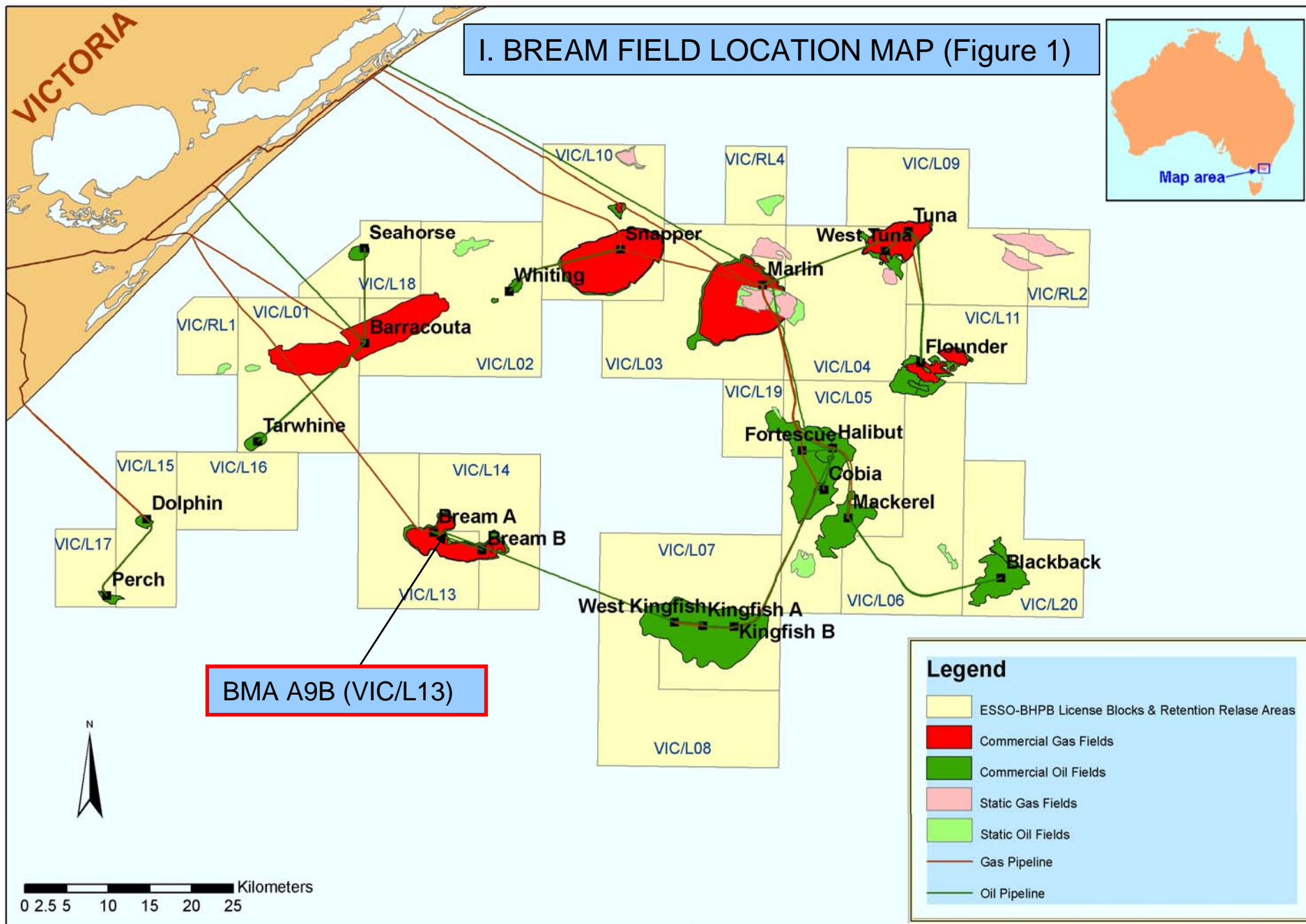


WELL COMPLETION REPORT
BREAM A9B
GIPPSLAND BASIN, VICTORIA

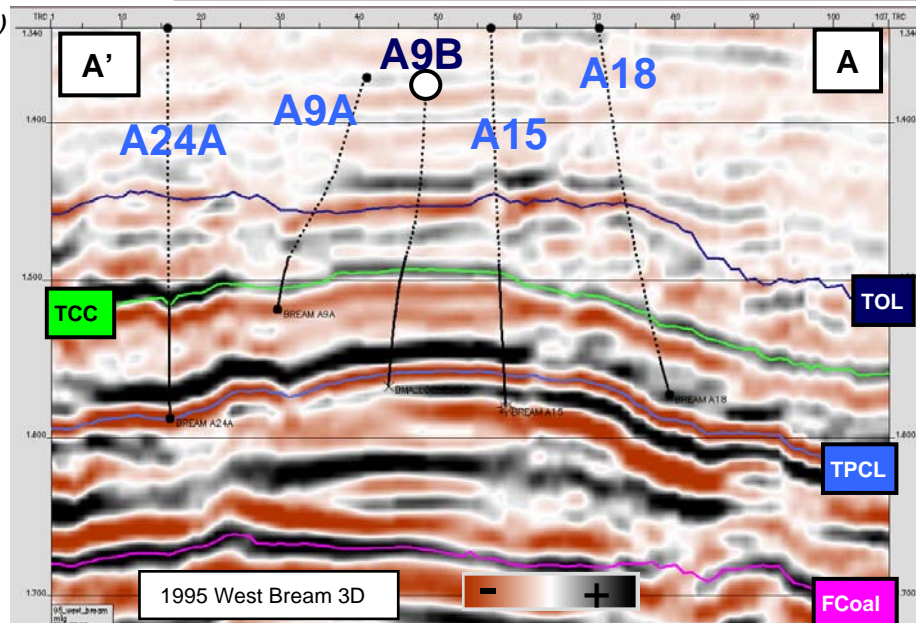
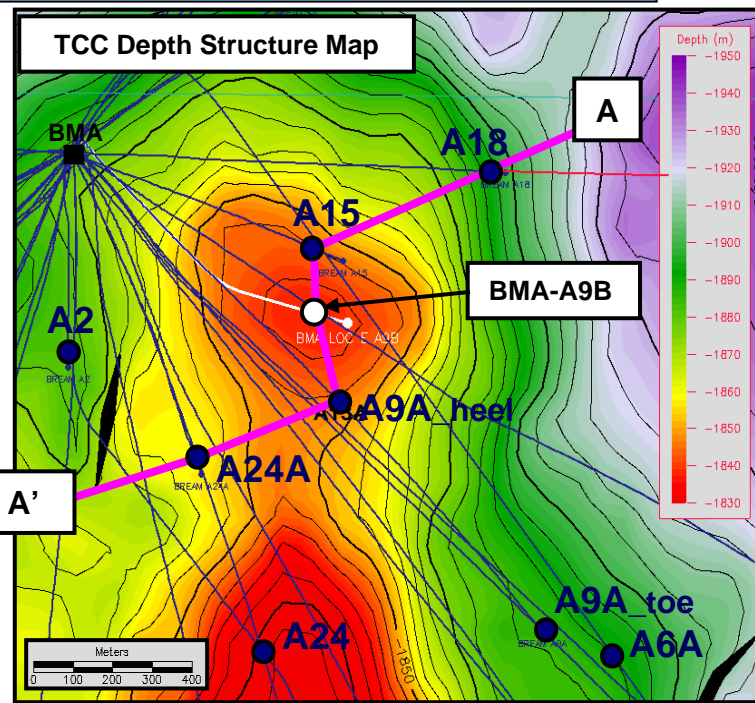
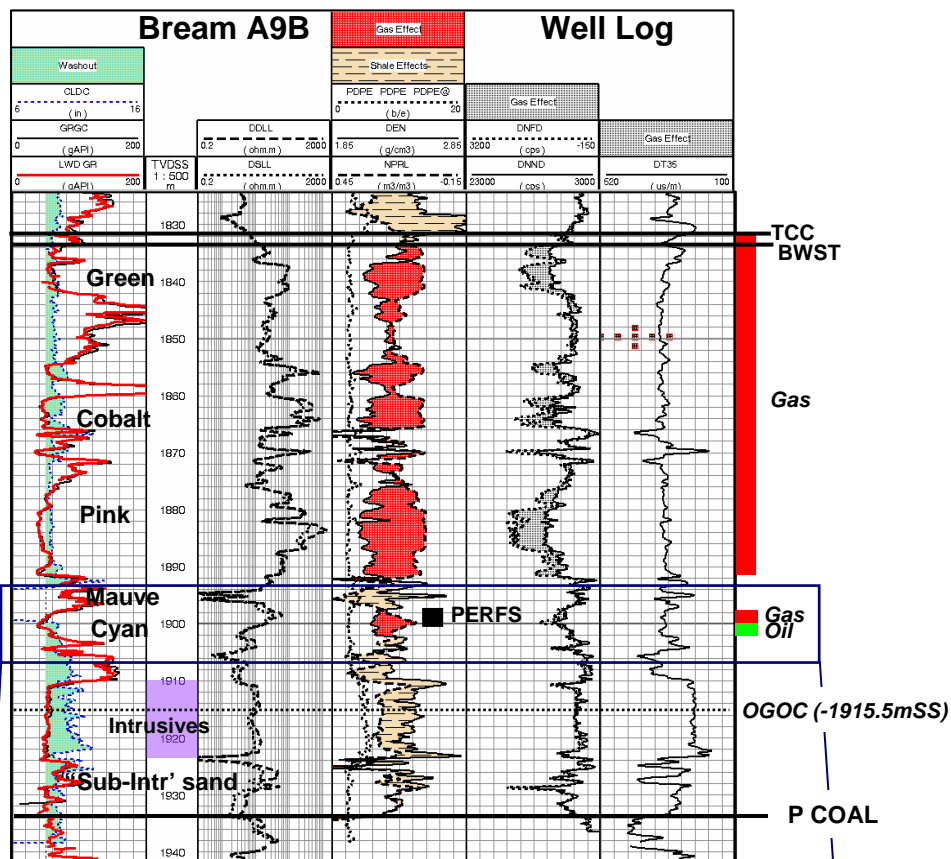
Author: Peter Ryan
Compiler: Sheryl Sazenis
August 2006

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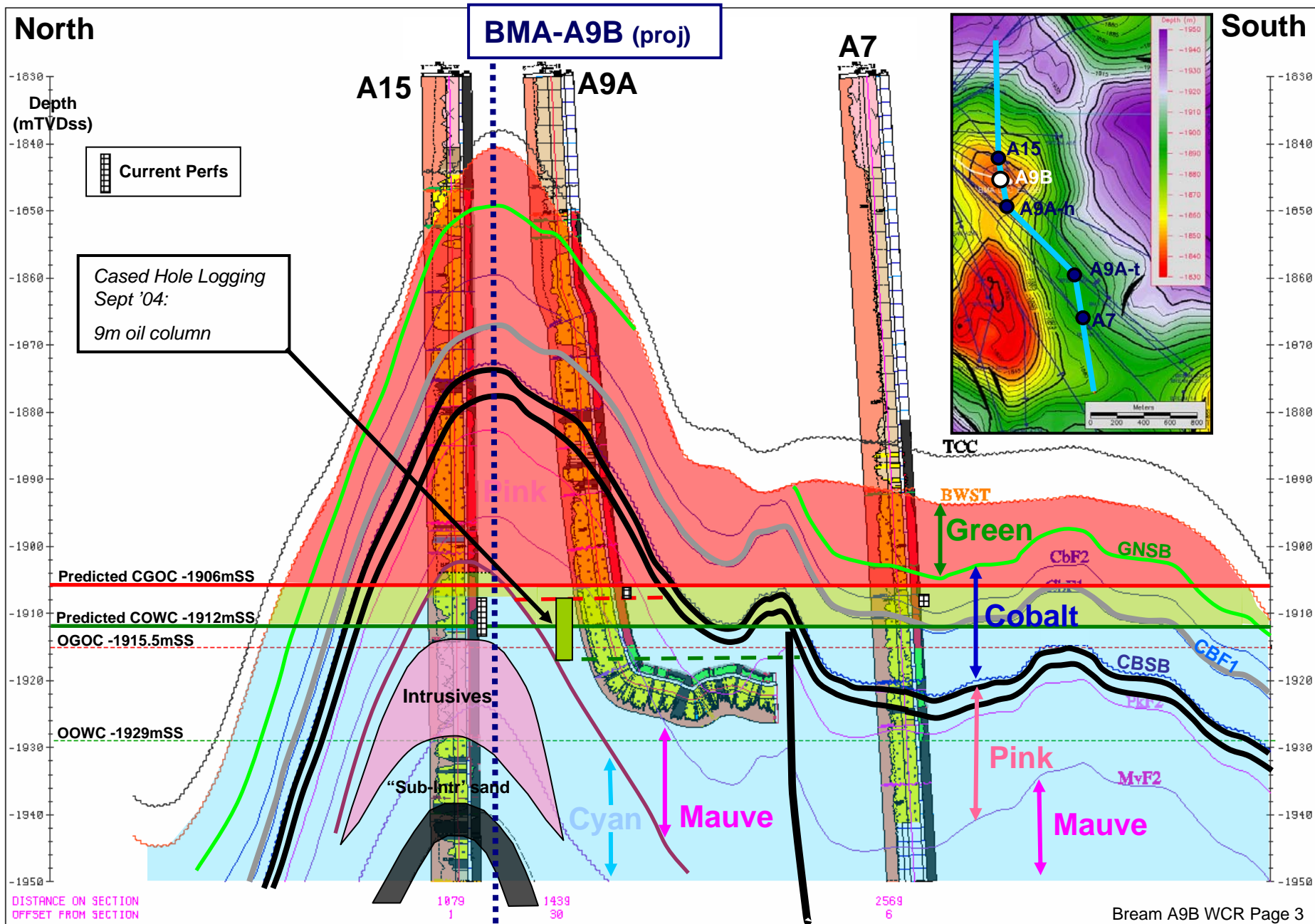
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II. WELL DATA RECORD: BREAM A9B Summary Log, Map & Seismic section (Figure 2)



II. WELL DATA RECORD: BREAM A9B Structural section through well location (Figure 3)



II. WELL DATA RECORD (cont'd)

LOCATION

Field	Bream	Conductor #9 Surface Coordinates	
Well Name	A9B (Loc E)	(GDA94) X	567353.5m E
Conductor Number	Slot 9	(MGA94) Y	5738460.92 N
State	Victoria	Latitude	38° 29' 58.800" S
Permit/Licence	Vic/L13	Longitude	147° 46' 20.685" E
Geological Basin	Gippsland	Perforations (driller)	2206 – 2209m MDRT
Top of Latrobe	2036.0m MDRT		1897.5 – 1900.0m TVDRT
	1789.0m TVDRT		
	-1756.1m TVDSS		
MGA94 X	567895.1m E	Datum	GDA94 (GRS80)
MGA94 Y	5738091.0m N	Projection	Transverse Mercator
Latitude	38° 30' 10.798" S		MGA94/UTM Zone 55 (S)
Longitude	147° 46' 43.4323" E		

ELEVATIONS & DEPTHS

Water Depth	59.40 m
Top Wellhead to MSL	20.115m
Main Deck Rel to MSL	25.12 m
RT Relative to MSL	32.82 m
Average Well Angle	34 deg (Tan)
Total Depth	2283.0m MDRT
	1994.4m TVDRT
	-1961.5m TVDSS
Plug Back Depth	2240.0m MDRT

DATES

Skid Rig	23/02/2006
Kicked Off	01/03/2006
Development Rig Days	12.96
NPT Days	.4
Rig Released	11/03/2006
I.P. Established	05/05/2006

MISCELLANEOUS

Operator	Esso Australia Pty Ltd	Contractor	International Sea Drilling Ltd
Esso Interest	50%	Rig Name	Nabors Rig 453
Permittee/Licensee	Esso/BHPP	Equipment Type	Platform
Other Interest	50% J.V. Interest	Completion Type	Single
Overriding Royalty	2.5%	Completion Size	3-1/2"
Drilling AFE No.	L0501G451		

WELL CLASSIFICATION

Before Drilling	Oil and gas Development	After Drilling	Oil well
------------------------	-------------------------	-----------------------	----------

II. WELL DATA RECORD (cont.)

CASING RECORD

Type	Size (Inches)	Weight (lb/ft)	Grade	Thread	Depth (mMDRT)
Original A9B Surface	13 ³ / ₈	54.5	K-55	BTC	797.0
Production	9 ⁵ / ₈	47.0	L-80	BTC	1756.0
Liner	7	26.0	L-80	Vam Top	2281.0

CEMENTING RECORD

Casing details	Cement Type	Dry Cement Volume (sacks)	Cement Additives	Mix Water (bbls)	Slurry Volume (bbls)	Slurry Density (ppg)	Cement to/from (m MDRT)	Casing Pressure Test (psi)
7" 26 lb/ft	CLASS G	406	HALAD 413L 30 gal / 10 bbl NF-5 0.25 gal / 10 bbl CFR-3L 3 gal / 10 bbl	70	84	15.8	1700.0 to 2281.0	2500

II. WELL DATA RECORD (cont.)

DRILLING PERFORMANCE

BMA A9B - Final Well Report

GENERAL

Platform:	Bream	Rig:	453	Reservoir:	N-1 (TCC)
Well:	A9B	Well Slot:	#9	RT-MSL (Rig453)	32.82
Drilling Complexity Index	3.2	Completion Complexity Index	2.8		

DEPTH		PERFORMANCE		MUD	
m MDRT	2283.0	20" Cond. Hole	N/A	Max Wt (ppg)	10.0
m TVDRT	1,994.35	12-1/4" Surf. Hole	N/A	Type (Surf. Hole)	N/A
Vert. Section (m)	762.05	8-1/2" Prod. Hole	N/A	Type (Inter. Hole)	N/A
INCLINATION		7" Liner Hole	257*	Type (Prod. Hole)	KCI/PHPA/Poly/Glycol
Max (deg) / Ave (deg)	47.9/ 34 (Tang)		* time to drill interval, incl's Connections & NPT.	Type (Liner Hole)	7"

Comments: New hole drilled: 1758m to 2,283mMDRT (525m MDRT drilled).

TIME ANALYSIS

Start Date:	25/02/2006, 1400hrs	Finish Date:	11/03/2006, 1300hrs		
Target Days (P10):	11.59	Total Days:	12.96	% Under Target:	11% over
AFE Days (P50):	13.7	NPT Days:	.4	% of Total Days:	3.1
Supplementary AFE Days (P50):	N/A				

COSTS *(based on projected)*

AFE No.:	L0501G451	Revisions:	--	\$ per m	A \$1.876 k / metre (new hole)
\$ per day:	A\$ 240 k/day	\$ per day (excl. T + L) * Equipment, LWD & Reeves	A\$ 198 k/day		

	Equipment	Materials	Contracts	Allocations	Contingency	Total
AFE (Original)	780,000	261,670	2,075,542	551,761	131,027	A\$3,800,000
AFE (Supplement)						
Projected	604600	187400	1729000	460000	130000	A\$3111000

CASING *(all depths herein are based on Rig 453 elevations: RT-MSL=32.82m)*

	<u>Size / Weight / Grade / Thread</u>	m MDRT	m TVDRT	PIT (ppg)
Conductor Casing *	22"	173	173	N/A
Surface Casing *	13-3/8", 54.5 ppf, K55, BTC	796.9	905	13.0 PIT
Intermediate Casing*	9 5/8", 47 ppf, L80, BTC	1769	1576	13.0 PIT
Production Liner	7", 26 ppf, L80, Vam Top **	2281	1992	

Comments: * Pre-existing casing strings.

** Liner top at 1603m MD. 155m inside 9 5/8" casing.

COMPLETION

	<u>Size / Weight / Grade / Thread</u>	MMDRT	MTVDR	Type
Completion	3-1/2", 9.2ppf, 13Cr80, Vam Ace	2037.54	1789	Single oil

	Upper Interval [m MDRT]	Upper Interval [m TVDRT]	Lower Interval [mMDRT]	Lower Interval [mTVDRT]	Gun Type
Perforation Interval:	2206-2209	1897.5-1900	NA	NA	Wireline

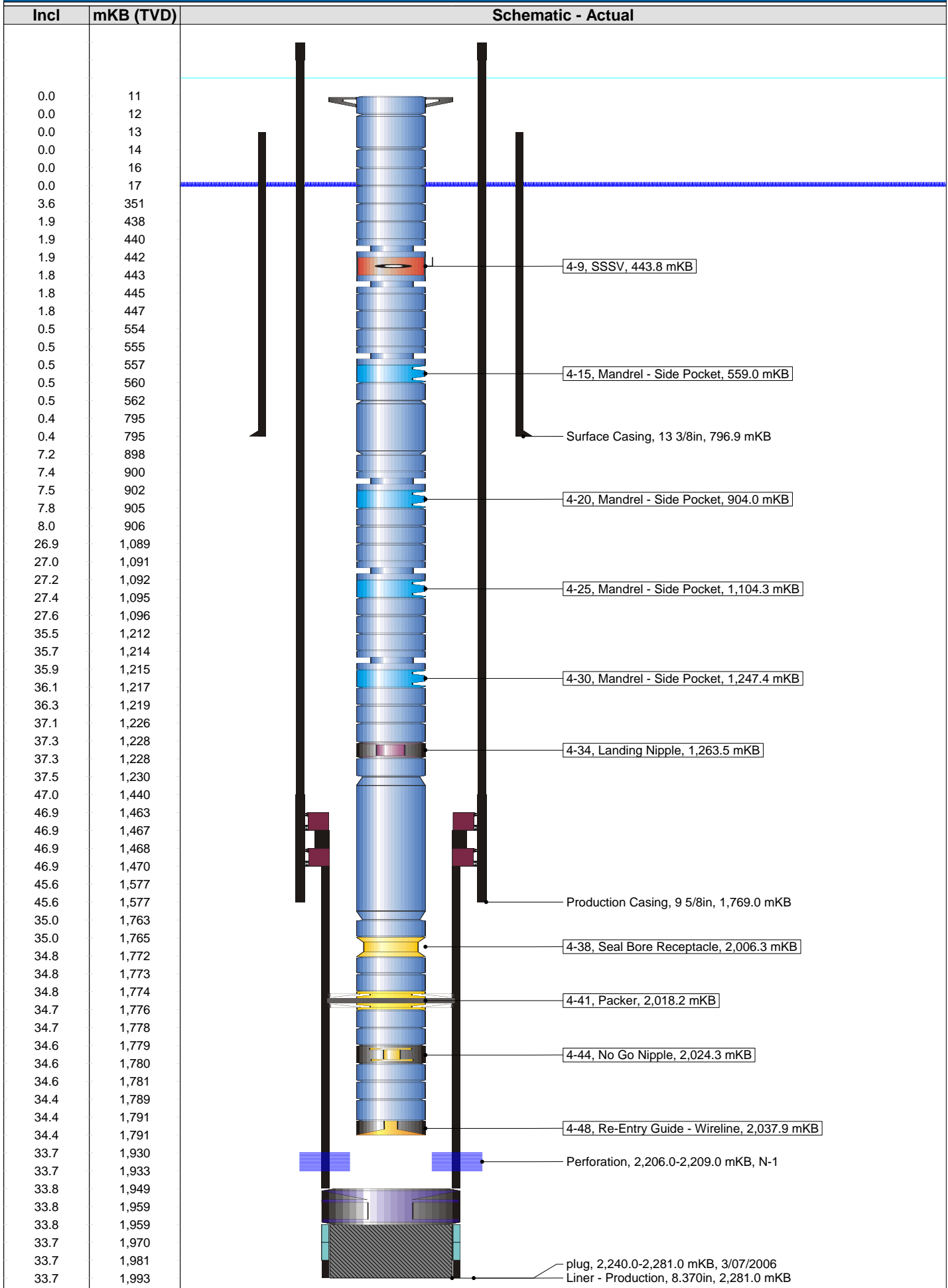
Comments: Completion was 3-1/2" 13Cr80 with TR-SSSV and 4 SPMs for gas lift, and one packer set at 2017m MDRT.

ADDITIONAL

		Upper Interval [m MDRT]	Lower Interval [m MDRT]
Logs Run	GR-Resistivity-Density-Neutron-Sonic-Caliper	1750	2283

Comments: The 8-1/2" hole interval was logged using the Reeves well shuttle system. All data was retrieved on first attempt.

Bream A9B: Existing Schematic



III. SAMPLES

The cuttings sampling programme for BREAM A9B are detailed in the following table:

Interval	Formation	Sampling Details
KOP to 150 m above Top of Latrobe (prognosed at 2034.8 mMDRT) 1769.0 – 1880.0 mMDRT	Lakes Entrance	Cuttings samples for description only at 30 m intervals.
150 m above Top of Latrobe to Top of Latrobe (prognosed at 2034.8 mMDRT) 1880.0 – 2020.0 mMDRT	Lakes Entrance	Three sets of washed and oven dried cuttings at 10 m intervals.
Top of Latrobe (prognosed at 2593.1 mMDRT) to Total Depth (TD) 2020.0 – 2283.0 mMDRT	Latrobe Group / Coarse Clastics	Three sets of washed and oven dried cuttings at 5 m intervals.

Detailed cuttings descriptions for the interval 1756.0 to 2283.0 mMDRT (TD) are contained in Appendix 3a.

CONVENTIONAL CORING

No conventional cores were cut in BREAM A9B.

SIDEWALL CORING

No sidewall core samples were shot in BREAM A9B.

IV. LOGS AND SURVEYS

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
MWD Run 1 & 2, Powerpulse (Directional & GR)	Schlumberger/Anadrill	1756.0	2263.78
Run 1: Compact Logging MCG-MDN-MPD-MSS-MDL	Reeves (Precision Logging) Compact wireline tools run on drillpipe (Shuttle System, memory mode)	1937.5	2280.0

(Reeves logs = memory/compact GR-Dual Neutron-Photo Density -Sonic -Dual Laterolog

V. FORMATION RESERVOIR TOPS

Horizon	m TVDSS			m MDRT ACTUAL	mTVT HC Column	
	Predicted Tops	ACTUAL	Diff. (m)		Predicted	ACTUAL
Top of Latrobe (TOL)	1755.1	1756.1	1.0 Low	2036.0	-	-
N-0 gas sand	-	1773.0	-	2056.4	4.0m gross gas	2.5m net gas
Top of Coarse Clastics (TCC)	1838.0	1831.8	6.2 High	2127.0	-	-
Base of Waste (BWST)	1842.5	1833.6	8.9 High	2129.2	55.0 m	60.3 m
newGnsb	1847.9	1842.4	5.5 High	2139.8	gross gas /	gas /
newCbF2	1857.6	1852.7	4.8 High	2152.2	51 m	55.7 m
newCbF1	1866.2	1860.7	5.5 High	2161.2	net	net
newCbsb	1870.8	1865.9	4.8 High	2168.0	gas	gas
newPkf2	1874.6	1869.2	5.4 High	2172.0	"	"
newPkf1	1880.5	1875.9	4.6 High	2180.0	"	"
newPksb	1892.0	1892.1	0.1 Low	2199.5	"	"
newMvF2	1893.2	1894.2	1.0 Low	2202.0	"	"
newMvSB	1896.5	1897.5	1.0 Low	2205.0	"	"
CYF2	1901.4	1896.7	4.7 High	2206.0	-	2.6m
Current GOC	1903.0	1900.1	2.9m High	2209.1	3.0 gross	net gas
Current LPO	1906.0	1902.2	3.8m High	2211.7	oil	2.3m net oil
CYF1	-	1903.7	-	2213.5	-	-
CYSB	1907.7	1905.6	2.1 High	2215.7	-	-
Top Intrusives	1913.2	1910.0	3.2 High	2221.0	-	-
Top P Asp Coal	1936.5	1933.7	2.8 High	2249.5	-	-
Top Sub_Intr sand	-	1926.1	-	2240.4	-	0m net pay
Total Depth (TD)	1959.2	1961.6	2.4 Low	2283.0	-	-

VI. GEOLOGICAL ANALYSIS - BREAM A9B

Objectives

BMA-A9B was designed as a second drainage point to a structural crest in the eastern central region of the Bream A field (See Figures 1 & 2). The objective of the A9B development well was to intersect the hydrocarbon bearing N-1 reservoir on a mapped structural high, up-dip from BMA-A15 producer and the mechanically idle BMA-A9A well, suspected of having a cement channel behind casing. BMA-A9B was required as an additional producer to accelerate otherwise lost reserves from beyond platform life-end into the forecast life of the facility.

The well was expected to encounter a mostly gas saturated N-1 reservoir section with a thin oil column at the base within the upper Cyan unit. The bulk of the N-1 reservoir would require gas 'blow-down' prior to ultimately producing the down-flank oil within the Mauve, Pink, Cobalt and Green units. The BMA-A9B well was expected to encounter a similar stratigraphy to that observed in the nearby A15 and A9A wells which penetrated well developed N-1 reservoir sands (Figure 3).

