1	2.787	0.013	0.041	0.001	1.000
1946.8	73	186.7	2.757	0.014	0.049	0.001	1.000
1947.0	74	226.3	2.730	0.014	0.051	0.001	1.000
1947.2	72	168.3	2.734	0.013	0.045	0.001	1.000
1947.4	71	224.6	2.716	0.012	0.041	0.001	1.000
1947.6	69	217.2	2.714	0.012	0.032	0.001	1.000
1947.8	66	167.4	2.726	0.014	0.021	0.001	1.000
1948.0	63	163.1	2.723	0.018	0.011	0.006	1.000
1948.2	63	233.5	2.717	0.027	0.010	0.013	1.000
1948.4	66	239.8	2.673	0.040	0.021	0.028	1.000
1948.6	71	145.3	2.610	0.051	0.040	0.045	1.000
1948.8	74	121.1	2.617	0.053	0.053	0.040	1.000
1949.0	76	101.1	2.646	0.050	0.062	0.030	1.000
1949.2	77	96.0	2.631	0.044	0.065	0.029	1.000
1949.4	74	82.7	2.620	0.039	0.053	0.033	1.000
1949.6	71	72.7	2.635	0.038	0.041	0.031	1.000
1949.8	69	66.2	2.638	0.044	0.033	0.035	1.000
1950.0	71	66.1	2.601	0.052	0.042	0.048	1.000
1950.2	77	65.7	2.570	0.057	0.066	0.054	1.000
1950.4	83	77.6	2.588	0.061	0.090	0.044	1.000
1950.6	84	82.9	2.593	0.057	0.096	0.039	1.000
1950.8	83	62.7	2.612	0.050	0.091	0.031	1.000
1951.0	79	44.3	2.634	0.048	0.075	0.028	1.000
1951.2	76	31.9	2.605	0.052	0.060	0.042	1.000
1951.4	75	30.5	2.540	0.064	0.058	0.069	1.000
1951.6	79	34.1	2.450	0.093	0.072	0.108	0.990
1951.8	85	35.6	2.376	0.132	0.102	0.144	0.700
1952.0	96	27.2	2.289	0.172	0.156	0.178	0.611
1952.2	104	18.0	2.234	0.206	0.203	0.201	0.666
1952.4	103	12.2	2.200	0.226	0.195	0.223	0.793
1952.6	98	12.5	2.183	0.245	0.169	0.243	0.747
1952.8	91	13.8	2.203	0.250	0.131	0.247	0.727
1953.0	90	13.4	2.224	0.242	0.125	0.238	0.774
1953.2	92	14.1	2.236	0.248	0.135	0.233	0.755
1953.4	93	13.1	2.257	0.246	0.141	0.223	0.812
1953.6	91	11.0	2.285	0.233	0.133	0.209	0.963
1953.8	89	9.1	2.303	0.223	0.121	0.202	1.000
1954.0	88	7.9	2.322	0.214	0.116	0.193	1.000
1954.2	87	7.0	2.321	0.202	0.113	0.189	1.000
1954.4	89	5.5	2.312	0.199	0.120	0.190	1.000
1954.6	90	4.3	2.308	0.213	0.128	0.195	1.000
1954.8	90	4.4	2.276	0.219	0.124	0.209	1.000
1955.0	88	4.6	2.228	0.215	0.116	0.228	1.000
1955.2	85	4.6	2.209	0.217	0.100	0.240	1.000
1955.4	81	4.8	2.204	0.234	0.084	0.252	1.000
1955.6	80	5.2	2.191	0.259	0.080	0.268	1.000
1955.8	82	5.9	2.189	0.279	0.085	0.274	1.000
1956.0	82	6.8	2.191	0.267	0.087	0.269	1.000
1956.2	81	7.2	2.181	0.248	0.082	0.267	1.000

PERCH_4 (page 15 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
1956.4	81	7.5	2.185	0.242	0.085	0.263	1.000
1956.6	87	7.6	2.211	0.238	0.111	0.245	1.000
1956.8	95	6.7	2.248	0.224	0.149	0.216	1.000
1957.0	101	5.1	2.294	0.214	0.187	0.186	1.000
1957.2	106	4.3	2.331	0.212	0.215	0.164	1.000
1957.4	103	3.3	2.357	0.209	0.199	0.158	1.000
1957.6	94	2.3	2.324	0.202	0.147	0.180	1.000
1957.8	85	3.6	2.276	0.208	0.101	0.211	1.000
1958.0	81	5.0	2.260	0.224	0.081	0.228	1.000
1958.2	80	4.9	2.268	0.228	0.080	0.227	1.000
1958.4	82	4.7	2.299	0.205	0.088	0.205	1.000
1958.6	84	4.8	2.318	0.194	0.096	0.191	1.000
1958.8	85	5.3	2.320	0.192	0.103	0.188	1.000
1959.0	85	5.3	2.311	0.186	0.103	0.189	1.000
1959.2	88	5.0	2.298	0.189	0.114	0.192	1.000
1959.4	87	5.3	2.289	0.205	0.109	0.203	1.000
1959.6	84	6.9	2.288	0.212	0.097	0.209	1.000
1959.8	81	10.9	2.319	0.207	0.084	0.199	1.000
1960.0	80	14.2	2.378	0.195	0.077	0.175	1.000
1960.2	82	15.7	2.338	0.180	0.089	0.180	0.946
1960.4	85	16.2	2.272	0.175	0.099	0.200	0.835
1960.6	85	15.5	2.264	0.174	0.101	0.202	0.846
1960.8	82	14.0	2.345	0.171	0.088	0.174	1.000
1961.0	79	12.3	2.431	0.168	0.074	0.148	1.000
1961.2	81	10.6	2.447	0.155	0.084	0.134	1.000
1961.4	83	9.5	2.427	0.136	0.094	0.129	1.000
1961.6	82	8.8	2.423	0.132	0.090	0.130	1.000
1961.8	80	8.3	2.429	0.137	0.078	0.133	1.000
1962.0	81	8.6	2.422	0.135	0.084	0.134	1.000
1962.2	82	9.8	2.434	0.138	0.087	0.130	1.000
1962.4	81	12.1	2.436	0.140	0.085	0.130	1.000
1962.6	81	15.4	2.449	0.141	0.084	0.127	1.000
1962.8	80	17.3	2.500	0.139	0.080	0.112	1.000
1963.0	78	17.7	2.526	0.125	0.068	0.101	1.000
1963.2	78	21.1	2.439	0.113	0.070	0.122	1.000
1963.4	80	24.8	2.196	0.113	0.077	0.000	0.000
1963.6	76	28.1	1.908	0.128		Coal	
1963.8	69	34.3	1.658	0.170		Coal	
1964.0	61	40.0	1.469	0.244		Coal	
1964.2	54	48.5	1.369	0.362		Coal	
1964.4	49	43.6	1.340	0.473		Coal	
1964.6	47	38.6	1.324	0.548		Coal	
1964.8	45	55.7	1.313	0.630		Coal	
1965.0	43	53.3	1.308	0.724		Coal	
1965.2	43	44.3	1.309	0.720		Coal	
1965.4	43	48.0	1.311	0.653		Coal	
1965.6	42	48.2	1.312	0.615		Coal	
1965.8	42	55.4	1.318	0.628		Coal	
1966.0	44	75.3	1.321	0.679		Coal	
1966.2	45	94.3	1.321	0.756		Coal	
1966.4	49	36.9	1.322	0.775		Coal	
1966.6	56	15.6	1.321	0.769		Coal	
1966.8	62	30.4	1.330	0.810		Coal	
1967.0	65	309.1	1.346	0.758		Coal	
1967.2	68	673.0	1.361	0.665		Coal	
1967.4	76	28.0	1.362	0.728		Coal	

