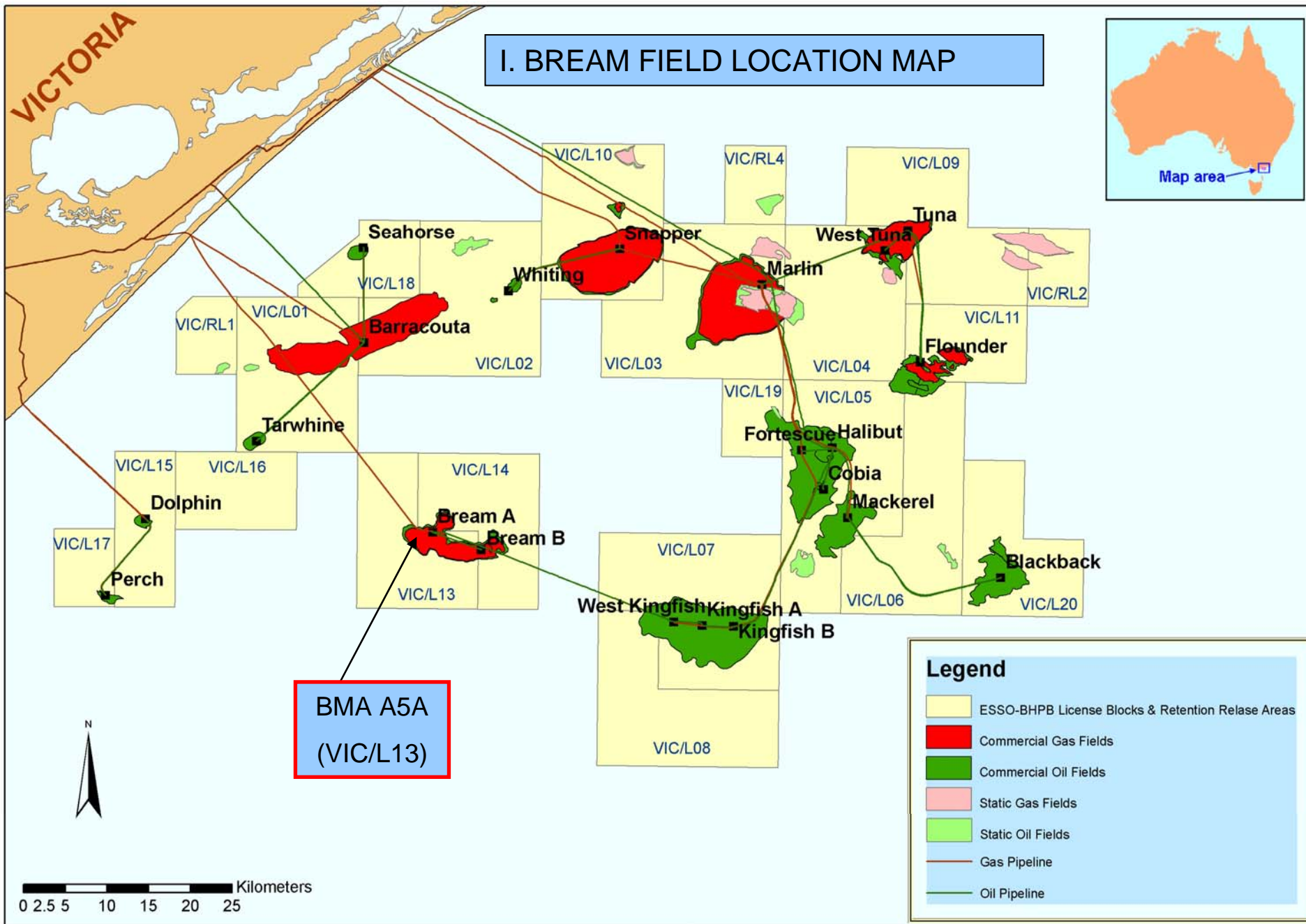


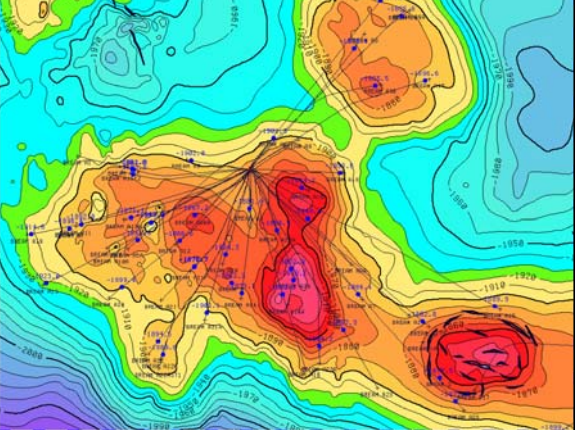
WELL COMPLETION REPORT
BREAM A5A
GIPPSLAND BASIN, VICTORIA

Author: Mike Hordern
Compiler: Sheryl Sazenis
November 2005

CONTENTS

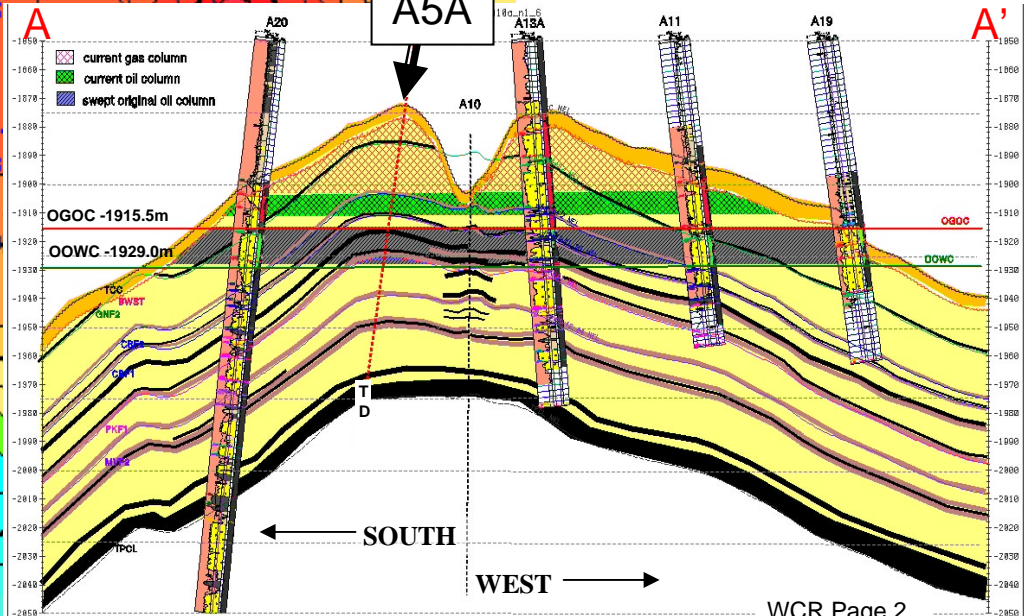
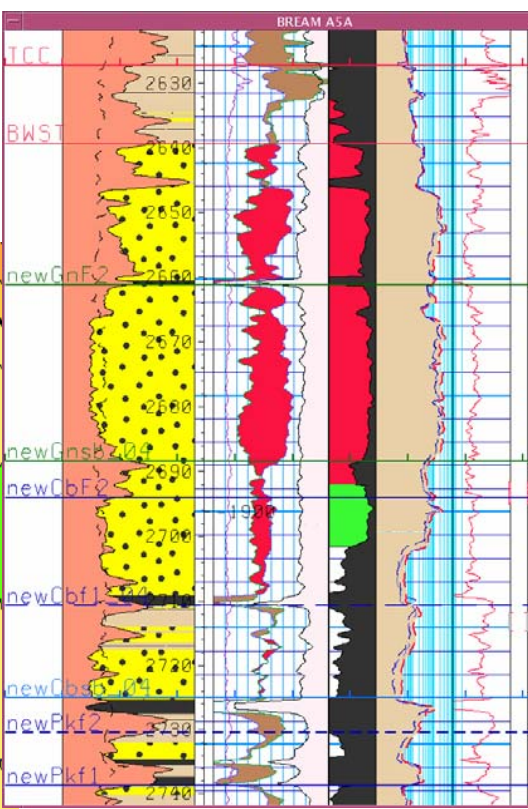
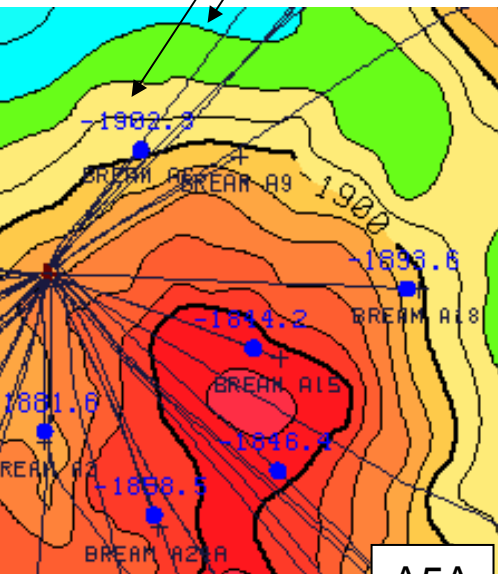
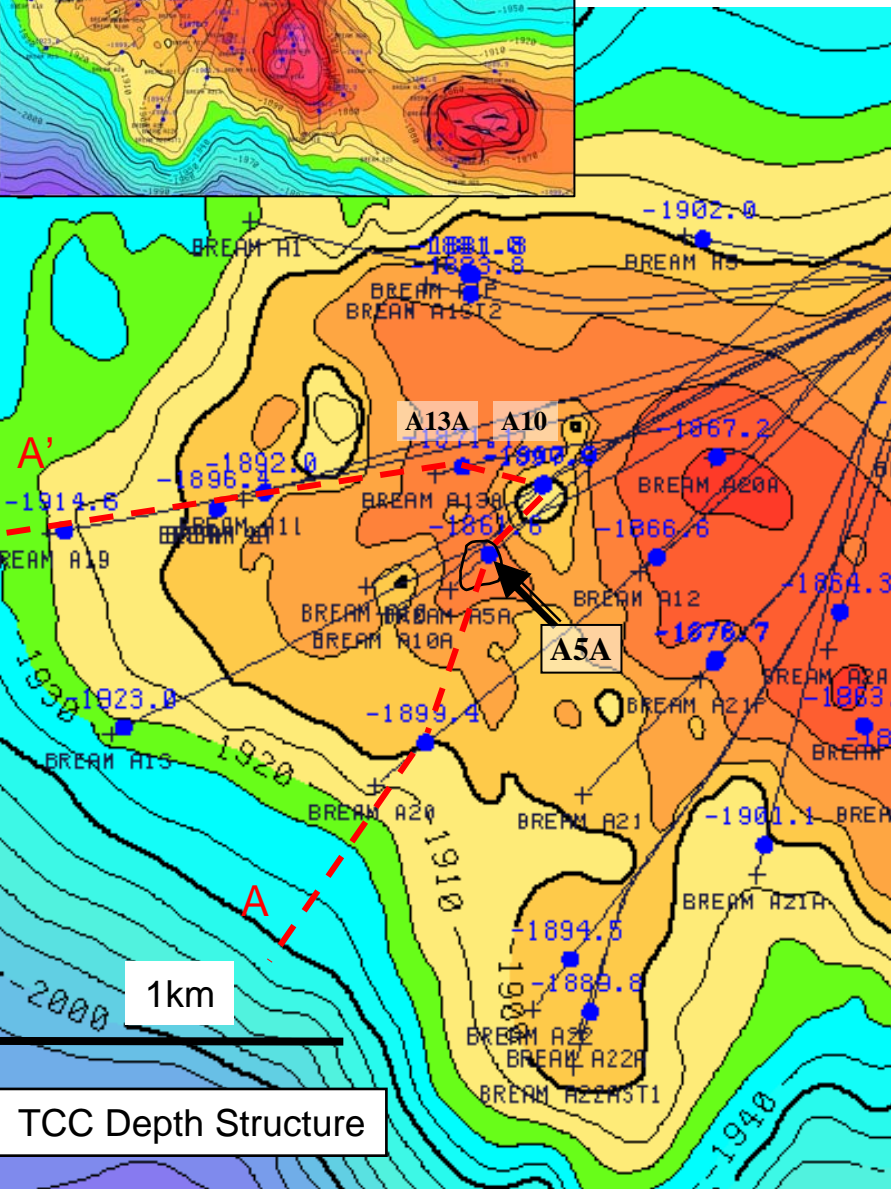
I. BREAM FIELD LOCATION MAP	1
II. WELL DATA RECORD	2
BREAM TCC STRUCTURE MAP AND CROSS-SECTION	2
BREAM A5A SEISMIC PROFILE	3
LOCATION	4
ELEVATIONS & DEPTHS	4
MISCELLANEOUS	4
WELL CLASSIFICATION	4
CASING RECORD	5
CEMENTING RECORD	5
DRILLING PERFORMANCE	6
BMA A5A - FINAL WELL REPORT	6
<i>GENERAL</i>	<i>6</i>
<i>TIME ANALYSIS</i>	<i>6</i>
<i>COSTS (based on projected)</i>	<i>6</i>
<i>CASING (all depths herein are based on Rig 453 elevations: RT-MSL=32.82m)</i>	<i>6</i>
<i>COMPLETION</i>	<i>6</i>
<i>Following poor performance from perforated zone, zone was plugged a month later</i>	
<i>and new zone perforated:</i>	<i>6</i>
<i>ADDITIONAL</i>	<i>6</i>
COMPLETION SCHEMATIC	7
III. SAMPLES	8
CONVENTIONAL CORING	8
SIDEWALL CORING	8
IV. LOGS AND SURVEYS	8
V. FORMATION RESERVOIR TOPS - BREAM A5A	9
VI. GEOLOGICAL ANALYSIS - BREAM A5A	10
VII. APPENDICES	
1. Survey Data & Listing	
1a. Survey Data	
1b. MD-TVD Survey Data Listing	
2. Petrophysics	
2a. Petrophysics Evaluation Summary	
3. Sample Descriptions	
3a. Lithology/Show Descriptions	
4. Logs	
4a. Mud Log	
4b. Well Completion Log	