Results

The Bream A9B well was spudded on 1st March, 2006 after setting a whipstock and milling a hole in the 9-5/8" production casing. An 8-1/2" production hole was drilled from 1769.0 mMDRT to a total depth of 2283.0 mMDRT (1994.35 mTVDRT). The well was logged with the Precision Energy Services compact shuttle system. After running 7" production casing, the well was completed with 3½" completion tubing and perforated from 2206 - 2209 mMDRT (1897.5 – 1900 mTVDss). Initial production was established on 2nd May, 2006.

The Top of Latrobe Group (TOL) was intersected at 2036.0 mMDRT (-1756.1 mSS), 1.1m TVD low to prediction. Within the 75.6 mTVD Gurnard Formation interval, a 3.5m TVD gross (2.5m TVD net) gas sand (N-0) was intersected at 2056.4 mMDRT. The remainder of the Gurnard interval was comprised of siltstone and volcanics. The Top Coarse of Clastics (TCC) was intersected at 2127.0 mMDRT (-1831.8 mTVDss), 6.2m high to prognosis.

The subsequent intra-Latrobe formation tops were intersected between 9m high and 1.0m low to prognosis. The Top *P. Asperopolus* coal marker (Top P Asp. coal), which in combination with the TCC is one of the main seismic mapping surfaces, was intersected 2.8m high to prognosis.

The N-1 reservoir sandstone units were found to be of similar thickness and quality as those encountered in the BMA-A15 well. The shallowest N-1 unit found at the A9B well location was the Green unit. The Green, Cobalt, Pink and Mauve sands were all found to be gas saturated. Thin gas (2.6m TVD net) and oil (2.3m TVD net) columns were logged in the Cyan unit (Low Proved Oil = 1902.3 mSS) as a result of the well intersecting the reservoir slightly high to prognosis and up-dip of the A15 producer. The deepest reservoir of interest intersected in the A9B well was the Sub-Intrusive (N-1) sand (Figure 2 & 3), encountered above the P. Asp. coal. Analysis of the wireline logs over this zone suggests the first 1.3m of this 6.7m TVD gross sand interval is oil saturated but the reservoir properties do not meet the minimum petrophysical 'cut-offs' for net pay. No net oil is assessed for this zone.

APPENDIX 1a

BREAM A9B

Survey Data



BMA A-9B DMag Final Geodetic Survey

Report Date: March 8, 2006	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: Esso Australia Pty Ltd	Vertical Section Azimuth: 118.480°
Field: Bream A GDA 94	Vertical Section Origin: S 1.540 m, E 17.010 m
Structure / Slot: Bream A / 9	TVD Reference Datum: RKB
Well: 9	TVD Reference Elevation: 32.8 m relative to MSL
Borehole: BMA A-9B	Sea Bed / Ground Level Elevation: -59.400 m relative to MSL
UWI/API#:	Magnetic Declination: 13.068°
Survey Name / Date: BMA A-9B DMag Final / March 1, 2006	Total Field Strength: 60131.618 nT
Tort / AHD / DDI / ERD ratio: 124.829° / 846.97 m / 5.599 / 0.425	Magnetic Dip: -69.035°
Grid Coordinate System: GDA94/MGA94 Zone 55	Declination Date: March 06, 2006
Location Lat/Long: S 38 29 58.800, E 147 46 20.685	Magnetic Declination Model: BGGM 2005
Location Grid N/E Y/X: N 5738460.920 m, E 567353.500 m	North Reference: Grid North
Grid Convergence Angle: -0.48085262°	Total Corr Mag North -> Grid North: +13.549°
Grid Scale Factor: 0.99965587	Local Coordinates Referenced To: Structure Reference Point

Comments	Measured Depth (m)	Inclination (deg)	Azimuth (deg)	TVD (m)	Vertical Section (m)	NS (m)	EW (m)	DLS (deg/30 m)	Northing (m)	Easting (m)	Latitude	Longitude
Tie-In	0.00	0.00	0.00	0.00	0.00	-1.54	17.01	0.00	5738460.92	567353.50	S 38 29 58.800	E 147 46 20.685
	25.00	0.00	0.00	25.00	0.00	-1.54	17.01	0.00	5738460.92	567353.50	S 38 29 58.800	E 147 46 20.685
	89.32	0.50	335.48	89.32	-0.23	-1.29	16.89	0.23	5738461.18	567353.38	S 38 29 58.792	E 147 46 20.680
	104.32	1.50	12.98	104.32	-0.33	-1.03	16.91	2.29	5738461.43	567353.40	S 38 29 58.784	E 147 46 20.681
	119.32	3.25	29.98	119.30	-0.37	-0.47	17.16	3.74	5738461.99	567353.66	S 38 29 58.766	E 147 46 20.691
	134.32	5.25	31.48	134.26	-0.33	0.48	17.73	4.01	5738462.94	567354.23	S 38 29 58.735	E 147 46 20.714
	144.32	6.50	32.98	144.21	-0.26	1.34	18.28	3.78	5738463.80	567354.77	S 38 29 58.706	E 147 46 20.737
	167.82	8.37	38.21	167.51	0.14	3.80	20.06	2.54	5738466.26	567356.56	S 38 29 58.626	E 147 46 20.809
	176.42	10.00	27.00	176.00	0.22	4.96	20.79	8.42	5738467.42	567357.28	S 38 29 58.588	E 147 46 20.839
	194.92	9.25	25.50	194.24	0.10	7.73	22.16	1.28	5738470.19	567358.65	S 38 29 58.498	E 147 46 20.894
	213.52	8.25	21.00	212.62	-0.15	10.33	23.28	1.95	5738472.79	567359.77	S 38 29 58.414	E 147 46 20.940
	231.92	7.25	25.50	230.86	-0.38	12.61	24.25	1.91	5738475.07	567360.75	S 38 29 58.339	E 147 46 20.979
	250.42	6.25	28.00	249.23	-0.45	14.55	25.23	1.69	5738477.01	567361.72	S 38 29 58.276	E 147 46 21.019
	268.92	6.20	30.00	267.62	-0.43	16.31	26.20	0.36	5738478.76	567362.69	S 38 29 58.219	E 147 46 21.058
	296.62	5.25	35.50	295.18	-0.24	18.63	27.68	1.19	5738481.09	567364.18	S 38 29 58.143	E 147 46 21.119
	333.52	4.00	29.00	331.96	-0.02	21.13	29.29	1.10	5738483.59	567365.78	S 38 29 58.062	E 147 46 21.184
	417.42	2.25	39.16	415.73	0.31	24.97	31.75	0.65	5738487.42	567368.24	S 38 29 57.937	E 147 46 21.284
	501.02	1.00	62.16	499.30	1.02	26.58	33.43	0.50	5738489.04	567369.92	S 38 29 57.884	E 147 46 21.353
	587.32	0.25	105.66	585.59	1.62	26.89	34.28	0.29	5738489.34	567370.77	S 38 29 57.874	E 147 46 21.388
	702.32	0.50	138.16	700.59	2.34	26.44	34.85	0.08	5738488.89	567371.34	S 38 29 57.888	E 147 46 21.412
	788.52	0.50	124.16	786.79	3.07	25.95	35.42	0.04	5738488.40	567371.90	S 38 29 57.904	E 147 46 21.435
	803.52	0.30	11.76	801.79	3.12	25.95	35.48	1.35	5738488.41	567371.97	S 38 29 57.904	E 147 46 21.438
	812.72	0.30	38.86	810.99	3.12	26.00	35.50	0.46	5738488.45	567371.99	S 38 29 57.902	E 147 46 21.438
	841.42	1.50	136.16	839.68	3.49	25.78	35.80	1.64	5738488.24	567372.29	S 38 29 57.909	E 147 46 21.451
	870.22	4.20	143.26	868.44	4.81	24.67	36.70	2.83	5738487.12	567373.18	S 38 29 57.945	E 147 46 21.488
	898.92	7.00	144.96	897.00	7.33	22.39	38.33	2.93	5738484.84	567374.82	S 38 29 58.018	E 147 46 21.557
	927.72	10.10	146.06	925.48	11.14	18.86	40.75	3.23	5738481.31	567377.23	S 38 29 58.132	E 147 46 21.658
	956.42	12.90	143.26	953.60	16.28	14.20	44.07	2.98	5738476.66	567380.56	S 38 29 58.282	E 147 46 21.796
	985.22	15.40	139.76	981.53	22.76	8.71	48.46	2.75	5738471.16	567384.95	S 38 29 58.459	E 147 46 21.980
	1013.92	18.30	139.06	1008.99	30.53	2.39	53.88	3.04	5738464.85	567390.36	S 38 29 58.663	E 147 46 22.205
	1042.72	21.10	139.76	1036.10	39.60	-4.98	60.19	2.93	5738457.48	567396.67	S 38 29 58.900	E 147 46 22.468
	1071.32	23.90	136.56	1062.52	49.90	-13.12	67.50	3.20	5738449.35	567403.98	S 38 29 59.162	E 147 46 22.773
	1100.02	26.80	134.46	1088.46	61.65	-21.87	76.12	3.17	5738440.59	567412.59	S 38 29 59.444	E 147 46 23.132
	1128.82	29.30	133.36	1113.87	74.71	-31.26	85.88	2.66	5738431.21	567422.35	S 38 29 59.745	E 147 46 23.537
	1157.62	29.40	133.76	1138.98	88.34	-40.99	96.11	0.23	5738421.49	567432.58	S 38 30 0.058	E 147 46 23.963
	1186.32	30.00	132.66	1163.91	102.09	-50.72	106.47	0.85	5738411.75	567442.94	S 38 30 0.371	E 147 46 24.394
	1214.82	32.90	131.96	1188.22	116.53	-60.73	117.47	3.08	5738401.75	567453.93	S 38 30 0.692	E 147 46 24.851
	1243.52	35.50	133.76	1211.95	132.15	-71.71	129.29	2.92	5738390.78	567465.74	S 38 30 1.045	E 147 46 25.343
	1272.32	38.10	132.66	1235.01	148.83	-83.51	141.86	2.79	5738378.98	567478.32	S 38 30 1.425	E 147 46 25.866
	1300.62	41.40	134.06	1256.77	166.32	-95.94	155.01	3.62	5738366.55	567491.46	S 38 30 1.824	E 147 46 26.413
	1329.32	45.00	134.06	1277.69	185.24	-109.60	169.13	3.76	5738352.90	567505.57	S 38 30 2.263	E 147 46 27.000
	1358.02	47.40	134.06	1297.55	205.19	-124.01	184.01	2.51	5738338.50	567520.45	S 38 30 2.726	E 147 46 27.619
	1386.72	47.40	134.06	1316.98	225.54	-138.70	199.20	0.00	5738323.81	567535.63	S 38 30 3.199	E 147 46 28.251
	1415.32	47.60	134.06	1336.30	245.85	-153.36	214.35	0.21	5738309.15	567550.77	S 38 30 3.670	E 147 46 28.881
	1444.02	47.70	135.86	1355.63	266.19	-168.35	229.36	1.39	5738294.17	567565.78	S 38 30 4.152	E 147 46 29.506
	1472.72	47.60	132.66	1374.97	286.60	-183.15	244.54	2.47	5738279.38	567580.96	S 38 30 4.628	E 147 46 30.138
	1501.32	47.30	133.36	1394.31	306.99	-197.52	259.95	0.63	5738265.01	567596.36	S 38 30 5.090	E 147 46 30.779
	1530.02	47.10	134.06	1413.81	327.31	-212.07	275.17	0.58	5738250.46	567611.58	S 38 30 5.557	E 147 46 31.412

1558.72	47.00	131.26	1433.37	347.67	-226.30	290.62	2.14	5738236.24	567627.02	S 38 30 6.015	E 147 46 32.054
1587.52	47.00	134.06	1453.01	368.09	-240.57	306.10	2.13	5738221.97	567642.50	S 38 30 6.473	E 147 46 32.698
1616.32	46.90	131.66	1472.67	388.47	-254.89	321.53	1.83	5738207.66	567657.92	S 38 30 6.933	E 147 46 33.340
1645.12	46.60	131.66	1492.41	408.90	-268.83	337.20	0.31	5738193.72	567673.58	S 38 30 7.381	E 147 46 33.991
1673.92	46.50	131.26	1512.21	429.27	-282.67	352.87	0.32	5738179.88	567689.25	S 38 30 7.826	E 147 46 34.643
1702.82	48.10	131.66	1531.81	449.97	-296.74	368.78	1.69	5738165.83	567705.16	S 38 30 8.277	E 147 46 35.305
1731.52	47.90	131.66	1551.01	470.73	-310.91	384.72	0.21	5738151.65	567721.08	S 38 30 8.733	E 147 46 35.967
1750.00	47.90	131.86	1563.40	484.08	-320.04	394.95	0.24	5738142.53	567731.31	S 38 30 9.026	E 147 46 36.392
1802.08	41.64	118.76	1600.44	520.29	-341.33	424.60	6.41	5738121.25	567760.95	S 38 30 9.708	E 147 46 37.623
1830.98	40.06	118.17	1622.30	539.19	-350.34	441.21	1.69	5738112.24	567777.56	S 38 30 9.996	E 147 46 38.312
1859.93	35.88	113.15	1645.12	556.97	-358.08	457.24	5.38	5738104.50	567793.58	S 38 30 10.242	E 147 46 38.976
1888.74	35.29	112.55	1668.55	573.65	-364.59	472.69	0.71	5738098.00	567809.02	S 38 30 10.449	E 147 46 39.616
1917.12	35.15	108.55	1691.74	589.85	-370.33	488.00	2.44	5738092.25	567824.34	S 38 30 10.631	E 147 46 40.250
1945.54	35.56	102.97	1714.92	605.88	-374.79	503.82	3.43	5738087.80	567840.14	S 38 30 10.772	E 147 46 40.904
1974.64	35.32	94.19	1738.65	621.71	-377.31	520.46	5.25	5738085.28	567856.78	S 38 30 10.849	E 147 46 41.592
2002.88	35.08	86.13	1761.74	636.02	-377.36	536.71	4.94	5738085.23	567873.03	S 38 30 10.846	E 147 46 42.263
2032.39	34.45	85.45	1785.98	650.18	-376.12	553.49	0.75	5738086.47	567889.80	S 38 30 10.801	E 147 46 42.955
2061.28	34.02	84.79	1809.86	663.75	-374.74	569.69	0.59	5738087.85	567905.99	S 38 30 10.752	E 147 46 43.623
2090.26	33.53	82.66	1833.95	676.99	-372.98	585.70	1.33	5738089.61	567922.00	S 38 30 10.690	E 147 46 44.283
2119.28	33.52	82.38	1858.15	689.96	-370.89	601.59	0.16	5738091.69	567937.88	S 38 30 10.618	E 147 46 44.938
2148.28	33.68	81.84	1882.30	702.88	-368.69	617.49	0.35	5738093.90	567953.77	S 38 30 10.543	E 147 46 45.593
2177.09	33.73	81.36	1906.27	715.67	-366.35	633.30	0.28	5738096.23	567969.58	S 38 30 10.463	E 147 46 46.245
2205.90	33.69	80.36	1930.23	728.34	-363.82	649.09	0.58	5738098.77	567985.36	S 38 30 10.376	E 147 46 46.896
2234.50	33.78	81.17	1954.02	740.90	-361.27	664.76	0.48	5738101.32	568001.03	S 38 30 10.289	E 147 46 47.542
2263.78	33.72	79.83	1978.36	753.72	-358.58	680.81	0.77	5738104.00	568017.07	S 38 30 10.197	E 147 46 48.203
2283.00	33.70	79.80	1994.35	762.05	-356.70	691.31	0.04	5738105.89	568027.57	S 38 30 10.133	E 147 46 48.636

Projected to TD

Survey Type: Definitive Survey

Survey Error Model: SLB ISCWSA version 24 *** 3-D 95.00% Confidence 2.7955 sigma

Surveying Prog:

MD From (m)

0.00

92.22

1750.00

MD To (m)

92.22

1750.00

2283.00

EOU Freq Survey Tool Type

Act-Stns SLB_MWD-STD-Depth Only

Act-Stns SLB_MWD-STD

Act-Stns SLB_MWD+DMAG

Borehole -> Survey

BMA A-9B -> BMA-09H Final

BMA A-9B -> BMA-09H Final

BMA A-9B -> BMA A-9B DMag Final

APPENDIX 1b

BREAM A9B

Survey Data Listing

Report Date:	31 July 2006
Well:	Bream A9B
Structure / Slot:	NABORS Rig 453
TVD Reference Datum:	DrillSite Elevation
TVD Reference Elevation:	32.82 m relative to MSL
Sea Bed / Ground Level Elevation:	59.43 m relative to MSL
Grid Coordinate System:	GDA94/MGA94 Zone 55
Location Lat/Long:	S -38 29' 58.800228", E 147 46' 20.685000"
Location Grid N/E:	N 5738460.92 m, E 567353.5 m
Survey Azimuth Reference:	Grid North

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
0	0	360	0	32.82	0	0	5738460.92	567353.5
5	0	0	5	27.82	0	0	5738460.92	567353.5
10	0	0	10	22.82	0	0	5738460.92	567353.5
15	0	0	15	17.82	0	0	5738460.92	567353.5
20	0	0	20	12.82	0	0	5738460.92	567353.5
25	0	360	25	7.82	0	0	5738460.92	567353.5
30	0.04	358.09	30	2.82	0	0	5738460.93	567353.5
35	0.08	356.19	35	-2.18	0.01	0	5738460.93	567353.5
40	0.12	354.28	40	-7.18	0.01	-0.01	5738460.94	567353.5
45	0.16	352.37	45	-12.18	0.03	-0.01	5738460.95	567353.49
50	0.19	350.47	50	-17.18	0.04	-0.02	5738460.96	567353.48
55	0.23	348.56	55	-22.18	0.06	-0.03	5738460.98	567353.48
60	0.27	346.66	60	-27.18	0.08	-0.03	5738461	567353.47
65	0.31	344.75	65	-32.18	0.1	-0.05	5738461.02	567353.46
70	0.35	342.84	70	-37.18	0.13	-0.06	5738461.05	567353.45
75	0.39	340.94	75	-42.18	0.15	-0.07	5738461.08	567353.43
80	0.43	339.03	80	-47.18	0.19	-0.09	5738461.11	567353.42
85	0.47	337.13	85	-52.18	0.22	-0.1	5738461.15	567353.4
90	0.55	337.18	90	-57.18	0.26	-0.12	5738461.18	567353.38
95	0.88	349.68	95	-62.18	0.32	-0.13	5738461.24	567353.37
100	1.21	2.18	100	-67.18	0.41	-0.12	5738461.33	567353.38
105	1.58	13.75	105	-72.18	0.52	-0.1	5738461.45	567353.41
110	2.16	19.42	109.99	-77.17	0.68	-0.04	5738461.6	567353.46
115	2.75	25.08	114.99	-82.17	0.87	0.05	5738461.79	567353.55
120	3.34	30.05	119.98	-87.16	1.1	0.18	5738462.02	567353.68
125	4.01	30.55	124.97	-92.15	1.38	0.34	5738462.3	567353.84
130	4.67	31.05	129.96	-97.14	1.7	0.53	5738462.62	567354.03
135	5.34	31.58	134.94	-102.12	2.07	0.76	5738463	567354.26
140	5.96	32.33	139.91	-107.09	2.49	1.02	5738463.41	567354.52
145	6.55	33.13	144.88	-112.06	2.95	1.32	5738463.87	567354.82
150	6.95	34.24	149.85	-117.03	3.44	1.64	5738464.36	567355.15
155	7.35	35.36	154.81	-121.99	3.94	2	5738464.87	567355.5
160	7.75	36.47	159.77	-126.95	4.47	2.39	5738465.4	567355.89
165	8.15	37.58	164.72	-131.9	5.02	2.81	5738465.95	567356.31
170	8.78	35.37	169.67	-136.85	5.6	3.25	5738466.53	567356.75
175	9.73	28.85	174.6	-141.78	6.28	3.67	5738467.21	567357.17
180	9.85	26.71	179.53	-146.71	7.05	4.06	5738467.97	567357.56
185	9.65	26.3	184.46	-151.63	7.81	4.44	5738468.73	567357.94
190	9.45	25.9	189.38	-156.57	8.55	4.8	5738469.48	567358.31
195	9.25	25.48	194.32	-161.5	9.28	5.16	5738470.21	567358.66
200	8.98	24.27	199.26	-166.44	10	5.49	5738470.92	567358.99
205	8.71	23.06	204.2	-171.38	10.7	5.8	5738471.63	567359.3
210	8.44	21.85	209.14	-176.32	11.39	6.09	5738472.31	567359.59
215	8.17	21.36	214.09	-181.27	12.06	6.35	5738472.99	567359.85
220	7.9	22.58	219.04	-186.22	12.71	6.61	5738473.64	567360.11
225	7.63	23.81	223.99	-191.17	13.33	6.87	5738474.26	567360.37

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
230	7.35	25.03	228.95	-196.13	13.93	7.14	5738474.85	567360.64
235	7.08	25.92	233.91	-201.09	14.49	7.41	5738475.42	567360.91
240	6.81	26.59	238.88	-206.06	15.04	7.68	5738475.96	567361.18
245	6.54	27.27	243.84	-211.02	15.55	7.94	5738476.48	567361.44
250	6.27	27.94	248.81	-215.99	16.05	8.2	5738476.97	567361.7
255	6.24	28.5	253.78	-220.96	16.53	8.46	5738477.45	567361.96
260	6.22	29.04	258.75	-225.93	17	8.72	5738477.93	567362.22
265	6.21	29.58	263.72	-230.9	17.47	8.98	5738478.4	567362.48
270	6.16	30.21	268.69	-235.87	17.94	9.25	5738478.87	567362.75
275	5.99	31.21	273.66	-240.84	18.4	9.52	5738479.32	567363.02
280	5.82	32.2	278.64	-245.82	18.84	9.79	5738479.76	567363.29
285	5.65	33.19	283.61	-250.79	19.26	10.06	5738480.18	567363.56
290	5.48	34.19	288.59	-255.77	19.66	10.32	5738480.58	567363.82
295	5.31	35.18	293.57	-260.75	20.05	10.59	5738480.97	567364.09
300	5.14	34.9	298.55	-265.73	20.42	10.85	5738481.34	567364.35
305	4.97	34.02	303.53	-270.71	20.78	11.1	5738481.7	567364.6
310	4.8	33.14	308.51	-275.69	21.13	11.34	5738482.06	567364.84
315	4.63	32.26	313.49	-280.67	21.48	11.56	5738482.4	567365.07
320	4.46	31.38	318.48	-285.66	21.81	11.77	5738482.73	567365.28
325	4.29	30.5	323.46	-290.64	22.13	11.97	5738483.06	567365.47
330	4.12	29.62	328.45	-295.63	22.45	12.16	5738483.37	567365.66
335	3.97	29.18	333.44	-300.62	22.76	12.33	5738483.68	567365.83
340	3.86	29.78	338.42	-305.6	23.06	12.5	5738483.98	567366
345	3.76	30.39	343.41	-310.59	23.34	12.66	5738484.27	567366.16
350	3.66	31	348.4	-315.58	23.62	12.82	5738484.55	567366.32
355	3.55	31.6	353.39	-320.57	23.89	12.98	5738484.82	567366.48
360	3.45	32.21	358.38	-325.56	24.16	13.14	5738485.08	567366.64
365	3.34	32.81	363.37	-330.55	24.41	13.29	5738485.33	567366.79
370	3.24	33.42	368.37	-335.55	24.65	13.44	5738485.58	567366.94
375	3.13	34.02	373.36	-340.54	24.88	13.59	5738485.81	567367.09
380	3.03	34.63	378.35	-345.53	25.11	13.73	5738486.03	567367.24
385	2.93	35.23	383.35	-350.52	25.33	13.88	5738486.25	567367.38
390	2.82	35.84	388.34	-355.52	25.53	14.02	5738486.46	567367.52
395	2.72	36.45	393.33	-360.51	25.73	14.16	5738486.65	567367.66
400	2.61	37.05	398.33	-365.51	25.92	14.29	5738486.84	567367.79
405	2.51	37.66	403.32	-370.5	26.1	14.42	5738487.02	567367.92
410	2.4	38.26	408.32	-375.5	26.27	14.55	5738487.19	567368.05
415	2.3	38.87	413.31	-380.49	26.43	14.68	5738487.35	567368.18
420	2.21	39.87	418.31	-385.49	26.58	14.8	5738487.5	567368.3
425	2.14	41.25	423.31	-390.49	26.73	14.92	5738487.65	567368.42
430	2.06	42.62	428.3	-395.48	26.87	15.04	5738487.79	567368.54
435	1.99	44	433.3	-400.48	27	15.16	5738487.92	567368.66
440	1.91	45.37	438.3	-405.48	27.12	15.27	5738488.05	567368.77
445	1.84	46.75	443.29	-410.47	27.24	15.38	5738488.16	567368.88
450	1.76	48.12	448.29	-415.47	27.35	15.49	5738488.28	567368.99
455	1.69	49.5	453.29	-420.47	27.46	15.59	5738488.38	567369.09
460	1.61	50.87	458.29	-425.47	27.56	15.69	5738488.48	567369.19
465	1.54	52.25	463.29	-430.47	27.65	15.79	5738488.57	567369.29
470	1.46	53.63	468.28	-435.46	27.74	15.89	5738488.66	567369.39
475	1.39	55	473.28	-440.46	27.81	15.98	5738488.74	567369.48
480	1.31	56.38	478.28	-445.46	27.89	16.07	5738488.81	567369.57
485	1.24	57.75	483.28	-450.46	27.95	16.16	5738488.87	567369.66
490	1.16	59.13	488.28	-455.46	28.01	16.24	5738488.93	567369.74
495	1.09	60.5	493.28	-460.46	28.06	16.32	5738488.99	567369.83
500	1.02	61.88	498.28	-465.46	28.11	16.4	5738489.03	567369.91
505	0.97	64.17	503.28	-470.46	28.15	16.48	5738489.07	567369.98
510	0.92	66.69	508.28	-475.46	28.19	16.55	5738489.11	567370.05
515	0.88	69.21	513.27	-480.45	28.22	16.62	5738489.14	567370.12

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
520	0.84	71.73	518.27	-485.45	28.25	16.69	5738489.17	567370.19
525	0.79	74.25	523.27	-490.45	28.28	16.75	5738489.2	567370.25
530	0.75	76.77	528.27	-495.45	28.31	16.81	5738489.23	567370.31
535	0.7	79.29	533.27	-500.45	28.33	16.87	5738489.25	567370.37
540	0.66	81.81	538.27	-505.45	28.35	16.92	5738489.28	567370.42
545	0.62	84.33	543.27	-510.45	28.37	16.97	5738489.29	567370.47
550	0.57	86.85	548.27	-515.45	28.39	17.02	5738489.31	567370.52
555	0.53	89.37	553.27	-520.45	28.4	17.06	5738489.32	567370.56
560	0.49	91.89	558.27	-525.45	28.41	17.1	5738489.33	567370.6
565	0.44	94.41	563.27	-530.45	28.42	17.14	5738489.34	567370.64
570	0.4	96.93	568.27	-535.45	28.42	17.17	5738489.34	567370.68
575	0.36	99.45	573.27	-540.45	28.42	17.2	5738489.35	567370.71
580	0.31	101.97	578.27	-545.45	28.42	17.23	5738489.35	567370.73
585	0.27	104.49	583.27	-550.45	28.42	17.26	5738489.34	567370.76
590	0.26	106.42	588.27	-555.45	28.41	17.28	5738489.34	567370.78
595	0.27	107.83	593.27	-560.45	28.41	17.3	5738489.33	567370.8
600	0.28	109.24	598.27	-565.45	28.4	17.32	5738489.32	567370.82
605	0.29	110.66	603.27	-570.45	28.39	17.34	5738489.31	567370.84
610	0.3	112.07	608.27	-575.45	28.38	17.36	5738489.3	567370.87
615	0.31	113.48	613.27	-580.45	28.37	17.39	5738489.29	567370.89
620	0.32	114.9	618.27	-585.45	28.35	17.41	5738489.28	567370.91
625	0.33	116.31	623.27	-590.45	28.34	17.43	5738489.26	567370.94
630	0.34	117.72	628.27	-595.45	28.32	17.46	5738489.25	567370.96
635	0.35	119.13	633.27	-600.45	28.31	17.48	5738489.23	567370.98
640	0.36	120.55	638.27	-605.45	28.29	17.51	5738489.22	567371.01
645	0.38	121.96	643.27	-610.45	28.27	17.53	5738489.2	567371.03
650	0.39	123.37	648.27	-615.45	28.25	17.56	5738489.18	567371.06
655	0.4	124.79	653.27	-620.45	28.23	17.58	5738489.15	567371.08
660	0.41	126.2	658.27	-625.45	28.21	17.61	5738489.13	567371.11
665	0.42	127.61	663.27	-630.45	28.19	17.64	5738489.11	567371.14
670	0.43	129.03	668.27	-635.45	28.16	17.66	5738489.09	567371.16
675	0.44	130.44	673.27	-640.45	28.14	17.69	5738489.06	567371.19
680	0.45	131.85	678.27	-645.45	28.11	17.72	5738489.03	567371.22
685	0.46	133.27	683.27	-650.45	28.08	17.74	5738489	567371.24
690	0.47	134.68	688.27	-655.45	28.05	17.77	5738488.98	567371.27
695	0.48	136.09	693.27	-660.45	28.02	17.8	5738488.95	567371.3
700	0.49	137.5	698.27	-665.45	27.99	17.83	5738488.91	567371.33
705	0.5	137.72	703.27	-670.45	27.96	17.86	5738488.88	567371.36
710	0.5	136.91	708.27	-675.45	27.93	17.89	5738488.85	567371.39
715	0.5	136.1	713.27	-680.45	27.9	17.92	5738488.82	567371.42
720	0.5	135.29	718.27	-685.45	27.86	17.95	5738488.79	567371.45
725	0.5	134.48	723.27	-690.45	27.83	17.98	5738488.76	567371.48
730	0.5	133.66	728.27	-695.45	27.8	18.01	5738488.73	567371.51
735	0.5	132.85	733.27	-700.45	27.77	18.04	5738488.7	567371.54
740	0.5	132.04	738.27	-705.45	27.74	18.07	5738488.67	567371.58
745	0.5	131.23	743.27	-710.45	27.72	18.1	5738488.64	567371.61
750	0.5	130.42	748.27	-715.45	27.69	18.14	5738488.61	567371.64
755	0.5	129.6	753.27	-720.45	27.66	18.17	5738488.58	567371.67
760	0.5	128.79	758.27	-725.45	27.63	18.21	5738488.55	567371.71
765	0.5	127.98	763.27	-730.45	27.61	18.24	5738488.53	567371.74
770	0.5	127.17	768.27	-735.45	27.58	18.27	5738488.5	567371.77
775	0.5	126.36	773.27	-740.45	27.55	18.31	5738488.48	567371.81
780	0.5	125.54	778.27	-745.45	27.53	18.34	5738488.45	567371.84
785	0.5	124.73	783.27	-750.45	27.5	18.38	5738488.43	567371.88
790	0.48	113.07	788.27	-755.45	27.48	18.41	5738488.4	567371.92
795	0.41	75.6	793.27	-760.45	27.47	18.44	5738488.39	567371.94
800	0.35	38.14	798.27	-765.45	27.47	18.46	5738488.4	567371.96
805	0.3	16.12	803.27	-770.45	27.49	18.47	5738488.42	567371.97