PERCH_4 (page 16 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1967.6	84	13.2	1.368	0.818		Coal	
1967.8	87	15.4	1.386	0.828		Coal	
1968.0	82	9.2	1.405	0.777		Coal	
1968.2	76	161.5	1.413	0.779		Coal	
1968.4	71	676.4	1.410	0.677		Coal	
1968.6	68	14.8	1.401	0.664		Coal	
1968.8	65	30.0	1.389	0.680		Coal	
1969.0	62	26.2	1.381	0.626		Coal	
1969.2	63	7.8	1.375	0.581		Coal	
1969.4	65	8.4	1.366	0.638		Coal	
1969.6	67	7.8	1.371	0.786		Coal	
1969.8	66	5.9	1.383	0.967		Coal	
1970.0	70	38.0	1.389	0.961		Coal	
1970.2	81	851.1	1.399	0.714		Coal	
1970.4	85	946.2	1.411	0.642		Coal	
1970.6	85	294.6	1.417	0.671		Coal	
1970.8	86	147.7	1.403	0.691		Coal	
1971.0	88	965.2	1.416	0.710		Coal	
1971.2	86	1000.0	1.429	0.739		Coal	
1971.4	78	886.3	1.426	0.760		Coal	
1971.6	73	90.1	1.414	0.773		Coal	
1971.8	75	28.0	1.397	0.761		Coal	
1972.0	74	16.4	1.373	0.757		Coal	
1972.2	71	8.2	1.371	0.700		Coal	
1972.4	70	5.6	1.382	0.654		Coal	
1972.6	70	5.6	1.383	0.660		Coal	
1972.8	73	13.1	1.380	0.718		Coal	
1973.0	76	17.0	1.384	0.735		Coal	
1973.2	77	675.0	1.391	0.746		Coal	
1973.4	75	213.6	1.392	0.812		Coal	
1973.6	74	19.2	1.387	0.715		Coal	
1973.8	72	16.5	1.381	0.633		Coal	
1974.0	71	16.7	1.379	0.682		Coal	
1974.2	70	19.9	1.373	0.787		Coal	
1974.4	69	20.1	1.360	0.838		Coal	
1974.6	68	37.8	1.356	0.784		Coal	
1974.8	66	22.0	1.357	0.788		Coal	
1975.0	64	18.9	1.353	0.803		Coal	
1975.2	63	19.1	1.341	0.740		Coal	
1975.4	62	23.6	1.334	0.716		Coal	
1975.6	60	20.0	1.330	0.741		Coal	
1975.8	57	46.2	1.325	0.788		Coal	
1976.0	59	137.8	1.327	0.825		Coal	
1976.2	66	16.6	1.353	0.725		Coal	
1976.4	70	13.5	1.373	0.657		Coal	
1976.6	69	20.7	1.369	0.667		Coal	
1976.8	67	19.3	1.358	0.704		Coal	
1977.0	67	12.2	1.359	0.725		Coal	
1977.2	69	6.9	1.371	0.764		Coal	
1977.4	70	6.3	1.375	0.786		Coal	
1977.6	71	33.1	1.370	0.733		Coal	
1977.8	74	50.9	1.369	0.738		Coal	
1978.0	76	23.9	1.377	0.825		Coal	
1978.2	75	26.8	1.388	0.836		Coal	
1978.4	73	120.5	1.395	0.818		Coal	
1978.6	71	690.3	1.408	0.941		Coal	

PERCH_4 (page 17 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
1978.8	72	52.8	1.406	1.048		Coal	
1979.0	73	21.0	1.386	0.948		Coal	
1979.2	74	229.6	1.369	0.726		Coal	
1979.4	73	725.4	1.359	0.685		Coal	
1979.6	72	97.8	1.349	0.874		Coal	
1979.8	69	22.2	1.347	1.211		Coal	
1980.0	66	30.5	1.347	0.948		Coal	
1980.2	64	20.4	1.333	0.932		Coal	
1980.4	62	60.7	1.325	1.065		Coal	
1980.6	58	98.7	1.345	1.188		Coal	
1980.8	55	20.3	1.374	0.887		Coal	
1981.0	59	47.1	1.388	0.682		Coal	
1981.2	66	36.9	1.394	0.624		Coal	
1981.4	69	48.2	1.388	0.611		Coal	
1981.6	69	18.3	1.381	0.611		Coal	
1981.8	70	244.8	1.402	0.597		Coal	
1982.0	71	395.0	1.401	0.574		Coal	
1982.2	73	35.6	1.394	0.555		Coal	
1982.4	77	19.0	1.384	0.550		Coal	
1982.6	83	14.6	1.374	0.552		Coal	
1982.8	86	161.3	1.377	0.565		Coal	
1983.0	81	62.6	1.392	0.595		Coal	
1983.2	76	11.7	1.401	0.652		Coal	
1983.4	75	55.5	1.397	0.727		Coal	
1983.6	77	38.1	1.387	0.779		Coal	
1983.8	82	25.0	1.384	0.766		Coal	
1984.0	105	27.4	1.388	0.722		Coal	
1984.2	151	24.8	1.392	0.674		Coal	
1984.4	190	27.2	1.393	0.653		Coal	
1984.6	209	21.4	1.394	0.604		Coal	
1984.8	216	15.6	1.394	0.535		Coal	
1985.0	219	14.8	1.393	0.493		Coal	
1985.2	215	16.3	1.508	0.453		Coal	
1985.4	202	15.4	2.005	0.389		Coal	
1985.6	189	13.4	2.434	0.361	1.000	0.000	0.000
1985.8	181	12.6	2.511	0.348	1.000	0.000	1.000
1986.0	171	12.2	2.509	0.325	0.844	0.000	1.000
1986.2	161	11.1	2.472	0.293	0.695	0.000	1.000
1986.4	157	8.1	2.431	0.268	0.651	0.000	1.000
1986.6	154	7.8	2.413	0.264	0.615	0.000	1.000
1986.8	145	9.7	2.367	0.269	0.518	0.017	1.000
1987.0	138	9.2	2.325	0.270	0.454	0.064	1.000
1987.2	136	8.3	2.315	0.270	0.431	0.084	1.000
1987.4	134	8.7	2.304	0.261	0.414	0.099	1.000
1987.6	132	9.5	2.297	0.245	0.398	0.110	1.000
1987.8	130	10.2	2.303	0.229	0.385	0.114	1.000
1988.0	128	9.8	2.291	0.238	0.370	0.135	1.000
1988.2	127	8.6	2.264	0.248	0.356	0.162	1.000
1988.4	123	8.0	2.261	0.249	0.332	0.175	1.000
1988.6	119	6.6	2.274	0.253	0.301	0.179	1.000
1988.8	115	5.0	2.289	0.261	0.272	0.185	1.000
1989.0	111	3.8	2.290	0.257	0.245	0.190	1.000
1989.2	107	1.8	2.307	0.263	0.222	0.193	1.000
1989.4	105	1.4	2.280	0.300	0.207	0.222	1.000
1989.6	103	1.4	2.229	0.344	0.198	0.260	1.000
1989.8	102	1.5	2.139	0.345	0.190	0.291	1.000

PERCH_4 (page 18 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
1990.0	101	1.7	2.127	0.358	0.184	0.302	1.000
1990.2	98	1.7	2.234	0.335	0.167	0.262	1.000
1990.4	86	1.7	2.260	0.295	0.107	0.251	1.000
1990.6	74	1.9	2.259	0.275	0.052	0.256	1.000
1990.8	68	2.3	2.248	0.270	0.030	0.263	1.000
1991.0	67	2.4	2.267	0.269	0.025	0.257	1.000
1991.2	67	2.4	2.276	0.262	0.025	0.251	1.000
1991.4	68	2.5	2.283	0.250	0.030	0.242	1.000
1991.6	69	2.5	2.323	0.243	0.035	0.226	1.000
1991.8	70	2.6	2.339	0.255	0.038	0.226	1.000
1992.0	72	2.6	2.330	0.270	0.045	0.234	1.000
1992.2	74	2.6	2.335	0.261	0.052	0.227	1.000
1992.4	77	2.6	2.355	0.233	0.065	0.204	1.000
1992.6	80	2.6	2.383	0.227	0.081	0.189	1.000
1992.8	83	2.6	2.388	0.239	0.094	0.190	1.000
1993.0	87	2.6	2.381	0.257	0.110	0.197	1.000
1993.2	88	2.6	2.349	0.266	0.117	0.209	1.000
1993.4	87	3.0	2.327	0.263	0.112	0.215	1.000
1993.6	87	5.9	2.334	0.256	0.109	0.210	1.000
1993.8	85	8.5	2.393	0.251	0.101	0.193	1.000
1994.0	82	8.7	2.457	0.222	0.087	0.165	1.000
1994.2	81	8.1	2.452	0.186	0.081	0.149	1.000
1994.4	80	6.6	2.418	0.172	0.081	0.152	1.000
1994.6	83	6.1	2.392	0.180	0.092	0.160	1.000
1994.8	91	6.6	2.349	0.194	0.132	0.171	1.000
1995.0	96	6.4	2.327	0.201	0.157	0.176	1.000
1995.2	95	6.5	2.315	0.195	0.153	0.179	1.000
1995.4	96	7.5	2.342	0.188	0.157	0.165	1.000
1995.6	99	7.6	2.406	0.190	0.171	0.141	1.000
1995.8	98	7.2	2.429	0.191	0.169	0.136	1.000
1996.0	97	6.2	2.371	0.182	0.162	0.151	1.000
1996.2	102	5.3	2.387	0.175	0.188	0.136	1.000
1996.4	111	4.4	2.467	0.177	0.249	0.098	1.000
1996.6	122	3.9	2.423	0.185	0.323	0.096	1.000
1996.8	127	4.6	2.232	0.242	0.361	0.165	1.000
1997.0	129	6.3	1.954	0.338		Coal	
1997.2	135	9.4	1.660	0.377		Coal	
1997.4	148	10.4	1.563	0.354		Coal	
1997.6	163	10.8	1.667	0.458		Coal	
1997.8	177	14.0	1.983	0.569		Coal	
1998.0	186	17.0	2.292	0.488		Coal	
1998.2	188	11.4	2.383	0.425	1.000	0.000	1.000
1998.4	191	10.9	2.416	0.383	1.000	0.000	1.000
1998.6	195	9.9	2.456	0.370	1.000	0.000	1.000
1998.8	198	8.8	2.479	0.415	1.000	0.000	1.000
1999.0	193	10.8	2.443	0.470	1.000	0.000	1.000
1999.2	190	11.7	2.347	0.560	1.000	0.000	1.000
1999.4	191	7.7	2.268	0.696	1.000	0.000	1.000
1999.6	188	6.1	2.142	0.661		Coal	
1999.8	177	5.2	2.012	0.649		Coal	
2000.0	169	4.9	1.849	0.641		Coal	
2000.2	166	4.7	1.767	0.639		Coal	
2000.4	171	4.6	1.825	0.619		Coal	
2000.6	181	4.5	1.926	0.531		Coal	
2000.8	191	4.5	1.972	0.466		Coal	
2001.0	196	5.5	2.087	0.507		Coal	