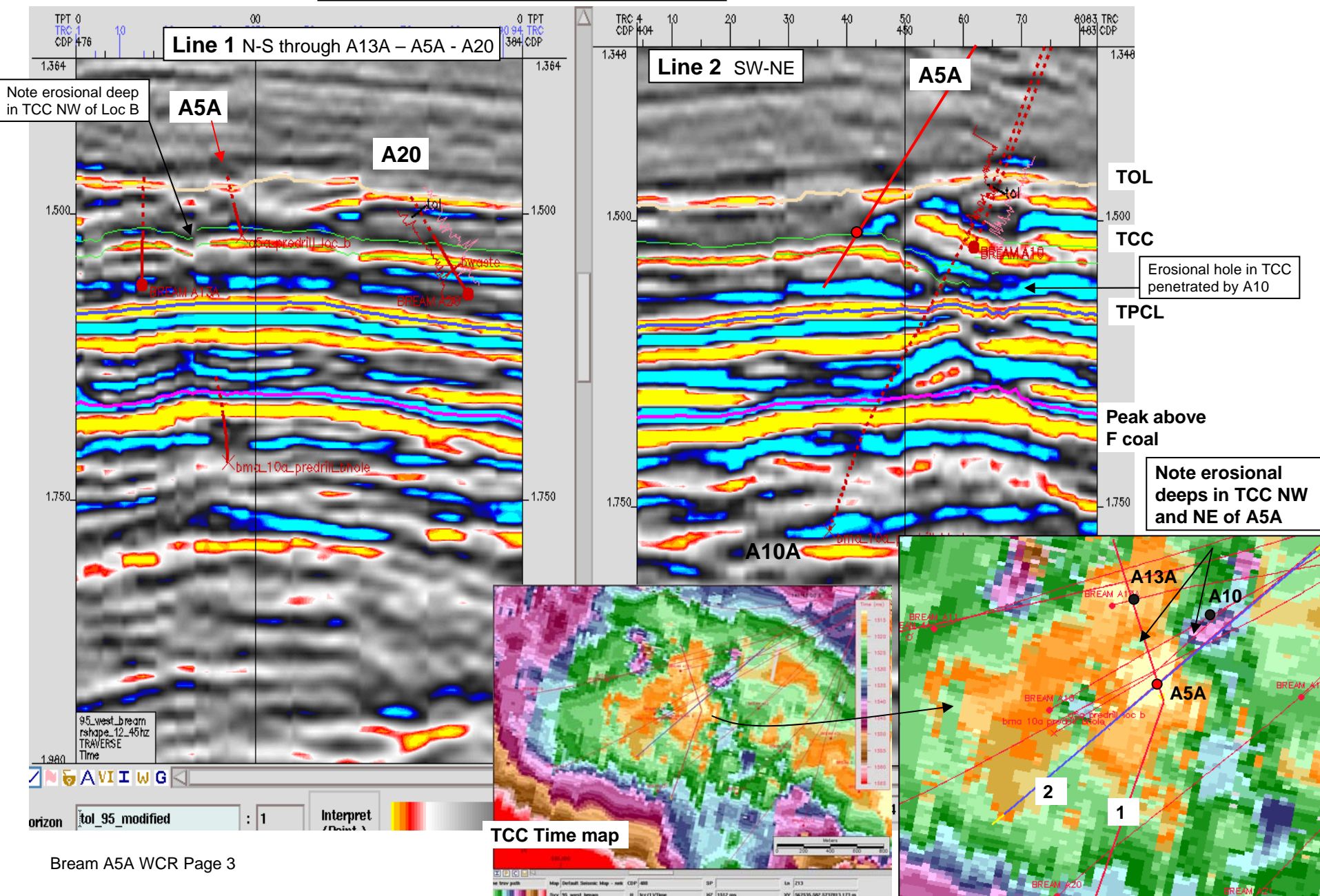


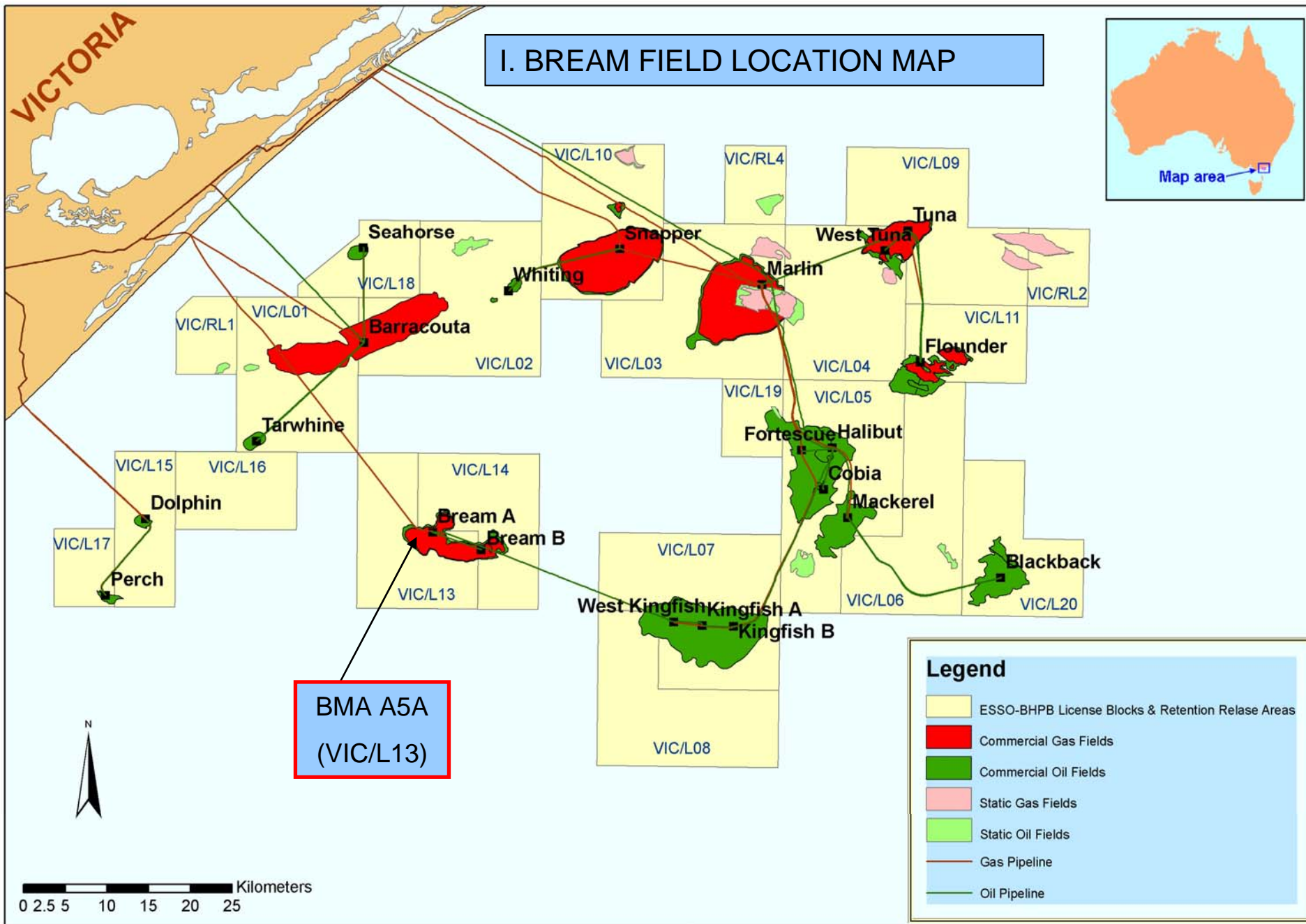
II. WELL DATA RECORD: Bream TCC Structure Map and Cross-Section

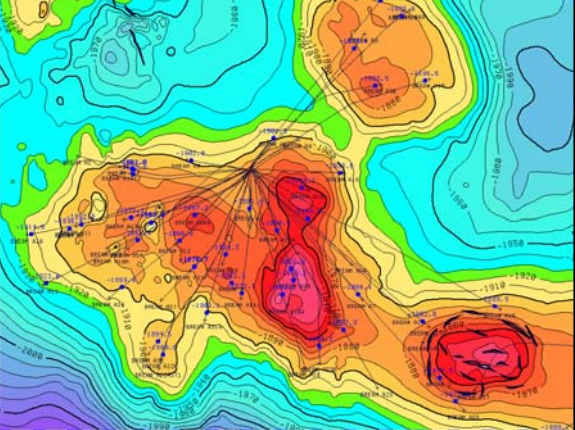
OGOC -1915.5m
OOWC -1929.0m



BREAM A5A Seismic Profile

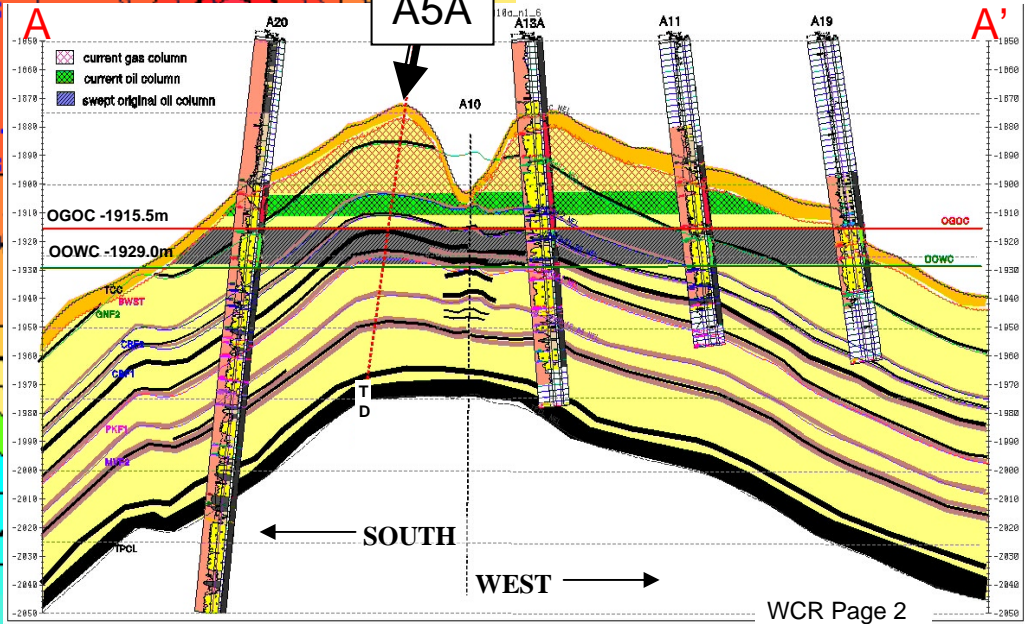
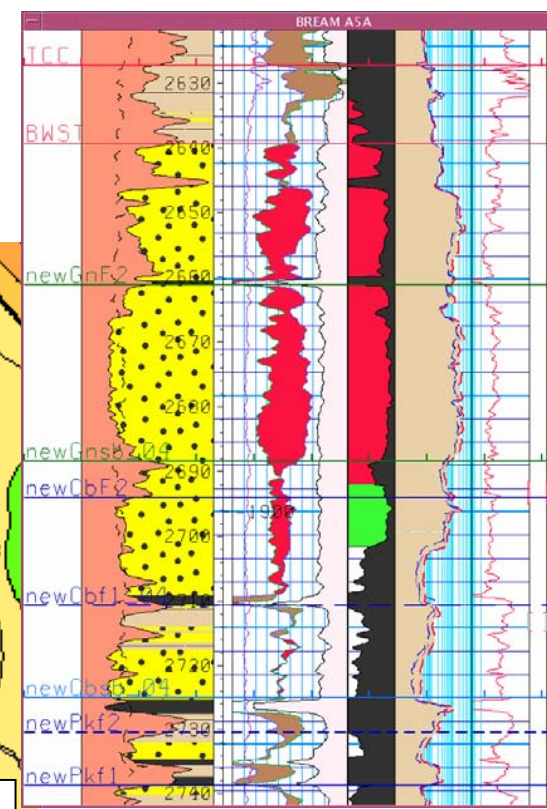
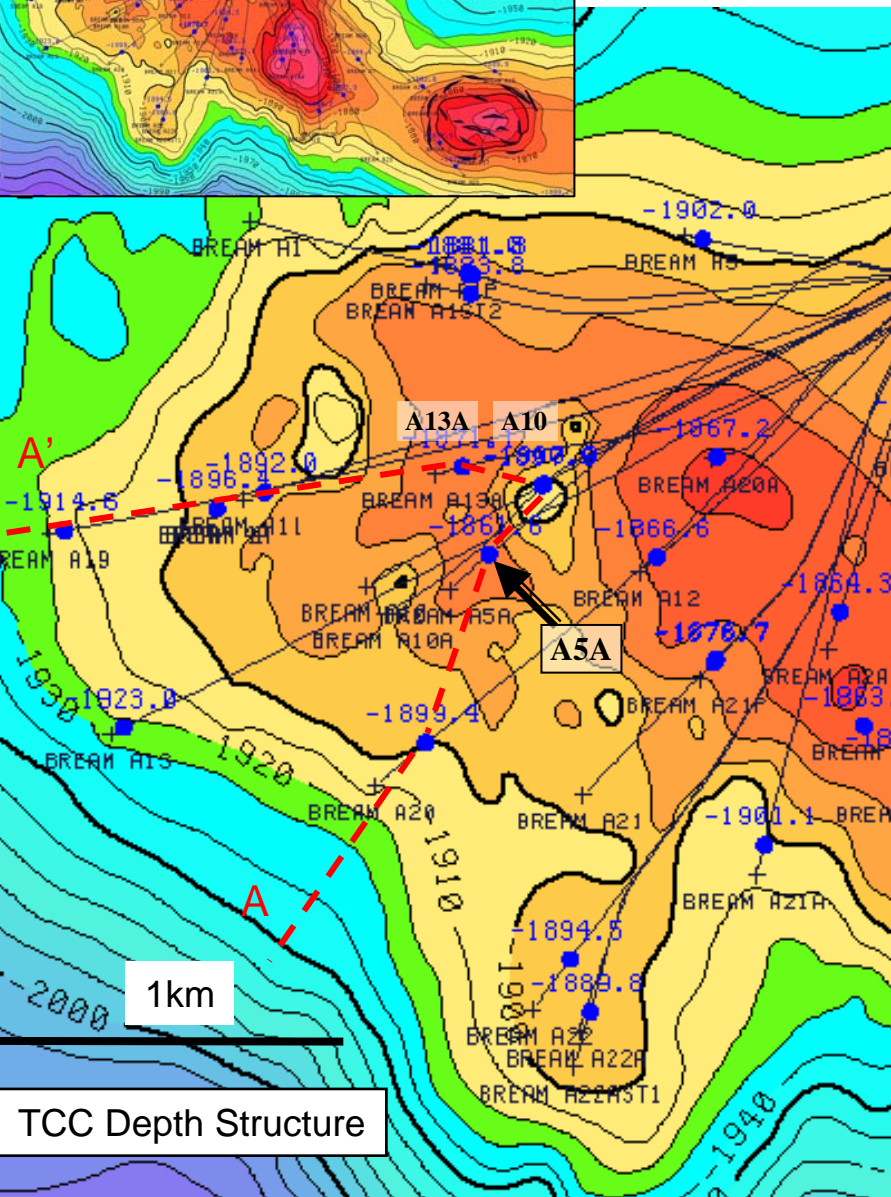






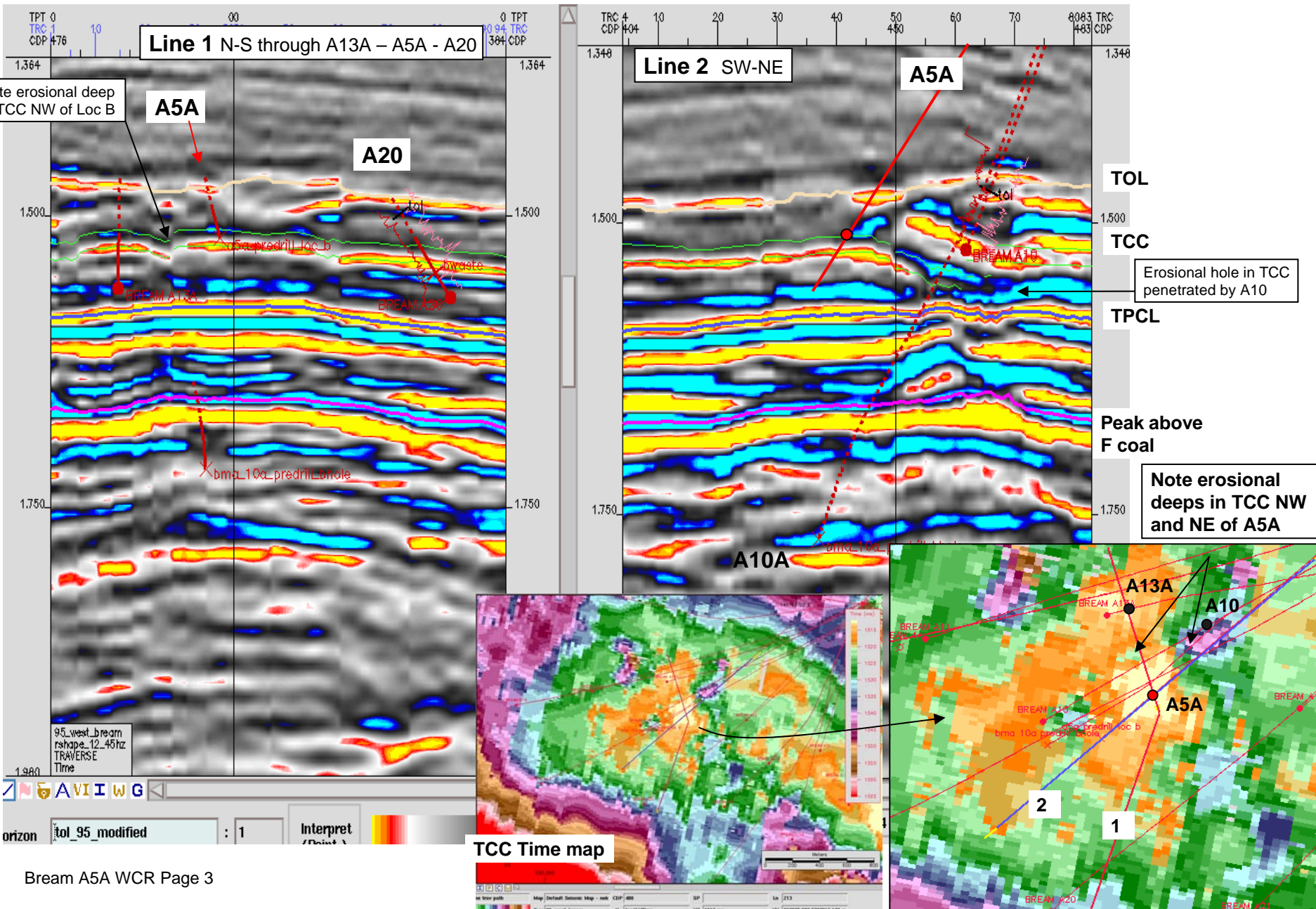
II. WELL DATA RECORD: Bream TCC Structure Map and Cross-Section