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
810	0.3	30.85	808.27	-775.45	27.52	18.48	5738488.44	567371.98
815	0.4	46.59	813.27	-780.45	27.54	18.5	5738488.46	567372
820	0.6	63.54	818.27	-785.45	27.54	18.52	5738488.46	567372.03
825	0.81	80.49	823.26	-790.45	27.52	18.57	5738488.44	567372.07
830	1.02	97.44	828.26	-795.45	27.48	18.62	5738488.4	567372.12
835	1.23	114.39	833.26	-800.44	27.42	18.69	5738488.34	567372.19
840	1.44	131.35	838.26	-805.44	27.34	18.77	5738488.27	567372.27
845	1.84	137.04	843.26	-810.44	27.24	18.86	5738488.16	567372.37
850	2.3	138.28	848.26	-815.44	27.1	18.98	5738488.03	567372.48
855	2.77	139.51	853.25	-820.43	26.93	19.12	5738487.86	567372.62
860	3.24	140.74	858.25	-825.43	26.73	19.28	5738487.65	567372.79
865	3.71	141.97	863.24	-830.42	26.49	19.47	5738487.41	567372.97
870	4.18	143.21	868.23	-835.4	26.21	19.68	5738487.14	567373.18
875	4.67	143.54	873.21	-840.39	25.9	19.91	5738486.83	567373.41
880	5.15	143.84	878.19	-845.37	25.56	20.16	5738486.48	567373.66
885	5.64	144.14	883.17	-850.35	25.18	20.43	5738486.1	567373.93
890	6.13	144.43	888.14	-855.32	24.76	20.73	5738485.68	567374.23
895	6.62	144.73	893.11	-860.29	24.3	21.05	5738485.23	567374.55
900	7.12	145	898.08	-865.26	23.82	21.39	5738484.74	567374.9
905	7.65	145.19	903.03	-870.22	23.29	21.76	5738484.21	567375.26
910	8.19	145.38	907.99	-875.17	22.72	22.15	5738483.65	567375.66
915	8.73	145.57	912.93	-880.11	22.11	22.57	5738483.04	567376.07
920	9.27	145.77	917.87	-885.05	21.47	23.01	5738482.39	567376.51
925	9.81	145.96	922.8	-889.98	20.78	23.47	5738481.71	567376.97
930	10.32	145.84	927.73	-894.9	20.06	23.96	5738480.98	567377.46
935	10.81	145.35	932.64	-899.82	19.3	24.48	5738480.23	567377.98
940	11.3	144.86	937.55	-904.73	18.52	25.03	5738479.44	567378.53
945	11.79	144.37	942.45	-909.63	17.7	25.61	5738478.63	567379.11
950	12.27	143.89	947.34	-914.52	16.86	26.22	5738477.79	567379.73
955	12.76	143.4	952.22	-919.4	15.99	26.87	5738476.91	567380.37
960	13.21	142.82	957.09	-924.27	15.09	27.54	5738476.02	567381.05
965	13.64	142.22	961.95	-929.13	14.17	28.25	5738475.1	567381.75
970	14.08	141.61	966.81	-933.99	13.23	28.99	5738474.16	567382.49
975	14.51	141	971.65	-938.83	12.27	29.77	5738473.19	567383.27
980	14.95	140.39	976.49	-943.67	11.29	30.57	5738472.21	567384.07
985	15.38	139.79	981.31	-948.49	10.29	31.41	5738471.21	567384.91
990	15.88	139.64	986.13	-953.31	9.26	32.28	5738470.18	567385.79
995	16.39	139.52	990.93	-958.11	8.2	33.18	5738469.13	567386.69
1000	16.89	139.4	995.72	-962.9	7.12	34.12	5738468.04	567387.62
1005	17.4	139.28	1000.5	-967.68	6	35.08	5738466.92	567388.58
1010	17.9	139.16	1005.27	-972.45	4.85	36.07	5738465.77	567389.57
1015	18.41	139.09	1010.02	-977.2	3.67	37.09	5738464.6	567390.59
1020	18.89	139.21	1014.75	-981.93	2.46	38.13	5738463.39	567391.63
1025	19.38	139.33	1019.48	-986.66	1.22	39.2	5738462.14	567392.7
1030	19.86	139.45	1024.19	-991.37	-0.05	40.29	5738460.87	567393.79
1035	20.35	139.57	1028.88	-996.06	-1.36	41.41	5738459.56	567394.91
1040	20.84	139.69	1033.56	-1000.74	-2.7	42.55	5738458.22	567396.05
1045	21.32	139.5	1038.23	-1005.41	-4.07	43.71	5738456.85	567397.21
1050	21.81	138.95	1042.88	-1010.06	-5.46	44.91	5738455.46	567398.41
1055	22.3	138.39	1047.51	-1014.69	-6.87	46.15	5738454.06	567399.65
1060	22.79	137.83	1052.13	-1019.31	-8.29	47.44	5738452.63	567400.94
1065	23.28	137.27	1056.73	-1023.91	-9.73	48.76	5738451.19	567402.26
1070	23.77	136.71	1061.32	-1028.5	-11.19	50.12	5738449.73	567403.62
1075	24.27	136.29	1065.88	-1033.06	-12.67	51.52	5738448.26	567405.02
1080	24.78	135.92	1070.43	-1037.61	-14.16	52.96	5738446.76	567406.46
1085	25.28	135.56	1074.96	-1042.14	-15.67	54.44	5738445.25	567407.94
1090	25.79	135.19	1079.47	-1046.66	-17.21	55.95	5738443.72	567409.45
1095	26.29	134.83	1083.97	-1051.15	-18.76	57.51	5738442.17	567411.01

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1100	26.8	134.46	1088.44	-1055.62	-20.33	59.1	5738440.6	567412.6
1105	27.23	134.27	1092.9	-1060.08	-21.92	60.72	5738439.01	567414.22
1110	27.67	134.08	1097.33	-1064.51	-23.52	62.37	5738437.4	567415.87
1115	28.1	133.89	1101.75	-1068.93	-25.14	64.05	5738435.78	567417.56
1120	28.53	133.7	1106.15	-1073.33	-26.78	65.77	5738434.14	567419.27
1125	28.97	133.51	1110.54	-1077.72	-28.44	67.51	5738432.48	567421.01
1130	29.3	133.38	1114.9	-1082.08	-30.12	69.28	5738430.81	567422.78
1135	29.32	133.45	1119.26	-1086.44	-31.8	71.06	5738429.13	567424.56
1140	29.34	133.52	1123.62	-1090.8	-33.48	72.83	5738427.44	567426.33
1145	29.36	133.58	1127.98	-1095.16	-35.17	74.61	5738425.75	567428.11
1150	29.37	133.65	1132.34	-1099.52	-36.86	76.38	5738424.06	567429.89
1155	29.39	133.72	1136.69	-1103.88	-38.56	78.16	5738422.37	567431.66
1160	29.45	133.67	1141.05	-1108.23	-40.25	79.93	5738420.67	567433.43
1165	29.55	133.48	1145.4	-1112.58	-41.95	81.72	5738418.97	567435.22
1170	29.66	133.29	1149.75	-1116.93	-43.65	83.51	5738417.28	567437.01
1175	29.76	133.09	1154.09	-1121.27	-45.34	85.32	5738415.58	567438.82
1180	29.87	132.9	1158.43	-1125.61	-47.04	87.13	5738413.89	567440.64
1185	29.97	132.71	1162.76	-1129.94	-48.73	88.96	5738412.19	567442.47
1190	30.37	132.57	1167.09	-1134.27	-50.43	90.81	5738410.49	567444.31
1195	30.88	132.45	1171.39	-1138.57	-52.15	92.69	5738408.77	567446.19
1200	31.39	132.32	1175.67	-1142.85	-53.89	94.6	5738407.03	567448.1
1205	31.9	132.2	1179.93	-1147.11	-55.66	96.54	5738405.27	567450.04
1210	32.41	132.08	1184.16	-1151.34	-57.44	98.51	5738403.48	567452.01
1215	32.92	131.97	1188.37	-1155.55	-59.25	100.52	5738401.68	567454.02
1220	33.37	132.28	1192.56	-1159.73	-61.08	102.54	5738399.84	567456.05
1225	33.82	132.6	1196.72	-1163.9	-62.95	104.58	5738397.97	567458.09
1230	34.28	132.91	1200.86	-1168.04	-64.85	106.64	5738396.07	567460.14
1235	34.73	133.23	1204.98	-1172.16	-66.78	108.71	5738394.14	567462.21
1240	35.18	133.54	1209.08	-1176.26	-68.75	110.79	5738392.17	567464.29
1245	35.63	133.7	1213.16	-1180.34	-70.75	112.88	5738390.17	567466.38
1250	36.09	133.51	1217.21	-1184.39	-72.77	115	5738388.15	567468.5
1255	36.54	133.32	1221.24	-1188.42	-74.81	117.15	5738386.12	567470.66
1260	36.99	133.13	1225.24	-1192.43	-76.85	119.33	5738384.07	567472.84
1265	37.44	132.94	1229.23	-1196.41	-78.92	121.54	5738382.01	567475.05
1270	37.89	132.75	1233.18	-1200.37	-80.99	123.78	5738379.93	567477.29
1275	38.41	132.79	1237.12	-1204.3	-83.09	126.05	5738377.83	567479.55
1280	39	133.04	1241.02	-1208.2	-85.22	128.34	5738375.71	567481.84
1285	39.58	133.29	1244.89	-1212.07	-87.38	130.65	5738373.54	567484.15
1290	40.16	133.53	1248.73	-1215.91	-89.59	132.98	5738371.34	567486.48
1295	40.74	133.78	1252.53	-1219.71	-91.83	135.32	5738369.09	567488.82
1300	41.33	134.03	1256.3	-1223.48	-94.1	137.69	5738366.82	567491.19
1305	41.95	134.06	1260.04	-1227.22	-96.41	140.07	5738364.51	567493.57
1310	42.58	134.06	1263.74	-1230.92	-98.75	142.49	5738362.17	567495.99
1315	43.2	134.06	1267.4	-1234.58	-101.12	144.93	5738359.81	567498.44
1320	43.83	134.06	1271.03	-1238.21	-103.51	147.41	5738357.41	567500.91
1325	44.46	134.06	1274.62	-1241.8	-105.93	149.91	5738354.99	567503.41
1330	45.06	134.06	1278.17	-1245.35	-108.38	152.44	5738352.54	567505.94
1335	45.47	134.06	1281.69	-1248.87	-110.85	154.99	5738350.07	567508.49
1340	45.89	134.06	1285.18	-1252.36	-113.34	157.56	5738347.58	567511.06
1345	46.31	134.06	1288.65	-1255.83	-115.84	160.15	5738345.08	567513.65
1350	46.73	134.06	1292.09	-1259.27	-118.37	162.76	5738342.56	567516.26
1355	47.15	134.06	1295.5	-1262.68	-120.91	165.38	5738340.02	567518.88
1360	47.4	134.06	1298.89	-1266.07	-123.46	168.02	5738337.46	567521.53
1365	47.4	134.06	1302.27	-1269.45	-126.02	170.67	5738334.9	567524.17
1370	47.4	134.06	1305.66	-1272.84	-128.58	173.31	5738332.34	567526.81
1375	47.4	134.06	1309.04	-1276.22	-131.14	175.96	5738329.78	567529.46
1380	47.4	134.06	1312.43	-1279.61	-133.7	178.6	5738327.22	567532.1
1385	47.4	134.06	1315.81	-1282.99	-136.26	181.25	5738324.67	567534.75

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1390	47.42	134.06	1319.2	-1286.38	-138.82	183.89	5738322.1	567537.39
1395	47.46	134.06	1322.58	-1289.76	-141.38	186.54	5738319.54	567540.04
1400	47.49	134.06	1325.96	-1293.14	-143.94	189.18	5738316.98	567542.69
1405	47.53	134.06	1329.33	-1296.51	-146.5	191.83	5738314.42	567545.33
1410	47.56	134.06	1332.71	-1299.89	-149.07	194.48	5738311.85	567547.98
1415	47.6	134.06	1336.08	-1303.26	-151.64	197.14	5738309.29	567550.64
1420	47.62	134.35	1339.45	-1306.63	-154.21	199.78	5738306.71	567553.28
1425	47.63	134.67	1342.82	-1310	-156.8	202.42	5738304.12	567555.92
1430	47.65	134.98	1346.19	-1313.37	-159.4	205.04	5738301.52	567558.54
1435	47.67	135.29	1349.56	-1316.74	-162.02	207.64	5738298.9	567561.14
1440	47.69	135.61	1352.93	-1320.11	-164.66	210.24	5738296.27	567563.74
1445	47.7	135.75	1356.29	-1323.47	-167.31	212.81	5738293.62	567566.32
1450	47.68	135.19	1359.66	-1326.84	-169.94	215.41	5738290.98	567568.91
1455	47.66	134.64	1363.03	-1330.21	-172.55	218.02	5738288.37	567571.53
1460	47.64	134.08	1366.4	-1333.58	-175.13	220.66	5738285.79	567574.17
1465	47.63	133.52	1369.77	-1336.94	-177.69	223.33	5738283.23	567576.83
1470	47.61	132.96	1373.14	-1340.32	-180.22	226.02	5738280.7	567579.52
1475	47.58	132.72	1376.51	-1343.69	-182.73	228.73	5738278.2	567582.23
1480	47.52	132.84	1379.88	-1347.06	-185.23	231.44	5738275.69	567584.94
1485	47.47	132.96	1383.26	-1350.44	-187.74	234.14	5738273.18	567587.64
1490	47.42	133.08	1386.64	-1353.82	-190.25	236.83	5738270.67	567590.33
1495	47.37	133.21	1390.03	-1357.21	-192.77	239.52	5738268.15	567593.02
1500	47.31	133.33	1393.42	-1360.6	-195.29	242.19	5738265.63	567595.69
1505	47.27	133.45	1396.81	-1363.99	-197.81	244.86	5738263.11	567598.36
1510	47.24	133.57	1400.2	-1367.38	-200.34	247.53	5738260.58	567601.03
1515	47.2	133.69	1403.6	-1370.78	-202.87	250.18	5738258.05	567603.68
1520	47.17	133.82	1406.99	-1374.17	-205.41	252.83	5738255.51	567606.33
1525	47.13	133.94	1410.39	-1377.57	-207.95	255.47	5738252.97	567608.97
1530	47.1	134.06	1413.8	-1380.98	-210.49	258.11	5738250.43	567611.61
1535	47.08	133.57	1417.2	-1384.38	-213.03	260.75	5738247.89	567614.25
1540	47.07	133.09	1420.61	-1387.79	-215.54	263.41	5738245.38	567616.91
1545	47.05	132.6	1424.01	-1391.19	-218.03	266.09	5738242.89	567619.6
1550	47.03	132.11	1427.42	-1394.6	-220.49	268.8	5738240.43	567622.3
1555	47.01	131.62	1430.83	-1398.01	-222.94	271.52	5738237.99	567625.02
1560	47	131.38	1434.24	-1401.42	-225.35	274.26	5738235.57	567627.76
1565	47	131.87	1437.65	-1404.83	-227.78	276.99	5738233.14	567630.5
1570	47	132.36	1441.06	-1408.24	-230.23	279.71	5738230.69	567633.21
1575	47	132.84	1444.47	-1411.65	-232.71	282.4	5738228.21	567635.9
1580	47	133.33	1447.88	-1415.06	-235.21	285.07	5738225.72	567638.57
1585	47	133.81	1451.29	-1418.47	-237.73	287.72	5738223.2	567641.22
1590	46.99	133.85	1454.7	-1421.88	-240.26	290.35	5738220.66	567643.85
1595	46.97	133.44	1458.11	-1425.29	-242.79	292.99	5738218.14	567646.5
1600	46.96	133.02	1461.53	-1428.71	-245.29	295.66	5738215.63	567649.16
1605	46.94	132.6	1464.94	-1432.12	-247.77	298.34	5738213.15	567651.84
1610	46.92	132.19	1468.35	-1435.53	-250.23	301.03	5738210.69	567654.53
1615	46.9	131.77	1471.77	-1438.95	-252.68	303.75	5738208.25	567657.25
1620	46.86	131.66	1475.19	-1442.37	-255.1	306.47	5738205.82	567659.97
1625	46.81	131.66	1478.61	-1445.79	-257.53	309.2	5738203.4	567662.7
1630	46.76	131.66	1482.03	-1449.21	-259.95	311.92	5738200.97	567665.42
1635	46.71	131.66	1485.46	-1452.64	-262.37	314.64	5738198.55	567668.14
1640	46.65	131.66	1488.89	-1456.07	-264.79	317.36	5738196.14	567670.86
1645	46.6	131.66	1492.32	-1459.5	-267.2	320.07	5738193.72	567673.57
1650	46.58	131.59	1495.76	-1462.94	-269.61	322.79	5738191.31	567676.29
1655	46.57	131.52	1499.2	-1466.38	-272.02	325.5	5738188.9	567679
1660	46.55	131.45	1502.63	-1469.81	-274.43	328.22	5738186.5	567681.72
1665	46.53	131.38	1506.07	-1473.25	-276.83	330.94	5738184.09	567684.44
1670	46.51	131.31	1509.51	-1476.69	-279.23	333.67	5738181.7	567687.17
1675	46.56	131.27	1512.95	-1480.14	-281.62	336.39	5738179.3	567689.89

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1680	46.84	131.34	1516.38	-1483.56	-284.02	339.12	5738176.9	567692.63
1685	47.11	131.41	1519.8	-1486.97	-286.44	341.87	5738174.49	567695.37
1690	47.39	131.48	1523.19	-1490.37	-288.87	344.62	5738172.05	567698.12
1695	47.67	131.55	1526.57	-1493.74	-291.31	347.38	5738169.61	567700.88
1700	47.94	131.62	1529.92	-1497.1	-293.77	350.15	5738167.15	567703.65
1705	48.08	131.66	1533.27	-1500.45	-296.24	352.93	5738164.68	567706.43
1710	48.05	131.66	1536.61	-1503.79	-298.72	355.71	5738162.21	567709.21
1715	48.02	131.66	1539.95	-1507.13	-301.19	358.48	5738159.74	567711.98
1720	47.98	131.66	1543.3	-1510.48	-303.66	361.26	5738157.27	567714.76
1725	47.95	131.66	1546.65	-1513.83	-306.12	364.03	5738154.8	567717.53
1730	47.91	131.66	1549.99	-1517.18	-308.59	366.8	5738152.33	567720.31
1735	47.9	131.7	1553.35	-1520.53	-311.06	369.58	5738149.87	567723.08
1740	47.9	131.75	1556.7	-1523.88	-313.53	372.34	5738147.4	567725.85
1745	47.9	131.8	1560.05	-1527.23	-316	375.11	5738144.92	567728.61
1750	47.9	131.86	1563.4	-1530.58	-318.47	377.87	5738142.45	567731.38
1755	47.3	130.6	1566.78	-1533.96	-320.91	380.65	5738140.02	567734.15
1760	46.7	129.34	1570.19	-1537.37	-323.26	383.44	5738137.66	567736.94
1765	46.1	128.08	1573.65	-1540.83	-325.53	386.25	5738135.39	567739.75
1770	45.5	126.83	1577.15	-1544.33	-327.72	389.07	5738133.2	567742.57
1775	44.89	125.57	1580.68	-1547.86	-329.83	391.91	5738131.09	567745.41
1780	44.29	124.31	1584.25	-1551.43	-331.85	394.77	5738129.07	567748.27
1785	43.69	123.05	1587.86	-1555.04	-333.79	397.63	5738127.14	567751.14
1790	43.09	121.8	1591.5	-1558.68	-335.64	400.52	5738125.28	567754.02
1795	42.49	120.54	1595.18	-1562.36	-337.4	403.41	5738123.52	567756.91
1800	41.89	119.28	1598.89	-1566.07	-339.08	406.31	5738121.84	567759.81
1805	41.48	118.7	1602.62	-1569.8	-340.69	409.22	5738120.24	567762.72
1810	41.21	118.6	1606.38	-1573.56	-342.27	412.12	5738118.65	567765.62
1815	40.93	118.5	1610.15	-1577.33	-343.84	415	5738117.08	567768.51
1820	40.66	118.39	1613.93	-1581.11	-345.4	417.88	5738115.53	567771.38
1825	40.39	118.29	1617.73	-1584.91	-346.94	420.73	5738113.98	567774.24
1830	40.11	118.19	1621.55	-1588.73	-348.47	423.58	5738112.45	567777.08
1835	39.48	117.47	1625.39	-1592.57	-349.97	426.41	5738110.96	567779.91
1840	38.76	116.61	1629.27	-1596.45	-351.4	429.22	5738109.52	567782.72
1845	38.04	115.74	1633.19	-1600.37	-352.78	432	5738108.14	567785.5
1850	37.31	114.87	1637.15	-1604.33	-354.09	434.76	5738106.83	567788.26
1855	36.59	114	1641.14	-1608.32	-355.34	437.49	5738105.59	567790.99
1860	35.88	113.15	1645.18	-1612.36	-356.52	440.2	5738104.4	567793.7
1865	35.78	113.04	1649.23	-1616.41	-357.67	442.89	5738103.25	567796.39
1870	35.67	112.94	1653.29	-1620.47	-358.81	445.58	5738102.11	567799.08
1875	35.57	112.84	1657.36	-1624.54	-359.94	448.26	5738100.98	567801.76
1880	35.47	112.73	1661.43	-1628.61	-361.07	450.94	5738099.86	567804.44
1885	35.37	112.63	1665.5	-1632.68	-362.18	453.61	5738098.74	567807.11
1890	35.28	112.37	1669.58	-1636.76	-363.29	456.28	5738097.63	567809.78
1895	35.26	111.67	1673.66	-1640.84	-364.38	458.95	5738096.55	567812.46
1900	35.23	110.96	1677.75	-1644.93	-365.42	461.64	5738095.5	567815.14
1905	35.21	110.26	1681.83	-1649.01	-366.44	464.34	5738094.48	567817.84
1910	35.19	109.55	1685.92	-1653.1	-367.42	467.05	5738093.5	567820.55
1915	35.16	108.85	1690.01	-1657.19	-368.37	469.77	5738092.55	567823.27
1920	35.19	107.98	1694.09	-1661.27	-369.28	472.5	5738091.64	567826
1925	35.26	107	1698.18	-1665.36	-370.15	475.25	5738090.78	567828.75
1930	35.34	106.02	1702.26	-1669.44	-370.97	478.01	5738089.96	567831.52
1935	35.41	105.04	1706.34	-1673.52	-371.74	480.8	5738089.18	567834.3
1940	35.48	104.06	1710.41	-1677.59	-372.47	483.61	5738088.46	567837.11
1945	35.55	103.08	1714.48	-1681.66	-373.15	486.43	5738087.78	567839.93
1950	35.52	101.62	1718.55	-1685.73	-373.77	489.27	5738087.15	567842.77
1955	35.48	100.12	1722.63	-1689.81	-374.32	492.11	5738086.61	567845.61
1960	35.44	98.61	1726.7	-1693.88	-374.79	494.97	5738086.13	567848.47
1965	35.4	97.1	1730.78	-1697.96	-375.19	497.83	5738085.74	567851.34

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1970	35.36	95.59	1734.86	-1702.04	-375.51	500.71	5738085.42	567854.21
1975	35.32	94.09	1738.94	-1706.12	-375.75	503.59	5738085.17	567857.09
1980	35.27	92.66	1743.02	-1710.2	-375.92	506.47	5738085	567859.97
1985	35.23	91.23	1747.11	-1714.29	-376.02	509.35	5738084.9	567862.85
1990	35.19	89.81	1751.2	-1718.38	-376.05	512.23	5738084.88	567865.73
1995	35.15	88.38	1755.29	-1722.47	-376	515.1	5738084.92	567868.6
2000	35.1	86.95	1759.38	-1726.56	-375.89	517.97	5738085.04	567871.47
2005	35.03	86.08	1763.47	-1730.65	-375.7	520.84	5738085.22	567874.34
2010	34.93	85.97	1767.57	-1734.75	-375.5	523.7	5738085.42	567877.2
2015	34.82	85.85	1771.67	-1738.85	-375.3	526.55	5738085.62	567880.05
2020	34.71	85.74	1775.78	-1742.96	-375.09	529.39	5738085.83	567882.89
2025	34.61	85.62	1779.89	-1747.07	-374.88	532.23	5738086.05	567885.73
2030	34.5	85.51	1784.01	-1751.19	-374.66	535.06	5738086.27	567888.56
2035	34.41	85.39	1788.13	-1755.31	-374.43	537.88	5738086.49	567891.38
2036	34.4	85.37	1788.96	-1756.14	-374.39	538.44	5738086.54	567891.94
2037	34.38	85.34	1789.78	-1756.96	-374.34	539	5738086.58	567892.5
2038	34.37	85.32	1790.61	-1757.79	-374.3	539.56	5738086.63	567893.07
2039	34.35	85.3	1791.43	-1758.61	-374.25	540.13	5738086.67	567893.63
2040	34.34	85.28	1792.26	-1759.44	-374.2	540.69	5738086.72	567894.19
2041	34.32	85.25	1793.08	-1760.26	-374.16	541.25	5738086.77	567894.75
2042	34.31	85.23	1793.91	-1761.09	-374.11	541.81	5738086.81	567895.31
2043	34.29	85.21	1794.74	-1761.92	-374.06	542.37	5738086.86	567895.88
2044	34.28	85.18	1795.56	-1762.74	-374.02	542.94	5738086.91	567896.44
2045	34.26	85.16	1796.39	-1763.57	-373.97	543.5	5738086.95	567897
2046	34.25	85.14	1797.22	-1764.4	-373.92	544.06	5738087	567897.56
2047	34.23	85.12	1798.04	-1765.22	-373.87	544.62	5738087.05	567898.12
2048	34.22	85.09	1798.87	-1766.05	-373.83	545.18	5738087.1	567898.68
2049	34.2	85.07	1799.7	-1766.88	-373.78	545.74	5738087.14	567899.24
2050	34.19	85.05	1800.52	-1767.7	-373.73	546.3	5738087.19	567899.8
2051	34.17	85.02	1801.35	-1768.53	-373.68	546.86	5738087.24	567900.36
2052	34.16	85	1802.18	-1769.36	-373.63	547.42	5738087.29	567900.92
2053	34.14	84.98	1803.01	-1770.19	-373.58	547.98	5738087.34	567901.48
2054	34.13	84.96	1803.83	-1771.01	-373.54	548.54	5738087.39	567902.04
2055	34.11	84.93	1804.66	-1771.84	-373.49	549.09	5738087.44	567902.6
2056	34.1	84.91	1805.49	-1772.67	-373.44	549.65	5738087.49	567903.15
2057	34.08	84.89	1806.32	-1773.5	-373.39	550.21	5738087.54	567903.71
2058	34.07	84.86	1807.15	-1774.33	-373.34	550.77	5738087.59	567904.27
2059	34.05	84.84	1807.97	-1775.15	-373.29	551.33	5738087.64	567904.83
2060	34.04	84.82	1808.8	-1775.98	-373.24	551.88	5738087.69	567905.39
2061	34.02	84.8	1809.63	-1776.81	-373.19	552.44	5738087.74	567905.94
2062	34.01	84.74	1810.46	-1777.64	-373.13	553	5738087.79	567906.5
2063	33.99	84.66	1811.29	-1778.47	-373.08	553.56	5738087.84	567907.06
2064	33.97	84.59	1812.12	-1779.3	-373.03	554.11	5738087.89	567907.61
2065	33.96	84.52	1812.95	-1780.13	-372.98	554.67	5738087.95	567908.17
2066	33.94	84.44	1813.78	-1780.96	-372.92	555.22	5738088	567908.73
2067	33.92	84.37	1814.61	-1781.79	-372.87	555.78	5738088.05	567909.28
2068	33.91	84.3	1815.44	-1782.62	-372.81	556.33	5738088.11	567909.84
2069	33.89	84.22	1816.27	-1783.45	-372.76	556.89	5738088.17	567910.39
2070	33.87	84.15	1817.1	-1784.28	-372.7	557.44	5738088.22	567910.95
2071	33.86	84.08	1817.93	-1785.11	-372.65	558	5738088.28	567911.5
2072	33.84	84	1818.76	-1785.94	-372.59	558.55	5738088.34	567912.05
2073	33.82	83.93	1819.59	-1786.77	-372.53	559.11	5738088.39	567912.61
2074	33.8	83.86	1820.42	-1787.6	-372.47	559.66	5738088.45	567913.16
2075	33.79	83.78	1821.25	-1788.43	-372.41	560.21	5738088.51	567913.71
2076	33.77	83.71	1822.08	-1789.26	-372.35	560.76	5738088.57	567914.27
2077	33.75	83.63	1822.91	-1790.09	-372.29	561.32	5738088.63	567914.82
2078	33.74	83.56	1823.74	-1790.93	-372.23	561.87	5738088.7	567915.37
2079	33.72	83.49	1824.58	-1791.76	-372.16	562.42	5738088.76	567915.92