PERCH_4 (page 19 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
2001.2	194	6.5	2.278	0.548	1.000	0.000	1.000
2001.4	189	7.1	2.382	0.506	1.000	0.000	1.000
2001.6	189	9.0	2.448	0.426	1.000	0.000	1.000
2001.8	195	9.1	2.487	0.378	1.000	0.000	1.000
2002.0	201	8.5	2.509	0.354	1.000	0.000	1.000
2002.2	200	8.7	2.500	0.332	1.000	0.000	1.000
2002.4	202	9.6	2.447	0.311	1.000	0.000	1.000
2002.6	208	9.2	2.408	0.290	1.000	0.000	1.000
2002.8	211	9.3	2.376	0.281	1.000	0.000	1.000
2003.0	206	8.9	2.336	0.284	1.000	0.000	1.000
2003.2	196	8.2	2.271	0.294	1.000	0.000	1.000
2003.4	186	6.1	2.213	0.320	1.000	0.000	1.000
2003.6	173	5.8	2.177	0.337	0.871	0.000	1.000
2003.8	155	7.4	2.168	0.307	0.624	0.000	1.000
2004.0	130	8.4	2.194	0.275	0.381	0.166	0.925
2004.2	108	8.9	2.226	0.267	0.224	0.221	0.943
2004.4	110	8.5	2.253	0.254	0.242	0.202	1.000
2004.6	126	7.7	2.297	0.233	0.348	0.151	1.000
2004.8	114	7.5	2.313	0.223	0.267	0.162	1.000
2005.0	87	6.5	2.281	0.234	0.114	0.216	1.000
2005.2	86	4.6	2.255	0.259	0.108	0.236	1.000
2005.4	84	3.2	2.307	0.275	0.098	0.230	1.000
2005.6	82	2.6	2.350	0.283	0.086	0.224	1.000
2005.8	81	2.2	2.334	0.275	0.085	0.225	1.000
2006.0	82	1.8	2.303	0.261	0.087	0.227	1.000
2006.2	82	1.5	2.299	0.253	0.087	0.225	1.000
2006.4	81	1.5	2.310	0.249	0.083	0.220	1.000
2006.6	82	1.5	2.283	0.246	0.087	0.227	1.000
2006.8	85	1.3	2.260	0.253	0.104	0.233	1.000
2007.0	88	1.1	2.282	0.263	0.116	0.227	1.000
2007.2	86	0.9	2.269	0.265	0.106	0.235	1.000
2007.4	82	1.1	2.260	0.250	0.090	0.236	1.000
2007.6	85	1.6	2.280	0.244	0.101	0.223	1.000
2007.8	89	4.4	2.326	0.239	0.119	0.202	1.000
2008.0	89	2.2	2.334	0.244	0.121	0.202	1.000
2008.2	86	2.2	2.304	0.252	0.106	0.218	1.000
2008.4	80	2.9	2.255	0.251	0.080	0.241	1.000
2008.6	79	4.0	2.226	0.255	0.075	0.254	1.000
2008.8	83	5.0	2.216	0.262	0.094	0.256	1.000
2009.0	82	5.1	2.231	0.266	0.090	0.253	1.000
2009.2	77	5.2	2.255	0.264	0.066	0.249	1.000
2009.4	77	5.1	2.268	0.255	0.065	0.241	1.000
2009.6	76	4.7	2.278	0.255	0.062	0.239	1.000
2009.8	75	4.5	2.274	0.254	0.058	0.240	1.000
2010.0	76	3.5	2.307	0.241	0.060	0.223	1.000
2010.2	77	3.0	2.296	0.232	0.066	0.222	1.000
2010.4	78	2.7	2.241	0.229	0.070	0.240	1.000
2010.6	82	2.5	2.219	0.244	0.088	0.250	1.000
2010.8	83	2.3	2.227	0.266	0.094	0.253	1.000
2011.0	80	2.2	2.243	0.264	0.081	0.249	1.000
2011.2	81	2.3	2.228	0.249	0.084	0.249	1.000
2011.4	85	2.4	2.253	0.241	0.102	0.232	1.000
2011.6	84	2.3	2.275	0.244	0.095	0.227	1.000
2011.8	78	2.2	2.249	0.244	0.069	0.243	1.000
2012.0	77	2.1	2.283	0.238	0.066	0.229	1.000
2012.2	81	1.8	2.295	0.233	0.082	0.219	1.000

PERCH_4 (page 20 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
2012.4	85	1.2	2.284	0.240	0.100	0.221	1.000
2012.6	85	0.9	2.308	0.246	0.103	0.215	1.000
2012.8	85	0.7	2.301	0.239	0.100	0.214	1.000
2013.0	83	0.6	2.223	0.247	0.091	0.248	1.000
2013.2	80	0.7	2.145	0.269	0.077	0.290	1.000
2013.4	77	0.9	2.147	0.298	0.064	0.303	1.000
2013.6	75	1.7	2.221	0.341	0.057	0.296	1.000
2013.8	77	2.6	2.246	0.356	0.066	0.292	1.000
2014.0	83	3.2	2.268	0.316	0.093	0.262	1.000
2014.2	89	3.7	2.265	0.268	0.120	0.234	1.000
2014.4	92	4.0	2.240	0.243	0.138	0.229	1.000
2014.6	96	4.5	2.250	0.233	0.157	0.216	1.000
2014.8	99	5.3	2.242	0.234	0.174	0.215	1.000
2015.0	101	5.5	2.228	0.239	0.182	0.221	1.000
2015.2	96	4.2	2.230	0.237	0.156	0.226	1.000
2015.4	88	3.7	2.252	0.243	0.117	0.230	1.000
2015.6	84	3.0	2.284	0.255	0.099	0.228	1.000
2015.8	85	2.4	2.298	0.256	0.101	0.223	1.000
2016.0	87	1.9	2.317	0.234	0.110	0.204	1.000
2016.2	88	1.4	2.329	0.222	0.114	0.194	1.000
2016.4	85	1.5	2.352	0.228	0.101	0.193	1.000
2016.6	83	1.9	2.345	0.228	0.091	0.198	1.000
2016.8	87	3.7	2.299	0.212	0.112	0.201	1.000
2017.0	92	7.0	2.272	0.200	0.138	0.200	1.000
2017.2	90	10.3	2.072	0.237		Coal	
2017.4	86	12.1	1.906	0.301		Coal	
2017.6	80	12.4	1.969	0.333		Coal	
2017.8	73	15.4	2.050	0.390		Coal	
2018.0	66	21.9	1.692	0.440		Coal	
2018.2	59	19.0	1.349	0.461		Coal	
2018.4	55	21.6	1.303	0.519		Coal	
2018.6	57	29.9	1.322	0.563		Coal	
2018.8	66	33.6	1.339	0.572		Coal	
2019.0	77	20.8	1.348	0.630		Coal	
2019.2	88	15.5	1.367	0.685		Coal	
2019.4	103	15.1	1.397	0.677		Coal	
2019.6	120	12.9	1.450	0.769		Coal	
2019.8	139	11.5	1.528	0.888		Coal	
2020.0	152	8.3	1.640	0.791		Coal	
2020.2	160	7.2	1.719	0.654		Coal	
2020.4	166	8.2	1.809	0.596		Coal	
2020.6	177	9.1	1.932	0.544		Coal	
2020.8	185	9.8	2.051	0.524		Coal	
2021.0	185	10.7	2.183	0.525		Coal	
2021.2	186	11.2	2.319	0.498	1.000	0.000	1.000
2021.4	191	10.1	2.410	0.463	1.000	0.000	1.000
2021.6	195	9.9	2.498	0.440	1.000	0.000	1.000
2021.8	200	10.9	2.544	0.407	1.000	0.000	1.000
2022.0	205	10.8	2.523	0.376	1.000	0.000	1.000
2022.2	206	10.4	2.526	0.353	1.000	0.000	1.000
2022.4	203	10.6	2.577	0.335	1.000	0.000	1.000
2022.6	205	10.8	2.559	0.318	1.000	0.000	1.000
2022.8	207	10.1	2.527	0.320	1.000	0.000	1.000
2023.0	198	9.1	2.525	0.333	1.000	0.000	1.000
2023.2	174	7.8	2.503	0.336	0.896	0.000	1.000
2023.4	141	6.8	2.463	0.332	0.479	0.042	1.000