OGOC -1915.5m
OOWC -1929.0m



TCC Depth Structure

BREAM A5A Seismic Profile



II. WELL DATA RECORD (cont'd)

LOCATION

Field	Bream	Conductor #5 Surface Coordinates	
Well Name	A5A (Loc B)	(GDA94) X	567345.00mE
Conductor Number	Slot 5	(MGA94) Y	5,738461.68mN
State	Victoria	Latitude	38° 29' 58.7796"S
Permit/Licence	Vic/L13	Longitude	147° 46' 20.3340"E
Geological Basin	Gippsland	Perforations	2711.8 – 2714.6m MDRT
Top Of Latrobe	2496.7m MDRT	Initial zone:	1941.5 – 1943.1m TVDRT
	1822.4m TVDRT	(22/06/2005)	(-1908.7 – 1910.3m TVDSS)
	-1789.6m TVDSS	Subsequent zone:	2691.5 – 2695.0m MDRT
MGA94 X	566134.81m E	(24/07/2005)	1930.2 – 1932.2m TVDRT
MGA94 Y	5737718.94m N		(1897.4 – 1899.3m TVDSS)
Latitude	38° 30' 23.200"S	Datum	GDA94 (GRS80)
Longitude	147° 45' 30.628"E	Projection	Traverse Mercator MGA94/UTM Zone 55 (S)

ELEVATIONS & DEPTHS

Water Depth	59.40 m
Top Wellhead to MSL	27.73 m
Main Deck Rel to MSL	25.12 m
RT Relative to MSL	32.82 m
Average Well Angle	56.2°(tang)
Total Depth	2810.0 m MDRT
	1994.5 m TVDRT
	-1961.7m TVDSS
Later Plug Back Depth	2709m MDRT
Initial Plug Back Depth	2775.5m MDRT

DATES

Skid Rig (P&A A5)	02/06/2005
Spudded	09/06/2005
Development Rig Days	14.7
NPT Days	0.29
Rig Released	24/06/2005
I.P. Established	05/07/2005
(initial zone)	

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 Oil
Overriding Royalty	2.5%	Completion Size	3-1/2"
Drilling AFE No.	L0501F457		

WELL CLASSIFICATION

Before Drilling	Oil Development	After Drilling	Cased and Completed Oil Well
------------------------	-----------------	-----------------------	---------------------------------

II. WELL DATA RECORD (cont.)

CASING RECORD

Type	Size (Inches)	Weight (lb/ft)	Grade	Thread	Depth (mMDRT)
Original A5 Conductor	22	133	K-55	BTC	169.0
Original A5 Surface*	13 ³ / ₈	54.5	K-55	BTC	895.0
Production Casing	7	29	L-80	Vam Top	2809.0

(3 ½" completion tubing (9.2lb/ft, 13Cr80), depth 2470.5m)

* A5A was drilled out from under the A5 original surface casing shoe.

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" 29 lb/ft	ABC	550	HALAD 413L 30 gal / 10 bbl NF-6 0.25 gal / 10 bbl CFR-3L 3 gal / 10 bbl	61	113	15.8	2809 to 2000	2500 psi

II. WELL DATA RECORD (cont.)

DRILLING PERFORMANCE

BMA A5A - Final Well Report

GENERAL

Platform:	Bream	Rig:	453	Reservoir:	N-1 (TCC) Sands
Well:	A5A	Well Slot:	#5	RT-MSL (Rig453)	32.82
Drilling Complexity Index	3.2	Completion Complexity Index	2.6		

DEPTH		PERFORMANCE		MUD	
m MDRT	2,810.00	20" Cond. Hole	N/A	Max Wt (ppg)	10.1
m TVDRT	1,994.52	12-1/4" Surf. Hole	N/A	Type (Surf. Hole)	N/A
Vert. Section (m)	1,678.69	8-1/2" Prod. Hole	542m/day	Type (Prod. Hole)	KCI/PHPA/Poly/Glycol
INCLINATION		6" Liner Hole	N/A	Type (Liner Hole)	N/A
Max (deg) / Ave (deg)	58.4/ 56.2 (Tang)	* time to drill interval, incl's Connections & NPT.			

Comments: New hole drilled: 896m to 2,810mMDRT (1,914m MDRT drilled).

TIME ANALYSIS

Start Date:	9/06/2005, 2130hrs	Finish Date:	24/06/2005, 1300hrs		
Target Days (P10):	14.9	Total Days:	14.7	% Under Target:	1 % (under)
AFE Days (P50):	16.5	NPT Days:	0.29	% of Total Days:	2%
Supplementary AFE Days (P50):	N/A				

COSTS *(based on projected)*

AFE No.:	L0501F457	Revisions:	--	\$ per m	A \$2.01 k / metre (new hole)
\$ per day:	A\$ 262 k/day	\$ per day (excl. T + L) * Equipment, LWD & Reeves	A\$ 180 k/day		A\$ 1.37 k / metre* * based on TD not new hole

	Equipment	Materials	Contracts	Allocations	Contingency	Total
AFE (Original)	1,065,000	555,500	2,016,800	630,700	132,000	A\$4,400,000
AFE (Supplement)	-	-	-	-	-	-
Projected	1,052,000	453,000	1,637,000	561,000	147,000	A\$3,850,000

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

	Size / Weight / Grade / Thread	m MDRT	m TVDRT	PIT (ppg)
Conductor Casing *	22"	169	169	N/A
Surface Casing *	13-3/8", 54.5 ppf, K55, BTC	895	853	13.8 (LOT)
Prod Casing	7", 29.0ppf, L80, Vam Top	2,809	1,994	N/A

Comments: * Pre-existing casing strings.

COMPLETION

	Size / Weight / Grade / Thread	MMDRT	MTVDRT	Type
Completion	3-1/2", 9.2ppf, 13Cr80, Vam Ace	2470.3	1806.9	Single oil

	Top of Interval [m MDRT]	Top of Interval [m TVDRT]	Bottom of Interval [mMDRT]	Bottom of Interval [mTVDRT]	Gun Type
Perforation Interval:	2711.8 (N-1 sand)	1941.5	2714.6 (N-1 sand)	1943.1	MAXR 4 1/2 "

Comments: Completion was 3-1/2" 13Cr80 with TR-SSSV and 3 SPMs for gas lift, and one packer set at 2460m MDRT.

Following poor performance from perforated zone, zone was plugged a month later and new zone perforated:

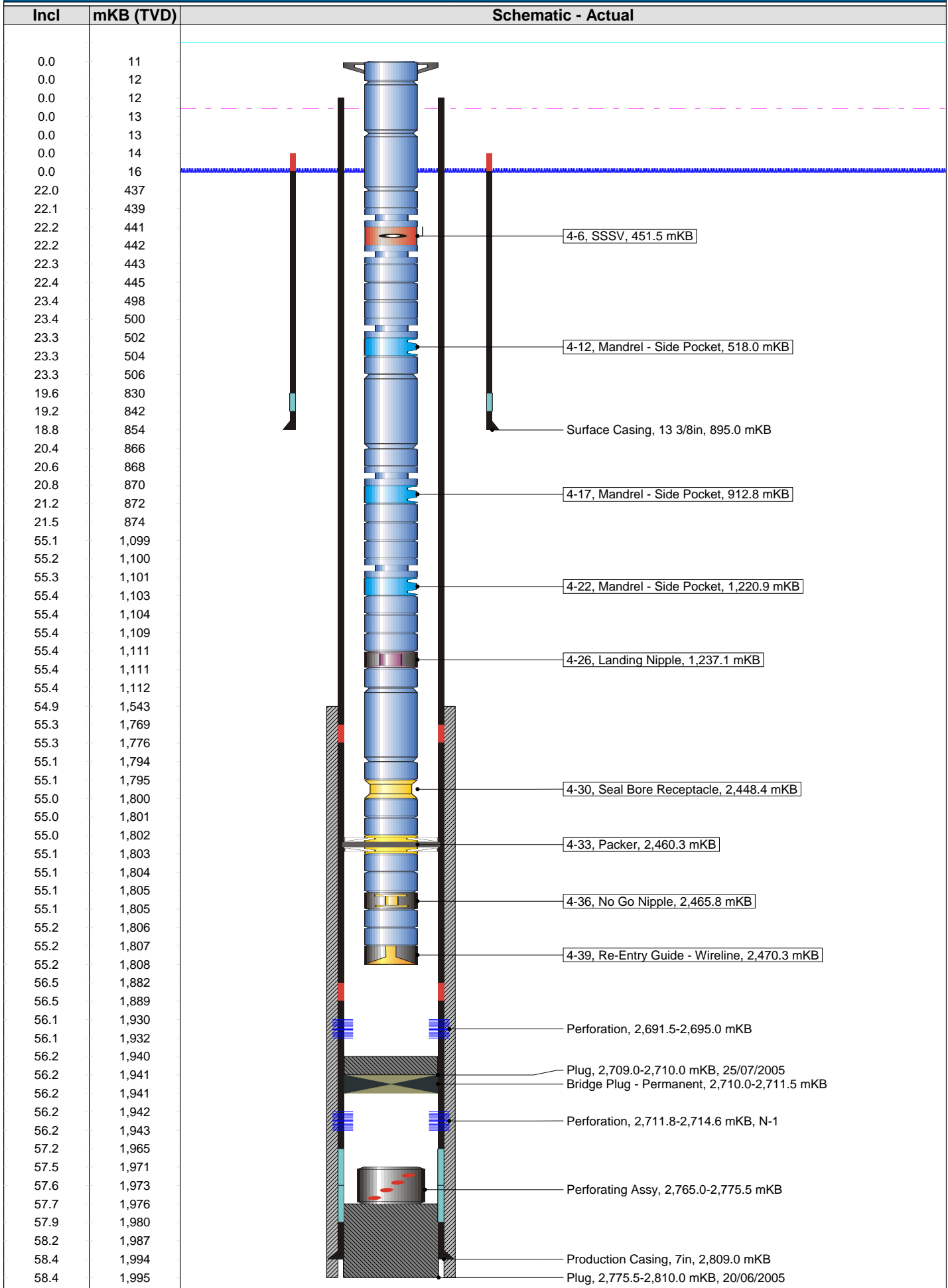
2691.5 – 2695.0m MDRT (1930.2 – 1932.2m TVDRT), Wireline 2 1/8"

ADDITIONAL

		Upper Interval [m MDRT]	Lower Interval [m MDRT]
Logs Run	GR-Resistivity-Density-Neutron-Sonic-Caliper	843.1	2,807

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

Bream A5A: Existing Schematic



III. SAMPLES

The cuttings sampling programme for BREAM A5A are detailed in the following table:

Interval	Formation	Sampling Details
KOP to 150 m above Top of Latrobe: 900.0 – 2370.0 mMDRT	Gippsland Limestone and Lakes Entrance Formation	Cuttings samples for description only at 30 m intervals.
150 m above Top of Latrobe to Top of Latrobe (prognosed at 2526.1 mMDRT): 2370.0 – 2500.0 mMDRT	Lakes Entrance Formation and Latrobe Group	Three sets of washed and oven dried cuttings at 10 m intervals.
Top of Latrobe (prognosed at 2526.1 mMDRT) to Total Depth (TD): 2500.0 – 2810.0 mMDRT	Latrobe Group / Coarse Clastics	Three sets of washed and oven dried cuttings at 5 m intervals.

Detailed cuttings descriptions for the interval 900.0 to 2810.0 mMDRT (TD) are contained in Appendix 3a.

Conventional coring

No conventional cores were cut in BREAM A5A.

Sidewall coring

No sidewall core samples were shot in BREAM A5A.

IV. LOGS AND SURVEYS

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
MWD Run 1, Powerpulse (Directional, GR & APWD)	Schlumberger-Anadrill	898.0	2790.16
Run 1: Drillpipe conveyed Logging MCG-MDN-MPD-MSS-MDL	Reeves (Precision Logging) Compact wireline tools run on drillpipe (Shuttle System, memory mode)	843.1	2807.0

(M=memory/compact GR-Dual Neutron-Photo Density-Sonic-Dual Laterlog)

V. FORMATION RESERVOIR TOPS - Bream A5A

Horizon	m TVDSS			m MDRT ACTUAL	m TVT Gross HC Column	
	Predicted Tops	ACTUAL	Diff. (m)		Predicted	ACTUAL
Top of Latrobe (TOL)	-1805	-1789.6	15.4 high	2496.7		
Top of gas sands		-1796.2		2508.4		31.6 gas (22.0 net)
Base of gas sand		-1827.8		2565.9		
Top of Coarse Clastics (TCC)	-1875	-1861.6	13.4 high	2627.2		
Base of Waste zone (BWST)	-1880	-1868.3	11.7 high	2639.3		3.9 gas (1.4 net)
newGnF2		-1880.5		2661.2		11.4 gas (10.4 net)
newGnsb		-1895.7		2688.4		17.2 gas (17.2 net)
Current GOC	-1905	-1897.7	7.3 high	2692.0	4m	5.1m oil (5.1 net)
NewCbF2	-1905	-1898.8	6.2 high	2694.0		
Current OWC	-1909	-1902.8	6.2 high	2701.2		
newCbf1	-1913	-1908.1	4.9 high	2710.7		Residual
newCbsb	-1920	-1916.0	4.0 high	2725.0		
newPkf2		-1919.0		2730.8		
newPkf1		-1923.6		2738.8		
newPksb		-1936.0		2761.7		
newMvf2		-1939.4		2768.0		
newMvsb		-1945.7		2779.7		
Total Depth (TD)	-1960	-1961.7		2810.0		

VI. GEOLOGICAL ANALYSIS - BREAM A5A

Objectives

Bream A5A (Location B) was the second well drilled by the ISDL Rig 453 in the Bream A 2005 drilling program. It targeted an undrilled local crest at the Top of Coarse Clastics N-1 reservoir in the western part of the Bream field between A13A and A12 to capture N-1 oil reserves migrating from the south flank near A20. The crest is flanked to the north and east by a deep erosional hole in the Top of Coarse Clastics (TCC) penetrated by A10 and A10A. This erosive hole acts as a significant local barrier to oil migrating updip within the N-1 sands. Likewise another smaller gully to the NW separates the upper N-1 reservoir sands at A5A from A13A, defining the A5A as an important drainage point required for this local attic and focus area in this part of the field.

A 2mTVD N-1 oil column observed in the recently drilled A10A well, coupled with the fact that the downdip A20 well was still producing oil prior to mechanical failure, confirmed that oil was present and likely to migrate into the A5A crestal location. Simulation studies also indicated that oil would continue to migrate and collect at this location as thickened oil legs for effective capture by A5A.

Results

Bream A5A was kicked off below the A5 surface casing shoe on 9 June 2005 and drilled to TD of 2810mMDRT (1961.7m TVDSS). Logging was conducted by Reeves (Precision Logging) drillpipe conveyed wireline tools on Shuttle. The well was completed as a successful oil producer.

TOL was encountered at 2496m MDRT (1789.6m TVDSS), 15.4m high to prediction, and Top of Coarse Clastics at 2627.2m MDRT (1861.6m TVDSS), 13.4m TVD high. This emphasises the local relief of this crest compared to the surrounding area. The TCC is 9.5m TVD updip of A13A, 5m updip of A12 and 36.3m updip of A10A. The individual N-1 Green, Cobalt and Pink sand units, separated by shale/coal baffles, are also significantly updip compared to A13A and A10A.