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2080	33.7	83.41	1825.41	-1792.59	-372.1	562.97	5738088.82	567916.47
2081	33.69	83.34	1826.24	-1793.42	-372.04	563.52	5738088.89	567917.02
2082	33.67	83.27	1827.07	-1794.25	-371.97	564.07	5738088.95	567917.57
2083	33.65	83.19	1827.91	-1795.09	-371.91	564.62	5738089.02	567918.13
2084	33.64	83.12	1828.74	-1795.92	-371.84	565.17	5738089.08	567918.67
2085	33.62	83.05	1829.57	-1796.75	-371.78	565.72	5738089.15	567919.23
2086	33.6	82.97	1830.4	-1797.58	-371.71	566.27	5738089.22	567919.77
2087	33.59	82.9	1831.24	-1798.42	-371.64	566.82	5738089.28	567920.32
2088	33.57	82.83	1832.07	-1799.25	-371.57	567.37	5738089.35	567920.87
2089	33.55	82.75	1832.9	-1800.08	-371.5	567.92	5738089.42	567921.42
2090	33.53	82.68	1833.74	-1800.92	-371.43	568.47	5738089.49	567921.97
2091	33.53	82.65	1834.57	-1801.75	-371.36	569.01	5738089.56	567922.52
2092	33.53	82.64	1835.4	-1802.58	-371.29	569.56	5738089.63	567923.06
2093	33.53	82.63	1836.24	-1803.42	-371.22	570.11	5738089.7	567923.61
2094	33.53	82.62	1837.07	-1804.25	-371.15	570.66	5738089.77	567924.16
2095	33.53	82.61	1837.9	-1805.08	-371.08	571.21	5738089.85	567924.71
2096	33.53	82.6	1838.74	-1805.92	-371.01	571.75	5738089.92	567925.26
2097	33.53	82.59	1839.57	-1806.75	-370.94	572.3	5738089.99	567925.8
2098	33.53	82.59	1840.41	-1807.59	-370.86	572.85	5738090.06	567926.35
2099	33.53	82.58	1841.24	-1808.42	-370.79	573.4	5738090.13	567926.9
2100	33.53	82.57	1842.07	-1809.25	-370.72	573.94	5738090.2	567927.45
2101	33.53	82.56	1842.91	-1810.09	-370.65	574.49	5738090.27	567927.99
2102	33.53	82.55	1843.74	-1810.92	-370.58	575.04	5738090.34	567928.54
2103	33.53	82.54	1844.57	-1811.75	-370.51	575.59	5738090.42	567929.09
2104	33.53	82.53	1845.41	-1812.59	-370.43	576.13	5738090.49	567929.64
2105	33.52	82.52	1846.24	-1813.42	-370.36	576.68	5738090.56	567930.18
2106	33.52	82.51	1847.07	-1814.25	-370.29	577.23	5738090.63	567930.73
2107	33.52	82.5	1847.91	-1815.09	-370.22	577.78	5738090.7	567931.28
2108	33.52	82.49	1848.74	-1815.92	-370.15	578.33	5738090.78	567931.83
2109	33.52	82.48	1849.58	-1816.76	-370.08	578.87	5738090.85	567932.37
2110	33.52	82.47	1850.41	-1817.59	-370	579.42	5738090.92	567932.92
2111	33.52	82.46	1851.24	-1818.42	-369.93	579.97	5738090.99	567933.47
2112	33.52	82.45	1852.08	-1819.26	-369.86	580.51	5738091.07	567934.02
2113	33.52	82.44	1852.91	-1820.09	-369.79	581.06	5738091.14	567934.56
2114	33.52	82.43	1853.74	-1820.92	-369.71	581.61	5738091.21	567935.11
2115	33.52	82.42	1854.58	-1821.76	-369.64	582.16	5738091.28	567935.66
2116	33.52	82.41	1855.41	-1822.59	-369.57	582.7	5738091.35	567936.21
2117	33.52	82.4	1856.24	-1823.43	-369.49	583.25	5738091.43	567936.75
2118	33.52	82.39	1857.08	-1824.26	-369.42	583.8	5738091.5	567937.3
2119	33.52	82.38	1857.91	-1825.09	-369.35	584.35	5738091.57	567937.85
2120	33.52	82.37	1858.75	-1825.93	-369.28	584.89	5738091.65	567938.4
2121	33.53	82.35	1859.58	-1826.76	-369.2	585.44	5738091.72	567938.94
2122	33.54	82.33	1860.41	-1827.59	-369.13	585.99	5738091.79	567939.49
2123	33.54	82.31	1861.25	-1828.43	-369.05	586.54	5738091.87	567940.04
2124	33.55	82.29	1862.08	-1829.26	-368.98	587.08	5738091.94	567940.59
2125	33.55	82.27	1862.91	-1830.09	-368.91	587.63	5738092.02	567941.13
2126	33.56	82.25	1863.75	-1830.93	-368.83	588.18	5738092.09	567941.68
2127	33.56	82.24	1864.58	-1831.76	-368.76	588.73	5738092.17	567942.23
2128	33.57	82.22	1865.41	-1832.59	-368.68	589.27	5738092.24	567942.78
2129	33.57	82.2	1866.25	-1833.43	-368.61	589.82	5738092.32	567943.32
2130	33.58	82.18	1867.08	-1834.26	-368.53	590.37	5738092.39	567943.87
2131	33.58	82.16	1867.91	-1835.09	-368.46	590.92	5738092.47	567944.42
2132	33.59	82.14	1868.75	-1835.93	-368.38	591.47	5738092.54	567944.97
2133	33.6	82.12	1869.58	-1836.76	-368.31	592.01	5738092.62	567945.52
2134	33.6	82.11	1870.41	-1837.59	-368.23	592.56	5738092.69	567946.06
2135	33.61	82.09	1871.24	-1838.43	-368.15	593.11	5738092.77	567946.61
2136	33.61	82.07	1872.08	-1839.26	-368.08	593.66	5738092.85	567947.16
2137	33.62	82.05	1872.91	-1840.09	-368	594.21	5738092.92	567947.71

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2138	33.62	82.03	1873.74	-1840.92	-367.92	594.76	5738093	567948.26
2139	33.63	82.01	1874.58	-1841.76	-367.85	595.3	5738093.08	567948.81
2140	33.63	81.99	1875.41	-1842.59	-367.77	595.85	5738093.15	567949.35
2141	33.64	81.98	1876.24	-1843.42	-367.69	596.4	5738093.23	567949.9
2142	33.65	81.96	1877.07	-1844.25	-367.62	596.95	5738093.31	567950.45
2143	33.65	81.94	1877.91	-1845.09	-367.54	597.5	5738093.38	567951
2144	33.66	81.92	1878.74	-1845.92	-367.46	598.05	5738093.46	567951.55
2145	33.66	81.9	1879.57	-1846.75	-367.38	598.6	5738093.54	567952.1
2146	33.67	81.88	1880.4	-1847.58	-367.31	599.14	5738093.62	567952.65
2147	33.67	81.86	1881.23	-1848.42	-367.23	599.69	5738093.7	567953.19
2148	33.68	81.85	1882.07	-1849.25	-367.15	600.24	5738093.78	567953.74
2149	33.68	81.83	1882.9	-1850.08	-367.07	600.79	5738093.85	567954.29
2150	33.68	81.81	1883.73	-1850.91	-366.99	601.34	5738093.93	567954.84
2151	33.68	81.79	1884.56	-1851.74	-366.91	601.89	5738094.01	567955.39
2152	33.69	81.78	1885.4	-1852.58	-366.83	602.44	5738094.09	567955.94
2153	33.69	81.76	1886.23	-1853.41	-366.75	602.99	5738094.17	567956.49
2154	33.69	81.74	1887.06	-1854.24	-366.67	603.54	5738094.25	567957.04
2155	33.69	81.73	1887.89	-1855.07	-366.59	604.08	5738094.33	567957.58
2156	33.69	81.71	1888.72	-1855.9	-366.51	604.63	5738094.41	567958.14
2157	33.7	81.69	1889.56	-1856.74	-366.43	605.18	5738094.49	567958.68
2158	33.7	81.68	1890.39	-1857.57	-366.35	605.73	5738094.57	567959.23
2159	33.7	81.66	1891.22	-1858.4	-366.27	606.28	5738094.65	567959.78
2160	33.7	81.64	1892.05	-1859.23	-366.19	606.83	5738094.73	567960.33
2161	33.7	81.63	1892.88	-1860.06	-366.11	607.38	5738094.81	567960.88
2162	33.7	81.61	1893.72	-1860.9	-366.03	607.93	5738094.89	567961.43
2163	33.71	81.59	1894.55	-1861.73	-365.95	608.48	5738094.97	567961.98
2164	33.71	81.58	1895.38	-1862.56	-365.87	609.02	5738095.05	567962.53
2165	33.71	81.56	1896.21	-1863.39	-365.79	609.57	5738095.13	567963.08
2166	33.71	81.54	1897.04	-1864.22	-365.71	610.12	5738095.22	567963.62
2167	33.71	81.53	1897.88	-1865.06	-365.63	610.67	5738095.3	567964.17
2168	33.71	81.51	1898.71	-1865.89	-365.54	611.22	5738095.38	567964.72
2169	33.72	81.49	1899.54	-1866.72	-365.46	611.77	5738095.46	567965.27
2170	33.72	81.48	1900.37	-1867.55	-365.38	612.32	5738095.54	567965.82
2171	33.72	81.46	1901.2	-1868.38	-365.3	612.87	5738095.63	567966.37
2172	33.72	81.44	1902.03	-1869.21	-365.21	613.42	5738095.71	567966.92
2173	33.72	81.43	1902.87	-1870.05	-365.13	613.96	5738095.79	567967.47
2174	33.72	81.41	1903.7	-1870.88	-365.05	614.51	5738095.87	567968.02
2175	33.73	81.39	1904.53	-1871.71	-364.97	615.06	5738095.96	567968.56
2176	33.73	81.38	1905.36	-1872.54	-364.88	615.61	5738096.04	567969.11
2177	33.73	81.36	1906.19	-1873.37	-364.8	616.16	5738096.12	567969.66
2178	33.73	81.33	1907.02	-1874.2	-364.72	616.71	5738096.21	567970.21
2179	33.73	81.29	1907.86	-1875.04	-364.63	617.26	5738096.29	567970.76
2180	33.73	81.26	1908.69	-1875.87	-364.55	617.81	5738096.38	567971.31
2181	33.72	81.22	1909.52	-1876.7	-364.46	618.36	5738096.46	567971.86
2182	33.72	81.19	1910.35	-1877.53	-364.38	618.9	5738096.54	567972.41
2183	33.72	81.15	1911.18	-1878.36	-364.29	619.45	5738096.63	567972.95
2184	33.72	81.12	1912.02	-1879.19	-364.21	620	5738096.72	567973.5
2185	33.72	81.09	1912.85	-1880.03	-364.12	620.55	5738096.8	567974.05
2186	33.72	81.05	1913.68	-1880.86	-364.04	621.1	5738096.89	567974.6
2187	33.72	81.02	1914.51	-1881.69	-363.95	621.65	5738096.97	567975.15
2188	33.71	80.98	1915.34	-1882.52	-363.86	622.2	5738097.06	567975.7
2189	33.71	80.95	1916.17	-1883.35	-363.78	622.74	5738097.15	567976.24
2190	33.71	80.91	1917.01	-1884.19	-363.69	623.29	5738097.23	567976.79
2191	33.71	80.88	1917.84	-1885.02	-363.6	623.84	5738097.32	567977.34
2192	33.71	80.84	1918.67	-1885.85	-363.51	624.39	5738097.41	567977.89
2193	33.71	80.81	1919.5	-1886.68	-363.42	624.94	5738097.5	567978.44
2194	33.71	80.77	1920.33	-1887.51	-363.34	625.48	5738097.59	567978.98
2195	33.71	80.74	1921.17	-1888.35	-363.25	626.03	5738097.68	567979.53

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2196	33.7	80.7	1922	-1889.18	-363.16	626.58	5738097.77	567980.08
2197	33.7	80.67	1922.83	-1890.01	-363.07	627.13	5738097.86	567980.63
2198	33.7	80.63	1923.66	-1890.84	-362.98	627.67	5738097.95	567981.17
2199	33.7	80.6	1924.49	-1891.67	-362.89	628.22	5738098.04	567981.72
2200	33.7	80.56	1925.33	-1892.51	-362.8	628.77	5738098.13	567982.27
2201	33.7	80.53	1926.16	-1893.34	-362.7	629.32	5738098.22	567982.82
2202	33.7	80.5	1926.99	-1894.17	-362.61	629.86	5738098.31	567983.36
2203	33.69	80.46	1927.82	-1895	-362.52	630.41	5738098.4	567983.91
2204	33.69	80.43	1928.65	-1895.83	-362.43	630.96	5738098.49	567984.46
2205	33.69	80.39	1929.48	-1896.67	-362.34	631.5	5738098.59	567985.01
2206	33.69	80.36	1930.32	-1897.5	-362.25	632.05	5738098.68	567985.55
2207	33.69	80.39	1931.15	-1898.33	-362.15	632.6	5738098.77	567986.1
2208	33.7	80.42	1931.98	-1899.16	-362.06	633.14	5738098.86	567986.65
2209	33.7	80.45	1932.81	-1899.99	-361.97	633.69	5738098.96	567987.19
2210	33.7	80.48	1933.65	-1900.83	-361.88	634.24	5738099.05	567987.74
2211	33.71	80.5	1934.48	-1901.66	-361.78	634.79	5738099.14	567988.29
2212	33.71	80.53	1935.31	-1902.49	-361.69	635.33	5738099.23	567988.83
2213	33.71	80.56	1936.14	-1903.32	-361.6	635.88	5738099.32	567989.38
2214	33.72	80.59	1936.97	-1904.15	-361.51	636.43	5738099.41	567989.93
2215	33.72	80.62	1937.8	-1904.98	-361.42	636.97	5738099.5	567990.48
2216	33.72	80.65	1938.64	-1905.82	-361.33	637.52	5738099.59	567991.02
2217	33.72	80.67	1939.47	-1906.65	-361.24	638.07	5738099.68	567991.57
2218	33.73	80.7	1940.3	-1907.48	-361.15	638.62	5738099.77	567992.12
2219	33.73	80.73	1941.13	-1908.31	-361.06	639.17	5738099.86	567992.67
2220	33.73	80.76	1941.96	-1909.14	-360.97	639.71	5738099.95	567993.22
2221	33.74	80.79	1942.79	-1909.97	-360.88	640.26	5738100.04	567993.76
2222	33.74	80.82	1943.63	-1910.81	-360.79	640.81	5738100.13	567994.31
2223	33.74	80.84	1944.46	-1911.64	-360.7	641.36	5738100.22	567994.86
2224	33.75	80.87	1945.29	-1912.47	-360.62	641.91	5738100.31	567995.41
2225	33.75	80.9	1946.12	-1913.3	-360.53	642.46	5738100.4	567995.96
2226	33.75	80.93	1946.95	-1914.13	-360.44	643.01	5738100.48	567996.51
2227	33.76	80.96	1947.78	-1914.96	-360.35	643.55	5738100.57	567997.06
2228	33.76	80.99	1948.62	-1915.8	-360.27	644.1	5738100.66	567997.6
2229	33.76	81.01	1949.45	-1916.63	-360.18	644.65	5738100.74	567998.15
2230	33.77	81.04	1950.28	-1917.46	-360.09	645.2	5738100.83	567998.7
2231	33.77	81.07	1951.11	-1918.29	-360.01	645.75	5738100.92	567999.25
2232	33.77	81.1	1951.94	-1919.12	-359.92	646.3	5738101	567999.8
2233	33.78	81.13	1952.77	-1919.95	-359.83	646.85	5738101.09	568000.35
2234	33.78	81.16	1953.6	-1920.78	-359.75	647.4	5738101.17	568000.9
2235	33.78	81.15	1954.43	-1921.61	-359.66	647.95	5738101.26	568001.45
2236	33.78	81.1	1955.27	-1922.44	-359.58	648.5	5738101.35	568002
2237	33.77	81.06	1956.1	-1923.28	-359.49	649.05	5738101.43	568002.55
2238	33.77	81.01	1956.93	-1924.11	-359.41	649.59	5738101.52	568003.1
2239	33.77	80.96	1957.76	-1924.94	-359.32	650.14	5738101.6	568003.64
2240	33.77	80.92	1958.59	-1925.77	-359.23	650.69	5738101.69	568004.19
2241	33.77	80.87	1959.42	-1926.6	-359.14	651.24	5738101.78	568004.74
2242	33.76	80.83	1960.25	-1927.43	-359.05	651.79	5738101.87	568005.29
2243	33.76	80.78	1961.08	-1928.26	-358.97	652.34	5738101.96	568005.84
2244	33.76	80.74	1961.92	-1929.1	-358.88	652.89	5738102.05	568006.39
2245	33.76	80.69	1962.75	-1929.93	-358.79	653.44	5738102.14	568006.94
2246	33.76	80.64	1963.58	-1930.76	-358.7	653.98	5738102.23	568007.48
2247	33.75	80.6	1964.41	-1931.59	-358.61	654.53	5738102.32	568008.03
2248	33.75	80.55	1965.24	-1932.42	-358.52	655.08	5738102.41	568008.58
2249	33.75	80.51	1966.07	-1933.25	-358.42	655.63	5738102.5	568009.13
2250	33.75	80.46	1966.9	-1934.08	-358.33	656.17	5738102.59	568009.68
2251	33.75	80.41	1967.73	-1934.92	-358.24	656.72	5738102.68	568010.22
2252	33.74	80.37	1968.57	-1935.75	-358.15	657.27	5738102.78	568010.77
2253	33.74	80.32	1969.4	-1936.58	-358.05	657.82	5738102.87	568011.32

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2254	33.74	80.28	1970.23	-1937.41	-357.96	658.37	5738102.96	568011.87
2255	33.74	80.23	1971.06	-1938.24	-357.87	658.91	5738103.06	568012.42
2256	33.74	80.19	1971.89	-1939.07	-357.77	659.46	5738103.15	568012.96
2257	33.73	80.14	1972.72	-1939.91	-357.68	660.01	5738103.25	568013.51
2258	33.73	80.09	1973.56	-1940.74	-357.58	660.55	5738103.34	568014.06
2259	33.73	80.05	1974.39	-1941.57	-357.49	661.1	5738103.44	568014.6
2260	33.73	80	1975.22	-1942.4	-357.39	661.65	5738103.53	568015.15
2261	33.73	79.96	1976.05	-1943.23	-357.29	662.19	5738103.63	568015.7
2262	33.72	79.91	1976.88	-1944.06	-357.2	662.74	5738103.73	568016.24
2263	33.72	79.87	1977.71	-1944.9	-357.1	663.29	5738103.82	568016.79
2264	33.72	79.83	1978.55	-1945.73	-357	663.84	5738103.92	568017.34
2265	33.72	79.83	1979.38	-1946.56	-356.9	664.38	5738104.02	568017.88
2266	33.72	79.83	1980.21	-1947.39	-356.81	664.93	5738104.12	568018.43
2267	33.72	79.82	1981.04	-1948.22	-356.71	665.47	5738104.22	568018.98
2268	33.72	79.82	1981.87	-1949.05	-356.61	666.02	5738104.31	568019.52
2269	33.71	79.82	1982.71	-1949.89	-356.51	666.57	5738104.41	568020.07
2270	33.71	79.82	1983.54	-1950.72	-356.41	667.11	5738104.51	568020.61
2271	33.71	79.82	1984.37	-1951.55	-356.32	667.66	5738104.61	568021.16
2272	33.71	79.82	1985.2	-1952.38	-356.22	668.21	5738104.71	568021.71
2273	33.71	79.82	1986.03	-1953.21	-356.12	668.75	5738104.8	568022.25
2274	33.71	79.81	1986.87	-1954.05	-356.02	669.3	5738104.9	568022.8
2275	33.71	79.81	1987.7	-1954.88	-355.92	669.84	5738105	568023.35
2276	33.71	79.81	1988.53	-1955.71	-355.83	670.39	5738105.1	568023.89
2277	33.71	79.81	1989.36	-1956.54	-355.73	670.94	5738105.2	568024.44
2278	33.71	79.81	1990.19	-1957.37	-355.63	671.48	5738105.29	568024.98
2279	33.7	79.81	1991.02	-1958.2	-355.53	672.03	5738105.39	568025.53
2280	33.7	79.8	1991.86	-1959.04	-355.43	672.57	5738105.49	568026.08
2281	33.7	79.8	1992.69	-1959.87	-355.33	673.12	5738105.59	568026.62
2282	33.7	79.8	1993.52	-1960.7	-355.24	673.67	5738105.69	568027.17
2283	33.7	79.8	1994.35	-1961.53	-355.14	674.21	5738105.79	568027.72

APPENDIX 2a

BREAM A9B

Petrophysics Evaluation Summary

Esso Australia Pty Ltd.
Exploration Department

Bream A9B
Petrophysics Report

Petrophysicist: A.A. Mills
July 2006

Bream A9B Petrophysics Report

INTRODUCTION

Bream A9B is a directional well designed to intersect the TCC N-1 reservoir sands in the eastern part of the Bream A field.

Bream A9B was kicked-off at 1769.0 mMDRT, out of the 9⁵/₈" production casing and drilled to a Total Depth of 2283.0 mMDRT (1994.35 mTVDRT) in an 8½" production hole.

LWD GR and D&I data were acquired using Schlumberger Drilling & Measurements PowerPulse while drilling from 1756.0 mMDRT to 2264.5 mMDRT.

After reaching TD, the well was logged up in memory mode with Precision Energy Service's shuttle on drill pipe from 1756.0 mMDRT to 2265.0 mMDRT.

The Precision logs were depth matched to the Schlumberger LWD GR log and analysed for porosity, water saturation and net pay over the interval 2025 - 2250 mMDRT.

Note that all depth quoted in this report are logged mMDRT unless otherwise specified.

DATA

Data from the following logging surveys were used in the interpretation:

Survey/Log	Suite	Company	Top (m MDRT)	Bottom (m MDRT)
LWD-GR (base log for depth matching)	2	Schlumberger	1756.0	2264.5
Dual Laterolog (DDL, DSL), Gamma Ray (GRGC), Photo Density (PDPE, DEN), Caliper (CLDC), Compensated Neutron (NPRL) and Compensated Sonic (DT)	1	Precision	1761	2265

Deviation

The average well deviation over the reservoir interval was 33.7° towards an average azimuth of 80°.

Mud Data

Mud Type: KCl/Glycol/PHPA
Mud Weight: 10.0 ppg
Rm: 0.095 @ 25 °C
Rmf: 0.072 @ 25 °C
Rmc: 0.099 @ 25 °C
KCL 8.0%
BHT: 82.4 °C (as measured by the Precision tools)

Hole Size

1756 - 2283 mMDRT 8 ½ inches

Data Acquisition & Log Quality

Good quality Schlumberger D&M LWD data and Precision shuttle data were acquired without incident, despite relatively poor hole conditions. Caliper closure between 2201-2209m MDRT coincided with some questionable log responses and depth control.

Data Processing

As the shuttle GR 1st reading (2246.8 mMDRT) was shallow to the LWD GR 1st reading (2264.5 mMDRT) a complete GR for the well was generated by normalizing the LWD GR to the Reeves GR ($GR_{LWDNORM} = GR_{LWD} * [200/195]$), depth aligning the normalized LWD GR to the Reeves GRGC curve, and then splicing the bottom 18m of the LWD GR to the Reeves curve.

Resistivity data over the interval 2202 -2213m MDRT were depth aligned to better match the Reeves density-neutron curves .

Bream A9B Petrophysics Report

The PDPE was shifted -0.4 b/e to remove barite effect, before U was generated for lithology determination.

INTERPRETATION

Logs Used

The primary logs used in the interpretation were the depth matched DDLL (deep resistivity), GRGC (composite gamma from GRGC and the basal LWD-GR), DEN (bulk density), PDPE (photo-electric effect) and NPRL (thermal neutron porosity). In addition, coal intervals were identified using a coal flag (Flag_coal). Hydrocarbon types were denoted using a hydrocarbon flag (Flag_rhoh). A temperature log was created using the following data:

<u>Depth (mMDRT)</u>	<u>Temperature (deg. C)</u>
92.2	10
2280	92.4

The temperature at depth 92.2 mMDRT represents the temperature of the sea-bed and the temperature at 2280 mMDRT (first reading of the Precision logs) is the estimated formation temperature equal to BHT + 10 degC.

Radioactive reservoir sands are present in this well, particularly across the interval 2139-62m MDRT. The GR is generally a poor clay indicator across this interval. The approach taken here to adequately characterise the clay content was to use the U, DEN, NPRL and GR measurements, with heavy weighting towards DEN, NPRL, moderate towards U. and low weighting towards GR.

Formation Water Salinity

R_{wa} analysis using a = 1, m = 2 and n = 2 indicates clean water sands have an apparent formation water salinity of 30,000 ppm NaCl equivalent throughout the zone of interest.

Hydrocarbon Type Identification

A combination of resistivity, density-neutron logs, total Near-Far neutron counts, and mud log shows were used to determine hydrocarbon types present in the reservoirs. The following table lists the determination made using this process:

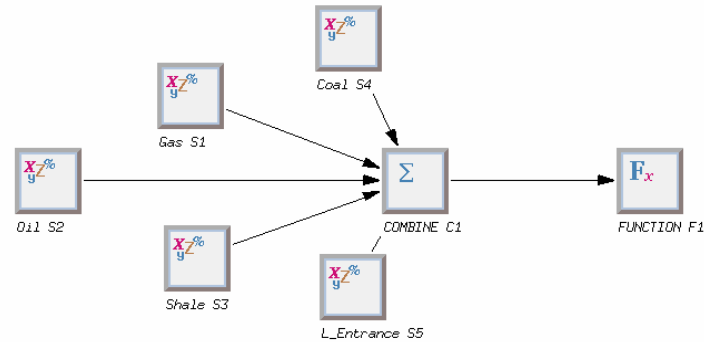
Zone	Top Depth mMD	Bottom Depth mMD	Fluid Type
N0_TOL_GAS	2056.4	2060.6	Probable Gas
N1_TCC_GAS	2127.0	2199.5	Gas
N1_CYAN_GAS	2206.0	2209.1	Gas
N1_CYAN_OIL	2209.1	2213.5	Oil
N1_CYAN_RESID	2213.5	2215.7	Residual Oil
N1_SUB_INTR_OIL	2240.4	2242.0	Oil
N1_SUB_INTR_WATER	2242.0	2248.5	Water

Clay Volume, Porosity and Water Saturation

Schlumberger's Geoframe ELAN+ module was used to determine mineral volumes, total porosity, effective porosity and effective saturation. The details of the models are illustrated in the figures and tables below.