PERCH_4 (page 21 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
2023.6	112	6.1	2.415	0.318	0.251	0.180	1.000
2023.8	96	5.7	2.363	0.278	0.160	0.200	1.000
2024.0	90	5.6	2.325	0.249	0.128	0.205	1.000
2024.2	85	6.4	2.280	0.241	0.103	0.222	1.000
2024.4	84	7.1	2.263	0.242	0.099	0.229	1.000
2024.6	89	7.6	2.270	0.253	0.122	0.225	1.000
2024.8	96	8.0	2.266	0.267	0.155	0.225	1.000
2025.0	98	8.1	2.259	0.263	0.169	0.221	1.000
2025.2	94	7.5	2.222	0.278	0.146	0.246	1.000
2025.4	88	7.3	2.178	0.295	0.114	0.277	0.962
2025.6	86	7.7	2.168	0.291	0.104	0.282	0.927
2025.8	88	7.7	2.177	0.296	0.114	0.278	0.930
2026.0	90	8.4	2.211	0.311	0.126	0.269	0.905
2026.2	88	10.4	2.228	0.314	0.118	0.267	0.810
2026.4	84	9.4	2.192	0.289	0.099	0.273	0.855
2026.6	83	9.7	2.161	0.254	0.091	0.275	0.847
2026.8	84	10.2	2.151	0.247	0.099	0.274	0.817
2027.0	83	10.0	2.162	0.257	0.094	0.275	0.828
2027.2	81	9.7	2.171	0.264	0.084	0.276	0.845
2027.4	83	8.6	2.145	0.276	0.093	0.289	0.861
2027.6	85	8.5	2.167	0.273	0.102	0.277	0.893
2027.8	85	8.0	2.232	0.254	0.101	0.245	1.000
2028.0	86	4.6	2.247	0.258	0.104	0.240	1.000
2028.2	86	2.4	2.262	0.294	0.108	0.250	1.000
2028.4	87	1.3	2.184	0.327	0.109	0.289	1.000
2028.6	83	0.9	2.107	0.337	0.092	0.324	1.000
2028.8	79	0.8	2.094	0.310	0.075	0.325	1.000
2029.0	80	0.9	2.174	0.291	0.077	0.286	1.000
2029.2	83	1.6	2.247	0.250	0.093	0.240	1.000
2029.4	85	3.5	2.254	0.234	0.100	0.229	1.000
2029.6	86	4.5	2.237	0.235	0.109	0.234	1.000
2029.8	88	4.7	2.232	0.235	0.118	0.234	1.000
2030.0	86	5.0	2.227	0.209	0.107	0.228	1.000
2030.2	81	4.7	2.252	0.188	0.084	0.216	1.000
2030.4	79	4.3	2.299	0.195	0.073	0.204	1.000
2030.6	77	4.4	2.325	0.203	0.068	0.200	1.000
2030.8	77	4.7	2.312	0.198	0.064	0.203	1.000
2031.0	77	5.2	2.281	0.197	0.064	0.214	1.000
2031.2	79	5.9	2.250	0.202	0.076	0.225	1.000
2031.4	83	6.4	2.221	0.208	0.092	0.234	1.000
2031.6	82	6.9	2.213	0.211	0.088	0.239	1.000
2031.8	80	7.6	2.197	0.208	0.078	0.247	1.000
2032.0	79	8.8	2.216	0.201	0.075	0.238	1.000
2032.2	77	9.3	2.279	0.196	0.066	0.214	1.000
2032.4	75	9.5	2.282	0.198	0.056	0.216	1.000
2032.6	78	9.5	2.243	0.211	0.068	0.233	1.000
2032.8	82	9.6	2.217	0.228	0.086	0.245	0.946
2033.0	81	9.8	2.210	0.237	0.084	0.251	0.917
2033.2	79	10.0	2.206	0.254	0.072	0.262	0.884
2033.4	78	10.2	2.223	0.267	0.070	0.261	0.880
2033.6	79	10.1	2.248	0.258	0.075	0.247	0.926
2033.8	81	10.0	2.241	0.247	0.081	0.244	0.936
2034.0	80	9.9	2.247	0.239	0.078	0.240	0.955
2034.2	80	10.0	2.266	0.218	0.077	0.225	1.000
2034.4	81	9.5	2.270	0.205	0.082	0.217	1.000
2034.6	84	9.5	2.222	0.213	0.096	0.234	0.981

PERCH_4 (page 22 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
2034.8	89	9.1	2.185	0.226	0.121	0.247	0.935
2035.0	94	8.4	2.156	0.239	0.148	0.257	0.918
2035.2	94	8.4	2.173	0.246	0.148	0.253	0.932
2035.4	88	8.3	2.169	0.270	0.118	0.270	0.913
2035.6	83	8.2	2.134	0.295	0.090	0.300	0.855
2035.8	83	8.6	2.180	0.278	0.094	0.275	0.898
2036.0	88	5.8	2.240	0.255	0.114	0.239	1.000
2036.2	90	4.7	2.255	0.239	0.124	0.225	1.000
2036.4	93	5.1	2.241	0.235	0.140	0.225	1.000
2036.6	96	4.8	2.221	0.237	0.159	0.228	1.000
2036.8	99	4.6	2.224	0.237	0.176	0.223	1.000
2037.0	101	4.6	2.263	0.238	0.183	0.207	1.000
2037.2	99	5.0	2.216	0.235	0.175	0.226	1.000
2037.4	95	5.2	2.215	0.227	0.154	0.228	1.000
2037.6	92	4.9	2.230	0.219	0.135	0.224	1.000
2037.8	92	4.7	2.203	0.216	0.136	0.233	1.000
2038.0	97	3.9	2.192	0.221	0.162	0.233	1.000
2038.2	105	3.4	2.242	0.237	0.208	0.208	1.000
2038.4	112	3.6	2.274	0.252	0.249	0.192	1.000
2038.6	115	4.3	2.282	0.251	0.271	0.183	1.000
2038.8	111	5.7	2.294	0.258	0.244	0.190	1.000
2039.0	102	8.0	2.291	0.269	0.191	0.209	1.000
2039.2	90	9.6	2.272	Nul	0.127	0.968	0.266
2039.4	78	10.1	2.269	Nul	0.070	0.982	0.268
2039.6	70	9.4	2.285	Nul	0.038	0.990	0.285
2039.8	70	9.0	2.295	Nul	0.038	0.991	0.292
2040.0	73	7.8	2.290	Nul	0.050	0.987	0.312
2040.2	76	6.8	2.269	Nul	0.063	0.984	0.333
2040.4	79	5.8	2.248	Nul	0.074	0.982	0.361
2040.6	86	5.2	2.227	Nul	0.104	0.974	0.376
2040.8	101	4.9	2.213	Nul	0.185	0.954	0.378
2041.0	129	6.7	Nul	Nul	0.375	0.793	0.370
2041.2	160	9.7	Nul	Nul	0.690	0.000	1.000
2041.4	181	11.4	Nul	Nul	1.000	0.000	1.000
2041.6	195	12.3	Nul	Nul	1.000	0.000	1.000
2041.8	201	11.9	Nul	Nul	1.000	0.000	1.000
2042.0	202	11.8	Nul	Nul	1.000	0.000	1.000
2042.2	201	12.6	Nul	Nul	1.000	0.000	1.000
2042.4	195	11.8	Nul	Nul	1.000	0.000	1.000
2042.6	187	10.5	Nul	Nul	1.000	0.000	1.000
2042.8	182	9.8	Nul	Nul	1.000	0.000	1.000
2043.0	179	9.0	Nul	Nul	0.987	0.000	1.000
2043.2	175	9.6	Nul	Nul	0.914	0.000	1.000
2043.4	172	10.0	Nul	Nul	0.860	0.000	1.000
2043.6	171	9.5	Nul	Nul	0.843	0.000	1.000
2043.8	172	9.3	Nul	Nul	0.849	0.000	1.000
2044.0	171	8.8	Nul	Nul	0.844	0.000	1.000
2044.2	168	9.3	Nul	Nul	0.793	0.000	1.000
2044.4	163	9.7	Nul	Nul	0.724	0.000	1.000
2044.6	159	9.2	Nul	Nul	0.669	0.000	1.000
2044.8	153	8.9	Nul	Nul	0.600	0.000	1.000
2045.0	141	8.8	Nul	Nul	0.478	0.000	0.714
2045.2	125	8.8	Nul	Nul	0.345	0.000	0.236
2045.4	113	9.0	Nul	Nul	0.260	0.000	0.251
2045.6	102	9.2	Nul	Nul	0.193	0.000	0.260
2045.8	92	9.4	Nul	Nul	0.134	0.000	0.268