In the interval between TOL and TCC, a thick 31.6mTVD section of gas-bearing fluvial channel sands interbedded with coals was intersected, which contains 22mTVD net gas pay. Other similar gas sand reservoirs were also seen nearby in A10A, A10 and A13A however the A5A penetration is the thickest intersection to date on the field.

Between TCC and Base of Waste (BWST) is the 6.7mTVD altered "waste" zone which contains minor gas pay. Below BWST, a 29.4mTVD gross N-1 gas column is present, mostly within Green sand, to the current GOC interpreted at 2692m MDRT (1897.7m TVDSS) located just below the Green Sequence Boundary. Underlying the GOC is a 5.1mTVD oil leg (all net) in the Cobalt sand.

The current GOC at 1897.7m TVDSS is slightly higher than expected, particularly given the contact seen recently in A10A at 1904.3m TVDSS, and the GOC logged in A13A at 1903.5m TVDSS during Jan 2005. However this variability probably indicates that the oil leg is rising at slightly different rates in different sands due to local geologic effects and local well production.

A small 4.6mTVD possible oil/ residual zone is present in the lower Cobalt sand below newCbf1 2710.7m MDRT, however this zone proved to be mostly water productive. Other

VI. GEOLOGICAL ANALYSIS - BREAM A5A (cont'd)

sections of the swept zone to the field OOWC contain residual oil saturation and are interpreted to be effectively water productive.

Bream A5A was initially completed in the lower possible oil zone (perforations 2711.8-2714.6m MDRT), but this zone performed poorly (10kl/d oil, 208 kl/d total fluid, 95% water cut). This performance was disappointing and suggests the interval may be a low porosity residual oil zone. This zone was subsequently plugged and the well recompleted to the main Cobalt oil zone which flowed at an initial rate of 427 kl/d oil, 0% WC (25 July 2005).

APPENDIX 1a

BREAM A5A

Survey Data



BMA A-5A Final Geodetic Report

Report Date: June 14, 2005	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: Esso Australia Pty Ltd	Vertical Section Azimuth: 237.070°
Field: Bream A GDA 94	Vertical Section Origin: S 0.780 m, E 8.500 m
Structure / Slot: Bream A / 5	TVD Reference Datum: RKB
Well: 5	TVD Reference Elevation: 32.8 m relative to MSL
Borehole: BMA A-5A	Sea Bed / Ground Level Elevation: -59.400 m relative to MSL
UWI/API#:	Magnetic Declination: 13.097°
Survey Name / Date: BMA A-5A / June 10, 2005	Total Field Strength: 60149.014 nT
Tort / AHD / DDI / ERD ratio: 116.547° / 1759.56 m / 5.977 / 0.882	Magnetic Dip: -69.026°
Grid Coordinate System: GDA94/MGA94 Zone 55	Declination Date: June 10, 2005
Location Lat/Long: S 38 29 58.778, E 147 46 20.334	Magnetic Declination Model: BGGM 2004
Location Grid N/E Y/X: N 5738461.680 m, E 567345.000 m	North Reference: Grid North
Grid Convergence Angle: -0.48079183°	Total Corr Mag North -> Grid North: +13.578°
Grid Scale Factor: 0.99965585	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
Projected-Up	0.00	0.00	0.00	0.00	0.00	-0.78	8.50	0.00	5738461.68	567345.00	S 38 29 58.778	E 147 46 20.334
	49.32	0.00	0.00	49.32	0.00	-0.78	8.50	0.00	5738461.68	567345.00	S 38 29 58.778	E 147 46 20.334
	54.32	0.77	261.78	54.32	0.03	-0.79	8.47	4.62	5738461.68	567344.97	S 38 29 58.778	E 147 46 20.332
	59.32	0.84	261.78	59.32	0.09	-0.80	8.40	0.42	5738461.67	567344.90	S 38 29 58.779	E 147 46 20.330
	64.32	0.91	261.78	64.31	0.16	-0.81	8.32	0.42	5738461.65	567344.82	S 38 29 58.779	E 147 46 20.326
	69.32	0.98	261.78	69.31	0.24	-0.82	8.24	0.42	5738461.64	567344.74	S 38 29 58.779	E 147 46 20.323
	74.32	1.05	261.78	74.31	0.32	-0.83	8.16	0.42	5738461.63	567344.65	S 38 29 58.780	E 147 46 20.319
	79.32	1.12	261.78	79.31	0.40	-0.84	8.06	0.42	5738461.62	567344.56	S 38 29 58.780	E 147 46 20.316
	84.32	1.19	261.78	84.31	0.49	-0.86	7.96	0.42	5738461.60	567344.46	S 38 29 58.781	E 147 46 20.311
	89.32	1.26	261.78	89.31	0.59	-0.87	7.86	0.42	5738461.59	567344.35	S 38 29 58.781	E 147 46 20.307
	94.32	1.33	261.78	94.31	0.69	-0.89	7.74	0.42	5738461.57	567344.24	S 38 29 58.782	E 147 46 20.303
	99.32	1.40	261.78	99.31	0.80	-0.91	7.63	0.42	5738461.55	567344.12	S 38 29 58.782	E 147 46 20.298
	104.32	1.47	261.78	104.31	0.92	-0.92	7.50	0.42	5738461.54	567344.00	S 38 29 58.783	E 147 46 20.293
	109.32	1.54	261.78	109.30	1.04	-0.94	7.37	0.42	5738461.52	567343.87	S 38 29 58.784	E 147 46 20.287
	114.32	2.01	258.67	114.30	1.18	-0.97	7.22	2.88	5738461.49	567343.72	S 38 29 58.785	E 147 46 20.281
	119.32	2.42	258.03	119.30	1.36	-1.01	7.03	2.46	5738461.45	567343.53	S 38 29 58.786	E 147 46 20.273
	124.32	3.07	254.76	124.29	1.58	-1.07	6.80	4.01	5738461.39	567343.30	S 38 29 58.788	E 147 46 20.264
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	144.32	5.08	253.56	144.24	2.95	-1.46	5.43	2.70	5738461.00	567341.93	S 38 29 58.801	E 147 46 20.207
	149.32	5.60	253.77	149.22	3.39	-1.59	4.98	3.12	5738460.87	567341.48	S 38 29 58.805	E 147 46 20.189
	154.32	5.96	253.86	154.19	3.88	-1.73	4.50	2.16	5738460.73	567341.00	S 38 29 58.810	E 147 46 20.169
	159.32	6.52	254.52	159.16	4.39	-1.88	3.97	3.39	5738460.58	567340.47	S 38 29 58.815	E 147 46 20.147
	164.32	6.96	255.14	164.13	4.95	-2.03	3.41	2.68	5738460.43	567339.91	S 38 29 58.820	E 147 46 20.124
	169.32	8.02	258.21	169.09	5.57	-2.18	2.77	6.80	5738460.28	567339.27	S 38 29 58.825	E 147 46 20.098
	174.32	8.79	260.02	174.03	6.24	-2.32	2.06	4.88	5738460.14	567338.56	S 38 29 58.830	E 147 46 20.068
	179.32	9.64	262.25	178.97	6.97	-2.44	1.27	5.53	5738460.02	567337.77	S 38 29 58.834	E 147 46 20.036
	184.32	10.02	263.80	183.89	7.74	-2.54	0.42	2.78	5738459.92	567336.92	S 38 29 58.837	E 147 46 20.001
	189.32	10.57	265.33	188.81	8.53	-2.63	-0.47	3.69	5738459.83	567336.03	S 38 29 58.840	E 147 46 19.964
	194.32	10.91	266.48	193.73	9.35	-2.69	-1.40	2.41	5738459.77	567335.10	S 38 29 58.843	E 147 46 19.926
	199.32	11.14	269.55	198.63	10.17	-2.73	-2.36	3.78	5738459.73	567334.14	S 38 29 58.844	E 147 46 19.886
	204.32	11.77	268.63	203.53	11.01	-2.74	-3.35	3.94	5738459.72	567333.15	S 38 29 58.845	E 147 46 19.845
	209.32	12.26	269.71	208.43	11.89	-2.76	-4.39	3.23	5738459.70	567332.11	S 38 29 58.846	E 147 46 19.802
	214.32	12.42	270.50	213.31	12.79	-2.76	-5.46	1.40	5738459.71	567331.04	S 38 29 58.846	E 147 46 19.758
	219.32	12.66	271.11	218.19	13.69	-2.74	-6.54	1.64	5738459.72	567329.96	S 38 29 58.846	E 147 46 19.714
	224.32	12.78	271.34	223.07	14.60	-2.72	-7.64	0.78	5738459.74	567328.86	S 38 29 58.845	E 147 46 19.668
	229.32	12.92	271.42	227.94	15.52	-2.69	-8.76	0.85	5738459.77	567327.75	S 38 29 58.845	E 147 46 19.622
	234.32	13.01	271.39	232.81	16.45	-2.66	-9.88	0.54	5738459.80	567326.63	S 38 29 58.844	E 147 46 19.576
	239.32	13.11	271.24	237.69	17.38	-2.64	-11.01	0.63	5738459.82	567325.50	S 38 29 58.844	E 147 46 19.529
	244.32	13.24	271.14	242.55	18.33	-2.61	-12.15	0.79	5738459.85	567324.36	S 38 29 58.843	E 147 46 19.482
	249.32	13.38	271.02	247.42	19.28	-2.59	-13.30	0.86	5738459.87	567323.21	S 38 29 58.843	E 147 46 19.435
	254.32	13.59	270.83	252.28	20.25	-2.57	-14.46	1.29	5738459.89	567322.04	S 38 29 58.842	E 147 46 19.387
	259.32	13.76	270.64	257.14	21.23	-2.56	-15.64	1.05	5738459.90	567320.86	S 38 29 58.842	E 147 46 19.338
	264.32	13.82	270.59	262.00	22.23	-2.54	-16.84	0.37	5738459.92	567319.67	S 38 29 58.842	E 147 46 19.289
	269.32	13.89	270.63	266.85	23.22	-2.53	-18.03	0.42	5738459.93	567318.47	S 38 29 58.842	E 147 46 19.239
	274.32	13.99	270.64	271.70	24.23	-2.52	-19.24	0.60	5738459.94	567317.27	S 38 29 58.842	E 147 46 19.190
	279.32	14.10	270.62	276.55	25.24	-2.50	-20.45	0.66	5738459.96	567316.06	S 38 29 58.842	E 147 46 19.140

284.32	14.28	270.72	281.40	26.26	-2.49	-21.68	1.09	5738459.97	567314.83	S 38 29 58.842	E 147 46 19.089
289.32	14.42	270.78	286.25	27.29	-2.47	-22.92	0.84	5738459.99	567313.59	S 38 29 58.841	E 147 46 19.038
294.32	14.66	270.95	291.09	28.33	-2.46	-24.17	1.46	5738460.01	567312.34	S 38 29 58.841	E 147 46 18.986
299.32	14.84	271.15	295.92	29.39	-2.43	-25.44	1.12	5738460.03	567311.06	S 38 29 58.841	E 147 46 18.933
304.32	15.09	271.59	300.75	30.46	-2.40	-26.74	1.65	5738460.06	567309.77	S 38 29 58.840	E 147 46 18.880
309.32	15.23	271.93	305.58	31.53	-2.36	-28.04	1.00	5738460.10	567308.47	S 38 29 58.839	E 147 46 18.826
314.32	15.46	272.30	310.40	32.61	-2.31	-29.36	1.50	5738460.15	567307.15	S 38 29 58.838	E 147 46 18.772
319.32	15.64	272.63	315.22	33.71	-2.25	-30.70	1.20	5738460.21	567305.81	S 38 29 58.836	E 147 46 18.716
324.32	15.92	273.12	320.03	34.81	-2.19	-32.06	1.86	5738460.27	567304.45	S 38 29 58.835	E 147 46 18.660
329.32	16.09	273.27	324.83	35.92	-2.11	-33.44	1.05	5738460.35	567303.07	S 38 29 58.833	E 147 46 18.603
334.32	16.32	273.58	329.63	37.05	-2.03	-34.83	1.47	5738460.43	567301.68	S 38 29 58.830	E 147 46 18.546
339.32	16.44	273.64	334.43	38.18	-1.94	-36.24	0.73	5738460.52	567300.27	S 38 29 58.828	E 147 46 18.488
344.32	16.55	273.72	339.23	39.32	-1.85	-37.65	0.67	5738460.61	567298.86	S 38 29 58.825	E 147 46 18.429
349.32	16.71	273.87	344.02	40.47	-1.75	-39.08	0.99	5738460.71	567297.43	S 38 29 58.822	E 147 46 18.370
354.32	16.94	273.98	348.80	41.62	-1.65	-40.53	1.39	5738460.81	567295.99	S 38 29 58.820	E 147 46 18.311
359.32	17.09	274.07	353.58	42.79	-1.55	-41.99	0.91	5738460.91	567294.53	S 38 29 58.817	E 147 46 18.251
364.32	17.27	274.10	358.36	43.97	-1.44	-43.46	1.08	5738461.02	567293.06	S 38 29 58.814	E 147 46 18.190
369.32	17.51	274.22	363.13	45.16	-1.34	-44.95	1.46	5738461.12	567291.57	S 38 29 58.811	E 147 46 18.128
374.32	17.74	274.36	367.90	46.37	-1.22	-46.46	1.40	5738461.24	567290.06	S 38 29 58.807	E 147 46 18.066
379.32	17.98	274.57	372.66	47.59	-1.10	-47.99	1.49	5738461.36	567288.53	S 38 29 58.804	E 147 46 18.003
384.32	18.22	274.75	377.41	48.82	-0.98	-49.54	1.48	5738461.48	567286.98	S 38 29 58.800	E 147 46 17.939
389.32	18.49	274.84	382.15	50.06	-0.85	-51.11	1.63	5738461.61	567285.41	S 38 29 58.796	E 147 46 17.874
394.32	18.73	274.88	386.89	51.33	-0.71	-52.70	1.44	5738461.75	567283.82	S 38 29 58.792	E 147 46 17.808
399.32	19.01	275.12	391.62	52.60	-0.57	-54.31	1.74	5738461.89	567282.21	S 38 29 58.788	E 147 46 17.742
404.32	19.20	275.31	396.35	53.89	-0.42	-55.94	1.20	5738462.04	567280.58	S 38 29 58.784	E 147 46 17.674
409.32	19.46	275.31	401.07	55.19	-0.27	-57.58	1.56	5738462.19	567278.94	S 38 29 58.779	E 147 46 17.606
414.32	19.65	275.37	405.78	56.50	-0.11	-59.25	1.15	5738462.35	567277.27	S 38 29 58.775	E 147 46 17.538
419.32	20.00	275.41	410.48	57.83	0.05	-60.94	2.10	5738462.51	567275.58	S 38 29 58.770	E 147 46 17.468
424.32	20.21	275.63	415.18	59.18	0.21	-62.65	1.34	5738462.67	567273.87	S 38 29 58.765	E 147 46 17.397
429.32	20.62	275.71	419.86	60.54	0.39	-64.38	2.47	5738462.85	567272.14	S 38 29 58.760	E 147 46 17.326
434.32	20.90	275.97	424.54	61.92	0.57	-66.15	1.77	5738463.03	567270.38	S 38 29 58.755	E 147 46 17.253
439.32	21.31	276.11	429.20	63.32	0.76	-67.94	2.48	5738463.21	567268.59	S 38 29 58.749	E 147 46 17.179
444.32	21.65	276.19	433.86	64.74	0.95	-69.76	2.05	5738463.41	567266.77	S 38 29 58.743	E 147 46 17.104
449.32	22.08	276.28	438.50	66.19	1.15	-71.61	2.59	5738463.61	567264.92	S 38 29 58.737	E 147 46 17.027
454.32	22.26	276.21	443.13	67.65	1.36	-73.48	1.09	5738463.82	567263.04	S 38 29 58.731	E 147 46 16.950
459.32	22.63	276.25	447.75	69.13	1.57	-75.38	2.22	5738464.03	567261.14	S 38 29 58.725	E 147 46 16.871
464.32	23.00	276.58	452.36	70.63	1.78	-77.31	2.35	5738464.24	567259.22	S 38 29 58.718	E 147 46 16.792
469.32	23.15	276.66	456.96	72.14	2.01	-79.26	0.92	5738464.47	567257.27	S 38 29 58.711	E 147 46 16.711
474.32	23.27	276.60	461.55	73.66	2.24	-81.21	0.73	5738464.70	567255.31	S 38 29 58.705	E 147 46 16.630
479.32	23.33	276.60	466.14	75.19	2.46	-83.18	0.36	5738464.92	567253.35	S 38 29 58.698	E 147 46 16.549
484.32	23.44	276.42	470.73	76.72	2.69	-85.15	0.79	5738465.15	567251.38	S 38 29 58.691	E 147 46 16.468
489.32	23.50	276.44	475.32	78.26	2.91	-87.13	0.36	5738465.37	567249.40	S 38 29 58.684	E 147 46 16.386
494.32	23.56	276.54	479.90	79.80	3.14	-89.11	0.43	5738465.60	567247.42	S 38 29 58.678	E 147 46 16.304
499.32	23.62	276.68	484.49	81.34	3.37	-91.10	0.49	5738465.83	567245.43	S 38 29 58.671	E 147 46 16.222
504.32	23.55	276.35	489.07	82.89	3.59	-93.09	0.90	5738466.05	567243.45	S 38 29 58.664	E 147 46 16.140
509.32	23.42	276.76	493.65	84.43	3.82	-95.07	1.25	5738466.28	567241.47	S 38 29 58.657	E 147 46 16.058
514.32	23.44	276.73	498.24	85.96	4.06	-97.04	0.14	5738466.51	567239.49	S 38 29 58.650	E 147 46 15.977
519.32	23.26	276.63	502.83	87.48	4.29	-99.01	1.11	5738466.74	567237.52	S 38 29 58.643	E 147 46 15.895
524.32	23.26	276.90	507.43	89.00	4.52	-100.97	0.64	5738466.98	567235.56	S 38 29 58.636	E 147 46 15.814
529.32	23.17	277.02	512.02	90.51	4.76	-102.93	0.61	5738467.22	567233.61	S 38 29 58.629	E 147 46 15.733
534.32	23.17	277.13	516.62	92.02	5.00	-104.88	0.26	5738467.46	567231.66	S 38 29 58.621	E 147 46 15.653
539.32	23.02	277.38	521.22	93.52	5.25	-106.82	1.08	5738467.71	567229.71	S 38 29 58.614	E 147 46 15.572
544.32	22.93	277.70	525.82	95.00	5.50	-108.76	0.92	5738467.96	567227.78	S 38 29 58.606	E 147 46 15.493
549.32	22.83	277.80	530.43	96.48	5.77	-110.69	0.64	5738468.22	567225.85	S 38 29 58.598	E 147 46 15.413
554.32	22.82	277.82	535.04	97.95	6.03	-112.61	0.08	5738468.49	567223.93	S 38 29 58.590	E 147 46 15.334
559.32	22.63	278.14	539.65	99.41	6.30	-114.52	1.36	5738468.75	567222.02	S 38 29 58.582	E 147 46 15.255
564.32	22.57	278.34	544.26	100.85	6.57	-116.42	0.58	5738469.03	567220.12	S 38 29 58.574	E 147 46 15.176
569.32	22.46	278.51	548.88	102.29	6.85	-118.32	0.77	5738469.31	567218.23	S 38 29 58.565	E 147 46 15.098
574.32	22.43	278.68	553.50	103.72	7.14	-120.20	0.43	5738469.60	567216.34	S 38 29 58.556	E 147 46 15.020
579.32	22.26	278.83	558.13	105.14	7.43	-122.08	1.08	5738469.89	567214.46	S 38 29 58.547	E 147 46 14.942
584.32	22.25	278.98	562.76	106.55	7.72	-123.95	0.35	5738470.18	567212.59	S 38 29 58.538	E 147 46 14.865
589.32	22.13	278.95	567.39	107.96	8.02	-125.82	0.72	5738470.47	567210.73	S 38 29 58.529	E 147 46 14.788
594.32	22.08	279.03	572.02	109.36	8.31	-127.68	0.35	5738470.77	567208.87	S 38 29 58.520	E 147 46 14.711
599.32	21.97	279.14	576.65	110.75	8.61	-129.53	0.70	5738471.06	567207.02	S 38 29 58.511	E 147 46 14.634
604.32	21.93	279.23	581.29	112.14	8.90	-131.37	0.31	5738471.36	567205.17	S 38 29 58.502	E 147 46 14.558
609.32	21.83	279.35	585.93	113.52	9.20	-133.21	0.66	5738471.66	567203.33	S 38 29 58.493	E 147 46 14.482
614.32	21.76	279.44	590.57	114.89	9.51	-135.04	0.47	5738471.96	567201.50	S 38 29 58.483	E 147 46 14.406