ELAN+ MODEL

Elan+ Model and Module Configuration



ELAN Input Channels

	Compound Name Spec	BREAM A9B
TEMP_CH	TEMP;*	TEMP@ELAN_INPUTS;14 .WE [A1627624]
RHOB_IFAC_CH	IFRH;*	
NPFI_IFAC_CH	INPH;*	
RHOB_CH	DEN:BPB;*	DEN@ELAN_INPUTS2;11 .MOPED_LOAD .FIN .WE
NPFI_CH	NPRL:BPB;*	NPRL@ELAN_INPUTS2;12 .MOPED_LOAD .FIN .M
U_CH	U;*	U@ELAN_INPUTS;3 .DF [A1627612]
CUDC_CH/RT_CH	DDLL:BPB;*	DDLL@ELAN_INPUTS2;11 .FIN .MOPED_LOAD .W
GR_CH	GR;*	GR@ELAN_INPUTS2;17 .LWD .WE .WE .LWD .WE .
PRB1_CH	FLAG_RHOH;*	FLAG_RHOH@ELAN_INPUTS2;6 .WE .WE .WELLEI
PRB2_CH	FLAG_VOLC;*	FLAG_VOLC@ELAN_INPUTS2;7 .LLEDIT .WE .WEI
PRB3_CH	PRB3;*	
PRB4_CH	FLAG_COAL;*	FLAG_COAL@ELAN_INPUTS2;7 .WE .WELLEDIT .A
PRB5_CH	PRB5;*	
PRB6_CH	PRB6;*	
M_CH	MXP;*	
N_CH	SXP;*	

Bream A9B Petrophysics Report

ELAN Global Parameters

Reference Index	MD
Processing Interval	2025.0000(m) To 2250.0000(m)
Sampling Rate	0.3281(m)
Uncertainty Channel	FALSE
Clay Input	DRY
Special Fluids	IMMOVABLE_HYDROCARBON

ELAN Zone Definition

Name	Bottom To Top
La Trobe	2272.7000(m) To 2125.0000(m)
Channel	2125.0000(m) To 2025.0000(m)

ELAN Process Definition

Process	SOLVE1 "Gas"							
Equations	RHOB	NPHI	U	CUDC_DWA	GR	CT1		
Volumes	QUAR	ORTH	PYRI	ILLI	XWAT	UWAT	XGAS	UGAS
User Constraints	pyrcut=if((PRB2_CH<2005), PYRI,0)							
	constraint(pyrilm, PYRI<pyrcut)							
Constraint Zones	Bottom		Top					
UNDEFINED		2272.7000(m)		2025.0000(m)				

Constraints Applied

UNDEFINED	- WaterBaseMud_SXO_gt_SW
UNDEFINED	- IrreducibleXWater
UNDEFINED	- IrreducibleUWater

Process	SOLVE2 "Oil"							
Equations	RHOB	NPHI	U	CUDC_DWA	GR	CT2		
Volumes	QUAR	ORTH	ILLI	XWAT	UWAT	XOIL	UOIL	
User Constraints	constraint(maxDolomite, DOLO<0)							
Constraint Zones	Bottom		Top					
UNDEFINED		2272.7000(m)		2025.0000(m)				

Constraints Applied

UNDEFINED	- IrreducibleXWater
UNDEFINED	- IrreducibleUWater
UNDEFINED	- WaterBaseMud_SXO_gt_SW

Process	SOLVE3 "Shale"							
Equations	RHOB	NPHI	U	CUDC_DWA	GR			
Volumes	QUAR	ILLI	XWAT	UWAT				
Constraint Zones	Bottom		Top					
UNDEFINED		2272.7000(m)		2025.0000(m)				

Process	SOLVE4 "Coal"							
Equations	RHOB							
Volumes	COAL							

Constraint Zones	Bottom		Top					
UNDEFINED		2272.7000(m)		2025.0000(m)				

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Process SOLVE5 "L_Entrance"
Equations RHOB NPHI U
Volumes QUAR ILLI

Constraint Zones Bottom Top
UNDEFINED 2272.7000(m) 2025.0000(m)

Process SOLVE6 "VOLC"
Equations RHOB
Volumes IGNE

Constraint Zones Bottom Top
UNDEFINED 2272.7000(m) 2025.0000(m)

Process COMBINE 1 "COMBINE"
Order SOL.2 SOL.1 SOL.3 SOL.4 SOL.6 SOL.5
Combine Method

"Channel" 7456.3647 (m) Internal Average

"Lakes Entran" 6643.7007 (m) Sol.5

Probability Functions

probability(SOL.4, PRB4_CH)

probability(SOL.6, PRB2_CH)

prob3 = linear(ILLI_VOL.SOL.3, 0.2, 0, 0.5, 1)

probability(SOL.3, prob3)

prob1 = if (PRB1_CH <=0.25, 1, 0)

probability(SOL.1, prob1)

Process FUNCTION 1 "FUNCTION"

Outputs VCL SXWI SWT SUWI PIGN PHIT

User-defined Function/n swt_cmp=if((PRB4_CH > 0),1,(UWAT_VOL + XBWA_VOL)/(UWAT_VOL + XBWA_VOL + UOIL_VOL + UGAS_VOL))

output(SWT, swt_cmp)

ELAN Different Parameters

Parameters	La Trobe	Channel		
n*****	*****	*****	*****	*****
RHOB_XOIL (g/cm3)	0.400	0.500		
CXDC_XWAT (mS/m)	17.098	16.153		
CXDC_XBWA (mS/m)	9.775	9.234		
CUDC_UWAT (mS/m)	6.501	6.170		
CUDC_UBWA (mS/m)	4.601	10.000		
CT2_UOIL ()	-0.800	-0.500		
RHOB_UNC_WM ()	0.800	1.000		
NPHI_UNC_WM ()	0.800	1.000		

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ELAN Same Parameters

Parameter	Value	Parameter	Value
RHOB_QUAR	2.650(g/cm3)	RHOB_CALC	2.710(g/cm3)
RHOB_DOLO	2.847(g/cm3)	RHOB_ORTH	2.570(g/cm3)
RHOB_PYRI	4.990(g/cm3)	RHOB_GLAU	2.650(g/cm3)
RHOB_ILLI	2.780(g/cm3)	RHOB_KAOL	2.620(g/cm3)
RHOB_COAL	1.200(g/cm3)	RHOB_IGNE	4.800(g/cm3)
RHOB_XWAT	1.000(g/cm3)	RHOB_UWAT	0.977(g/cm3)
RHOB_UOIL	0.500(g/cm3)	RHOB_XGAS	-0.031(g/cm3)
RHOB_UGAS	-0.031(g/cm3)	RHOB_XBWA	0.963(g/cm3)
NPHI_QUAR	-0.059(m3/m3)	NPHI_CALC	0.000(m3/m3)
NPHI_DOLO	0.032(m3/m3)	NPHI_ORTH	-0.010(m3/m3)
NPHI_PYRI	0.008(m3/m3)	NPHI_GLAU	0.410(m3/m3)
NPHI_ILLI	0.247(m3/m3)	NPHI_KAOL	0.450(m3/m3)
NPHI_COAL	0.450(m3/m3)	NPHI_IGNE	0.400(m3/m3)
NPHI_XWAT	1.000(m3/m3)	NPHI_UWAT	1.000(m3/m3)
NPHI_XOIL	0.600(m3/m3)	NPHI_UOIL	0.600(m3/m3)
NPHI_XGAS	0.087(m3/m3)	NPHI_UGAS	0.087(m3/m3)
NPHI_XBWA	1.000(m3/m3)	DT_QUAR	55.500(us/m)
DT_CALC	47.800(us/m)	DT_DOLO	43.500(us/m)
DT_ORTH	60.000(us/m)	DT_ILLI	60.000(us/m)
DT_KAOL	91.318(us/m)	DT_COAL	121.920(us/m)
DT_IGNE	16.916(us/m)	DT_XWAT	0.000(us/m)
DT_UWAT	220.000(us/m)	DT_XOIL	0.000(us/m)
DT_UOIL	240.000(us/m)	DT_XGAS	0.000(us/m)
DT_UGAS	289.865(us/m)	DT_XBWA	189.000(us/m)
U_QUAR	5.000()	U_CALC	14.100()
U_DOLO	9.100()	U_ORTH	8.700()
U_PYRI	82.060()	U_ILLI	9.900()
U_KAOL	5.100()	U_COAL	1.000()
U_IGNE	15.000()	U_XWAT	0.692()
U_UWAT	0.000()	U_XOIL	0.136()
U_UOIL	0.000()	U_XGAS	0.012()
U_UGAS	0.000()	U_XBWA	0.398()
CXDC_ILLI	-999.250(mS/m)	CXDC_KAOL	-999.250(mS/m)
CUDC_GLAU	-999.250(mS/m)	CUDC_ILLI	-999.250(mS/m)
CUDC_KAOL	-999.250(mS/m)	GR_QUAR	40.000(gAPI)
GR_CALC	11.000(gAPI)	GR_DOLO	3.000(gAPI)
GR_ORTH	200.000(gAPI)	GR_PYRI	0.000(gAPI)
GR_GLAU	150.000(gAPI)	GR_ILLI	220.000(gAPI)
GR_KAOL	98.000(gAPI)	GR_COAL	40.000(gAPI)
GR_IGNE	40.000(gAPI)	GR_XWAT	0.000(gAPI)
GR_UWAT	0.000(gAPI)	GR_XOIL	0.000(gAPI)
GR_UOIL	0.000(gAPI)	GR_XGAS	0.000(gAPI)
GR_UGAS	0.000(gAPI)	GR_XBWA	0.000(gAPI)
EX1_QUAR	0.000()	EX1_CALC	0.000()
EX1_ORTH	0.000()	EX1_PYRI	0.000()
EX1_ILLI	0.000()	EX1_COAL	0.000()
EX1_XWAT	0.000()	EX1_UWAT	0.000()
EX1_XOIL	0.000()	EX1_UOIL	0.000()
EX1_XGAS	0.000()	EX1_UGAS	0.000()
EX1_XBWA	0.000()	CT1_QUAR	0.000()
CT1_CALC	0.000()	CT1_DOLO	0.000()
CT1_ORTH	0.000()	CT1_PYRI	0.000()
CT1_GLAU	0.000()	CT1_ILLI	0.000()
CT1_KAOL	0.000()	CT1_COAL	0.000()
CT1_IGNE	0.000()	CT1_XWAT	0.000()
CT1_UWAT	0.000()	CT1_XOIL	0.000()

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CT1_UOIL	0.000()	CT1_XGAS	1.000()
CT1_UGAS	-0.400()	CT1_XBWA	0.000()
CT2_QUAR	0.000()	CT2_CALC	0.000()
CT2_DOLO	0.000()	CT2_ORTH	0.000()
CT2_PYRI	0.000()	CT2_GLAU	0.000()
CT2_ILLI	0.000()	CT2_KAOL	0.000()
CT2_COAL	0.000()	CT2_IGNE	0.000()
CT2_XWAT	0.000()	CT2_UWAT	0.000()
CT2_XOIL	1.000()	CT2_XGAS	0.000()
CT2_UGAS	0.000()	CT2_XBWA	0.000()
CT3_QUAR	-0.100()	CT3_CALC	0.000()
CT3_ORTH	1.000()	CT3_PYRI	0.000()
CT3_GLAU	0.000()	CT3_ILLI	0.000()
CT3_KAOL	0.000()	CT3_COAL	0.000()
CT3_XWAT	0.000()	CT3_UWAT	0.000()
CT3_XOIL	0.000()	CT3_UOIL	0.000()
CT3_XGAS	0.000()	CT3_UGAS	0.000()
CT3_XBWA	0.000()	CT4_QUAR	0.010()
CT4_CALC	0.000()	CT4_ORTH	0.000()
CT4_PYRI	-1.000()	CT4_GLAU	0.000()
CT4_ILLI	0.000()	CT4_COAL	0.000()
CT4_XWAT	0.000()	CT4_UWAT	0.000()
CT4_XOIL	0.000()	CT4_UOIL	0.000()
CT4_XGAS	0.000()	CT4_UGAS	0.000()
CT4_XBWA	0.000()	ARHOB_GLAU	2.960(g/cm3)
ARHOB_ILLI	2.780(g/cm3)	ARHOB_KAOL	2.620(g/cm3)
WCLP_GLAU	0.156(m3/m3)	WCLP_ILLI	0.254(m3/m3)
WCLP_KAOL	0.058(m3/m3)	CBWA_GLAU	-999.250(mS/m)
CBWA_ILLI	-999.250(mS/m)	CBWA_KAOL	-999.250(mS/m)
CECA_GLAU	0.233(meq/g)	CECA_ILLI	0.200(meq/g)
CECA_KAOL	0.090(meq/g)	RMF	0.160(ohm.m)
MST	61.880(degC)	RW	0.749(ohm.m)
RWT	-999.250(degC)	SALIN_ISOL	-999.250(ppk)
SALIN_PARA	-999.250(ppk)	SALIN_XWAT	12.924(ppk)
SALIN_UWAT	30.000(ppk)	SALIN_XIWA	-999.250(ppk)
SALIN_UIWA	-999.250(ppk)	SALIN_XOIL	0.000(ppk)
SALIN_UOIL	0.000(ppk)	SALIN_XGAS	0.000(ppk)
SALIN_UGAS	0.000(ppk)	SALIN_XSFL	-999.250(ppk)
SALIN_USFL	-999.250(ppk)	CT1_ZP	0.000()
CT2_ZP	0.000()	CT3_ZP	0.000()
CT4_ZP	0.000()	RHOB_UNC_ZP	0.027(g/cm3)
NPHI_UNC_ZP	0.015(m3/m3)	DT_UNC_ZP	2.250(us/m)
U_UNC_ZP	0.225()	CXDC_UNC_ZP	0.072(mS/m)
CUDC_UNC_ZP	0.038(mS/m)	GR_UNC_ZP	2.250(gAPI)
EX1_UNC_ZP	0.015()	CT1_UNC_ZP	0.015()
CT2_UNC_ZP	0.015()	CT3_UNC_ZP	0.015()
CT4_UNC_ZP	0.015()	VOLS_UNC_ZP	0.015(m3/m3)
DT_UNC_WM	0.300()	U_UNC_WM	0.500()
CXDC_UNC_WM	0.500()	CUDC_UNC_WM	1.000()
GR_UNC_WM	0.000()	EX1_UNC_WM	1.000()
CT1_UNC_WM	0.800()	CT2_UNC_WM	0.800()
CT3_UNC_WM	0.900()	CT4_UNC_WM	1.000()
VOLS_UNC_WM	1.000()	RHOB_IFAC_ZP	0.500()
NPHI_IFAC_ZP	0.500()	A_ZP	1.000()
N_ZP	2.000()	C_DWA	0.000()
M_DWA	2.000()	BVIRR	0.010(m3/m3)

RESULTS AND DISCUSSION

Results of this analysis are consistent with field expectations.

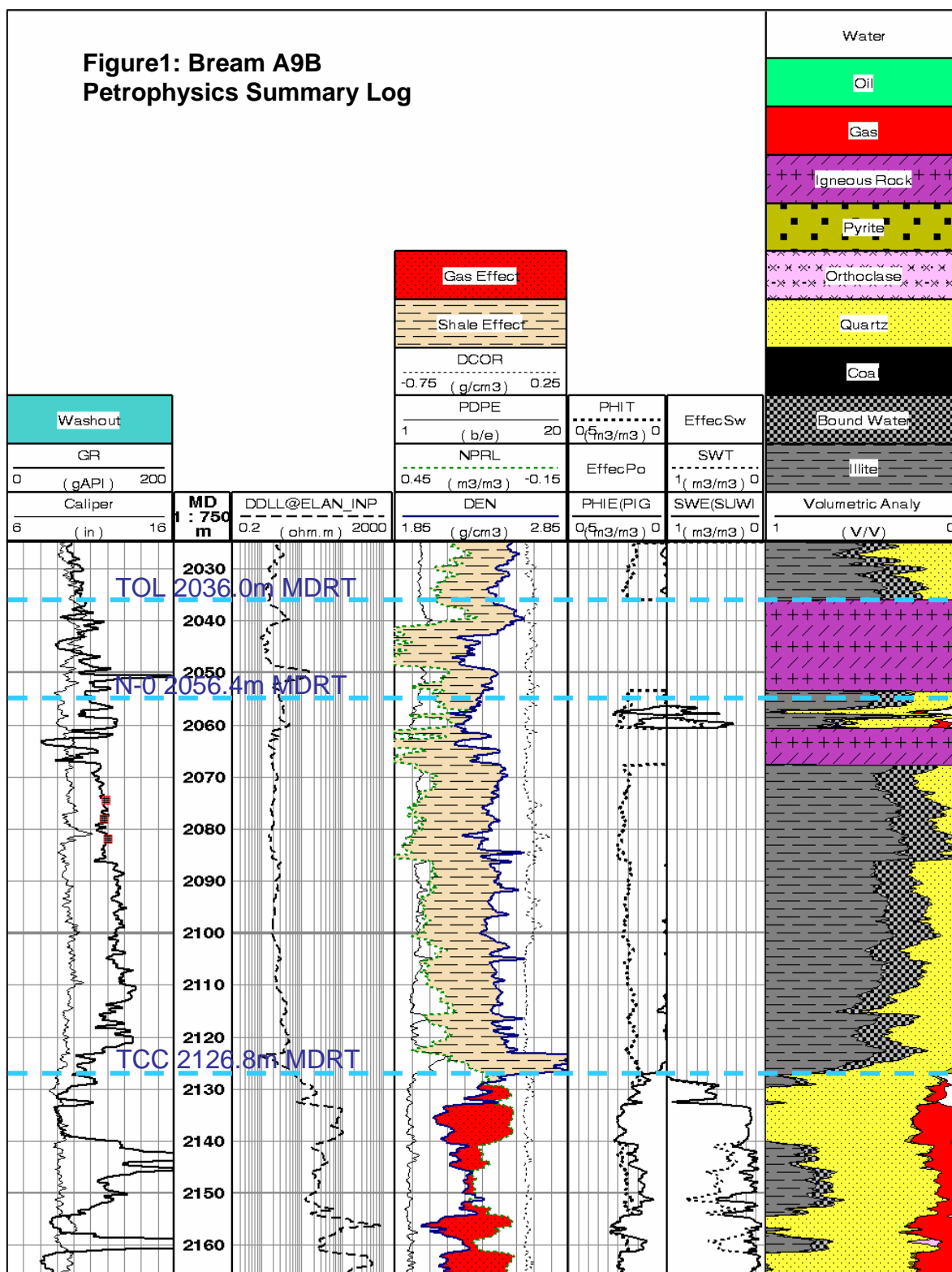


Figure 1

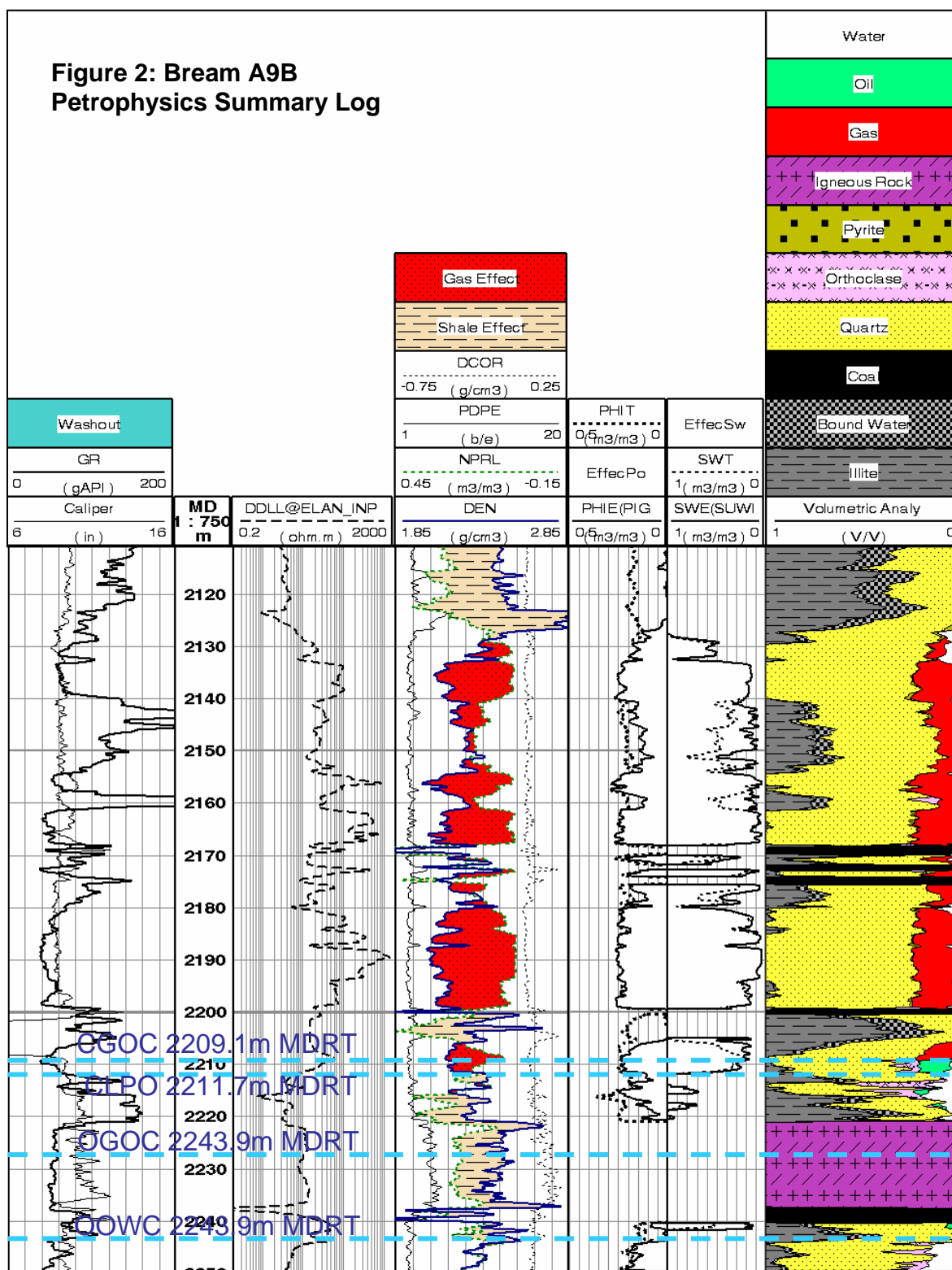


Figure 2

Bream A9B

Petrophysical Summary 2025 - 2250m MD

Depth Reference:

Average VCI, Phie, Swe based on Phie cutoff.

Primary: MDKB

0.08 for gas, 0.12 for oil and water

	DEPTH				THICKNESS							AVERAGE PARAMETERS			
	Top		Bottom		Gross		Net Reservoir		Net Pay		N/G	Net Pay			
Zone	MD (m)	TVDSS (m)	MD (m)	TVDSS (m)	MD (m)	TVD (m)	MD (m)	TVD (m)	MD (m)	TVD (m)	Ratio	Clay Volume (m3/m3)	Effective Porosity (m3/m3)	Effective Water Saturation (m3/m3)	Comments
(N-0) TOL - GAS	2056.4	1773.0	2060.6	1776.5	4.2	3.5	3.1	2.5	3.1	2.5	0.73	0.374	0.147	0.634	probable gas
(N-1) TCC - GAS	2127.0	1831.8	2199.5	1892.1	72.5	60.3	66.9	55.7	66.9	55.7	0.92	0.106	0.195	0.192	gas
(N-1) CYAN - GAS	2206.0	1897.5	2209.1	1900.1	3.1	2.6	3.1	2.6	3.1	2.6	1.00	0.205	0.185	0.203	gas
(N-1) CYAN - OIL	2209.1	1900.1	2213.5	1903.7	4.4	3.7	2.8	2.3	2.8	2.3	0.64	0.086	0.210	0.322	oil
(N-1) CYAN - RESID	2213.5	1903.7	2215.7	1905.6	2.2	1.8	2.2	1.8	-	-	1.00	0.065	0.190	0.830	residual oil
(N-1) SUB_INTR - WATER	2242.0	1927.4	2248.5	1932.8	6.5	5.4	4.2	3.5	-	-	0.64	0.102	0.161	1.000	water

Table 1

BREAM A9B

Petrophysical Analysis

COMPANY: Esso Australia Pty. Ltd.

WELL: BREAM A9B

FIELD: BREAM

STATE: VIC

COUNTRY: AUSTRALIA

PETROPHYSICIST: A. A. MILLS

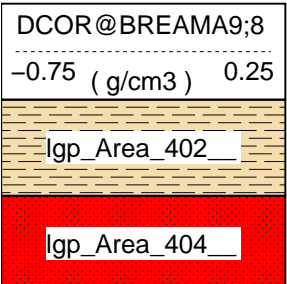
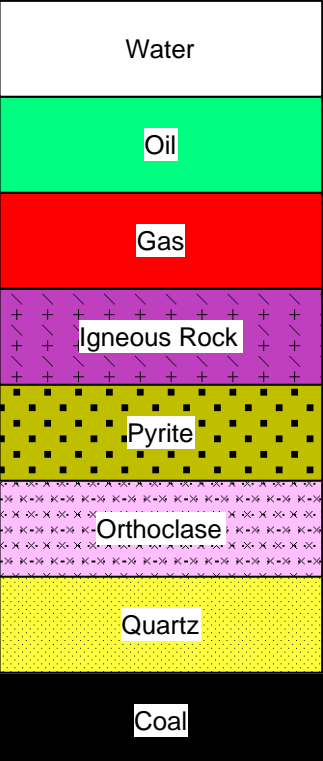
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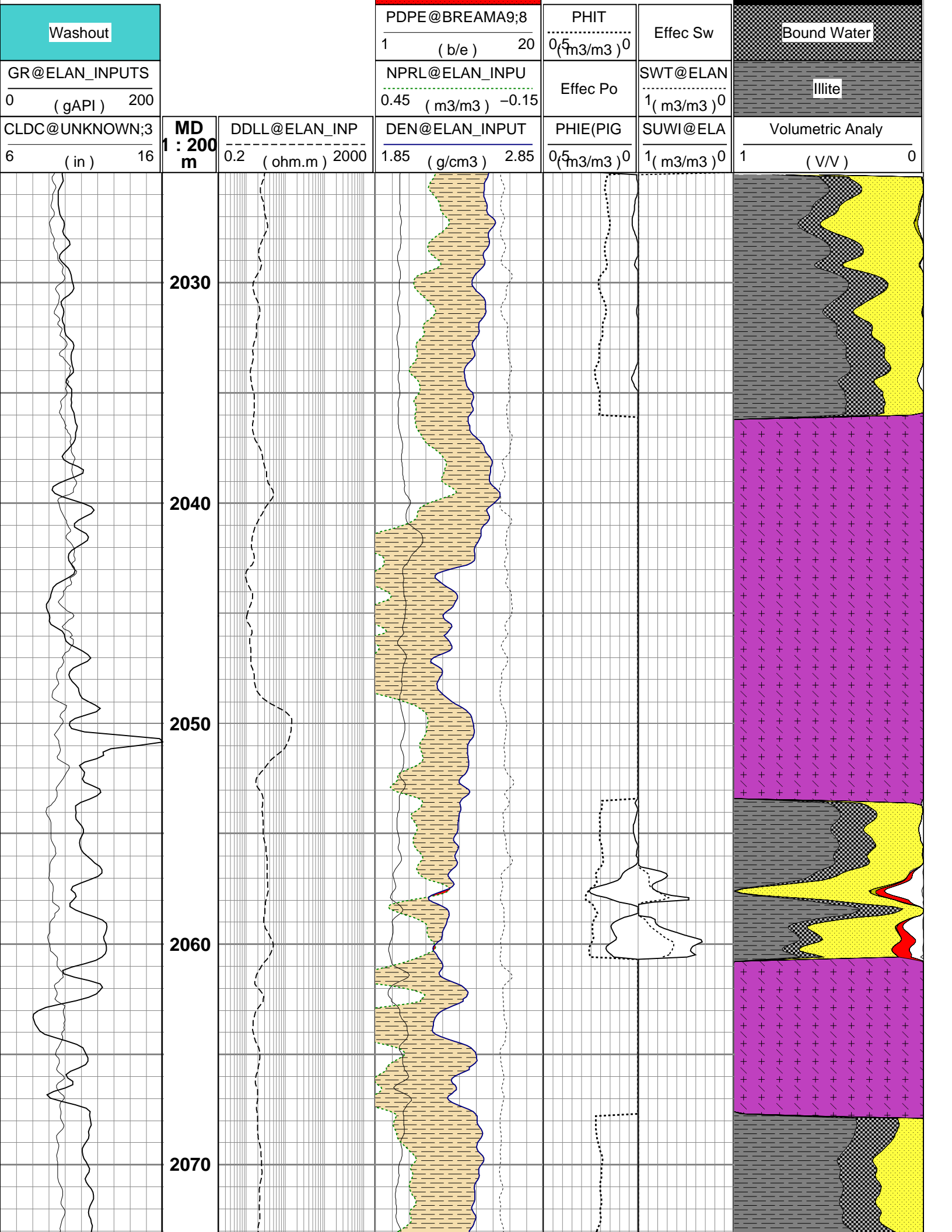
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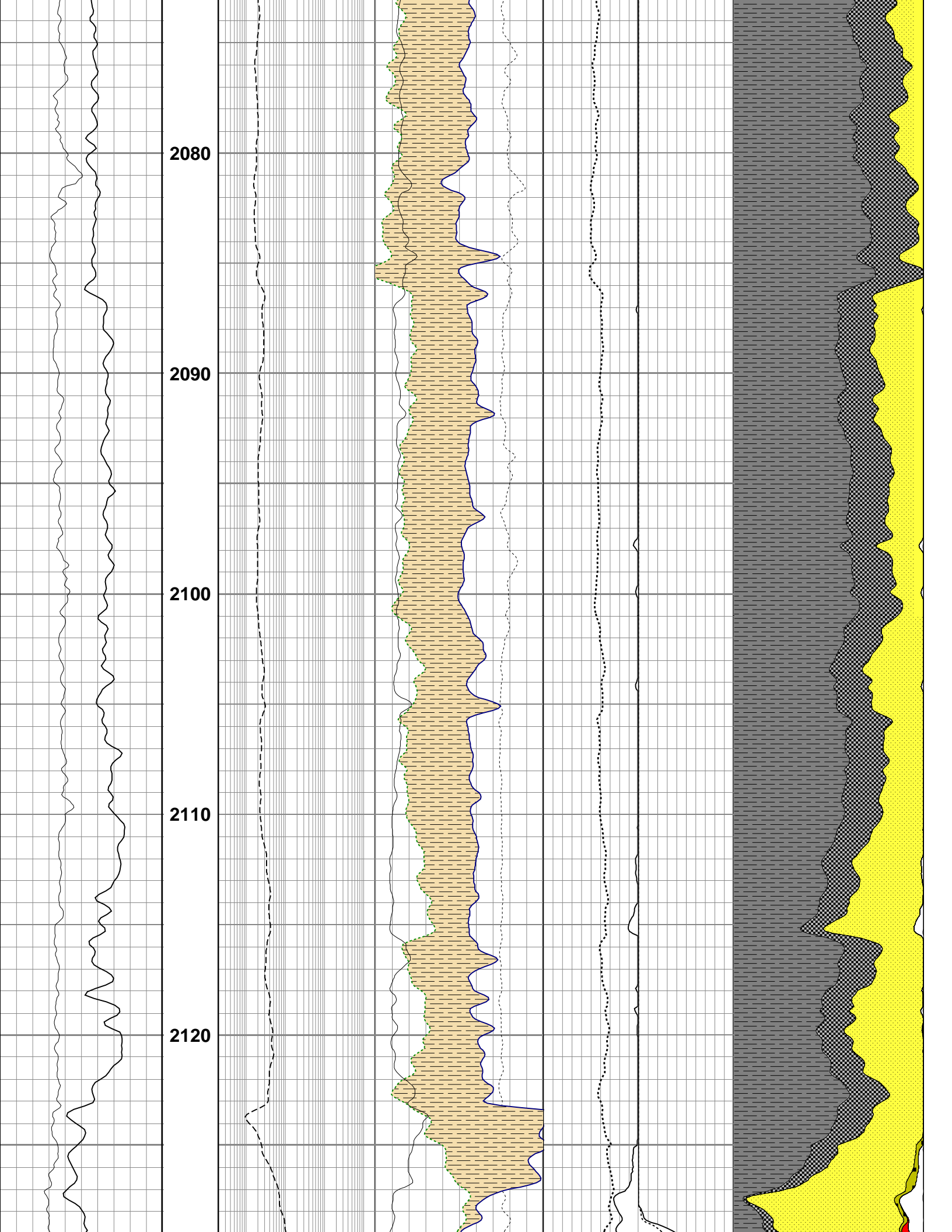
Elevations: K.B. 32.82 m