PERCH_4 (page 23 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
2046.0	83	9.4	Nul	Nul	0.091	0.000	0.276
2046.2	80	9.4	Nul	Nul	0.079	0.000	0.277
2046.4		9.6	Nul	Nul	1.000	0.000	1.000
2046.6		9.7	Nul	Nul	1.000	0.000	1.000
2046.8		8.9	Nul	Nul	1.000	0.000	1.000
2047.0		8.3	Nul	Nul	1.000	0.000	1.000
2047.2		7.8	Nul	Nul	1.000	0.000	1.000
2047.4		7.4	Nul	Nul	1.000	0.000	1.000
2047.6		7.1	Nul	Nul	1.000	0.000	1.000
2047.8		6.8	Nul	Nul	1.000	0.000	1.000
2048.0		6.8	Nul	Nul	1.000	0.000	1.000
2048.2		7.2	Nul	Nul	1.000	0.000	1.000
2048.4		7.6	Nul	Nul	1.000	0.000	1.000
2048.6		8.0	Nul	Nul	1.000	0.000	1.000
2048.8		8.7	Nul	Nul	1.000	0.000	1.000
2049.0		9.6	Nul	Nul	1.000	0.000	1.000
2049.2		13.9	Nul	Nul	1.000	0.000	1.000
2049.4		18.1	Nul	Nul	1.000	0.000	1.000
2049.6		N	Nul	Nul	1.000	0.000	0.000
2049.8		N	Nul	Nul	1.000	0.000	0.000
2050.0		N	Nul	Nul	1.000	0.000	0.000
2050.2		N	Nul	Nul	1.000	0.000	0.000
2050.4		N	Nul	Nul	1.000	0.000	0.000
2050.6		N	Nul	Nul	1.000	0.000	0.000
2050.8		N	Nul	Nul	1.000	0.000	0.000
2051.0		N	Nul	Nul	1.000	0.000	0.000
2051.2		N	Nul	Nul	1.000	0.000	0.000
2051.4		N	Nul	Nul	1.000	0.000	0.000
2051.6		N	Nul	Nul	1.000	0.000	0.000
2051.8		N	Nul	Nul	1.000	0.000	0.000
2052.0		N	Nul	Nul	1.000	0.000	0.000
2052.2		N	Nul	Nul	1.000	0.000	0.000
2052.4		N	Nul	Nul	1.000	0.000	0.000
2052.6		N	Nul	Nul	1.000	0.000	0.000
2052.8		N	Nul	Nul	1.000	0.000	0.000
2053.0		N	Nul	Nul	1.000	0.000	0.000
2053.2		N	Nul	Nul	1.000	0.000	0.000
2053.4		N	Nul	Nul	1.000	0.000	0.000
2053.6		N	Nul	Nul	1.000	0.000	0.000
2053.8		N	Nul	Nul	1.000	0.000	0.000
2054.0		N	Nul	Nul	1.000	0.000	0.000
2054.2		N	Nul	Nul	1.000	0.000	0.000
2054.4		N	Nul	Nul	1.000	0.000	0.000
2054.6		N	Nul	Nul	1.000	0.000	0.000
2054.8		N	Nul	Nul	1.000	0.000	0.000
2055.0		N	Nul	Nul	Nul	0.000	0.000
2055.2		N	Nul	Nul	Nul	0.000	0.000
2055.4		N	Nul	Nul	Nul	0.000	0.000
2055.6		N	Nul	Nul	Nul	0.000	0.000
2055.8		N	Nul	Nul	Nul	0.000	0.000
2056.0		N	Nul	Nul	Nul	0.000	0.000
2056.2		N	Nul	Nul	Nul	0.000	0.000
2056.4		N	Nul	Nul	Nul	0.000	0.000
2056.6		N	Nul	Nul	Nul	0.000	0.000
2056.8		N	Nul	Nul	Nul	0.000	0.000
2057.0		N	Nul	Nul	Nul	0.000	0.000

PERCH_4 (page 24 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPFI frac	VSH frac	PHIE frac	SWE frac
2057.2		N	Nul	Nul	Nul	0.000	0.000
2057.4		N	Nul	Nul	Nul	0.000	0.000
2057.6		N	Nul	Nul	Nul	0.000	0.000
2057.8		N	Nul	Nul	Nul	0.000	0.000
2058.0		N	Nul	Nul	Nul	0.000	0.000
2058.2		N	Nul	Nul	Nul	0.000	0.000
2058.4		N	Nul	Nul	Nul	0.000	0.000
2058.6		N	Nul	Nul	Nul	0.000	0.000
2058.8		N	Nul	Nul	Nul	0.000	0.000
2059.0		N	Nul	Nul	Nul	0.000	0.000
2059.2		N	Nul	Nul	Nul	0.000	0.000
2059.4		N	Nul	Nul	Nul	0.000	0.000
2059.6		N	Nul	Nul	Nul	0.000	0.000
2059.8		N	Nul	Nul	Nul	0.000	0.000
2060.0		N	Nul	Nul	Nul	0.000	0.000
2060.2		N	Nul	Nul	Nul	0.000	0.000
2060.4		N	Nul	Nul	Nul	0.000	0.000
2060.6		N	Nul	Nul	Nul	0.000	0.000
2060.8		N	Nul	Nul	Nul	0.000	0.000
2061.0		N	Nul	Nul	Nul	0.000	0.000
2061.2		N	Nul	Nul	Nul	0.000	0.000
2061.4		N	Nul	Nul	Nul	0.000	0.000
2061.6		N	Nul	Nul	Nul	0.000	0.000
2061.8		N	Nul	Nul	Nul	0.000	0.000
2062.0		N	Nul	Nul	Nul	0.000	0.000
2062.2		N	Nul	Nul	Nul	0.000	0.000
2062.4		N	Nul	Nul	Nul	0.000	0.000
2062.6		N	Nul	Nul	Nul	0.000	0.000
2062.8		N	Nul	Nul	Nul	0.000	0.000
2063.0		N	Nul	Nul	Nul	0.000	0.000
2063.2		N	Nul	Nul	Nul	0.000	0.000
2063.4		N	Nul	Nul	Nul	0.000	0.000
2063.6		N	Nul	Nul	Nul	0.000	0.000
2063.8		N	Nul	Nul	Nul	0.000	0.000
2064.0		N	Nul	Nul	Nul	0.000	0.000
2064.2		N	Nul	Nul	Nul	0.000	0.000
2064.4		N	Nul	Nul	Nul	0.000	0.000
2064.6		N	Nul	Nul	Nul	0.000	0.000
2064.8		N	Nul	Nul	Nul	0.000	0.000
2065.0		N	Nul	Nul	Nul	0.000	0.000
2065.2		N	Nul	Nul	Nul	0.000	0.000
2065.4		N	Nul	Nul	Nul	0.000	0.000
2065.6		N	Nul	Nul	Nul	0.000	0.000
2065.8		N	Nul	Nul	Nul	0.000	0.000
2066.0		N	Nul	Nul	Nul	0.000	0.000
2066.2		N	Nul	Nul	Nul	0.000	0.000
2066.4		N	Nul	Nul	Nul	0.000	0.000
2066.6		N	Nul	Nul	Nul	0.000	0.000
2066.8		N	Nul	Nul	Nul	0.000	0.000
2067.0		N	Nul	Nul	Nul	0.000	0.000
2067.2		N	Nul	Nul	Nul	0.000	0.000
2067.4		N	Nul	Nul	Nul	0.000	0.000
2067.6		N	Nul	Nul	Nul	0.000	0.000
2067.8		N	Nul	Nul	Nul	0.000	0.000
2068.0		N	Nul	Nul	Nul	0.000	0.000
2068.2		N	Nul	Nul	Nul	0.000	0.000