	619.32	21.66	279.49	595.22	116.25	9.81	-136.87	0.61	5738472.27	567199.68	S 38 29 58.474	E 147 46 14.331
	624.32	21.57	279.58	599.87	117.61	10.12	-138.68	0.58	5738472.57	567197.86	S 38 29 58.465	E 147 46 14.256
	629.32	21.48	279.69	604.52	118.96	10.42	-140.49	0.59	5738472.88	567196.06	S 38 29 58.455	E 147 46 14.181
	634.32	21.36	279.89	609.17	120.31	10.73	-142.29	0.84	5738473.19	567194.26	S 38 29 58.446	E 147 46 14.107
	639.32	21.29	280.14	613.83	121.64	11.05	-144.08	0.69	5738473.51	567192.47	S 38 29 58.436	E 147 46 14.033
	644.32	21.26	280.26	618.49	122.96	11.37	-145.87	0.32	5738473.83	567190.68	S 38 29 58.426	E 147 46 13.959
	649.32	21.26	280.36	623.15	124.28	11.70	-147.65	0.22	5738474.15	567188.90	S 38 29 58.416	E 147 46 13.885
	654.32	21.29	280.21	627.81	125.60	12.02	-149.44	0.37	5738474.48	567187.11	S 38 29 58.406	E 147 46 13.812
	659.32	21.29	280.45	632.47	126.93	12.35	-151.22	0.52	5738474.80	567185.33	S 38 29 58.396	E 147 46 13.738
	664.32	21.26	280.68	637.13	128.24	12.68	-153.01	0.53	5738475.13	567183.55	S 38 29 58.385	E 147 46 13.664
	669.32	21.29	280.53	641.79	129.56	13.01	-154.79	0.37	5738475.47	567181.76	S 38 29 58.375	E 147 46 13.590
	674.32	21.23	280.77	646.45	130.87	13.35	-156.57	0.63	5738475.80	567179.98	S 38 29 58.365	E 147 46 13.517
	679.32	21.21	281.11	651.11	132.18	13.69	-158.35	0.75	5738476.15	567178.21	S 38 29 58.354	E 147 46 13.443
	684.32	21.17	281.19	655.77	133.47	14.04	-160.12	0.30	5738476.50	567176.43	S 38 29 58.343	E 147 46 13.370
	689.32	21.21	281.16	660.43	134.77	14.39	-161.89	0.25	5738476.85	567174.66	S 38 29 58.332	E 147 46 13.297
	694.32	21.17	281.33	665.09	136.07	14.74	-163.67	0.44	5738477.20	567172.89	S 38 29 58.321	E 147 46 13.223
	699.32	21.16	281.54	669.76	137.36	15.10	-165.44	0.46	5738477.56	567171.12	S 38 29 58.310	E 147 46 13.150
	704.32	21.10	281.68	674.42	138.64	15.46	-167.20	0.47	5738477.92	567169.36	S 38 29 58.299	E 147 46 13.077
	709.32	21.12	281.81	679.08	139.92	15.83	-168.97	0.31	5738478.28	567167.59	S 38 29 58.288	E 147 46 13.004
	714.32	21.09	281.88	683.75	141.20	16.20	-170.73	0.24	5738478.65	567165.83	S 38 29 58.276	E 147 46 12.932
	719.32	21.15	281.92	688.41	142.48	16.57	-172.49	0.37	5738479.03	567164.07	S 38 29 58.264	E 147 46 12.859
	724.32	21.04	282.11	693.08	143.75	16.95	-174.25	0.78	5738479.40	567162.31	S 38 29 58.253	E 147 46 12.786
	729.32	21.04	282.15	697.74	145.02	17.32	-176.01	0.09	5738479.78	567160.56	S 38 29 58.241	E 147 46 12.713
	734.32	20.97	282.23	702.41	146.29	17.70	-177.76	0.45	5738480.16	567158.80	S 38 29 58.229	E 147 46 12.641
	739.32	20.97	282.27	707.08	147.55	18.08	-179.51	0.09	5738480.53	567157.06	S 38 29 58.217	E 147 46 12.569
	744.32	20.93	282.45	711.75	148.80	18.46	-181.25	0.45	5738480.92	567155.31	S 38 29 58.205	E 147 46 12.496
	749.32	20.93	282.42	716.42	150.06	18.85	-183.00	0.06	5738481.30	567153.57	S 38 29 58.193	E 147 46 12.424
	754.32	20.89	282.57	721.09	151.31	19.23	-184.74	0.40	5738481.69	567151.83	S 38 29 58.181	E 147 46 12.352
	759.32	20.85	282.59	725.76	152.56	19.62	-186.48	0.24	5738482.08	567150.09	S 38 29 58.169	E 147 46 12.280
	764.32	20.80	282.56	730.44	153.81	20.01	-188.21	0.31	5738482.46	567148.35	S 38 29 58.157	E 147 46 12.209
	769.32	20.78	282.56	735.11	155.05	20.40	-189.94	0.12	5738482.85	567146.62	S 38 29 58.145	E 147 46 12.137
	774.32	20.72	282.74	739.79	156.29	20.78	-191.67	0.53	5738483.24	567144.89	S 38 29 58.133	E 147 46 12.066
	779.32	20.69	282.71	744.46	157.53	21.17	-193.40	0.19	5738483.63	567143.17	S 38 29 58.121	E 147 46 11.994
	784.32	20.69	282.71	749.14	158.76	21.56	-195.12	0.00	5738484.01	567141.45	S 38 29 58.109	E 147 46 11.923
	789.32	20.63	282.85	753.82	159.99	21.95	-196.84	0.47	5738484.40	567139.73	S 38 29 58.097	E 147 46 11.852
	794.32	20.60	282.90	758.50	161.22	22.34	-198.56	0.21	5738484.80	567138.01	S 38 29 58.084	E 147 46 11.781
	799.32	20.56	282.84	763.18	162.45	22.74	-200.27	0.27	5738485.19	567136.30	S 38 29 58.072	E 147 46 11.710
	804.32	20.50	283.03	767.86	163.67	23.13	-201.98	0.54	5738485.58	567134.59	S 38 29 58.060	E 147 46 11.640
	809.32	20.45	283.05	772.55	164.88	23.52	-203.68	0.30	5738485.97	567132.89	S 38 29 58.048	E 147 46 11.569
	814.32	20.43	283.06	777.23	166.10	23.92	-205.38	0.12	5738486.37	567131.19	S 38 29 58.035	E 147 46 11.499
	819.32	20.35	283.13	781.92	167.30	24.31	-207.08	0.50	5738486.76	567129.49	S 38 29 58.023	E 147 46 11.429
	824.32	20.33	283.33	786.61	168.51	24.71	-208.77	0.43	5738487.16	567127.80	S 38 29 58.010	E 147 46 11.359
	829.32	20.26	283.27	791.30	169.71	25.11	-210.46	0.44	5738487.56	567126.11	S 38 29 57.998	E 147 46 11.289
	834.32	20.05	283.53	795.99	170.90	25.51	-212.14	1.37	5738487.96	567124.44	S 38 29 57.985	E 147 46 11.220
	839.32	20.04	283.05	800.69	172.08	25.90	-213.80	0.99	5738488.35	567122.77	S 38 29 57.973	E 147 46 11.151
	844.32	19.91	283.26	805.39	173.27	26.29	-215.47	0.89	5738488.74	567121.11	S 38 29 57.961	E 147 46 11.082
	849.32	19.87	283.36	810.09	174.44	26.68	-217.12	0.32	5738489.13	567119.45	S 38 29 57.949	E 147 46 11.013
	854.32	19.75	283.38	814.79	175.62	27.07	-218.77	0.72	5738489.52	567117.80	S 38 29 57.936	E 147 46 10.945
	859.32	19.69	283.47	819.50	176.78	27.47	-220.41	0.40	5738489.92	567116.16	S 38 29 57.924	E 147 46 10.877
	864.32	19.62	283.58	824.21	177.94	27.86	-222.05	0.48	5738490.31	567114.53	S 38 29 57.912	E 147 46 10.810
	869.32	19.61	283.66	828.92	179.09	28.25	-223.68	0.17	5738490.70	567112.90	S 38 29 57.900	E 147 46 10.742
	874.32	19.48	283.76	833.63	180.24	28.65	-225.30	0.81	5738491.10	567111.27	S 38 29 57.887	E 147 46 10.675
	879.32	19.38	283.80	838.35	181.38	29.05	-226.92	0.61	5738491.50	567109.66	S 38 29 57.875	E 147 46 10.608
	884.32	19.14	283.91	843.07	182.51	29.44	-228.52	1.46	5738491.89	567108.06	S 38 29 57.862	E 147 46 10.542
	889.32	19.03	283.80	847.79	183.63	29.83	-230.11	0.69	5738492.28	567106.47	S 38 29 57.850	E 147 46 10.476
	894.32	18.82	283.86	852.52	184.74	30.22	-231.68	1.27	5738492.67	567104.90	S 38 29 57.838	E 147 46 10.411
	898.00	18.77	284.15	856.01	185.55	30.51	-232.83	0.86	5738492.96	567103.75	S 38 29 57.829	E 147 46 10.364
	966.80	28.43	257.97	919.15	208.50	29.80	-259.72	6.12	5738492.25	567076.87	S 38 29 57.859	E 147 46 9.254
	995.62	33.51	257.04	943.85	222.40	26.58	-274.19	5.31	5738489.03	567062.40	S 38 29 57.968	E 147 46 8.658
	1024.44	36.09	254.25	967.51	237.99	22.49	-290.12	3.16	5738484.94	567046.48	S 38 29 58.104	E 147 46 8.003
	1052.94	39.62	250.42	990.02	254.86	17.16	-306.77	4.46	5738479.62	567029.84	S 38 29 58.282	E 147 46 7.317
	1081.54	42.92	246.85	1011.51	273.34	10.28	-324.32	4.25	5738472.73	567012.29	S 38 29 58.510	E 147 46 6.595
	1109.93	45.33	243.50	1031.89	292.90	1.97	-342.25	3.54	5738464.43	566994.37	S 38 29 58.784	E 147 46 5.858
	1138.40	48.75	241.39	1051.29	313.64	-7.68	-360.71	3.95	5738454.79	566975.92	S 38 29 59.102	E 147 46 5.100
	1166.60	51.88	234.98	1069.31	335.31	-19.13	-379.11	6.21	5738443.34	566957.52	S 38 29 59.478	E 147 46 4.344
	1195.16	54.08	231.63	1086.51	358.06	-32.76	-397.39	3.64	5738429.71	566939.25	S 38 29 59.925	E 147 46 3.595
	1223.60	55.44	228.23	1102.92	381.10	-47.71	-415.15	3.26	5738414.77	566921.49	S 38 30 0.415	E 147 46 2.867
	1254.14	55.31	227.89	1120.27	405.92	-64.51	-433.85	0.30	5738397.98	566902.80	S 38 30 0.965	E 147 46 2.101