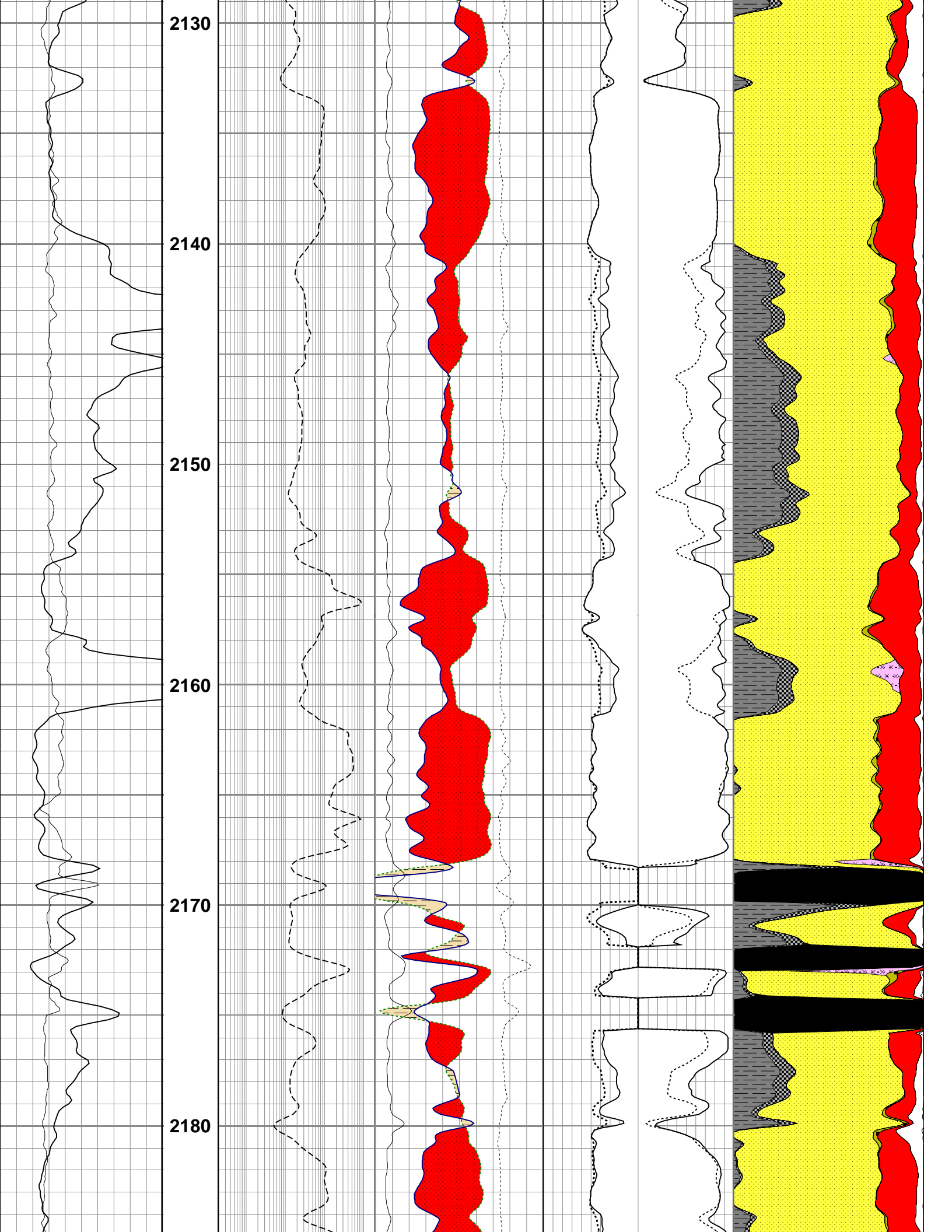
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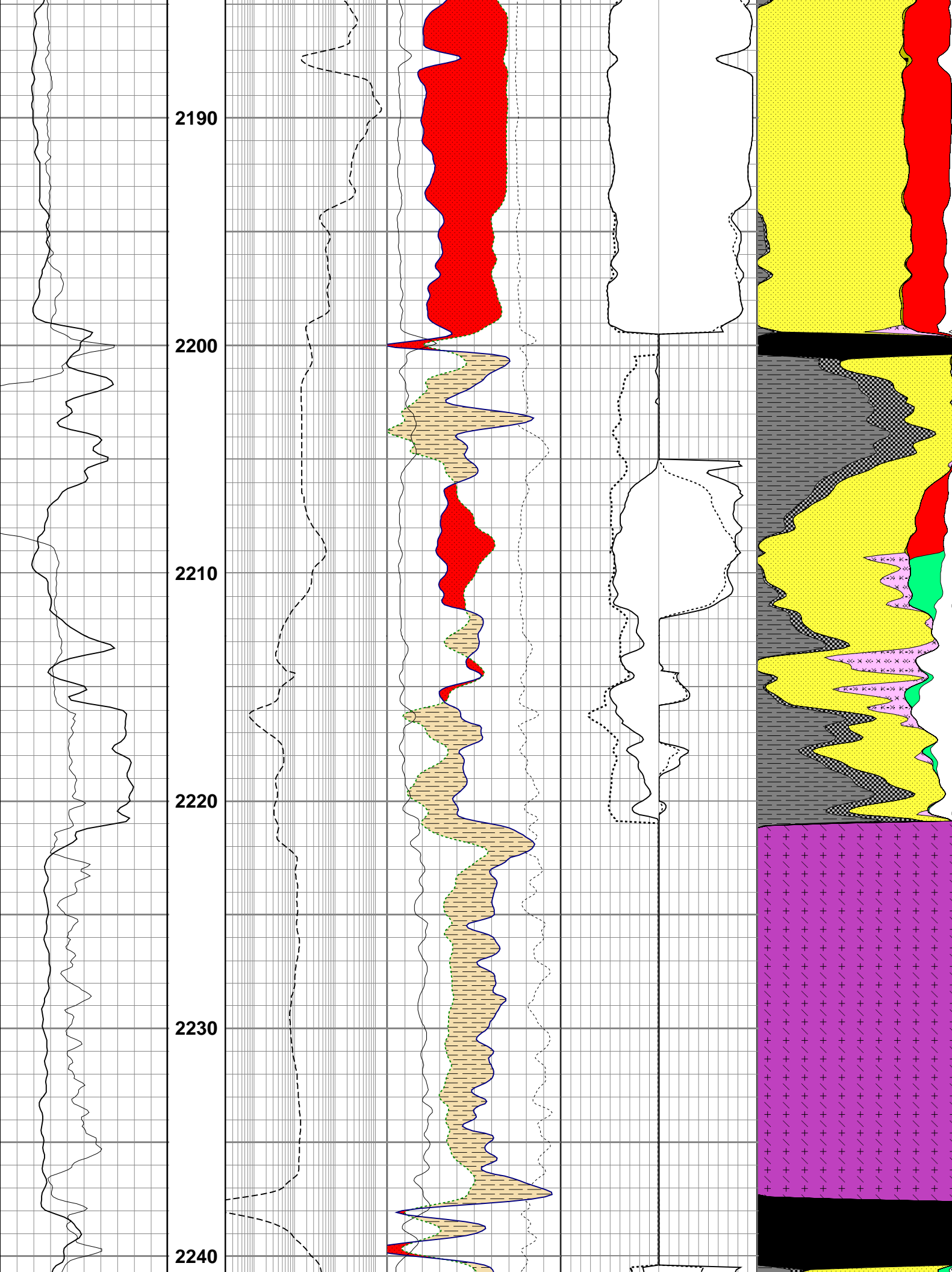
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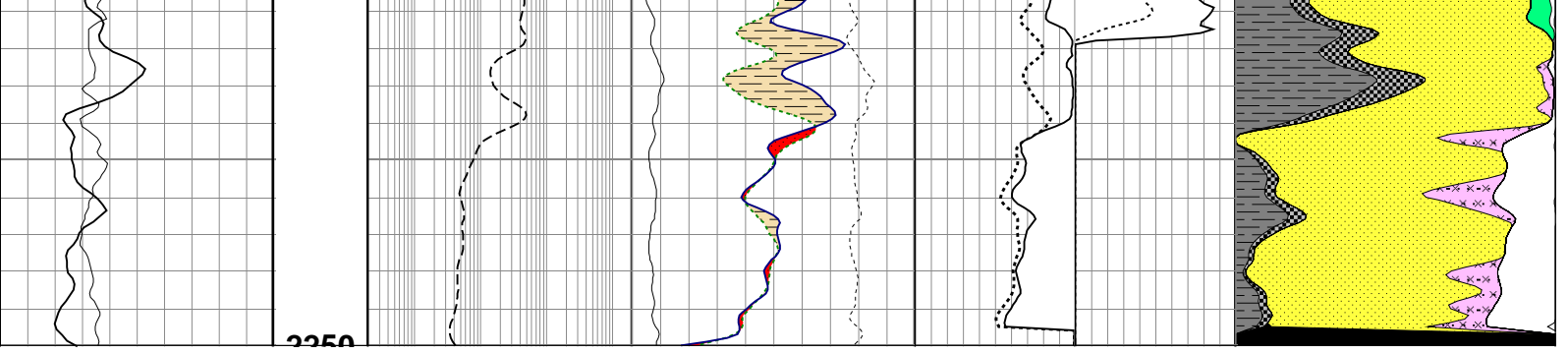












APPENDIX 3a

BREAM A9B

Lithology/Show Descriptions

Bream A9B Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
			<p>Previous Well History: 13.375" surface casing at 797.0 mMDRT. 9.625" Production casing at 2239.0 mMDRT. 5.5" Production liner at 2982.0 mMDRT. Bream A9 Plugged and Abandoned in February 2006.</p> <p>Top of Bridge Plug (EZSV) at 1763.0 mMDRT.</p> <p>Geologist on rig at 1545 hrs, 27 February 2006 at 1756.0 mMDRT.</p> <p>9.625" Whipstock set at 1761.3 mMDRT. 8.50" Mill from 1756.0 mMDRT to 1769.0 mMDRT. Top of Window at 1756.0 mMDRT. Bottom of Window at 1761.3 mMDRT. Rat hole: 7.7 m.</p> <p>Samples from 1756.0 showed an increasing percentage of new formation (Calcareous Claystone). At 1769.0 mMDRT when 94% new formation was seen in the samples, stopped drilling for a PIT.</p> <p>Perform PIT at 1756.0 mMDRT (1567.7 mTVDRT)/ 900 psi/ 13.0 ppg EMW using 9.7 ppg mud, at 0130 hrs, 01 March 2006.</p> <p>Kick-off Bream A9B with a Smith S73PX PDC bit on steerable motor assembly at 1769.0 mMDRT at 1630 hrs, 01 March 2006.</p> <p>Drill ahead from 1769.0 mMDRT to TD of 2283.0 mMDRT with a KCl/Glycol/PHPA mud system.</p> <p>Bit Details: BHA # 1, Bit # 1. Size: 8.5", Manufacturer / Type: Smith S73PX, Serial #: JT6968A. Jets: 20 x 6, TFA: 1.841 sq.in, Grading: 2-2-WT-A-X-1-CT-ER-TD. Krevs: 286.0, Top Drive RPM: 40 (+ 174 DHM RPM). Depth In: 1769.0 mMDRT. Depth Out: 2283.0 mMDRT. Metres drilled: 514.0 m, HOB: 19.40. Average ROP: 26.5 m/hr. Rotating: 410.0 metres / Rotating HOB = 11.50, Average Rotating ROP = 35.7 m/hr. Steering: 104.0 metres / Steering HOB = 7.90 , Average Steering ROP = 13.2 m/hr.</p> <p>30 metre spot samples from 1769.0 to 1880.0 mMDRT.</p>
1769	1780	100	<p>CALCAREOUS CLAYSTONE: medium grey to brownish grey, occasionally medium light grey, silty, moderately calcareous, rare gastropods, rare ooids, firm, sub blocky. Trace to 3%: cement and metal shavings.</p>
1780	1800	100	CALCAREOUS CLAYSTONE: medium grey to brownish grey, occasionally medium light grey, silty, moderately calcareous, rare gastropods, rare ooids, firm, sub blocky.
1800	1830	100	CALCAREOUS CLAYSTONE: medium grey to brownish grey, occasionally medium light grey, silty, moderately calcareous, rare ooids, firm, sub blocky.
1830	1860	100	CALCAREOUS CLAYSTONE: as above.

Bream A9B Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
			Start bagging samples at 10 metre intervals from 1880.0 mMDRT.
1860	1880	100	CALCAREOUS CLAYSTONE: medium grey to brownish grey, silty, moderately calcareous, trace disseminated pyrite, firm, sub blocky.
1880	1890	100	CALCAREOUS CLAYSTONE: as above.
1890	1900	100	CALCAREOUS CLAYSTONE: brownish grey to medium grey, silty, moderately calcareous, trace disseminated pyrite, firm, sub blocky.
1900	1910	100	CALCAREOUS CLAYSTONE: as above.
			Midnight Depth 01 March 2006 = 1910.0 mMDRT (1685.5 mTVDRT).
1910	1920	100	CALCAREOUS CLAYSTONE: brownish grey to medium light grey, occasionally medium grey, silty, moderately calcareous, trace disseminated pyrite, soft to firm, sub blocky.
1920	1930	100	CALCAREOUS CLAYSTONE: brownish grey to occasionally medium grey, silty, moderately calcareous, trace disseminated pyrite, trace fossil fragments, firm to occasionally moderately hard, sub blocky.
1930	1940	100	CALCAREOUS CLAYSTONE: as above.
1940	1950	100	CALCAREOUS CLAYSTONE: medium light grey to brownish grey, silty, moderately calcareous, trace fossil fragments, soft to firm, sub blocky.
1950	1960	100	CALCAREOUS CLAYSTONE: brownish grey to medium light grey, occasionally medium grey, silty, moderately calcareous, trace disseminated pyrite, trace fossil fragments, firm to occasionally moderately hard, sub blocky.
1960	1970	100	CALCAREOUS CLAYSTONE: as above.
1970	1980	100	CALCAREOUS CLAYSTONE: brownish grey to medium light grey, occasionally medium grey, silty, moderately calcareous, trace disseminated pyrite, trace forams, trace ooids, soft to firm, sub blocky.
1980	1990	100	CALCAREOUS CLAYSTONE: brownish grey to medium light grey, occasionally medium grey, silty, moderately calcareous, trace disseminated pyrite, trace nodular pyrite, trace forams, soft to firm, sub blocky.
1990	2000	100	CALCAREOUS CLAYSTONE: brownish grey to medium light grey, silty, moderately calcareous, trace disseminated pyrite, trace ooids, soft to firm, occasionally moderately hard, sub blocky.
2000	2010	100	CALCAREOUS CLAYSTONE: brownish grey to medium grey, silty, moderately calcareous, trace disseminated pyrite, trace glauconite, trace forams, firm to occasionally moderately hard, sub blocky.
2010	2020	90	CALCAREOUS CLAYSTONE: as above.
		10	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
			Start bagging samples at 5 metre intervals from 2025.0 mMDRT.
2020	2025	65	CALCAREOUS CLAYSTONE: brownish grey to medium grey, silty, moderately calcareous, trace disseminated pyrite, trace glauconite, soft to firm, occasionally moderately hard, sub blocky.
		10	SILTSTONE: pale brown to pale yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard, sub blocky.
		25	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
2025	2030	60	CALCAREOUS CLAYSTONE: as above.

Bream A9B Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2030	2035	20	SILTSTONE: as above.
		20	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
		60	CALCAREOUS CLAYSTONE: as above.
		30	SILTSTONE: pale brown to pale yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard, sub blocky.
		10	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
2035	2040		Top of Latrobe at 2036.0 mMDRT (1789.0 mTVDRT = -1756.2 mTVDSS)
		70	CALCAREOUS CLAYSTONE: brownish grey to medium grey, silty, moderately calcareous, trace disseminated pyrite, trace glauconite, soft to firm, occasionally moderately hard, sub blocky.
		20	SILTSTONE: as above.
2040	2045	10	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
		55	CALCAREOUS CLAYSTONE: as above.
		10	SILTSTONE: as above.
		5	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
		30	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour.
2045	2050	35	CALCAREOUS CLAYSTONE: as above.
		20	SILTSTONE: pale brown to pale yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard, sub blocky.
		15	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
		30	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour.
2050	2055	30	CALCAREOUS CLAYSTONE: brownish grey to medium grey, silty, moderately calcareous, trace disseminated pyrite, trace glauconite, soft to firm, occasionally moderately hard, sub blocky.
		30	SILTSTONE: pale brown to pale yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard, sub blocky.
		15	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
		25	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour.

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Interval (m)		%	Lithology / Show Description
From	To		
2055	2060	5	CALCAREOUS CLAYSTONE: brownish grey to medium grey, silty, moderately calcareous, trace disseminated pyrite, trace glauconite, soft to firm, occasionally moderately hard, sub blocky.
		60	SILTSTONE: pale brown to pale yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard, sub blocky.
		25	SANDSTONE 1: 10%, white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. SANDSTONE 2: 15%, clear to translucent, occasionally smoky grey, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visible porosity. No fluorescence.
2060	2065	10	VOLCANICS: as above.
		70	SILTSTONE: pale brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite, moderately hard, sub blocky.
		25	SANDSTONE 1: 10%, white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. SANDSTONE 2: 15%, clear to translucent, occasionally smoky grey, medium to dominantly coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visible porosity. No fluorescence.
2065	2070	5	VOLCANICS: as above.
		60	SILTSTONE: pale brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard, sub blocky.
		30	SANDSTONE 1: 10%, white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. SANDSTONE 2: 20%, clear to translucent, occasionally smoky grey, medium to dominantly coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visible porosity. No fluorescence.
2070	2075	10	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour.
		85	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, common glauconite pellets, moderately hard, sub blocky, common bit crushed rock flour.
		10	SANDSTONE 1: 5%, white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. SANDSTONE 2: 5%, clear to translucent, occasionally smoky grey, medium to dominantly coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visible porosity. No fluorescence.
		5	VOLCANICS: as above.

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Interval (m) From To		%	Lithology / Show Description
2075	2080	90	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, common glauconite pellets, moderately hard, sub blocky, common bit crushed rock flour.
		5	SANDSTONE 1: 5%, white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. SANDSTONE 2: Trace, clear to translucent, occasionally smoky grey, medium to dominantly coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visible porosity. No fluorescence.
2080	2085	5	VOLCANICS: as above.
		85	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, common glauconite pellets, moderately hard, sub blocky, common bit crushed rock flour.
		5	SANDSTONE 1: 5%, white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
2085	2090	10	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour.
		85	SILTSTONE: as above.
		5	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
		10	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour.
2090	2095	90	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, common glauconite pellets, moderately hard to hard, sub blocky, common bit crushed rock flour.
		5	SANDSTONE: white to pale green, very fine to fine, common quartzite, moderately well sorted, sub angular to sub rounded, common glauconitic matrix, hard aggregates, common rock flour, tight to poor inferred and visible porosity. No fluorescence.
		5	VOLCANICS: as above.
2095	2100	95	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, common glauconite pellets, moderately hard to hard, sub blocky, common bit crushed rock flour.
		5	VOLCANICS: as above.
2100	2105		Start adding Barablock to the Mud system at 2100.0 mMDRT. Barablock (dull fluorescence) seen from 2110.0 mMDRT samples to TD.
		90	SILTSTONE: as above.
2105	2110	10	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour.
		90	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, common glauconite pellets, moderately hard to hard, sub blocky, common bit crushed rock flour.
		10	VOLCANICS: as above.

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Interval (m) From To		%	Lithology / Show Description
2110	2115	90	SILTSTONE: as above.
		10	VOLCANICS: as above.
2115	2120	80	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, common glauconite pellets, moderately hard to hard, sub blocky, common bit crushed rock flour.
		10	SANDSTONE: translucent to medium light grey, very fine to fine, moderately well sorted, sub angular to sub rounded, abundant micropyrinite matrix, bit crushed rock flour, hard aggregates, tight to very poor visual and inferred porosity. No fluorescence.
		10	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour.
2120	2125	65	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard to hard, sub blocky, common bit crushed rock flour.
		25	SANDSTONE 1: 10%, translucent to medium light grey, very fine to fine, moderately well sorted, sub angular to sub rounded, abundant micropyrinite matrix, bit crushed rock flour, hard aggregates, tight to very poor visual and inferred porosity. SANDSTONE 2: 15%, clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, moderate pyrite cement, common pyrite nodules, dominantly hard aggregates, occasionally loose, tight to very poor inferred and visible porosity. No fluorescence.
		10	VOLCANICS: as above. Top of Coarse Clastics (N1 Reservoir) at 2127.5 mMDRT. (1865.0 mTVDRT = -1832.2 mTVDSS)
2125	2130	20	SILTSTONE: as above.
		70	SANDSTONE 1: 20%, translucent to medium light grey, very fine to fine, moderately well sorted, sub angular to sub rounded, abundant micropyrinite matrix, bit crushed rock flour, hard aggregates, tight to very poor visual and inferred porosity. SANDSTONE 2: 50%, clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, common fractured quartz grains, strong pyrite cement, common pyrite nodules, dominantly hard aggregates, occasionally loose, poor to fair inferred and visible porosity. No fluorescence.
		10	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour. Base of Waste (BWST) at 2129.5 mMDRT (1866.7 mTVDRT = -1833.9 mTVDSS)
2130	2135	30	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard to hard, sub blocky, common bit crushed rock flour.
		65	SANDSTONE 1: 10%, translucent to medium light grey, very fine to fine, moderately well sorted, sub angular to sub rounded, abundant micropyrinite matrix, bit crushed rock flour, hard aggregates, tight to very poor visual and inferred porosity. SANDSTONE 2: 55%, clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, common fractured quartz grains, moderate pyrite cement, rare to common pyrite nodules, hard aggregates, occasionally loose, generally clean, poor to fair inferred and visible porosity. No fluorescence.
		5	VOLCANICS: as above.

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Interval (m) From To		%	Lithology / Show Description
			GNSB (Base of Green sand) at 2138.0 mMDRT. (1873.8 mTVDRT = -1841.0 mTVDSS)
2135	2140	25	SILTSTONE: as above.
		70	SANDSTONE 1: 10%, translucent to medium light grey, very fine to fine, moderately well sorted, sub angular to sub rounded, abundant micropyrte matrix, bit crushed rock flour, hard aggregates, tight to very poor visual and inferred porosity. SANDSTONE 2: 60%, clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, common fractured quartz grains, moderate pyrite cement, rare to common pyrite nodules, hard aggregates, occasionally loose, generally clean, poor to fair inferred and visible porosity. No fluorescence.
		5	VOLCANICS: greyish green to greyish blue, dominantly chlorite, hard, bit crushed rock flour.
2140	2145	55	CLAYSTONE: off white to very pale orange, non calcareous, soft to amorphous, common rock flour.
		15	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard to hard, sub blocky, common bit crushed rock flour.
		30	SANDSTONE 1: 5%, translucent to medium light grey, very fine to fine, moderately well sorted, sub angular to sub rounded, abundant micropyrte matrix, bit crushed rock flour, hard aggregates, tight to very poor visual and inferred porosity. SANDSTONE 2: 25%, clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally fractured quartz grains, weak pyrite cement, trace pyrite nodules, rare hard aggregates, dominantly loose, generally clean, fair to good inferred and visible porosity. No fluorescence.
2145	2150	Trace	VOLCANICS: as above.
		30	CLAYSTONE: off white to very pale orange, non calcareous, soft to amorphous, common rock flour.
		10	SILTSTONE: as above.
2150	2155	60	SANDSTONE 1: Trace, translucent to medium light grey, very fine to fine, moderately well sorted, sub angular to sub rounded, abundant micropyrte matrix, bit crushed rock flour, hard aggregates, tight to very poor visual and inferred porosity. SANDSTONE 2: 60%, clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally fractured quartz grains, weak pyrite cement, trace pyrite nodules, rare hard aggregates, dominantly loose, generally clean, fair to good inferred and visible porosity. No fluorescence.
		40	CLAYSTONE: off white to very pale orange, non calcareous, soft to amorphous, common rock flour.
		5	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard to hard, sub blocky, common bit crushed rock flour.
2155	2160	55	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, occasionally fractured quartz grains, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, poor inferred and visible porosity. No fluorescence.
		25	CLAYSTONE: off white to very pale orange, non calcareous, soft to amorphous, common rock flour.