PERCH_4 (page 25 of data listing)

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
2068.4		N	Nul	Nul	Nul	0.000	0.000
2068.6		N	Nul	Nul	Nul	0.000	0.000
2068.8		N	Nul	Nul	Nul	0.000	0.000
2069.0		N	Nul	Nul	Nul	0.000	0.000
2069.2		N	Nul	Nul	Nul	0.000	0.000
2069.4		N	Nul	Nul	Nul	0.000	0.000
2069.6		N	Nul	Nul	Nul	0.000	0.000
2069.8		N	Nul	Nul	Nul	0.000	0.000
2070.0		N	Nul	Nul	Nul	0.000	0.000

Text attributes: size=MEDIUM path=LEFT TO RIGHT color=RED

Density/Neutron Crossplot- Perch 2 & 4 (UNCORRECTED PERCH 4 DENSITY VALUES)

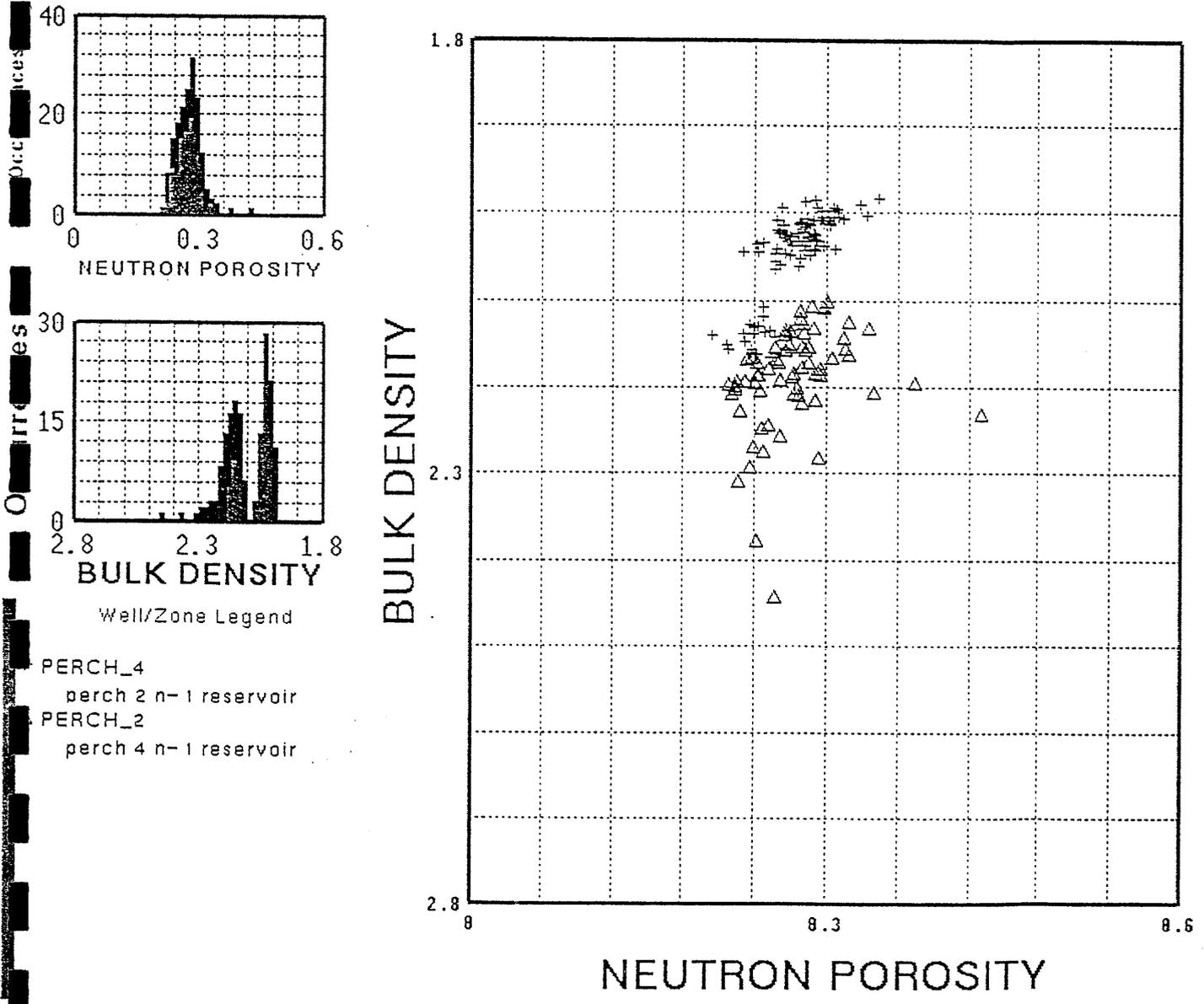


Figure 1

PE600736

This is an enclosure indicator page.
The enclosure PE600736 is enclosed within the
container PE900924 at this location in this
document.

The enclosure PE600736 has the following characteristics:

ITEM_BARCODE = PE600736
CONTAINER_BARCODE = PE900924
NAME = CBL-VDL-GR Log
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = WELL_LOG
DESCRIPTION = CBL-VDL-GR Log 1:200 for Perch-4
REMARKS =
DATE_CREATED = 19/02/95
DATE_RECEIVED = 15/03/95
W_NO = W1115
WELL_NAME = Perch-4
CONTRACTOR = Schlumberger
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE600737

This is an enclosure indicator page.
The enclosure PE600737 is enclosed within the
container PE900924 at this location in this
document.

The enclosure PE600737 has the following characteristics:

- ITEM_BARCODE = PE600737
- CONTAINER_BARCODE = PE900924
- NAME = Reservoir Evaluation Log (CPI)
- BASIN = GIPPSLAND
- PERMIT =
- TYPE = WELL
- SUBTYPE = WELL_LOG
- DESCRIPTION = CPI/Reservoir Evaluation Log (enclosure
from WCR) for Perch-4
- REMARKS =
- DATE_CREATED = 24/08/95
- DATE_RECEIVED = 25/08/95
- W_NO = W1115
- WELL_NAME = Perch-4
- CONTRACTOR = SOLAR
- CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 4

APPENDIX 4

PERCH-4

Lithology/Show Descriptions

Geologist: Jon Elliott

Perch-4 Lithology/Show Descriptions

<u>Depth (mMD)</u>	<u>%</u>	<u>Description</u>
1320	100	<u>LIMESTONE</u> : pale grey, pale grey brown, occasionally off white, micritic to predominantly calc-silty, locally micro-crystalline, firm, blocky, occasional crystalline calcite fossil fragments, trace visual porosity, locally very argillaceous and grading in part to siltstone
1350	100	<u>LIMESTONE</u> : as above, generally grading to calcareous siltstone.
1380	100	<u>LIMESTONE</u> : pale grey, occasionally pale grey brown and off white, firm, blocky, predominantly and generally grading to marl, locally calcarenitic, rare calcareous fossil fragments, rare glauconite.
1410	100	<u>LIMESTONE</u> : as above.
1440	100	<u>LIMESTONE</u> : pale grey to pale grey brown, occasionally off white, firm, blocky, silty to micritic and generally as marl, locally calcarenitic with common glauconite, occasional calcite fossil fragments, trace visual porosity.
1470	100	<u>LIMESTONE</u> : as above.
1500	100	<u>LIMESTONE</u> : generally as above, also occasionally chalky.
1530	100	<u>LIMESTONE</u> : pale grey, occasionally off white, pale grey brown, firm, massive, micritic to calcisiltitic, rarely calcarenitic, rare pyrite, glauconite, no visual porosity.
1560	100	<u>LIMESTONE</u> : as above.
1590	100	<u>LIMESTONE</u> : pale grey, rarely pale grey brown, moderately firm, massive, calcilutitic to calcisiltitic, generally as marl, common microfossils including forams and ostracods, trace glauconite, no visual porosity.
1620	100	<u>LIMESTONE</u> : pale grey, pale brown, occasionally off white, becoming commonly calcarenitic, generally as marl, locally common glauconite, common microfossils including gastropods and forams, no visual porosity.
1650	100	<u>LIMESTONE</u> : pale grey, occasionally pale grey brown, pale blue green, firm, massive, calcilutitic to calcisiltitic, rarely calcarenitic, common clastic detritus, trace glauconite, carbonaceous flecks, calcareous fossil fragments, no visual porosity.
1655	100	<u>LIMESTONE</u> : as above.
1660	100	<u>LIMESTONE</u> : generally as above, grading increasingly to calcareous claystone in part.
1665	80 20	<u>LIMESTONE</u> : as above. <u>CLAYSTONE</u> : pale to mid grey, occasionally pale grey brown, moderately firm, subfissile, micromicaceous, very calcareous and generally grading to argillaceous limestone, trace glauconite and carbonaceous flecks.
1670	80 20	<u>LIMESTONE</u> : as above. <u>CLAYSTONE</u> : as above.
1675	70 30	<u>LIMESTONE</u> : as above. <u>CLAYSTONE</u> : as above, becoming more silty and locally grading to calcareous siltstone.