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1282.54	56.21	227.72	1136.25	429.09	-80.28	-451.24	0.96	5738382.21	566885.41	S 38 30 1.481	E 147 46 1.389
1311.31	55.68	227.71	1152.36	452.61	-96.31	-468.88	0.55	5738366.18	566867.79	S 38 30 2.006	E 147 46 0.667
1339.95	56.20	228.63	1168.40	476.05	-112.14	-486.56	0.97	5738350.36	566850.11	S 38 30 2.523	E 147 45 59.942
1368.59	56.02	228.31	1184.37	499.56	-127.90	-504.35	0.34	5738334.61	566832.32	S 38 30 3.039	E 147 45 59.213
1397.42	55.90	227.95	1200.51	523.16	-143.84	-522.14	0.33	5738318.67	566814.54	S 38 30 3.561	E 147 45 58.485
1427.92	55.55	227.39	1217.69	548.02	-160.81	-540.78	0.57	5738301.70	566795.91	S 38 30 4.117	E 147 45 57.722
1455.09	55.36	228.89	1233.10	570.13	-175.75	-557.44	1.38	5738286.77	566779.25	S 38 30 4.606	E 147 45 57.039
1483.16	55.14	229.20	1249.10	592.97	-190.87	-574.86	0.36	5738271.66	566761.84	S 38 30 5.100	E 147 45 56.325
1512.02	54.35	229.05	1265.75	616.31	-206.29	-592.68	0.83	5738256.24	566744.02	S 38 30 5.605	E 147 45 55.595
1540.91	54.88	230.06	1282.48	639.66	-221.57	-610.60	1.02	5738240.97	566726.11	S 38 30 6.106	E 147 45 54.861
1569.53	55.84	229.71	1298.75	663.02	-236.74	-628.61	1.05	5738225.80	566708.10	S 38 30 6.603	E 147 45 54.123
1598.06	55.39	229.72	1314.86	686.37	-251.96	-646.57	0.47	5738210.58	566690.15	S 38 30 7.101	E 147 45 53.387
1626.78	55.95	230.07	1331.06	709.90	-267.24	-664.71	0.66	5738195.31	566672.02	S 38 30 7.601	E 147 45 52.643
1655.43	55.32	229.93	1347.23	733.37	-282.44	-682.83	0.67	5738180.12	566653.91	S 38 30 8.099	E 147 45 51.901
1683.72	56.42	229.37	1363.11	756.59	-297.60	-700.67	1.27	5738164.96	566636.07	S 38 30 8.596	E 147 45 51.170
1712.45	56.26	229.02	1379.03	780.28	-313.23	-718.78	0.35	5738149.34	566617.97	S 38 30 9.107	E 147 45 50.428
1741.09	55.75	228.66	1395.04	803.78	-328.86	-736.65	0.62	5738133.71	566600.10	S 38 30 9.619	E 147 45 49.696
1770.00	55.22	228.45	1411.42	827.34	-344.63	-754.51	0.58	5738117.95	566582.25	S 38 30 10.135	E 147 45 48.964
1798.98	56.22	228.15	1427.75	851.01	-360.56	-772.39	1.07	5738102.03	566564.38	S 38 30 10.657	E 147 45 48.232
1827.38	55.67	228.12	1443.65	874.25	-376.26	-789.91	0.58	5738086.33	566546.86	S 38 30 11.171	E 147 45 47.514
1856.22	55.37	227.89	1459.98	897.73	-392.16	-807.58	0.37	5738070.43	566529.20	S 38 30 11.691	E 147 45 46.790
1885.10	54.95	227.75	1476.48	921.12	-408.08	-825.14	0.45	5738054.52	566511.64	S 38 30 12.212	E 147 45 46.071
1913.84	54.76	227.59	1493.02	944.31	-423.91	-842.52	0.24	5738038.70	566494.27	S 38 30 12.730	E 147 45 45.359
1942.54	54.23	227.73	1509.69	967.35	-439.64	-859.79	0.57	5738022.97	566477.01	S 38 30 13.245	E 147 45 44.652
1971.34	55.16	228.07	1526.33	990.56	-455.40	-877.23	1.01	5738007.22	566459.58	S 38 30 13.761	E 147 45 43.938
2000.13	54.87	227.76	1542.84	1013.84	-471.21	-894.73	0.40	5737991.42	566442.08	S 38 30 14.278	E 147 45 43.220
2028.59	55.60	228.87	1559.07	1036.95	-486.75	-912.19	1.23	5737975.87	566424.62	S 38 30 14.787	E 147 45 42.505
2057.47	55.15	228.63	1575.48	1060.47	-502.42	-930.06	0.51	5737960.21	566406.76	S 38 30 15.300	E 147 45 41.773
2085.70	56.15	228.38	1591.41	1083.51	-517.87	-947.52	1.09	5737944.77	566389.31	S 38 30 15.805	E 147 45 41.058
2113.96	55.53	228.22	1607.27	1106.62	-533.42	-964.98	0.67	5737929.22	566371.86	S 38 30 16.314	E 147 45 40.343
2142.51	56.95	227.90	1623.14	1130.07	-549.29	-982.63	1.52	5737913.36	566354.21	S 38 30 16.834	E 147 45 39.620
2171.01	56.53	227.84	1638.77	1153.59	-565.27	-1000.30	0.45	5737897.38	566336.54	S 38 30 17.357	E 147 45 38.896
2199.62	56.33	227.52	1654.59	1177.11	-581.32	-1017.93	0.35	5737881.34	566318.92	S 38 30 17.882	E 147 45 38.174
2228.56	56.16	227.27	1670.67	1200.83	-597.61	-1035.64	0.28	5737865.06	566301.22	S 38 30 18.415	E 147 45 37.448
2256.86	55.96	227.18	1686.47	1223.96	-613.55	-1052.87	0.23	5737849.12	566283.99	S 38 30 18.937	E 147 45 36.742
2285.73	55.59	228.30	1702.71	1247.52	-629.61	-1070.54	1.04	5737833.07	566266.33	S 38 30 19.462	E 147 45 36.019
2314.37	55.68	228.68	1718.87	1270.89	-645.27	-1088.24	0.34	5737817.41	566248.63	S 38 30 19.975	E 147 45 35.294
2342.91	55.67	228.64	1734.97	1294.21	-660.84	-1105.94	0.04	5737801.84	566230.94	S 38 30 20.484	E 147 45 34.569
2371.48	55.45	229.48	1751.13	1317.54	-676.28	-1123.74	0.76	5737786.41	566213.15	S 38 30 20.990	E 147 45 33.839
2400.20	55.35	229.02	1767.43	1340.96	-691.71	-1141.65	0.41	5737770.98	566195.25	S 38 30 21.495	E 147 45 33.105
2429.43	55.21	228.77	1784.08	1364.74	-707.51	-1159.75	0.26	5737755.19	566177.15	S 38 30 22.012	E 147 45 32.364
2457.95	54.99	228.91	1800.40	1387.89	-722.90	-1177.36	0.26	5737739.80	566159.54	S 38 30 22.516	E 147 45 31.642
2486.70	55.47	230.11	1816.80	1411.30	-738.24	-1195.32	1.14	5737724.48	566141.59	S 38 30 23.018	E 147 45 30.906
2515.40	56.27	230.52	1832.90	1434.89	-753.41	-1213.60	0.91	5737709.31	566123.31	S 38 30 23.515	E 147 45 30.157
2544.25	57.18	230.64	1848.73	1458.86	-768.72	-1232.24	0.95	5737694.00	566104.69	S 38 30 24.017	E 147 45 29.393
2572.83	56.41	230.34	1864.38	1482.61	-783.94	-1250.69	0.85	5737678.79	566086.24	S 38 30 24.515	E 147 45 28.637
2601.59	56.46	230.30	1880.28	1506.41	-799.24	-1269.13	0.06	5737663.50	566067.81	S 38 30 25.016	E 147 45 27.881
2630.34	56.56	230.09	1896.14	1530.22	-814.59	-1287.55	0.21	5737648.15	566049.39	S 38 30 25.519	E 147 45 27.126
2658.55	56.02	229.02	1911.80	1553.48	-829.81	-1305.41	1.11	5737632.94	566031.54	S 38 30 26.017	E 147 45 26.394
2687.16	56.05	228.09	1927.78	1576.95	-845.52	-1323.19	0.81	5737617.23	566013.76	S 38 30 26.531	E 147 45 25.665
2716.60	56.25	227.84	1944.18	1601.09	-861.89	-1341.35	0.29	5737600.87	565995.61	S 38 30 27.067	E 147 45 24.921
2744.47	56.92	227.78	1959.53	1624.05	-877.51	-1358.59	0.72	5737585.25	565978.38	S 38 30 27.578	E 147 45 24.215
2773.23	57.67	227.57	1975.07	1647.93	-893.81	-1376.48	0.80	5737568.96	565960.49	S 38 30 28.112	E 147 45 23.482
2790.16	58.07	227.42	1984.07	1662.06	-903.49	-1387.05	0.74	5737559.28	565949.93	S 38 30 28.428	E 147 45 23.049
2810.00	58.40	227.30	1994.52	1678.69	-914.92	-1399.46	0.52	5737547.86	565937.52	S 38 30 28.802	E 147 45 22.541

Projection to TD

Survey Type: Raw Survey

Survey Error Model: SLB ISCWSA version 21 *** 3-D 95.00% Confidence 2.7955 sigma

Surveying Prog:

MD From (m)

0.00

898.00

MD To (m)

898.00

2810.00

EOU Freq

Act-Stns

Act-Stns

Survey Tool Type

SLB_CNSG+CASING

SLB_MWD-STD

APPENDIX 1b

BREAM A5A

MD-TVD Survey Data Listing

Report Date:	12 October 2005
Well:	Bream A5A
Structure / Slot:	NABORS Rig 453
TVD Reference Datum:	DrillSite Elevation
TVD Reference Elevation:	32.82 m relative to MSL
Sea Bed / Ground Level Elevation:	59.40 m relative to MSL
Grid Coordinate System:	GDA94/MGA94 Zone 55
Location Lat/Long:	S -38 29' 58.779600", E 147 46' 20.334000"
Location Grid N/E:	N 5738461.6306m, E 567345.0049m
Survey Azimuth Reference:	Grid North

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
0	0	360	0	32.82	0	0	5738461.68	567345
5	0	0	5	27.82	0	0	5738461.68	567345
10	0	0	10	22.82	0	0	5738461.68	567345
15	0	0	15	17.82	0	0	5738461.68	567345
20	0	0	20	12.82	0	0	5738461.68	567345
25	0	0	25	7.82	0	0	5738461.68	567345
30	0	0	30	2.82	0	0	5738461.68	567345
35	0	0	35	-2.18	0	0	5738461.68	567345
40	0	0	40	-7.18	0	0	5738461.68	567345
45	0	0	45	-12.18	0	0	5738461.68	567345
50	0.1	346.64	50	-17.18	0	0	5738461.68	567345
55	0.78	261.78	55	-22.18	-0.01	-0.04	5738461.68	567344.96
60	0.85	261.78	60	-27.18	-0.02	-0.11	5738461.67	567344.89
65	0.92	261.78	65	-32.18	-0.03	-0.19	5738461.66	567344.81
70	0.99	261.78	70	-37.18	-0.04	-0.27	5738461.64	567344.73
75	1.06	261.78	75	-42.18	-0.05	-0.36	5738461.63	567344.64
80	1.13	261.78	80	-47.18	-0.07	-0.46	5738461.62	567344.55
85	1.2	261.78	84.99	-52.17	-0.08	-0.56	5738461.6	567344.45
90	1.27	261.78	89.99	-57.17	-0.1	-0.66	5738461.59	567344.34
95	1.34	261.78	94.99	-62.17	-0.11	-0.78	5738461.57	567344.23
100	1.41	261.78	99.99	-67.17	-0.13	-0.89	5738461.55	567344.11
105	1.48	261.78	104.99	-72.17	-0.15	-1.02	5738461.54	567343.98
110	1.6	261.36	109.99	-77.17	-0.17	-1.15	5738461.52	567343.85
115	2.07	258.58	114.99	-82.17	-0.2	-1.31	5738461.49	567343.69
120	2.51	257.59	119.98	-87.16	-0.24	-1.5	5738461.45	567343.5
125	3.13	254.78	124.97	-92.15	-0.3	-1.74	5738461.39	567343.26
130	3.61	254.75	129.97	-97.15	-0.37	-2.03	5738461.31	567342.98
135	4.18	253.78	134.95	-102.13	-0.47	-2.35	5738461.22	567342.65
140	4.69	253.66	139.94	-107.12	-0.57	-2.72	5738461.11	567342.28
145	5.15	253.59	144.92	-112.1	-0.7	-3.14	5738460.99	567341.87
150	5.65	253.78	149.9	-117.08	-0.83	-3.59	5738460.86	567341.41
155	6.04	253.95	154.87	-122.05	-0.97	-4.08	5738460.71	567340.93
160	6.58	254.6	159.84	-127.02	-1.12	-4.61	5738460.56	567340.4
165	7.1	255.56	164.81	-131.99	-1.27	-5.18	5738460.41	567339.82
170	8.12	258.46	169.76	-136.94	-1.42	-5.83	5738460.27	567339.18
175	8.91	260.32	174.71	-141.89	-1.55	-6.55	5738460.13	567338.45
180	9.69	262.46	179.64	-146.82	-1.67	-7.35	5738460.01	567337.65
185	10.09	264.01	184.57	-151.75	-1.77	-8.21	5738459.91	567336.8
190	10.62	265.49	189.49	-156.67	-1.86	-9.1	5738459.83	567335.9
195	10.94	266.9	194.4	-161.58	-1.92	-10.03	5738459.76	567334.97
200	11.23	269.42	199.3	-166.48	-1.95	-10.99	5738459.73	567334.01
205	11.84	268.78	204.2	-171.38	-1.96	-11.99	5738459.72	567333.01
210	12.28	269.82	209.09	-176.27	-1.98	-13.04	5738459.71	567331.96
215	12.45	270.58	213.98	-181.16	-1.97	-14.11	5738459.71	567330.89
220	12.68	271.14	218.86	-186.04	-1.96	-15.2	5738459.73	567329.81
225	12.8	271.35	223.73	-190.91	-1.93	-16.3	5738459.75	567328.7
230	12.93	271.42	228.61	-195.79	-1.91	-17.41	5738459.78	567327.59

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
235	13.02	271.37	233.48	-200.66	-1.88	-18.53	5738459.8	567326.47
240	13.13	271.23	238.35	-205.53	-1.85	-19.66	5738459.83	567325.34
245	13.26	271.12	243.22	-210.4	-1.83	-20.81	5738459.85	567324.2
250	13.41	270.99	248.09	-215.27	-1.81	-21.96	5738459.87	567323.04
255	13.61	270.8	252.95	-220.13	-1.79	-23.13	5738459.89	567321.88
260	13.77	270.63	257.8	-224.98	-1.78	-24.31	5738459.91	567320.69
265	13.83	270.6	262.66	-229.84	-1.76	-25.5	5738459.92	567319.5
270	13.9	270.63	267.51	-234.69	-1.75	-26.7	5738459.93	567318.3
275	14	270.64	272.37	-239.55	-1.74	-27.91	5738459.95	567317.1
280	14.12	270.63	277.22	-244.4	-1.72	-29.12	5738459.96	567315.88
285	14.3	270.73	282.06	-249.24	-1.71	-30.35	5738459.97	567314.65
290	14.45	270.8	286.91	-254.09	-1.69	-31.59	5738459.99	567313.41
295	14.68	270.98	291.75	-258.93	-1.67	-32.85	5738460.01	567312.15
300	14.87	271.21	296.58	-263.76	-1.65	-34.12	5738460.03	567310.88
305	15.11	271.64	301.41	-268.59	-1.62	-35.42	5738460.07	567309.59
310	15.26	271.98	306.24	-273.42	-1.57	-36.72	5738460.11	567308.28
315	15.48	272.34	311.06	-278.24	-1.52	-38.05	5738460.16	567306.95
320	15.68	272.7	315.87	-283.05	-1.46	-39.39	5738460.22	567305.61
325	15.94	273.14	320.68	-287.86	-1.4	-40.75	5738460.29	567304.25
330	16.12	273.31	325.49	-292.67	-1.32	-42.13	5738460.37	567302.87
335	16.34	273.59	330.29	-297.47	-1.23	-43.53	5738460.45	567301.48
340	16.45	273.65	335.09	-302.27	-1.14	-44.93	5738460.54	567300.07
345	16.57	273.74	339.88	-307.06	-1.05	-46.35	5738460.63	567298.65
350	16.74	273.88	344.67	-311.85	-0.96	-47.78	5738460.73	567297.22
355	16.96	273.99	349.46	-316.64	-0.86	-49.23	5738460.83	567295.77
360	17.11	274.07	354.24	-321.42	-0.76	-50.69	5738460.93	567294.31
365	17.3	274.12	359.01	-326.19	-0.65	-52.16	5738461.03	567292.84
370	17.54	274.24	363.78	-330.96	-0.54	-53.66	5738461.14	567291.34
375	17.77	274.39	368.55	-335.73	-0.43	-55.17	5738461.26	567289.83
380	18.01	274.59	373.31	-340.49	-0.31	-56.7	5738461.38	567288.3
385	18.26	274.76	378.06	-345.24	-0.18	-58.25	5738461.5	567286.75
390	18.52	274.85	382.8	-349.98	-0.05	-59.82	5738461.64	567285.18
395	18.77	274.91	387.54	-354.72	0.09	-61.42	5738461.77	567283.59
400	19.04	275.15	392.27	-359.45	0.23	-63.03	5738461.91	567281.97
405	19.24	275.31	396.99	-364.17	0.38	-64.66	5738462.06	567280.34
410	19.49	275.32	401.71	-368.89	0.53	-66.31	5738462.22	567278.69
415	19.7	275.38	406.42	-373.6	0.69	-67.98	5738462.37	567277.02
420	20.03	275.44	411.13	-378.31	0.85	-69.67	5738462.53	567275.33
425	20.27	275.64	415.82	-383	1.02	-71.39	5738462.7	567273.61
430	20.66	275.75	420.5	-387.68	1.19	-73.13	5738462.87	567271.87
435	20.96	275.99	425.18	-392.36	1.37	-74.89	5738463.05	567270.11
440	21.36	276.12	429.84	-397.02	1.56	-76.69	5738463.24	567268.31
445	21.71	276.2	434.49	-401.67	1.76	-78.51	5738463.44	567266.49
450	22.1	276.27	439.13	-406.31	1.96	-80.37	5738463.64	567264.63
455	22.31	276.22	443.76	-410.94	2.17	-82.25	5738463.85	567262.76
460	22.68	276.29	448.38	-415.56	2.38	-84.15	5738464.06	567260.85
465	23.02	276.59	452.99	-420.17	2.59	-86.08	5738464.28	567258.92
470	23.17	276.65	457.59	-424.77	2.82	-88.02	5738464.5	567256.98
475	23.28	276.6	462.18	-429.36	3.05	-89.98	5738464.73	567255.02
480	23.34	276.58	466.77	-433.95	3.27	-91.95	5738464.96	567253.05
485	23.45	276.42	471.36	-438.54	3.5	-93.92	5738465.18	567251.08
490	23.51	276.45	475.95	-443.13	3.72	-95.9	5738465.41	567249.1
495	23.57	276.56	480.53	-447.71	3.95	-97.88	5738465.63	567247.12
500	23.61	276.64	485.11	-452.29	4.18	-99.87	5738465.86	567245.13
505	23.53	276.41	489.7	-456.88	4.41	-101.86	5738466.09	567243.14
510	23.42	276.76	494.28	-461.46	4.63	-103.84	5738466.32	567241.16
515	23.42	276.72	498.87	-466.05	4.87	-105.81	5738466.55	567239.19
520	23.26	276.67	503.46	-470.64	5.1	-107.78	5738466.78	567237.22