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Interval (m) From To		%	Lithology / Show Description
2160	2165	5	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, occasionally fractured quartz grains, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, poor inferred and visible porosity. No fluorescence.
		10	CLAYSTONE: off white to very pale orange, non calcareous, soft to amorphous, common rock flour.
		5	SILTSTONE: moderate brown to pale brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, moderately hard to hard, sub blocky.
2165	2170	85	SANDSTONE: clear to translucent, trace greyish pink, fine to very coarse, poorly sorted, sub angular to sub rounded, occasionally rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, poor inferred and visible porosity. No fluorescence. At 2145 hrs on 02 March 2006 at 2168.0 mMDRT (1898.8 mTVDRT), the Top Drive Hydraulic Supply failed. POOH to 1993.0 mMDRT (above the TOL) while fixing up the problem. Start RIH at 0700 hrs 03 March 2006. On bottom drilling at 0800 hrs. Trip gas at 0845 hrs = 430 units. (38146/3168/1751/259+520/131+143) // 86/7/4/2/1. Midnight Depth 02 March 2006 = 2168.0 mMDRT (1898.8 mTVDRT). CBSB (Base of Cobalt sand) at 2168.0 mMDRT. (1898.7 mTVDRT = -1865.9 mTVDSS)
		30	COAL: dusky brown to blackish red, earthy, firm, sub fissile to sub blocky, uneven, silty grading to CARBONACEOUS SILTSTONE in part, woody texture.
		5	CLAYSTONE: off white to very pale orange, non calcareous, soft, amorphous, common rock flour.
		25	SILTSTONE: greyish brown to dark reddish brown, arenaceous in part grading to very fine Sandstone, trace glauconite pellets, carbonaceous in part grading to SILTY COAL, firm to moderately hard, sub blocky.
2170	2175	40	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visible porosity. No fluorescence.
		40	COAL: dusky brown to blackish red, earthy, firm, sub fissile to sub blocky, uneven, silty grading to CARBONACEOUS SILTSTONE in part, woody texture.
		30	CLAYSTONE 1: 20%, off white to very pale orange, non calcareous, soft, amorphous, common rock flour. CLAYSTONE 2: 10%, medium light grey, non calcareous, moderately hard to hard, blocky.
		10	SILTSTONE: greyish brown to dark reddish brown, arenaceous in part grading to very fine Sandstone, trace glauconite pellets, carbonaceous in part grading to SILTY COAL, firm to moderately hard, sub blocky.
2175	2180	20	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visible porosity. No fluorescence.
		10	CLAYSTONE 1: 5%, off white to very pale orange, non calcareous, soft, amorphous, common rock flour. CLAYSTONE 2: 5%, medium light grey, non calcareous, moderately hard to hard, blocky.

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Interval (m) From To		%	Lithology / Show Description
2180	2185	40	SILTSTONE: moderate brown to dark reddish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, trace carbonaceous, firm to moderately hard, sub blocky, occasionally bit crushed rock flour.
		50	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, fair inferred and visible porosity. No fluorescence.
		10	CLAYSTONE 1: 5%, off white to very pale orange, non calcareous, soft, amorphous, common rock flour. CLAYSTONE 2: 5%, medium light grey, non calcareous, moderately hard to hard, blocky.
		20	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, occasionally rounded, weak pyrite cement, dominantly loose, generally clean, fair to good inferred and visible porosity. No fluorescence.
2185	2190	5	CLAYSTONE 1: Trace, off white to very pale orange, non calcareous, soft, amorphous, common rock flour. CLAYSTONE 2: 5%, medium light grey, non calcareous, moderately hard to hard, blocky.
		5	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, occasionally rounded, weak pyrite cement, loose, generally clean, fair to good inferred and visible porosity. No fluorescence.
2190	2195		PKSB (Base of Pink sand) at 2194.0 mMDRT. (1920.4 mTVDRT = -1887.6 mTVDSS)
		5	CLAYSTONE: medium light grey, non calcareous, moderately hard to hard, blocky.
		10	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, firm to moderately hard, sub blocky.
		85	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, loose, clean, fair to good inferred and visible porosity. No fluorescence.
2195	2200		MVSB (Base of Mauve sand) at 2199.0 mMDRT. (1924.5 mTVDRT = -1891.7 mTVDSS)
		30	COAL: brownish black to black, sub vitreous, brittle, moderately hard, angular, silty grading to CARBONACEOUS SILTSTONE in part, woody texture, trace quartz inclusions.
		10	CLAYSTONE 1: 5%, off white to very pale orange, non calcareous, soft, amorphous, common rock flour. CLAYSTONE 2: 5%, medium light grey, non calcareous, moderately hard to hard, blocky.
		30	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, firm to moderately hard, sub blocky.
		30	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, loose, clean, fair to good inferred and visible porosity. No fluorescence.

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Interval (m) From To		%	Lithology / Show Description
2200	2205	15	COAL: brownish black to black, earthy, firm to moderately hard, sub fissile to sub blocky, uneven, silty grading to CARBONACEOUS SILTSTONE in part, woody texture, trace quartz inclusions.
		10	CLAYSTONE 1: 5%, off white to very pale orange, non calcareous, soft, amorphous, common rock flour. CLAYSTONE 2: 5%, medium light grey, non calcareous, moderately hard to hard, blocky.
		15	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, trace glauconite pellets, firm to moderately hard, sub blocky.
		60	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, loose, clean, fair to good inferred and visible porosity. No fluorescence.
2205	2210	10	COAL: as above.
		10	CLAYSTONE 1: 5%, off white to very pale orange, non calcareous, soft, amorphous, common rock flour. CLAYSTONE 2: 5%, medium light grey, non calcareous, moderately hard to hard, blocky.
		20	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous in part grading to very fine Sandstone, trace glauconite pellets, carbonaceous in part grading to SILTY COAL, firm to moderately hard, sub blocky.
		60	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, loose, clean, fair to good inferred and visible porosity. No fluorescence.
2210	2215	10	COAL: as above
		15	CLAYSTONE 1: 10%, off white to very pale orange, non calcareous, soft, amorphous, common rock flour. CLAYSTONE 2: 5%, medium light grey, non calcareous, moderately hard to hard, blocky.
		25	SILTSTONE: greyish brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, carbonaceous in part grading to SILTY COAL, firm to moderately hard, sub blocky.
		50	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, generally clean, poor to fair inferred and visible porosity. No fluorescence.
			CYSB (Base of Cyan sand) at 2216.0 mMDRT. (1938.7 mTVDRT = -1905.9 mTVDSS)
2215	2220	5	COAL: as above
		10	CLAYSTONE 1: 5%, off white to very pale orange, non calcareous, soft, amorphous, common rock flour. CLAYSTONE 2: 5%, medium light grey, non calcareous, moderately hard to hard, blocky.
		15	SILTSTONE: greyish brown to dark yellowish brown, very arenaceous grading to very fine Sandstone, carbonaceous in part grading to SILTY COAL, firm to moderately hard, sub blocky.

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Interval (m) From To		%	Lithology / Show Description
2220	2225	70	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally rounded, weak pyrite cement, dominantly loose, generally clean, fair to good inferred and visible porosity. No fluorescence. Top of Igneous Intrusives at 2222.0 mMDRT (1943.7 mTVDRT = -1910.9 mTVDSS).
		25	CLAYSTONE: off white to very light grey, non calcareous, soft, amorphous, common rock flour.
		5	SILTSTONE: moderate brown to greyish brown, very arenaceous grading to very fine Sandstone, firm to moderately hard, sub blocky.
		50	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally rounded, weak pyrite cement, dominantly loose, generally clean, fair to good inferred and visible porosity. No fluorescence.
2225	2230	20	VOLCANICS: pale blue green to very pale green, light grey, off white, 50% quartz, hard, bit crushed rock flour.
		5	CLAYSTONE: off white to very light grey, non calcareous, soft, amorphous, common rock flour.
		15	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally rounded, weak pyrite cement, dominantly loose, generally clean, fair to good inferred and visible porosity. No fluorescence.
2230	2235	80	VOLCANICS: pale blue green to very pale green, light grey, off white, dominantly chlorite, hard, bit crushed rock flour.
		5	CLAYSTONE: off white to very light grey, non calcareous, soft, amorphous, common rock flour.
		5	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally rounded, weak pyrite cement, dominantly loose, generally clean, fair to good inferred and visible porosity. No fluorescence.
2235	2240	90	VOLCANICS: pale blue green to very pale green, light grey, off white, 50% quartz, hard, bit crushed rock flour.
		10	COAL: brownish black to black, sub vitreous, hard to very hard, blocky, uneven, with pyrite laminations, common quartz inclusions.
		5	CLAYSTONE: off white to very light grey, non calcareous, soft, amorphous, common rock flour.
		15	SILTSTONE: dusky red to dusky brown, very carbonaceous grading to SILTY COAL, firm to moderately hard, sub fissile to sub blocky.
		5	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally rounded, weak pyrite cement, dominantly loose, generally clean, fair to good inferred and visible porosity. No fluorescence.
		65	VOLCANICS: pale blue green to very pale green, light grey, off white, 50% quartz, hard, bit crushed rock flour.
2240	2245	5	COAL: dusky brown, earthy, firm to moderately hard, sub blocky, uneven, silty grading to CARBONACEOUS SILTSTONE in part, trace quartz inclusions.
		5	CLAYSTONE: off white to very light grey, non calcareous, soft, amorphous, common rock flour.

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Interval (m) From To		%	Lithology / Show Description
2245	2250	30	SILTSTONE: dark yellowish brown to moderate brown, very arenaceous grading to vry fine Sandstone, firm to moderately hard, sub blocky.
		20	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally rounded, weak pyrite cement, dominantly loose, generally clean, fair to good inferred and visible porosity. No fluorescence.
		40	VOLCANICS: pale blue green to very pale green, light grey, off white, 50% quartz, hard, bit crushed rock flour.
			P. asperopoulus Coal at 2247.5 mMDRT (1964.9 mTVDRT = -1932.1 mTVDSS)
		15	COAL: brownish black to blackish red, earthy, firm, sub fissile to sub blocky, uneven, silty grading to CARBONACEOUS SILTSTONE in part, woody texture.
		5	CLAYSTONE: off white to very pale orange, non calcareous, soft, amorphous, dispersive, common rock flour.
		20	SILTSTONE: dark yellowish brown to moderate brown, very arenaceous grading to vry fine Sandstone, firm to moderately hard, sub blocky.
2250	2255	25	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, strong pyrite cement, common pyrite nodules, common fractured quartz grains, dominantly hard aggregates, tight visible and inferred porosity. No fluorescence.
		35	VOLCANICS: pale blue green to very pale green, light grey, off white, 50% quartz, hard, bit crushed rock flour.
		30	COAL: brownish black to blackish red, earthy, firm, sub fissile to sub blocky, uneven, silty grading to CARBONACEOUS SILTSTONE in part, woody texture.
		15	CLAYSTONE: off white to very pale orange, non calcareous, soft, amorphous, dispersive, common rock flour.
		10	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to vry fine Sandstone, moderately hard, sub blocky, common rock flour.
		45	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, weak pyrite cement, dominantly loose, generally clean, poor to fair inferred and visible porosity. No fluorescence.
		Trace	VOLCANICS: as above, cavings.
2255	2260	10	COAL: as above.
		65	CLAYSTONE: greyish orange to very pale orange, non calcareous, soft, amorphous, dispersive, common rock flour.
		5	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to vry fine Sandstone, moderately hard, sub blocky, common rock flour.
		20	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, common fractured quartz grains, dominantly loose, occasionally hard aggregates, generally clean, poor to fair visible and inferred porosity. No fluorescence.
		Trace	VOLCANICS: as above, cavings.
2260	2265	10	COAL: as above.
		30	CLAYSTONE: greyish orange to very pale orange, non calcareous, soft, amorphous, dispersive, common rock flour.
		10	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to vry fine Sandstone, moderately hard, sub blocky, common rock flour.

Bream A9B Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2265	2270	50	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, common fractured quartz grains, dominantly loose, occasionally hard aggregates, generally clean, fair visible and inferred porosity. No fluorescence.
		25	CLAYSTONE: greyish orange to very pale orange, non calcareous, soft, amorphous, dispersive, common rock flour.
		5	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to vry fine Sandstone, moderately hard, sub blocky, common rock flour.
		70	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, weak pyrite cement, rare pyrite nodules, dominantly loose, generally clean, poor to fair inferred and visible porosity. No fluorescence.
2270	2275	5	COAL: black, sub vitreous, friable, sub fissile, uneven.
		40	CLAYSTONE: greyish orange to very pale orange, non calcareous, soft, amorphous, dispersive, common rock flour.
		5	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to vry fine Sandstone, moderately hard, sub blocky, common rock flour.
		50	SANDSTONE: clear to translucent, fine to very coarse, poorly sorted, sub angular to sub rounded, weak pyrite cement, rare pyrite nodules, dominantly loose, generally clean, poor to fair inferred and visible porosity. No fluorescence.
2275	2280	20	COAL: brownish black to black, sub vitreous, brittle, sub fissile, uneven, angular, silty in part grading to CARBONACEOUS SILTSTONE, trace pyrite laminations, trace quartz inclusions.
		20	CLAYSTONE: greyish orange to very pale orange, non calcareous, soft, amorphous, dispersive, common rock flour.
		10	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to vry fine Sandstone, moderately hard, sub blocky, common rock flour.
		50	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally fractured quartz grains, weak pyrite cement, dominantly loose, generally clean, poor to fair inferred and visible porosity. No fluorescence.
2280	2283 TD	10	COAL: brownish black to black, sub vitreous, brittle, sub fissile, uneven, angular, silty in part grading to CARBONACEOUS SILTSTONE, trace pyrite laminations, trace quartz inclusions.
		20	CLAYSTONE: greyish orange to very pale orange, non calcareous, soft, amorphous, dispersive, common rock flour.
		10	SILTSTONE: moderate brown to dark yellowish brown, very arenaceous grading to vry fine Sandstone, moderately hard, sub blocky, common rock flour.
		60	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to sub rounded, occasionally fractured quartz grains, weak pyrite cement, dominantly loose, generally clean, poor to fair inferred and visible porosity. No fluorescence.

Bream A9B Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
			BMA A9B reached a TD of 2283.0 mMDRT = 1994.4 mTVDRT (-1961.6 mTVDSS) at 1415 hrs on 03 March 2006.
			Circulate 3 x BU. Wiper Trip to shoe at 1756.0 mMDRT.
			Trip Gas at 2200 hrs, 03 March 2006 = 54 units.
			Start circulating at bottom from 2110 hrs, on 03 March 2006. Last circulation on bottom at 2245 hrs, 03 March 2006. Total circulating time for last circulation on bottom = 1 hr 35 minutes.
			Start POOH at 2250 hrs, 03 March 2006, for Reeves Wireline Logging Run #1.
			Bit on Surface at 05:30 hrs, 04 March 2006. Rig up for Reeves Logging at 0800 hrs, 04 March 2006.
			Tag bottom at 2030 hrs, 04 March 2006. Circulate at 70 SPM (225 GPM) for 80 minutes from 2040 hrs to 2200 hrs on 04 March 2006, as per program.
			At 2240 hrs, 04 March 2006, start Reeves Logging at Logging speed. (0.1 metre/second) from 2280.0 mMDRT to 1937.5 mMDRT.
			At 0020 hrs, 05 March 2006, at twice Logging speed (0.2 metre/second) from 1937.5 mMDRT to 1753.5 mMDRT.
			At 0055 hrs, 04 March 2006, at normal Tripping speed (0.3 metre/second) from 1753.5 mMDRT to surface.
			At surface at 0700 hrs, 05 March 2006.
			Top of casing window at 1756.0 mMDRT. Bottom of casing window at 1761.3 mMDRT.

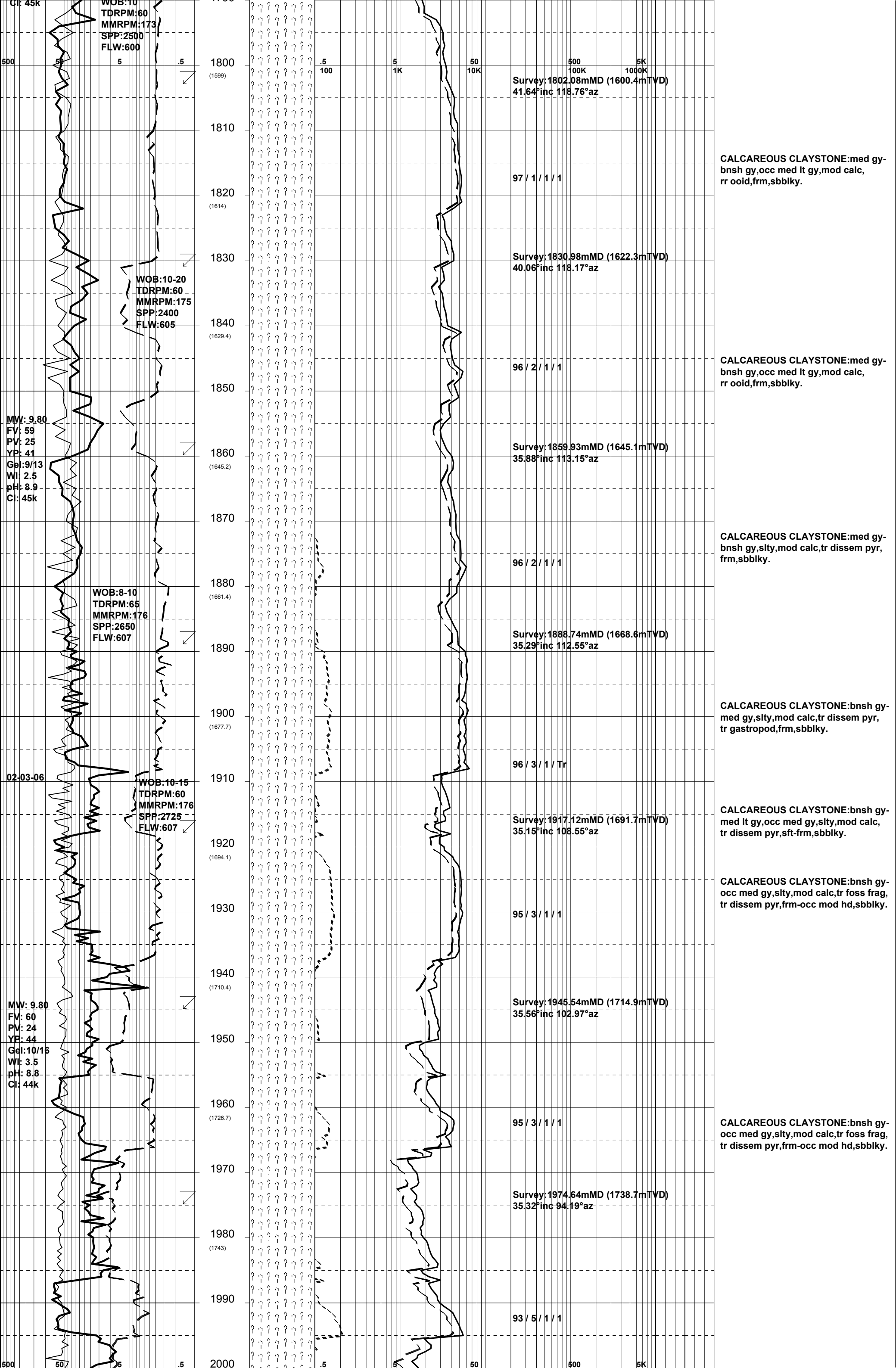
APPENDIX 4a

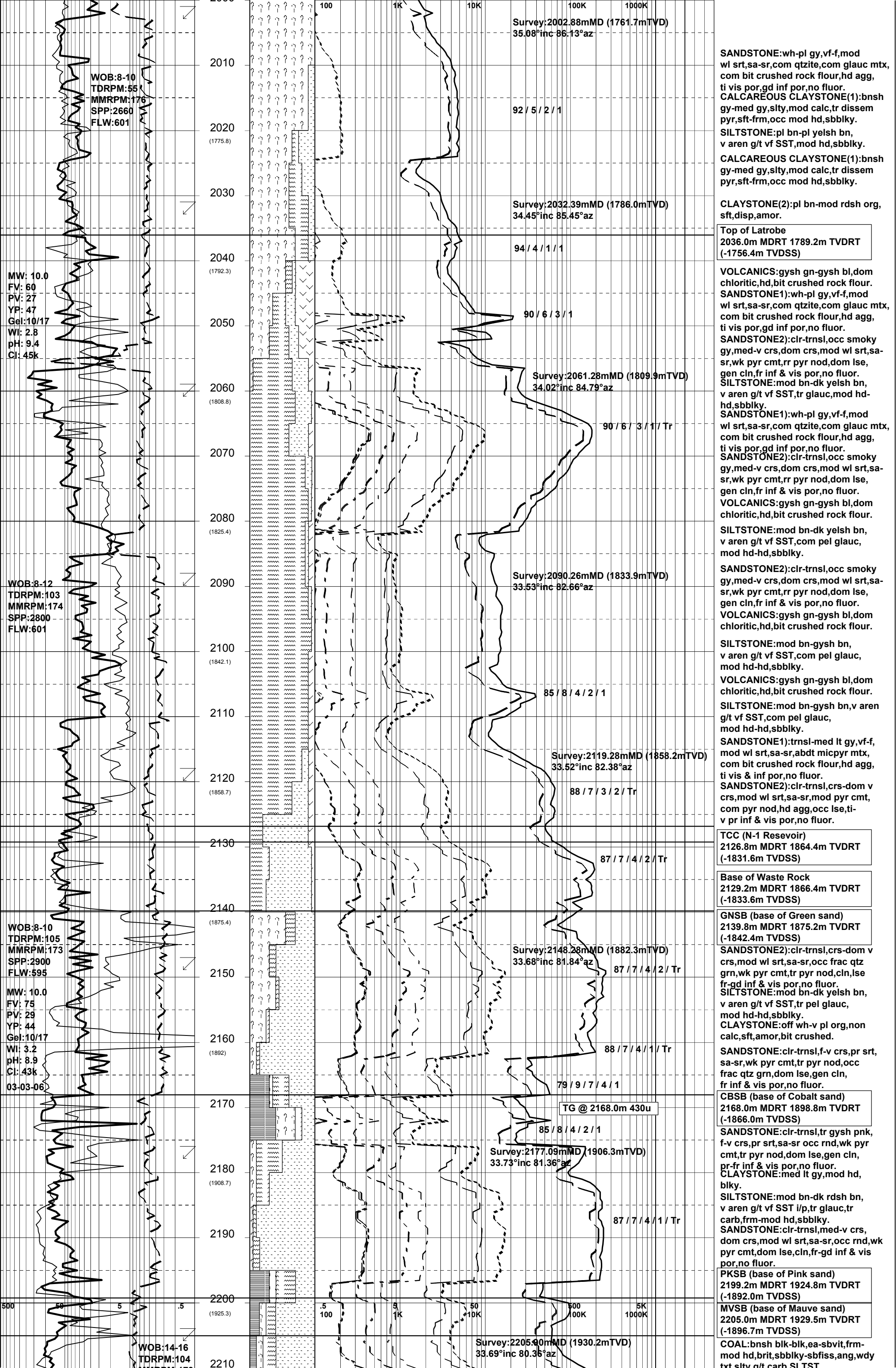
BREAM A9B

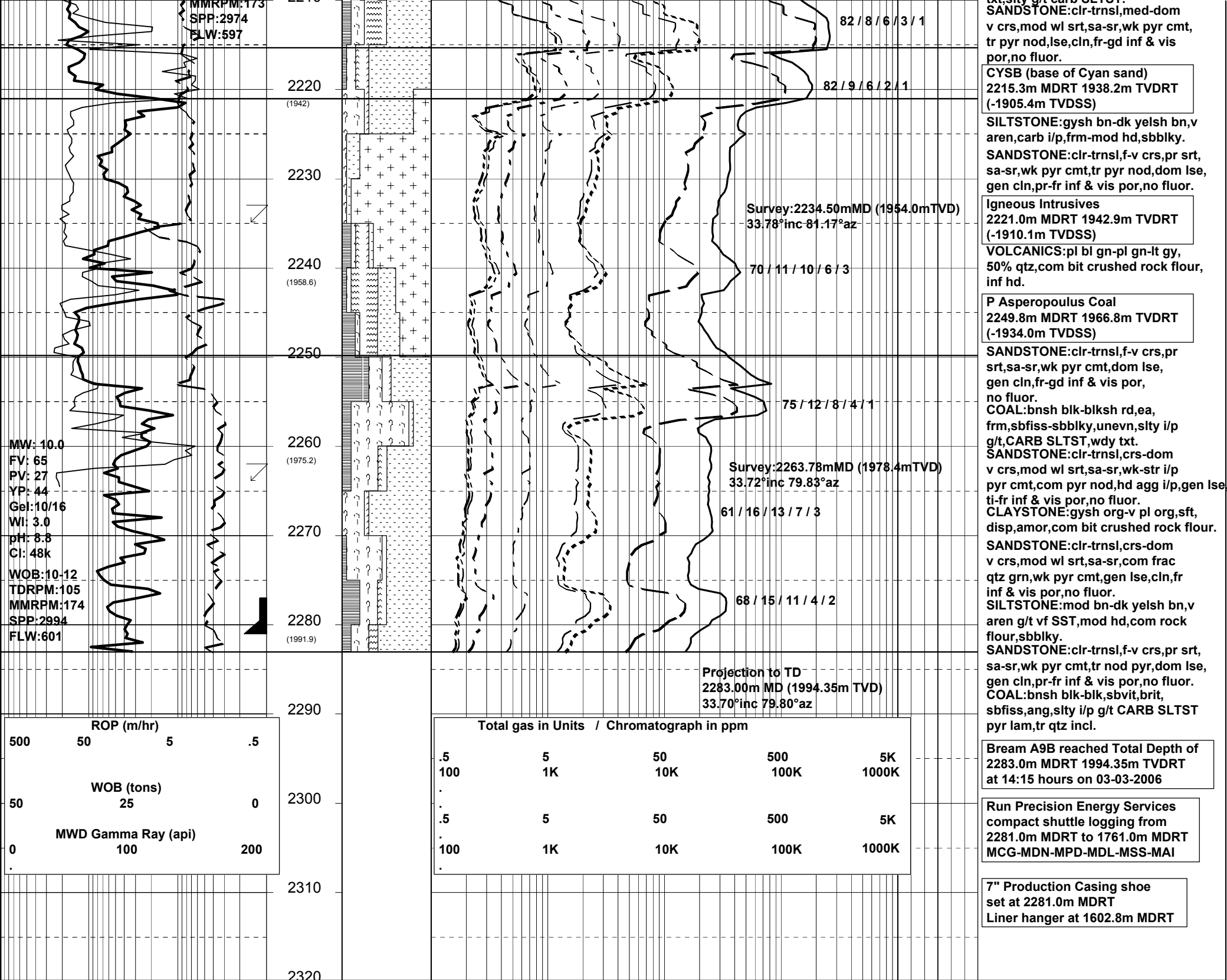
Mud Log



ROP (m/hr)			DEPTH (m) (TVD)	CUTTINGS LITHOLOGY	RESERVAL GAS DATA					CUT FLUOR	DIRECT FLR	LITHOLOGY DESCRIPTIONS and REMARKS			
500	50	5			.5	C1	C2	C3	iC4				nC4	iC5	TG
WOB (tons)					Total Gas in Units Chromatograph in PPM										
50	25	0			%	.5	5	50	500				5K	good	fair
MWD Gamma Ray (api)			0	100	200	100	1K	10K	100K	1000K	good	fair	poor		
Window Depth 1756.0 to 1761.3m MDRT Start Milling Window at 20:45 hours on 27-02-2006			1740											PREVIOUS WELL HISTORY Plugged & Abandoned in February, 2006. 13-3/8" Surface Csg 797.0m KB 9-5/8" Production Csg 2239.0m KB 5-1/2" Production Liner 2982.0m KB	
MW: 9.7 FV: 57 PV: 24 YP: 43 Gel: 10/15 WI: 1.6 pH: 9.5 Cl: 45k			1750											Top of Bridge Plug (EZSV): 1763.0m MDRT Top of Window at 1756.0m MDRT Bottom of Window at 1761.3m MDRT 8-1/2" Mill from 1756.0m MDRT to 1769.0m MDRT. Rat hole:7.7m	
WOB:2-10 TDRPM:60 MMRPM:174 SPP:1800 FLW:600			1760 (1570.5)	?	?	?	?	?	?	?	?	?	?	Bream A9B kick-off at 16:30 hours on 01-03-2006 from 1769.0m MDRT	
MW: 9.75 FV: 57 PV: 23 YP: 39 Gel: 9/13 WI: 1.8 pH: 8.9			1770	?	?	?	?	?	?	?	?	?	?	PIT at 1756.0m MDRT 1567.7m TVDRT 900 psi 9.7 ppg EMW:13.0 ppg	
			1780 (1584.7)	?	?	?	?	?	?	?	?	?	?	Drill with KCl/Glycol/PHPA mud system	
			1790	?	?	?	?	?	?	?	?	?	?	No H2S or CO2 detected	
														CALCAREOUS CLAYSTONE:med gy-bnsh gy,occ med lt gy,mod calc,rr gastropod,rr ooid,frm,sbblky.	