<u>Depth (mMD)</u>	<u>%</u>	<u>Description</u>
1680	60	<u>LIMESTONE</u> : pale brown grey, pale grey, soft to moderately firm, massive to subfissile, becoming increasingly argillaceous, common glauconite, locally micromicaceous, rare crystalline calcite possibly from fossil fragments, no visual porosity.
	40	<u>CLAYSTONE</u> : as above.
1685	60	<u>LIMESTONE</u> : as above.
	40	<u>CLAYSTONE</u> : as above with very common forams and occasional gastropods and ostracods.
1690	60	<u>LIMESTONE</u> : as above.
	40	<u>CLAYSTONE</u> : as above.
1695	70	<u>LIMESTONE</u> : pale grey to pale grey brown, moderately firm, massive, calcilitic grading to calcisiltitic, occasional hard limestone clasts, trace glauconite and forams, no visual porosity.
	30	<u>CLAYSTONE</u> : as above.
1700	50	<u>LIMESTONE</u> : as above.
	50	<u>CLAYSTONE</u> : pale brown grey, rare pale grey and green, moderately firm, plastic, moderately to very calcareous, generally grading to argillaceous limestone, trace glauconite, carbonaceous material, very fine mica and rare fossils.
1705	40	<u>LIMESTONE</u> : as above.
	60	<u>CLAYSTONE</u> : as above.
1710	50	<u>LIMESTONE</u> : as above.
	50	<u>CLAYSTONE</u> : as above.
1715	50	<u>LIMESTONE</u> : pale grey brown, occasionally pale brown, off white, firm, massive, very argillaceous, generally grading to calcareous claystone, trace glauconite.
	50	<u>CLAYSTONE</u> : as above.
1720	60	<u>LIMESTONE</u> : as above.
	40	<u>CLAYSTONE</u> : as above.
1725	40	<u>LIMESTONE</u> : as above.
	60	<u>CLAYSTONE</u> : generally as above, becoming increasingly silty and occasionally mid brown in colour.
1730	40	<u>LIMESTONE</u> : as above.
	60	<u>CLAYSTONE</u> : pale to occasionally mid brown, pale brown grey, pale grey, occasionally pale green, firm, massive to subfissile, silty in part, moderate to very calcareous.
1735	50	<u>LIMESTONE</u> : as above.
	50	<u>CLAYSTONE</u> : as above.
1740	40	<u>LIMESTONE</u> : pale grey, pale brown grey, firm, argillaceous, generally grading to calcilitite or calcisiltite, trace glauconite, no visual porosity.
	60	<u>CLAYSTONE</u> : as above.
1745	40	<u>LIMESTONE</u> : as above.
	60	<u>CLAYSTONE</u> : as above.
1750	30	<u>LIMESTONE</u> : as above, generally becoming increasingly argillaceous.

<u>Depth (mMD)</u>	<u>%</u>	<u>Description</u>
	70	<u>CLAYSTONE</u> : pale grey, pale grey brown, occasionally pale green grey, firm, subfissile, very calcareous and grading to argillaceous limestone, trace glauconite, and coal.
1755	30	<u>LIMESTONE</u> : as above.
	70	<u>CLAYSTONE</u> : as above.
1760	30	<u>LIMESTONE</u> : as above.
	70	<u>CLAYSTONE</u> : as above.
1765	10	<u>LIMESTONE</u> : as above becoming slowly more argillaceous.
	90	<u>CLAYSTONE</u> : pale brown grey, pale grey, occasionally pale green grey, moderately firm, massive to locally subfissile, moderately to very calcareous, occasional coal and glauconite, silty in part and occasionally grading to siltstone.
1770	10	<u>LIMESTONE</u> : pale grey to pale grey brown, firm, massive, very argillaceous and generally grading to calcareous claystone, trace glauconite, occasional hard microcrystalline calcite.
	90	<u>CLAYSTONE</u> : as above.
1775	90	<u>CLAYSTONE</u> : pale grey to pale grey brown, moderately firm, blocky to subfissile, moderate to very calcareous, common finely disseminated glauconite and coal fragments, occasional crystalline calcite microfossils, generally silty and grading to siltstone in part.
	10	<u>SILTSTONE</u> : pale to mid grey brown, mid green, firm, blocky, abundant argillaceous matrix, common to abundant glauconite, moderate to very calcareous.
1780	90	<u>CLAYSTONE</u> : as above.
	10	<u>SILTSTONE</u> : as above
1785	90	<u>CLAYSTONE</u> : as above with increasing dark green fresh glauconite.
	10	<u>SILTSTONE</u> : as above.
1790	80	<u>CLAYSTONE</u> : as above.
	20	<u>SILTSTONE</u> : as above.
1795	70	<u>CLAYSTONE</u> : pale to mid grey brown, occasionally pale brown, pale grey and pale green grey, moderately firm, massive to subfissile, locally common glauconite, very calcareous, silty.
	30	<u>SILTSTONE</u> : mid green, pale to mid grey brown, firm, massive, moderate to very calcareous, locally abundant glauconite, trace carbonaceous material.
1800	70	<u>CLAYSTONE</u> : as above.
	30	<u>SILTSTONE</u> : as above.
1805	70	<u>CLAYSTONE</u> : pale to mid grey brown, pale grey, firm, massive to subfissile, locally splintery, moderate to very calcareous, common medium to coarse well rounded sand grains, locally common glauconite.
	30	<u>SILTSTONE</u> : as above with local floating sand grains.
1810	60	<u>CLAYSTONE</u> : as above with increasing floating sand grains.
	40	<u>SILTSTONE</u> : as above.
1815	40	<u>CLAYSTONE</u> : as above.
	60	<u>SANDSTONE</u> : off white to pale grey, medium to very coarse grained, generally coarse grained with fair to good sorting, subangular to well rounded, local weak silica cement,

<u>Depth (mMD)</u>	<u>%</u>	<u>Description</u>
		trace hard pyrite cement, no matrix, trace glauconite, rare lithics, loose, good inferred porosity, 5% very dull to occasionally moderately bright yellow patchy fluorescence with no disenable cut and a trace pale yellow residue. Trace pin point yellow live oil fluorescence in mud.
1820	20	<u>CLAYSTONE</u> : as above.
	80	<u>SANDSTONE</u> : as above with 10% very dull yellow fluorescence with cut as above. Rare trace of moderately bright yellow pin point fluorescence in mud.
1825	20	<u>CLAYSTONE</u> : as above
	80	<u>SANDSTONE</u> : off white, medium to coarse, occasionally very coarse, fair sorting, subrounded, trace weak silica and moderate pyrite cement, local mid brown silty matrix, occasional glauconite, loose, good inferred porosity, 10% very dull yellow to cream fluorescence with a rare diffuse slow streaming cut and a trace pale yellow residue.
1830	10	<u>CLAYSTONE</u> : as above.
	90	<u>SANDSTONE</u> : as above, 10% fluorescence as above. Trace pin point oil fluorescence in mud.
1835	30	<u>CLAYSTONE</u> : mid brown, soft to moderately firm, massive, non to slightly calcareous, silty in part, local brown coal lenses and stringers.
	70	<u>SANDSTONE</u> : as above.
1840	90	<u>CLAYSTONE</u> : as above.
	10	<u>SANDSTONE</u> : as above.
1845	100	<u>CLAYSTONE</u> : mid brown, occasionally mid grey brown, non to very slightly calcareous, soft, generally amorphous to soluble, occasionally subfissile, common lignite, locally silty and grading to siltstone.
1850	100	<u>CLAYSTONE</u> : as above.
1855	90	<u>CLAYSTONE</u> : as above with occasional forams and loose floating sand grains, locally common glauconite.
	10	<u>SANDSTONE</u> : off white, green, fine to coarse, generally medium grained with fair sorting, subrounded, trace weak silica cement, common glauconite, loose to friable, fair inferred porosity, no show.
1860	100	<u>COAL</u> : dark brown, black, firm, massive, rare subconchoidal fracture, earthy, lignitic.
1865	100	<u>COAL</u> : as above.
1870	10	<u>COAL</u> : as above.
	90	<u>SILTSTONE</u> : pale to mid brown, occasionally cream, pale grey, firm, slightly to occasionally moderately calcareous, local moderate silica cement, trace carbonaceous material, argillaceous in part.
1875	30	<u>COAL</u> : dark brown to black, firm, massive, lignitic, earthy, locally very silty.
	60	<u>SILTSTONE</u> : as above.
	10	<u>SANDSTONE</u> : off white, medium to coarse, fair sorting, subrounded, no cement, no matrix, trace glauconite, loose, good inferred porosity, trace pin point dull to moderately bright yellow fluorescence with no cut and no residue.
1880	60	<u>SILTSTONE</u> : as above.