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
525	23.25	276.92	508.06	-475.24	5.33	-109.74	5738467.01	567235.26
530	23.17	277.03	512.65	-479.83	5.57	-111.69	5738467.25	567233.31
535	23.15	277.16	517.25	-484.43	5.81	-113.65	5738467.5	567231.36
540	23.01	277.42	521.85	-489.03	6.06	-115.59	5738467.74	567229.41
545	22.92	277.71	526.45	-493.63	6.32	-117.52	5738468	567227.48
550	22.83	277.8	531.06	-498.24	6.58	-119.45	5738468.26	567225.55
555	22.79	277.86	535.67	-502.85	6.85	-121.37	5738468.53	567223.63
560	22.62	278.17	540.28	-507.46	7.11	-123.28	5738468.8	567221.72
565	22.56	278.36	544.9	-512.08	7.39	-125.18	5738469.07	567219.82
570	22.46	278.53	549.52	-516.7	7.67	-127.08	5738469.35	567217.93
575	22.41	278.7	554.14	-521.32	7.96	-128.96	5738469.64	567216.04
580	22.26	278.85	558.76	-525.94	8.25	-130.84	5738469.93	567214.16
585	22.23	278.98	563.39	-530.57	8.54	-132.71	5738470.22	567212.29
590	22.12	278.96	568.02	-535.2	8.84	-134.57	5738470.52	567210.43
595	22.07	279.04	572.65	-539.83	9.13	-136.43	5738470.81	567208.57
600	21.96	279.15	577.29	-544.47	9.43	-138.28	5738471.11	567206.72
605	21.92	279.25	581.93	-549.11	9.72	-140.13	5738471.41	567204.88
610	21.82	279.36	586.57	-553.75	10.03	-141.96	5738471.71	567203.04
615	21.75	279.45	591.21	-558.39	10.33	-143.79	5738472.01	567201.21
620	21.65	279.5	595.86	-563.04	10.63	-145.62	5738472.32	567199.38
625	21.56	279.59	600.5	-567.68	10.94	-147.43	5738472.62	567197.57
630	21.46	279.72	605.16	-572.34	11.25	-149.24	5738472.93	567195.76
635	21.35	279.92	609.81	-576.99	11.56	-151.04	5738473.24	567193.96
640	21.29	280.16	614.47	-581.65	11.87	-152.83	5738473.56	567192.17
645	21.26	280.27	619.13	-586.31	12.2	-154.61	5738473.88	567190.39
650	21.26	280.34	623.79	-590.97	12.52	-156.4	5738474.2	567188.6
655	21.29	280.24	628.45	-595.63	12.84	-158.18	5738474.53	567186.82
660	21.29	280.48	633.11	-600.29	13.17	-159.97	5738474.85	567185.03
665	21.26	280.66	637.76	-604.94	13.5	-161.75	5738475.19	567183.25
670	21.28	280.56	642.42	-609.6	13.84	-163.53	5738475.52	567181.47
675	21.23	280.82	647.08	-614.26	14.17	-165.32	5738475.86	567179.69
680	21.2	281.12	651.75	-618.93	14.52	-167.09	5738476.2	567177.91
685	21.18	281.19	656.41	-623.59	14.87	-168.87	5738476.55	567176.14
690	21.2	281.18	661.07	-628.25	15.22	-170.64	5738476.9	567174.36
695	21.17	281.36	665.73	-632.91	15.57	-172.41	5738477.25	567172.59
700	21.15	281.56	670.39	-637.57	15.93	-174.18	5738477.61	567170.82
705	21.1	281.7	675.06	-642.24	16.29	-175.94	5738477.98	567169.06
710	21.12	281.82	679.72	-646.9	16.66	-177.71	5738478.34	567167.29
715	21.1	281.89	684.39	-651.57	17.03	-179.47	5738478.71	567165.53
720	21.14	281.95	689.05	-656.23	17.4	-181.23	5738479.09	567163.77
725	21.04	282.12	693.72	-660.9	17.78	-182.99	5738479.46	567162.01
730	21.03	282.16	698.38	-665.56	18.15	-184.75	5738479.84	567160.25
735	20.97	282.24	703.05	-670.23	18.53	-186.5	5738480.22	567158.5
740	20.96	282.29	707.72	-674.9	18.91	-188.25	5738480.6	567156.76
745	20.93	282.45	712.39	-679.57	19.3	-189.99	5738480.98	567155.01
750	20.92	282.44	717.06	-684.24	19.68	-191.74	5738481.36	567153.27
755	20.88	282.57	721.73	-688.91	20.07	-193.48	5738481.75	567151.52
760	20.84	282.59	726.4	-693.58	20.46	-195.22	5738482.14	567149.79
765	20.8	282.56	731.08	-698.26	20.84	-196.95	5738482.52	567148.05
770	20.77	282.58	735.75	-702.93	21.23	-198.68	5738482.91	567146.32
775	20.72	282.74	740.43	-707.61	21.62	-200.41	5738483.3	567144.59
780	20.69	282.71	745.1	-712.28	22.01	-202.13	5738483.69	567142.87
785	20.68	282.73	749.78	-716.96	22.39	-203.86	5738484.08	567141.15
790	20.63	282.86	754.46	-721.64	22.79	-205.58	5738484.47	567139.42
795	20.59	282.89	759.14	-726.32	23.18	-207.29	5738484.86	567137.71
800	20.55	282.87	763.82	-731	23.57	-209.01	5738485.25	567136
805	20.49	283.03	768.5	-735.68	23.96	-210.71	5738485.64	567134.29
810	20.45	283.05	773.19	-740.37	24.36	-212.42	5738486.04	567132.58

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
815	20.42	283.07	777.87	-745.05	24.75	-214.12	5738486.43	567130.88
820	20.35	283.16	782.56	-749.74	25.15	-215.81	5738486.83	567129.19
825	20.32	283.32	787.25	-754.43	25.54	-217.51	5738487.23	567127.5
830	20.23	283.31	791.94	-759.12	25.94	-219.19	5738487.63	567125.81
835	20.05	283.46	796.63	-763.81	26.34	-220.87	5738488.02	567124.14
840	20.02	283.08	801.33	-768.51	26.73	-222.53	5738488.42	567122.47
845	19.9	283.27	806.03	-773.21	27.12	-224.2	5738488.81	567120.81
850	19.85	283.36	810.73	-777.91	27.52	-225.85	5738489.2	567119.15
855	19.74	283.39	815.44	-782.62	27.91	-227.5	5738489.59	567117.5
860	19.68	283.48	820.14	-787.32	28.3	-229.14	5738489.98	567115.86
865	19.62	283.59	824.85	-792.03	28.69	-230.77	5738490.38	567114.23
870	19.59	283.67	829.56	-796.74	29.09	-232.4	5738490.77	567112.6
875	19.47	283.77	834.28	-801.46	29.48	-234.03	5738491.17	567110.97
880	19.35	283.81	838.99	-806.17	29.88	-235.64	5738491.56	567109.36
885	19.13	283.9	843.71	-810.89	30.28	-237.24	5738491.96	567107.76
890	19	283.81	848.44	-815.62	30.67	-238.82	5738492.35	567106.18
895	18.81	283.91	853.17	-820.35	31.05	-240.4	5738492.74	567104.6
900	19.05	283.39	857.84	-825.02	31.27	-242.12	5738492.95	567102.88
905	19.75	281.49	862.43	-829.61	31.21	-244.07	5738492.9	567100.93
910	20.45	279.58	867.02	-834.2	31.16	-246.03	5738492.85	567098.98
915	21.16	277.68	871.61	-838.79	31.11	-247.98	5738492.79	567097.02
920	21.86	275.78	876.2	-843.38	31.06	-249.93	5738492.74	567095.07
925	22.56	273.88	880.79	-847.97	31.01	-251.89	5738492.69	567093.12
930	23.26	271.97	885.37	-852.55	30.96	-253.84	5738492.64	567091.16
935	23.97	270.07	889.96	-857.14	30.91	-255.79	5738492.59	567089.21
940	24.67	268.17	894.55	-861.73	30.85	-257.75	5738492.54	567087.25
945	25.37	266.27	899.14	-866.32	30.8	-259.7	5738492.48	567085.3
950	26.07	264.36	903.73	-870.91	30.75	-261.66	5738492.43	567083.35
955	26.77	262.46	908.32	-875.5	30.7	-263.61	5738492.38	567081.39
960	27.48	260.56	912.91	-880.09	30.65	-265.56	5738492.33	567079.44
965	28.18	258.65	917.49	-884.67	30.6	-267.52	5738492.28	567077.48
970	28.99	257.87	921.89	-889.07	30.22	-269.83	5738491.9	567075.17
975	29.88	257.71	926.17	-893.35	29.66	-272.34	5738491.34	567072.66
980	30.76	257.54	930.46	-897.64	29.1	-274.85	5738490.79	567070.15
985	31.64	257.38	934.75	-901.93	28.55	-277.36	5738490.23	567067.64
990	32.52	257.22	939.03	-906.21	27.99	-279.87	5738489.67	567065.13
995	33.4	257.06	943.32	-910.5	27.43	-282.38	5738489.11	567062.62
1000	33.9	256.62	947.45	-914.63	26.74	-285.11	5738488.42	567059.89
1005	34.35	256.13	951.55	-918.73	26.03	-287.88	5738487.71	567057.13
1010	34.8	255.65	955.66	-922.84	25.32	-290.64	5738487	567054.36
1015	35.24	255.16	959.76	-926.94	24.61	-293.4	5738486.29	567051.6
1020	35.69	254.68	963.87	-931.05	23.9	-296.17	5738485.58	567048.84
1025	36.16	254.17	967.96	-935.14	23.17	-298.95	5738484.85	567046.06
1030	36.78	253.5	971.9	-939.08	22.23	-301.87	5738483.91	567043.13
1035	37.4	252.83	975.85	-943.03	21.3	-304.79	5738482.98	567040.21
1040	38.02	252.16	979.8	-946.98	20.36	-307.71	5738482.05	567037.29
1045	38.64	251.49	983.75	-950.93	19.43	-310.63	5738481.11	567034.37
1050	39.26	250.82	987.7	-954.88	18.49	-313.55	5738480.18	567031.45
1055	39.86	250.16	991.57	-958.75	17.45	-316.53	5738479.13	567028.47
1060	40.43	249.54	995.32	-962.5	16.24	-319.6	5738477.93	567025.4
1065	41.01	248.91	999.08	-966.26	15.04	-322.67	5738476.72	567022.33
1070	41.59	248.29	1002.84	-970.02	13.84	-325.74	5738475.52	567019.26
1075	42.17	247.67	1006.6	-973.78	12.63	-328.81	5738474.32	567016.19
1080	42.74	247.04	1010.36	-977.54	11.43	-331.88	5738473.11	567013.13
1085	43.21	246.44	1014	-981.18	10.04	-335.01	5738471.73	567010
1090	43.64	245.85	1017.59	-984.77	8.58	-338.16	5738470.26	567006.84
1095	44.06	245.26	1021.18	-988.36	7.12	-341.32	5738468.8	567003.68
1100	44.49	244.67	1024.76	-991.94	5.66	-344.48	5738467.34	567000.52