APPENDIX 4b

BREAM A9B

Well Completion Log

WELL COMPLETION LOG

Scale – 1:200

BREAM A-9B

Gippsland Basin, Victoria
Concession: VIC/L13



POST-DRILL
LOCATION:
Top of Latrobe

Latitude: 38° 30' 10.798" S
Longitude: 147° 46' 43.043" E
MGA X: 567895.14 mE
MGA Y: 5738091.04 mN
Depth: 2036.0m MDRT
1789.0 m TVDRT
(-1756.1mTVDSS)

COMPILED BY: Sheryl Sazenis
DRAFTED BY: Arnaldo Ribeiro
DRILLED BY: Nabors Rig 453
Datum: GDA94 (GRS80)
Projection: MGA/ UTM Zone 55 (S)

ELEVATION: G.L.: -59.40 m
R.T.: 32.82 m
Water Depth: 59.40 m

TOTAL DEPTH: 2283.0 mMDRT / 1994.4 mTVDRT
PLUGGED BACK T.D.: 2240.0m MDRT

DATES: Spudded: 01/03/2006
Rig Released: 11/03/2006
I.P. Established: 05/05/2005
(Initial production)

CLASSIFICATION: Development
STATUS: Cased and Completed

SERVICE COMPANIES:

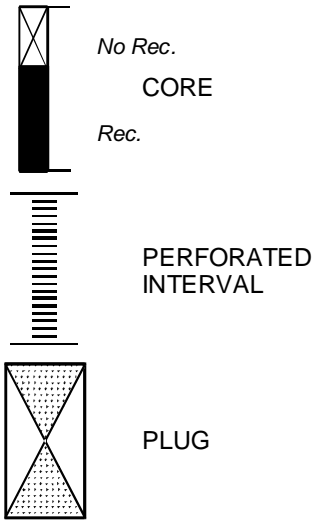
DRILLING CONTRACTOR: International Sea Drilling Limited (Nabors Rig 453)
MWD/DIRECT. DRLG: Schlumberger Anadrill
GYRO SURVEYING: SDI
CORING: n/a
PIPE CONVEYED: Reeves (Compact Shuttle Logging System)
LOGGING:
CEMENTING: Halliburton
CASING: Weatherford

PRODUCTION TESTING: n/a
DIVERS: n/a
MUD LOGGING: Geoservices Overseas S.A.
PRESSURE RECORDING: n/a
WELL VELOCITY SURVEY: n/a

MUD ENGINEERING: Halliburton- Baroid
LINER: n/a

LEGEND

2.7m NOS
Ø = 17%
Sw = 32%




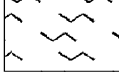



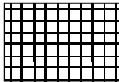

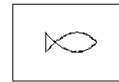
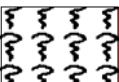

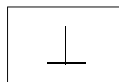
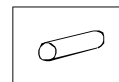
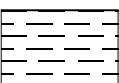

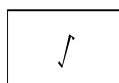



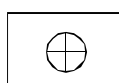
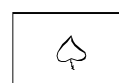
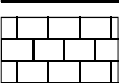
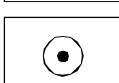
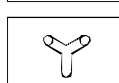
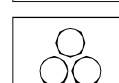
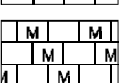

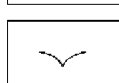

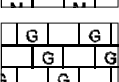


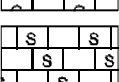
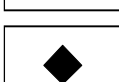
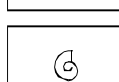
- ← SST RECOVERED SIDE WALL CORE LITHOLOGY
SST - Sandstone CLST - Claystone
SLST - Siltstone LMST - Limestone
MST - Mudstone ML - Marl
SH - Shale COAL - Coal
- ← SIDE WALL CORE - NO RECOVERY
- ← FIT
- ← P2/11 MDT/RFT PRETEST RUN/SEAT NUMBER
- ← S11/2 MDT/RFT SAMPLE RUN/SAMPLE NUMBER
- ← P2/40 MDT VERTICAL/HORIZONTAL PERMEABILITY TEST
- PACKER
- BRIDGE PLUG

- LOG ANALYSIS DATA
NS - Net Sand
NOS - Net Oil Sand
NGS - Net Gas Sand
Sw - Water Saturation
- MUD DATA
Ø - Porosity
Snd - Sand
MW - Mud Weight
FV - Funnel Velocity
PV - Plastic Velocity
YP - Yield Point
Gel - Gel Strength
pH - Acidity/Alkalinity
WL - Water Loss
Cl - Chloride
Ca - Calcium
Sol - Solids
H2O - Water
Oil -Oil

- SHOW OR STAIN
- HYDROCARBON CUT
- FLUORESCENCE
- GAS SHOW
- OIL PRODUCTIVE
- GAS PRODUCTIVE
- INTERPRETED OIL PRODUCTION
- INTERPRETED GAS PRODUCTION
- INTERPRETED WATER PRODUCTION
- WATER PRODUCTIVE
- CONDENSATE PRODUCTION
- INTEPRETED CONDENSATE BEARING
- DSTG DST WITH GAS RECOVERED
- DSTO DST WITH OIL RECOVERED
- SURVEY POINT
- 13-3/8" CASING SHOE
- MUD

LITHOLOGICAL SYMBOLS



	Siltstone		Marl		Chert		Echinoids
	Mudstone		Anhydrite		Carbonaceous Matter		Fish Remains
	Claystone		Volcanics		Calcareous		Plant Remains
	Shale		Basement		Glauconite		Spores
	Coal		Granule		Corals		Leaves
	Limestone		Oolites		Bryozoans		Foram
	Micritic Limestone		Dolomite		Brachiopods		Fossils
	Grain Limestone		Pyrite		Gastropods		
	Skeletal Limestone		Pyrite		Cephalopods		

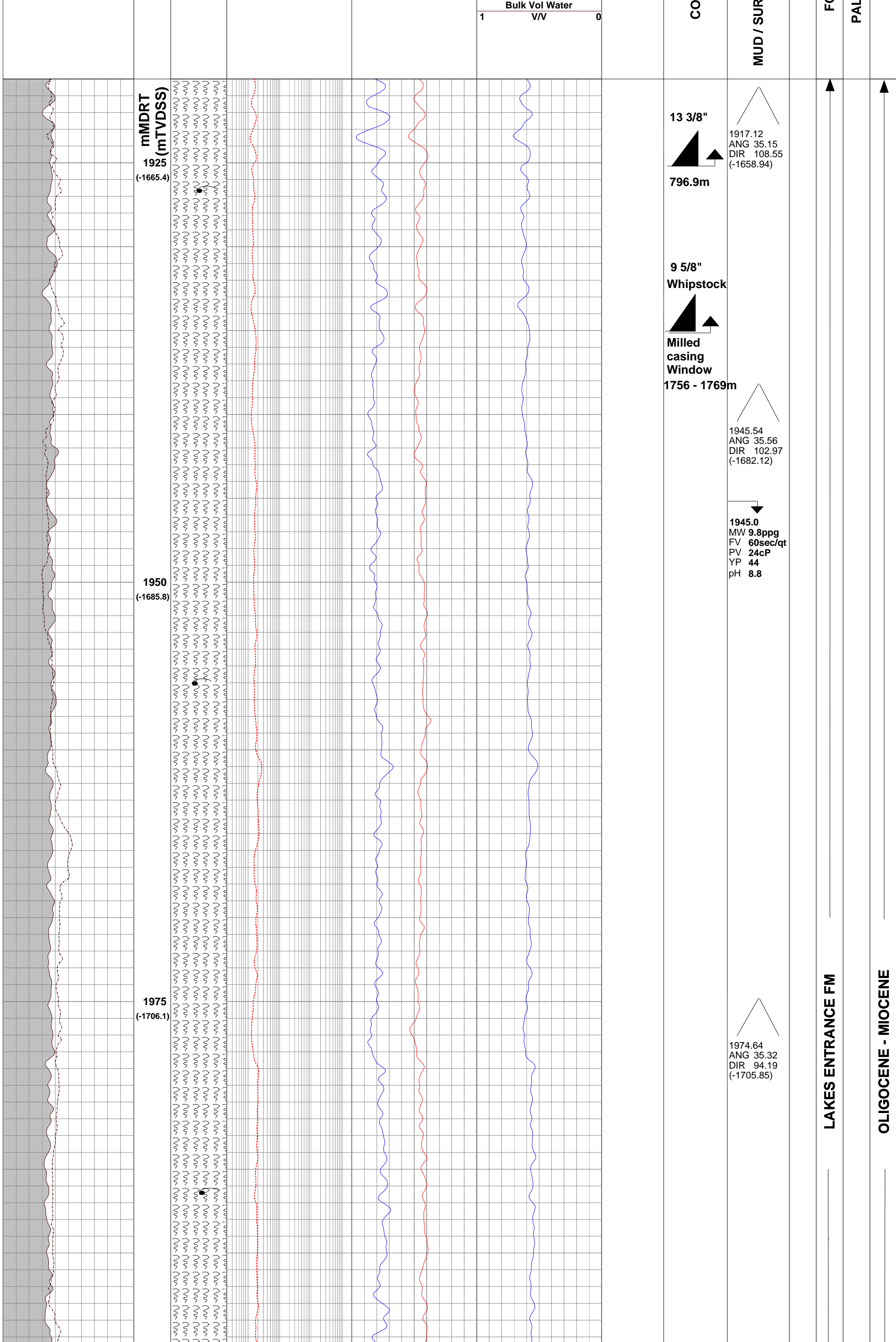
LOGGING AND SURVEYING			
Anadrill Schlumberger	Interval (mMDRT)	Precision (Reeves)	Interval (mMDRT)
MWD (Directional & GR) – 2 Runs	1756.0 mMDRT - 2263.78 mMDRT	MCG-MDN-MPD-MSS-MDL – 1 Run	2280.0 mMDRT- 1937.5 mMDRT

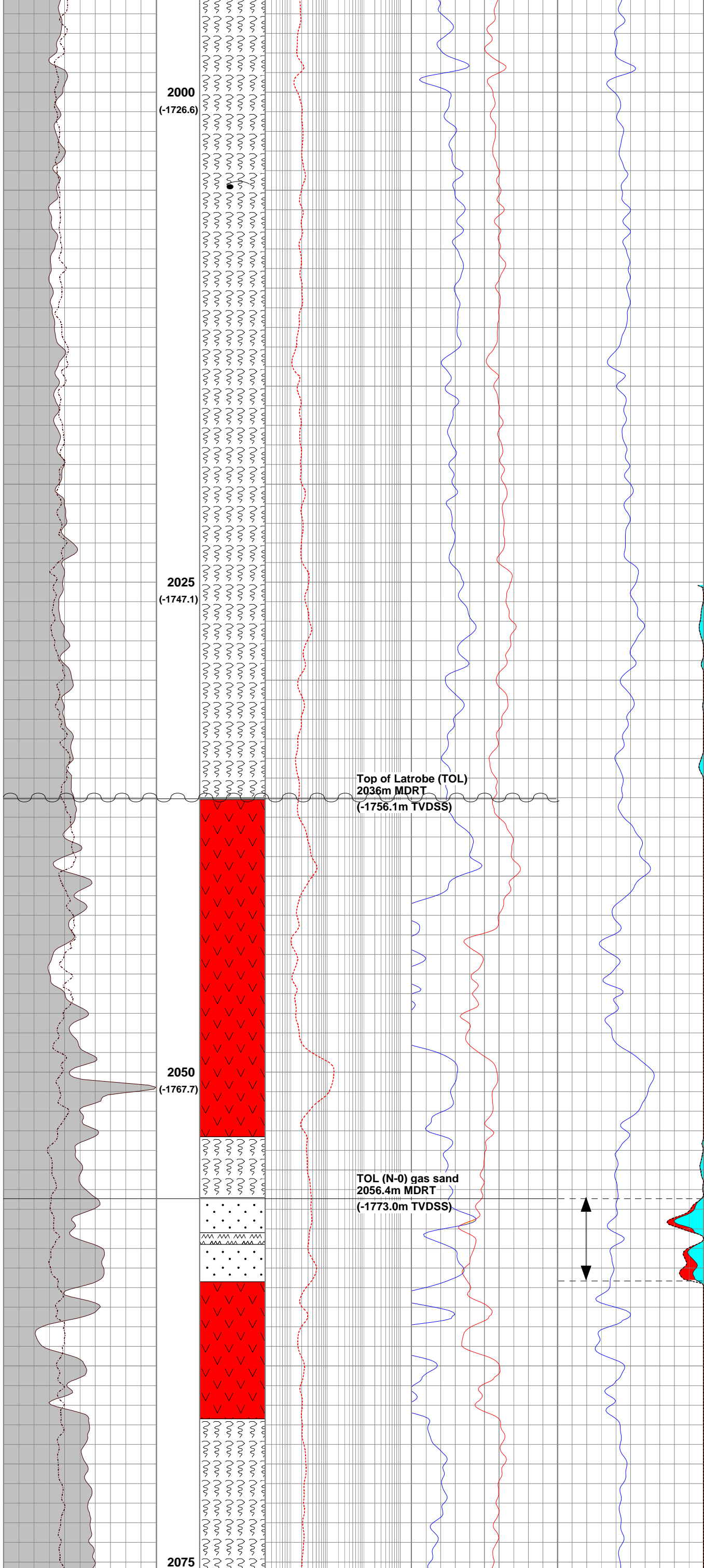
WELL DATA				
Date	27 February 2006- 01 March 2006	01 March 2006- 03 March 2006		04 March 2006- 05 March 2006
Run	MWD # 1	MWD # 2		Wireline Run # 1 on shuttle
Log	Powerpulse Directional & GR	Powerpulse Directional & GR		MCG-MDN-MPD-MSS-MDL
Depth Driller	1769.0 mMDRT	2283.0 mMDRT		2283.0 mMDRT
Depth Logger	1769.0 mMDRT	2283.0 mMDRT		2283.0 mMDRT
Bottom Log Interval	1769.0 mMDRT	2263.78 mMDRT		2280.0 mMDRT
Top Log Interval	1756.0 mMDRT	1756.0 mMDRT		1937.5 mMDRT
Casing Driller	1756.0 mMDRT	1756.0 mMDRT		1756.0 mMDRT
Casing Logger	1756.0 mMDRT	1756.0 mMDRT		1756.0 mMDRT
Casing Size	9.625"	9.625"		9.625"
Casing Weight	47.0 ppf	47.0 ppf		47.0 ppf
Bit Size	8.5"	8.5"		8.5"
Type of Fluid in Hole	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL		KCI/PHPA/GLYCOL
Density	9.70 ppg	10.00 ppg		10.00 ppg
Rm @ Measured Temp.	N/A	N/A		0.095
Rmf @ Measured Temp.	N/A	N/A		0.072
Rmc @ Measured Temp.	N/A	N/A		0.099
Max. Recorded Temp.	74.0 °C	76.0 °C		82.4 °C
Equipment / Location	Sale	Sale		Sale
Recorded By	B. Pattarakorn / C. Skiba	B. Pattarakorn / C. Skiba		R.Tench / B.Moss
Witnessed By	Trevor Lobo	Trevor Lobo		Trevor Lobo

CORES			PERFORATIONS		
From (mMDRT)	To (mMDRT)	Rec %	From (mMDRT)	To (mMDRT)	Gun Type
			2206.0	2209.0	Wireline

CASING				PLUGS		
Size	Set @ (mMDRT)	SX Cmt	Formation	From (mMDRT)	To (mMDRT)	SXCmt
13.375"	796.9	---	Gippsland Limestone			
9.625” (Whipstock)	1756.0 to 1769.0 Milled casing window	---				
7” Production Liner	2281.0	406	Latrobe Group	2240.0	2281.0	--

Caliper			DEPTH	LITHOLOGY	Deep Laterolog			Compensated Den			Compensated Sonic			TEST	MPLETION	VEY DATA	PLUGS	ORMATION	YNOLOGY	AGE				
6	IN	16			0.2	OHMM	2000	1.85	G/C3	2.85	500	US/M	100											
Gamma Ray								Neutron Porosity			Effective Porosity													
0	GAPI	200							0.45	V/V	-0.15	1	V/V								0			





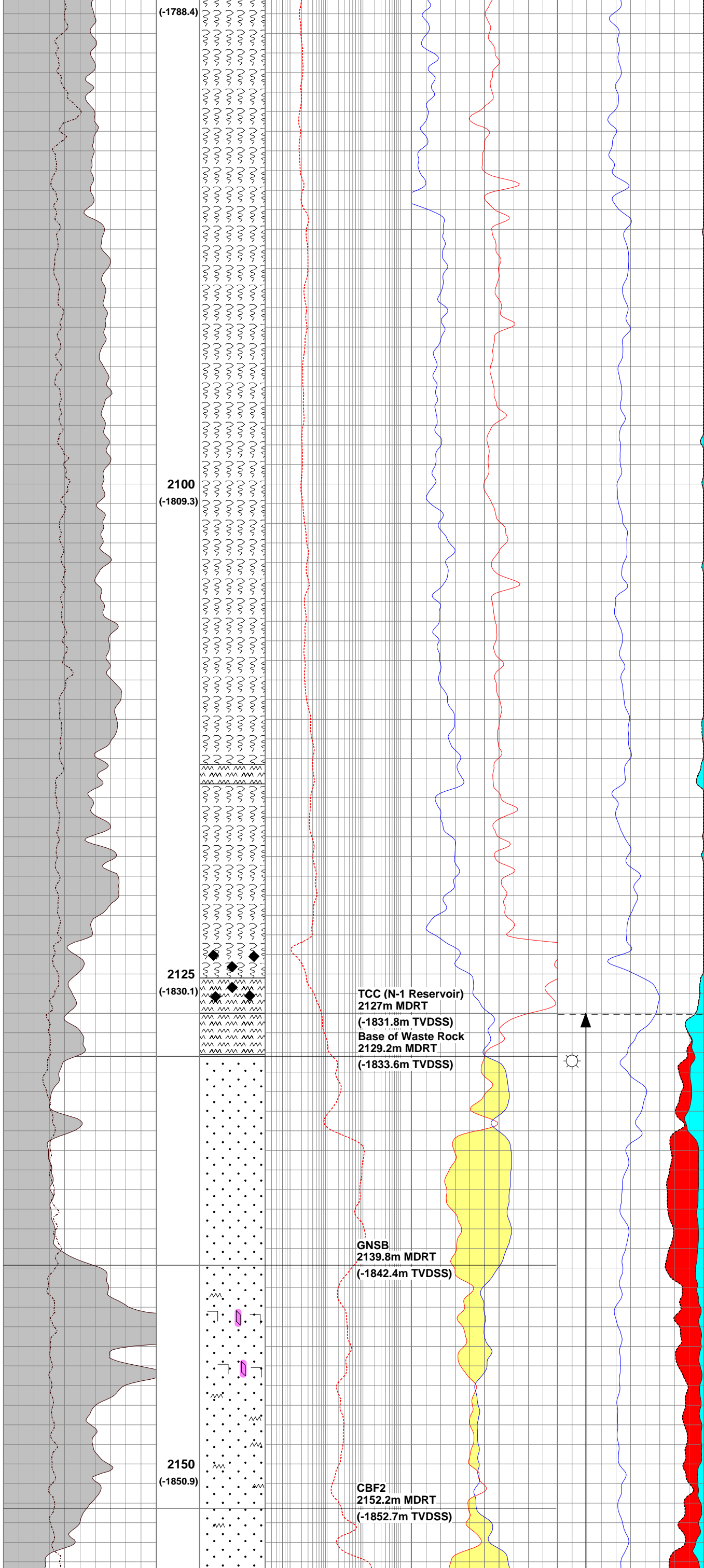
2002.88
ANG 35.08
DIR 86.13
(-1728.94)

2032.39
ANG 34.45
DIR 85.45
(-1753.18)

2040.0
MW 10ppg
FV 60sec/qt
PV 27cP
YP 47
pH 9.4

2061.28
ANG 34.02
DIR 84.79
(-1777.06)





(-1788.4)

2100
(-1809.3)

2125
(-1830.1)

2150
(-1850.9)

TCC (N-1 Reservoir)
2127m MDRT
(-1831.8m TVDSS)
Base of Waste Rock
2129.2m MDRT
(-1833.6m TVDSS)

GNSB
2139.8m MDRT
(-1842.4m TVDSS)

CBF2
2152.2m MDRT
(-1852.7m TVDSS)

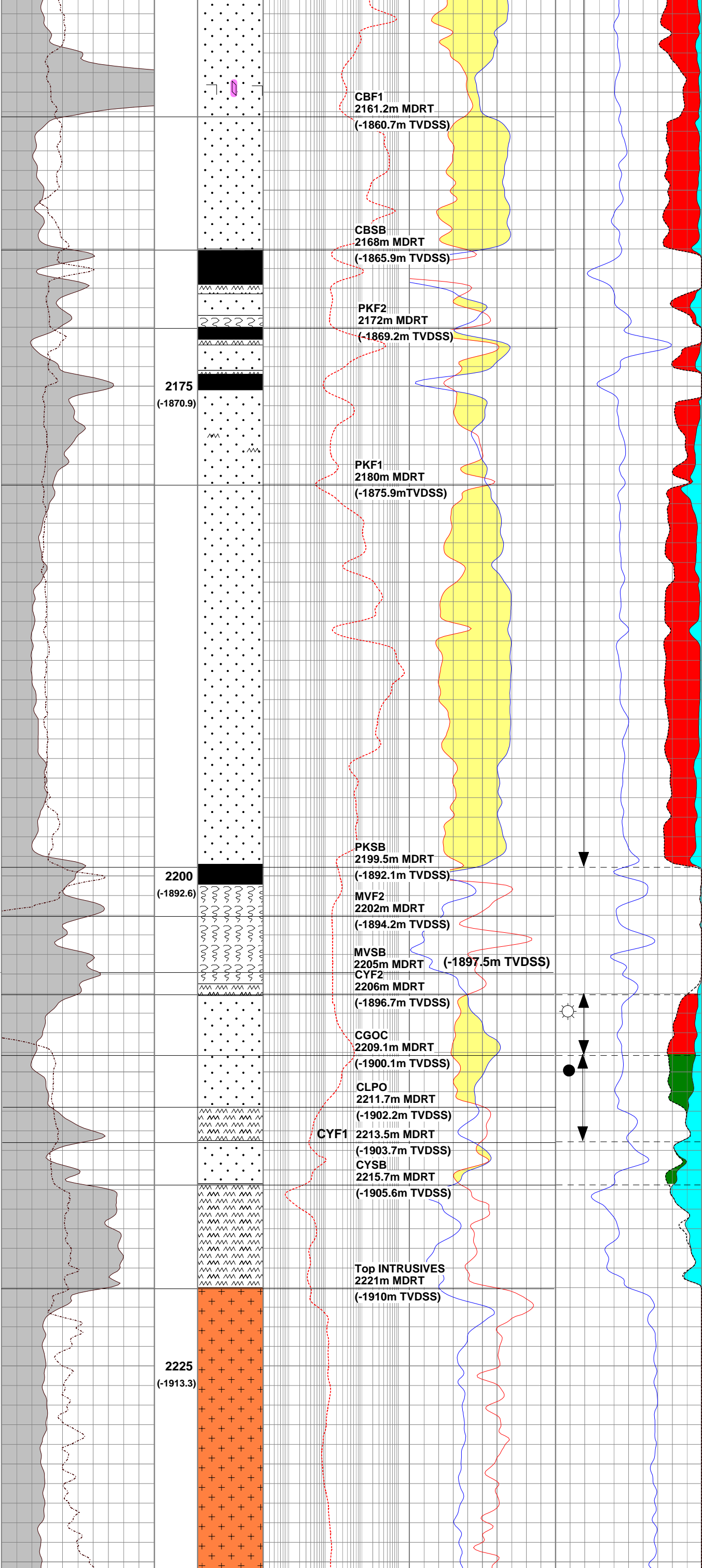
2090.26
ANG 33.53
DIR 82.66
(-1801.15)

2119.28
ANG 33.52
DIR 82.38
(-1825.35)

2148.28
ANG 33.68
DIR 81.84
(-1849.50)

2152.0
MW 10ppg
FV 75sec/qt
PV 20cP

CENE



YP 44
pH 8.9

2177.09
ANG 33.73
DIR 81.36
(-1873.47)

2205.90
ANG 33.69
DIR 80.36
(-1897.43)

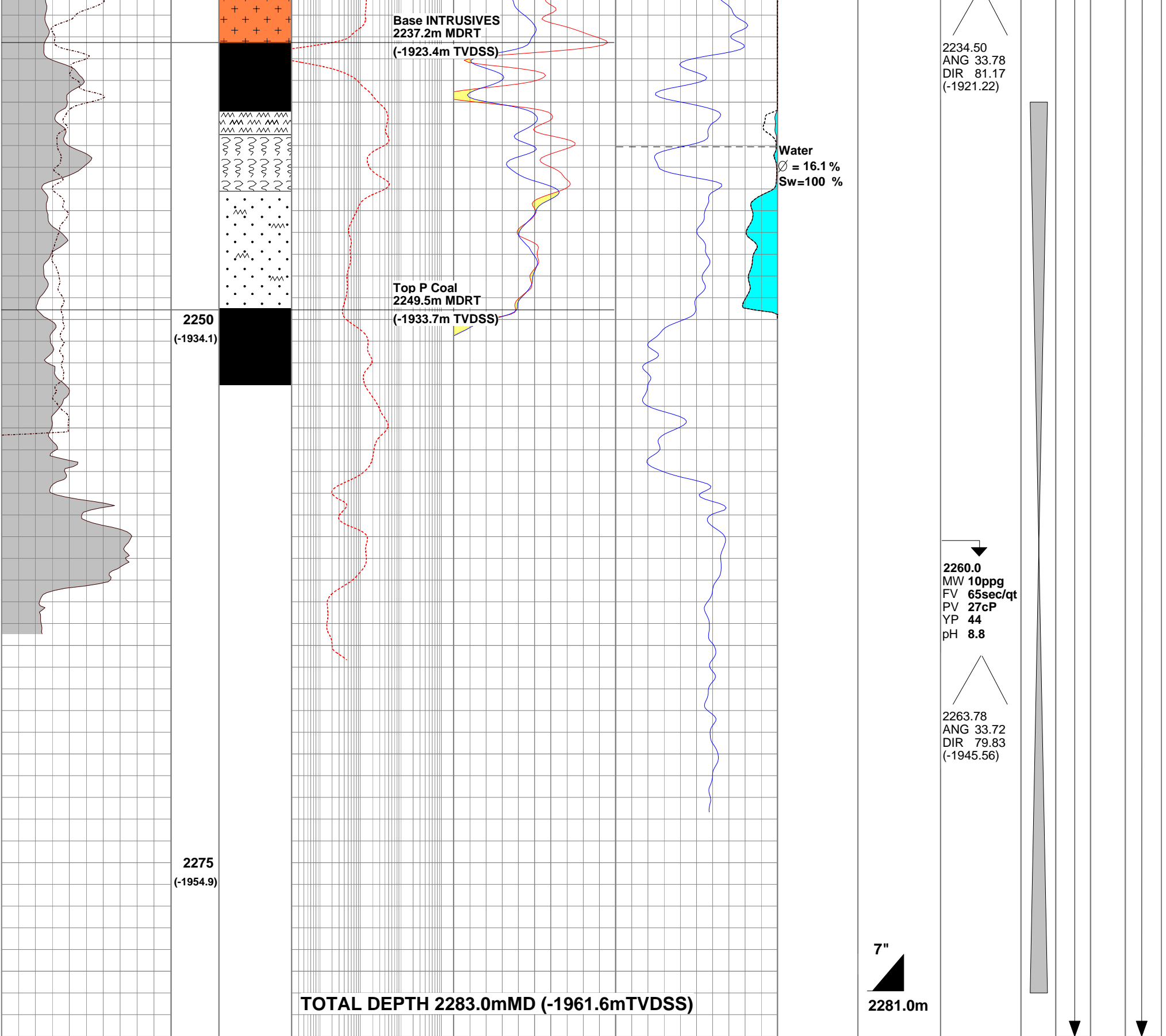
Gas
3.1m MD Net
2.6m TVD Net
Ø = 18.5%
Sw= 20.3%
Oil
2.8m MD Net
2.3m TVD Net
Ø = 21.0%
Sw= 32.2%
Residual oil
Ø = 19.0 %
Sw=83.0 %

2206.0m

2209.0m

LATROBE GROUP

PALEOCENE - EARLY EOCENE



GRGC CLDC DSLL DGLL DEN NPRL DT35 PIGN VUWA		Gamma Ray Density Caliper Shallow Laterolog Groningen Deep Laterlog Compensated Density Limestone Neutron Porosity Compensated Sonic Effective Porosity Bulk Volume Water	Bream A9B Initial Production Date: 05/05/2006 Production Zone: Bream N-1 Initial Total Liquid Rate 100 kL/day(perf'ed in gas, awaiting oil) Initial water cut: 0 Initial Oil rate: 100 kL/day 19/05/06 welltest 500 kl/d oil, 80% watercut.	
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