<u>Depth (mMD)</u>	<u>%</u>	<u>Description</u>
	40	<u>SANDSTONE</u> : as above becoming predominantly coarse to very coarse, no fluorescence.
1885	60	<u>SILTSTONE</u> : as above.
	40	<u>SANDSTONE</u> : as above with no show.
1890	20	<u>SILTSTONE</u> : as above
	80	<u>SANDSTONE</u> : off white, coarse to very coarse, fair sorting, subrounded, no cement, local cream silty matrix, rare lithics, pyrite, loose, good inferred porosity, trace very dull yellow patchy fluorescence in matrix with no cut.
1895	60	<u>CLAYSTONE</u> : pale grey firm, subfissile, very calcareous and grading to limestone, possibly cavings from above Latrobe Fm after wiper trip.
	40	<u>SANDSTONE</u> : as above.
1900	30	<u>SILTSTONE</u> : pale to mid grey, pale to dark grey brown, firm, massive to subfissile, non to moderately calcareous, trace pyrite, trace carbonaceous material, occasional forams.
	70	<u>SANDSTONE</u> : as above.
1905	20	<u>SILTSTONE</u> : as above.
	80	<u>SANDSTONE</u> : off white, medium to very coarse, predominantly coarse, fair sorting, subangular to subrounded, local moderate silica cement, locally common white argillaceous matrix, rare lithics, generally loose, fair inferred porosity, no show.
1910	40	<u>SILTSTONE</u> : pale to mid grey brown, pale grey, moderately firm, amorphous and very argillaceous to massive, moderately calcareous, trace disseminated pyrite, and carbonaceous material, occasional micro-fossils.
	60	<u>SANDSTONE</u> : as above.
1915	50	<u>SILTSTONE</u> : as above.
	50	<u>SANDSTONE</u> : as above.
1920	20	<u>COAL</u> : dark brown, black, firm to moderately hard, local subvitreous lustre and grading from lignite to subbituminous, commonly silty.
	80	<u>SILTSTONE</u> : as above, becoming mid brown to mid grey brown.
1925	40	<u>COAL</u> : as above.
	60	<u>SILTSTONE</u> : as above.
1930	50	<u>SILTSTONE</u> : as above.
	50	<u>SANDSTONE</u> : off white, pale brown, fine to occasionally coarse, fair sorting, subangular, weak silica cement, occasional quartz overgrowths, local pale brown argillaceous matrix, generally loose, trace to fair inferred porosity, no show.
1935	70	<u>SILTSTONE</u> : as above.
	30	<u>SANDSTONE</u> : as above.
1940	30	<u>SILTSTONE</u> : mid brown, pale to mid grey brown, massive, non to slightly calcareous, very argillaceous, trace finely disseminated carbonaceous material.
	70	<u>SANDSTONE</u> : as above, becoming predominantly coarse to very coarse grained.
1945	30	<u>SILTSTONE</u> : as above.
	70	<u>SANDSTONE</u> : as above.
	Tr	<u>LIMESTONE</u> : white, soft, massive, chalky, micritic, clean, appears similar to rock flour, is possible calcareous argillaceous matrix from sandstone.

<u>Depth (mMD)</u>	<u>%</u>	<u>Description</u>
1950	30	<u>SILTSTONE</u> : as above.
	70	<u>SANDSTONE</u> : off white to pale grey, medium to very coarse, angular to well rounded, angular grains are probably fragments from conglomeratic grains, fair sorting, weak silica cement, possible common white chalky micritic matrix, rare lithics and pyrite, loose, fair to good inferred porosity, no show. The matrix has dull yellow natural mineral fluorescence.
1955	10	<u>SILTSTONE</u> : as above.
	90	<u>SANDSTONE</u> : as above.
1960	10	<u>SILTSTONE</u> : as above.
	90	<u>SANDSTONE</u> : as above.
1965	70	<u>COAL</u> : black to dark brown, firm, massive to subfissile, silty, lignitic, earthy.
	30	<u>SANDSTONE</u> : as above.
Lost circulation material added at 1969 m, including mica and kwikseal.		
1970	100	<u>COAL</u> : as above.
1975	100	<u>COAL</u> : as above.
1980	100	<u>COAL</u> : as above.
1985	30	<u>COAL</u> : as above,
	20	<u>CLAYSTONE</u> : pale grey brown, soft, soluble, slightly to moderately calcareous, silty, trace carbonaceous material.
	50	<u>SANDSTONE</u> : off white, coarse to very coarse grained, angular to subrounded, angular grains may be fragments from very coarse to conglomeratic grains, no cement, off white argillaceous matrix, rare glauconite, loose, good inferred porosity no fluorescence.
1990	100	<u>SANDSTONE</u> : as above.
1995	90	<u>SANDSTONE</u> : as above.
	10	<u>COAL</u> : dark grey, black, dark brown, firm, subconchoidal, subbituminous.
2000	100	<u>SANDSTONE</u> : off white, coarse to very coarse grained, fair sorting, subangular to subrounded, trace weak silica cement, common off white argillaceous matrix, rare lithics, loose, good inferred porosity no show.
2005	90	<u>SANDSTONE</u> : as above.
	10	<u>COAL</u> : as above.
2010	100	<u>SANDSTONE</u> : as above.
2015	100	<u>SANDSTONE</u> : as above, generally medium to very coarse grained, good inferred porosity.
2020	100	<u>SANDSTONE</u> : as above.
2025	100	<u>SANDSTONE</u> : as above.
2030	100	<u>SANDSTONE</u> : as above.
2035	100	<u>SANDSTONE</u> : as above.

<u>Depth (mMD)</u>	<u>%</u>	<u>Description</u>
2040	100	<u>SANDSTONE</u> : off white, coarse to very coarse grained, fair sorting, subangular to subrounded, rare weak quartz overgrowth cement, local off white argillaceous matrix, occasional lithics, loose, good inferred porosity, no show.
2045	100	<u>SANDSTONE</u> : as above.
2050	100	<u>SANDSTONE</u> : as above.
2052	90	<u>SANDSTONE</u> : as above.
	10	<u>CLAYSTONE</u> : mid brown, soft, amorphous, moderately calcareous, common very finely disseminated carbonaceous material.

A total depth of 2052 m was reached at 20:30 hours, 11/02/95.

APPENDIX 5

APPENDIX 5

PERCH-4

Mud Log

PE600738

This is an enclosure indicator page.
The enclosure PE600738 is enclosed within the
container PE900924 at this location in this
document.

The enclosure PE600738 has the following characteristics:

ITEM_BARCODE = PE600738
CONTAINER_BARCODE = PE900924
NAME = Drilling Data Log (Mud Log)
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = MUD_LOG
DESCRIPTION = Drilling Data Log/Mud Log (enclosure
from WCR) for Perch-4
REMARKS =
DATE_CREATED = 23/02/95
DATE_RECEIVED = 25/08/95
W_NO = W1115
WELL_NAME = Perch-4
CONTRACTOR = HALLIBURTON
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 6

APPENDIX 6

PERCH-4

Well Completion Log

PE600739

This is an enclosure indicator page.
The enclosure PE600739 is enclosed within the
container PE900924 at this location in this
document.

The enclosure PE600739 has the following characteristics:

ITEM_BARCODE = PE600739
CONTAINER_BARCODE = PE900924
NAME = Well Completion Log
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = COMPLETION_LOG
DESCRIPTION = Well Completion Log
REMARKS =
DATE_CREATED = 23/02/95
DATE_RECEIVED = 25/08/95
W_NO = W1115
WELL_NAME = Perch-4
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)