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1105	44.91	244.08	1028.35	-995.53	4.19	-347.64	5738465.88	566997.37
1110	45.34	243.49	1031.94	-999.12	2.73	-350.79	5738464.41	566994.21
1115	45.94	243.12	1035.35	-1002.53	1.03	-354.04	5738462.72	566990.97
1120	46.54	242.75	1038.76	-1005.94	-0.66	-357.28	5738461.02	566987.72
1125	47.14	242.38	1042.16	-1009.34	-2.36	-360.52	5738459.33	566984.48
1130	47.74	242.01	1045.57	-1012.75	-4.05	-363.76	5738457.63	566981.24
1135	48.34	241.64	1048.98	-1016.16	-5.74	-367.01	5738455.94	566978
1140	48.93	241.03	1052.32	-1019.5	-7.54	-370.26	5738454.14	566974.75
1145	49.48	239.89	1055.51	-1022.69	-9.58	-373.52	5738452.11	566971.48
1150	50.04	238.75	1058.7	-1025.88	-11.61	-376.78	5738450.08	566968.22
1155	50.59	237.62	1061.9	-1029.08	-13.64	-380.05	5738448.05	566964.96
1160	51.15	236.48	1065.09	-1032.27	-15.67	-383.31	5738446.02	566961.69
1165	51.7	235.34	1068.29	-1035.47	-17.7	-386.57	5738443.99	566958.43
1170	52.14	234.58	1071.36	-1038.54	-19.97	-389.79	5738441.71	566955.21
1175	52.53	233.99	1074.37	-1041.55	-22.36	-392.99	5738439.33	566952.01
1180	52.91	233.41	1077.38	-1044.56	-24.74	-396.19	5738436.94	566948.81
1185	53.3	232.82	1080.39	-1047.57	-27.13	-399.39	5738434.56	566945.61
1190	53.68	232.24	1083.4	-1050.58	-29.51	-402.59	5738432.17	566942.41
1195	54.07	231.65	1086.41	-1053.59	-31.9	-405.79	5738429.78	566939.21
1200	54.31	231.05	1089.3	-1056.48	-34.52	-408.91	5738427.16	566936.09
1205	54.55	230.45	1092.19	-1059.37	-37.15	-412.04	5738424.53	566932.96
1210	54.79	229.86	1095.07	-1062.25	-39.78	-415.16	5738421.9	566929.84
1215	55.03	229.26	1097.96	-1065.14	-42.41	-418.28	5738419.28	566926.72
1220	55.27	228.66	1100.84	-1068.02	-45.04	-421.41	5738416.65	566923.59
1225	55.43	228.21	1103.72	-1070.9	-47.7	-424.51	5738413.98	566920.49
1230	55.41	228.16	1106.56	-1073.74	-50.45	-427.57	5738411.23	566917.43
1235	55.39	228.1	1109.4	-1076.58	-53.2	-430.63	5738408.48	566914.37
1240	55.37	228.05	1112.24	-1079.42	-55.95	-433.7	5738405.73	566911.31
1245	55.35	227.99	1115.08	-1082.26	-58.7	-436.76	5738402.98	566908.25
1250	55.33	227.94	1117.92	-1085.1	-61.45	-439.82	5738400.23	566905.19
1255	55.34	227.88	1120.76	-1087.94	-64.2	-442.88	5738397.48	566902.12
1260	55.5	227.85	1123.57	-1090.75	-66.98	-445.94	5738394.7	566899.06
1265	55.65	227.82	1126.38	-1093.56	-69.76	-449	5738391.93	566896
1270	55.81	227.8	1129.2	-1096.38	-72.53	-452.06	5738389.15	566892.94
1275	55.97	227.77	1132.01	-1099.19	-75.31	-455.13	5738386.38	566889.88
1280	56.13	227.74	1134.82	-1102	-78.08	-458.19	5738383.6	566886.81
1285	56.16	227.72	1137.63	-1104.81	-80.87	-461.25	5738380.82	566883.75
1290	56.07	227.72	1140.43	-1107.61	-83.65	-464.32	5738378.03	566880.69
1295	55.98	227.72	1143.23	-1110.41	-86.44	-467.38	5738375.24	566877.62
1300	55.89	227.71	1146.03	-1113.21	-89.23	-470.45	5738372.46	566874.56
1305	55.8	227.71	1148.83	-1116.01	-92.01	-473.51	5738369.67	566871.49
1310	55.7	227.71	1151.63	-1118.81	-94.8	-476.58	5738366.88	566868.43
1315	55.75	227.83	1154.43	-1121.61	-97.57	-479.66	5738364.11	566865.35
1320	55.84	227.99	1157.23	-1124.41	-100.33	-482.74	5738361.35	566862.26
1325	55.93	228.15	1160.03	-1127.21	-103.1	-485.83	5738358.59	566859.17
1330	56.02	228.31	1162.83	-1130.01	-105.86	-488.92	5738355.83	566856.09
1335	56.11	228.47	1165.63	-1132.81	-108.62	-492	5738353.06	566853
1340	56.2	228.63	1168.43	-1135.61	-111.38	-495.09	5738350.3	566849.91
1345	56.17	228.57	1171.22	-1138.4	-114.13	-498.2	5738347.55	566846.81
1350	56.14	228.52	1174.01	-1141.19	-116.89	-501.3	5738344.8	566843.7
1355	56.11	228.46	1176.8	-1143.98	-119.64	-504.41	5738342.05	566840.59
1360	56.07	228.41	1179.58	-1146.76	-122.39	-507.52	5738339.29	566837.48
1365	56.04	228.35	1182.37	-1149.55	-125.14	-510.62	5738336.54	566834.38
1370	56.01	228.29	1185.16	-1152.34	-127.9	-513.73	5738333.79	566831.28
1375	55.99	228.23	1187.96	-1155.14	-130.66	-516.81	5738331.02	566828.19
1380	55.97	228.17	1190.76	-1157.94	-133.43	-519.9	5738328.26	566825.11
1385	55.95	228.11	1193.56	-1160.74	-136.19	-522.98	5738325.49	566822.02
1390	55.93	228.04	1196.36	-1163.54	-138.96	-526.07	5738322.72	566818.94

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1395	55.91	227.98	1199.16	-1166.34	-141.72	-529.15	5738319.96	566815.85
1400	55.87	227.9	1201.97	-1169.15	-144.5	-532.22	5738317.18	566812.78
1405	55.81	227.81	1204.78	-1171.96	-147.28	-535.28	5738314.4	566809.73
1410	55.76	227.72	1207.6	-1174.78	-150.06	-538.33	5738311.62	566806.67
1415	55.7	227.63	1210.41	-1177.59	-152.84	-541.38	5738308.84	566803.62
1420	55.64	227.54	1213.23	-1180.41	-155.63	-544.44	5738306.06	566800.56
1425	55.58	227.44	1216.04	-1183.22	-158.41	-547.49	5738303.27	566797.51
1430	55.54	227.5	1218.87	-1186.05	-161.18	-550.55	5738300.51	566794.45
1435	55.5	227.78	1221.7	-1188.88	-163.93	-553.62	5738297.76	566791.38
1440	55.47	228.06	1224.54	-1191.72	-166.67	-556.69	5738295.01	566788.31
1445	55.43	228.33	1227.37	-1194.55	-169.42	-559.75	5738292.26	566785.25
1450	55.4	228.61	1230.21	-1197.39	-172.17	-562.82	5738289.51	566782.18
1455	55.36	228.89	1233.04	-1200.22	-174.92	-565.89	5738286.76	566779.11
1460	55.32	228.94	1235.89	-1203.07	-177.61	-568.99	5738284.07	566776.01
1465	55.28	229	1238.74	-1205.92	-180.31	-572.09	5738281.38	566772.91
1470	55.24	229.05	1241.59	-1208.77	-183	-575.2	5738278.68	566769.81
1475	55.2	229.11	1244.44	-1211.62	-185.69	-578.3	5738275.99	566766.7
1480	55.16	229.17	1247.29	-1214.47	-188.38	-581.4	5738273.3	566763.6
1485	55.09	229.19	1250.16	-1217.34	-191.07	-584.5	5738270.61	566760.5
1490	54.95	229.16	1253.04	-1220.22	-193.74	-587.59	5738267.94	566757.42
1495	54.82	229.14	1255.93	-1223.11	-196.41	-590.67	5738265.27	566754.33
1500	54.68	229.11	1258.82	-1226	-199.08	-593.76	5738262.6	566751.24
1505	54.54	229.09	1261.7	-1228.88	-201.76	-596.85	5738259.93	566748.15
1510	54.41	229.06	1264.59	-1231.77	-204.43	-599.94	5738257.25	566745.07
1515	54.4	229.15	1267.48	-1234.66	-207.08	-603.03	5738254.6	566741.97
1520	54.5	229.33	1270.38	-1237.56	-209.73	-606.13	5738251.96	566738.87
1525	54.59	229.5	1273.27	-1240.45	-212.37	-609.24	5738249.31	566735.77
1530	54.68	229.68	1276.17	-1243.35	-215.02	-612.34	5738246.67	566732.66
1535	54.77	229.85	1279.06	-1246.24	-217.66	-615.44	5738244.02	566729.56
1540	54.86	230.03	1281.96	-1249.14	-220.3	-618.54	5738241.38	566726.46
1545	55.02	230.01	1284.81	-1251.99	-222.95	-621.68	5738238.73	566723.32
1550	55.18	229.95	1287.65	-1254.83	-225.6	-624.83	5738236.08	566720.18
1555	55.35	229.89	1290.49	-1257.67	-228.26	-627.97	5738233.43	566717.03
1560	55.52	229.83	1293.34	-1260.52	-230.91	-631.12	5738230.78	566713.88
1565	55.69	229.77	1296.18	-1263.36	-233.56	-634.26	5738228.13	566710.74
1570	55.83	229.71	1299.02	-1266.2	-236.21	-637.41	5738225.47	566707.59
1575	55.75	229.71	1301.84	-1269.02	-238.88	-640.56	5738222.81	566704.44
1580	55.67	229.71	1304.66	-1271.84	-241.54	-643.71	5738220.14	566701.3
1585	55.6	229.72	1307.49	-1274.67	-244.21	-646.85	5738217.47	566698.15
1590	55.52	229.72	1310.31	-1277.49	-246.88	-650	5738214.8	566695
1595	55.44	229.72	1313.14	-1280.32	-249.55	-653.15	5738212.13	566691.85
1600	55.43	229.74	1315.96	-1283.14	-252.21	-656.3	5738209.47	566688.7
1605	55.53	229.8	1318.78	-1285.96	-254.87	-659.46	5738206.81	566685.54
1610	55.62	229.87	1321.6	-1288.78	-257.53	-662.62	5738204.15	566682.39
1615	55.72	229.93	1324.42	-1291.6	-260.19	-665.77	5738201.49	566679.23
1620	55.82	229.99	1327.24	-1294.42	-262.85	-668.93	5738198.83	566676.07
1625	55.92	230.05	1330.06	-1297.24	-265.51	-672.09	5738196.17	566672.91
1630	55.88	230.05	1332.88	-1300.06	-268.17	-675.25	5738193.52	566669.75
1635	55.77	230.03	1335.7	-1302.88	-270.82	-678.41	5738190.86	566666.59
1640	55.66	230.01	1338.52	-1305.7	-273.47	-681.58	5738188.21	566663.43
1645	55.55	229.98	1341.35	-1308.53	-276.13	-684.74	5738185.56	566660.27
1650	55.44	229.96	1344.17	-1311.35	-278.78	-687.9	5738182.9	566657.1
1655	55.33	229.93	1346.99	-1314.17	-281.43	-691.06	5738180.25	566653.94
1660	55.5	229.84	1349.8	-1316.98	-284.11	-694.21	5738177.57	566650.79
1665	55.69	229.74	1352.6	-1319.78	-286.79	-697.37	5738174.89	566647.63
1670	55.89	229.64	1355.41	-1322.59	-289.47	-700.52	5738172.21	566644.48
1675	56.08	229.54	1358.21	-1325.39	-292.15	-703.68	5738169.53	566641.32
1680	56.28	229.44	1361.02	-1328.2	-294.83	-706.83	5738166.85	566638.17

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1685	56.41	229.35	1363.81	-1330.99	-297.52	-709.98	5738164.16	566635.02
1690	56.39	229.29	1366.59	-1333.77	-300.24	-713.13	5738161.44	566631.87
1695	56.36	229.23	1369.36	-1336.54	-302.96	-716.28	5738158.72	566628.72
1700	56.33	229.17	1372.13	-1339.31	-305.68	-719.43	5738156	566625.57
1705	56.3	229.11	1374.9	-1342.08	-308.4	-722.58	5738153.28	566622.42
1710	56.27	229.05	1377.67	-1344.85	-311.12	-725.73	5738150.57	566619.27
1715	56.21	228.99	1380.45	-1347.63	-313.84	-728.87	5738147.84	566616.13
1720	56.13	228.93	1383.25	-1350.43	-316.57	-731.99	5738145.11	566613.01
1725	56.04	228.86	1386.05	-1353.23	-319.3	-735.11	5738142.38	566609.89
1730	55.95	228.8	1388.84	-1356.02	-322.03	-738.23	5738139.66	566606.77
1735	55.86	228.74	1391.64	-1358.82	-324.75	-741.35	5738136.93	566603.65
1740	55.77	228.67	1394.43	-1361.61	-327.48	-744.47	5738134.2	566600.53
1745	55.68	228.63	1397.26	-1364.44	-330.21	-747.57	5738131.47	566597.43
1750	55.59	228.6	1400.09	-1367.27	-332.94	-750.66	5738128.75	566594.34
1755	55.49	228.56	1402.92	-1370.1	-335.66	-753.75	5738126.02	566591.26
1760	55.4	228.52	1405.76	-1372.94	-338.39	-756.83	5738123.29	566588.17
1765	55.31	228.49	1408.59	-1375.77	-341.12	-759.92	5738120.57	566585.08
1770	55.22	228.45	1411.42	-1378.6	-343.84	-763.01	5738117.84	566581.99
1775	55.39	228.4	1414.24	-1381.42	-346.59	-766.1	5738115.09	566578.91
1780	55.57	228.35	1417.06	-1384.24	-349.34	-769.18	5738112.34	566575.82
1785	55.74	228.29	1419.87	-1387.05	-352.09	-772.26	5738109.59	566572.74
1790	55.91	228.24	1422.69	-1389.87	-354.84	-775.35	5738106.84	566569.65
1795	56.08	228.19	1425.5	-1392.68	-357.59	-778.43	5738104.1	566566.57
1800	56.2	228.15	1428.32	-1395.5	-360.34	-781.52	5738101.34	566563.48
1805	56.1	228.14	1431.12	-1398.3	-363.1	-784.6	5738098.58	566560.4
1810	56.01	228.14	1433.92	-1401.1	-365.87	-787.69	5738095.81	566557.31
1815	55.91	228.13	1436.72	-1403.9	-368.63	-790.77	5738093.05	566554.23
1820	55.81	228.13	1439.52	-1406.7	-371.4	-793.86	5738090.29	566551.14
1825	55.72	228.12	1442.32	-1409.5	-374.16	-796.94	5738087.52	566548.06
1830	55.64	228.1	1445.13	-1412.31	-376.92	-800.02	5738084.76	566544.98
1835	55.59	228.06	1447.96	-1415.14	-379.68	-803.08	5738082	566541.92
1840	55.54	228.02	1450.79	-1417.97	-382.44	-806.14	5738079.24	566538.86
1845	55.49	227.98	1453.62	-1420.8	-385.2	-809.21	5738076.49	566535.79
1850	55.43	227.94	1456.45	-1423.63	-387.95	-812.27	5738073.73	566532.73
1855	55.38	227.9	1459.29	-1426.47	-390.71	-815.33	5738070.97	566529.67
1860	55.32	227.87	1462.14	-1429.32	-393.47	-818.38	5738068.22	566526.62
1865	55.24	227.85	1464.99	-1432.17	-396.22	-821.42	5738065.46	566523.58
1870	55.17	227.82	1467.85	-1435.03	-398.98	-824.46	5738062.71	566520.54
1875	55.1	227.8	1470.7	-1437.88	-401.73	-827.5	5738059.95	566517.5
1880	55.02	227.77	1473.56	-1440.74	-404.49	-830.54	5738057.19	566514.46
1885	54.95	227.75	1476.42	-1443.6	-407.24	-833.59	5738054.44	566511.42
1890	54.92	227.72	1479.3	-1446.48	-410	-836.61	5738051.69	566508.39
1895	54.88	227.69	1482.17	-1449.35	-412.75	-839.63	5738048.93	566505.37
1900	54.85	227.67	1485.05	-1452.23	-415.5	-842.65	5738046.18	566502.35
1905	54.82	227.64	1487.93	-1455.11	-418.26	-845.68	5738043.43	566499.33
1910	54.79	227.61	1490.81	-1457.99	-421.01	-848.7	5738040.67	566496.3
1915	54.74	227.6	1493.69	-1460.87	-423.76	-851.72	5738037.92	566493.28
1920	54.65	227.62	1496.6	-1463.78	-426.5	-854.73	5738035.18	566490.28
1925	54.55	227.64	1499.5	-1466.68	-429.24	-857.73	5738032.44	566487.27
1930	54.46	227.67	1502.4	-1469.58	-431.98	-860.74	5738029.7	566484.26
1935	54.37	227.69	1505.31	-1472.49	-434.73	-863.75	5738026.96	566481.25
1940	54.28	227.72	1508.21	-1475.39	-437.47	-866.76	5738024.22	566478.24
1945	54.31	227.76	1511.11	-1478.29	-440.21	-869.78	5738021.48	566475.22
1950	54.47	227.82	1514	-1481.18	-442.94	-872.81	5738018.74	566472.2
1955	54.63	227.88	1516.89	-1484.07	-445.68	-875.83	5738016.01	566469.17
1960	54.79	227.94	1519.78	-1486.96	-448.41	-878.86	5738013.27	566466.14
1965	54.96	228	1522.67	-1489.85	-451.15	-881.89	5738010.53	566463.11
1970	55.12	228.05	1525.56	-1492.74	-453.88	-884.92	5738007.8	566460.09

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1975	55.12	228.03	1528.43	-1495.61	-456.63	-887.95	5738005.06	566457.05
1980	55.07	227.98	1531.3	-1498.48	-459.37	-890.99	5738002.31	566454.01
1985	55.02	227.92	1534.16	-1501.34	-462.12	-894.03	5737999.56	566450.97
1990	54.97	227.87	1537.03	-1504.21	-464.86	-897.07	5737996.82	566447.93
1995	54.92	227.82	1539.9	-1507.08	-467.61	-900.11	5737994.07	566444.89
2000	54.87	227.76	1542.76	-1509.94	-470.35	-903.15	5737991.33	566441.85
2005	54.99	227.95	1545.62	-1512.8	-473.09	-906.22	5737988.6	566438.78
2010	55.12	228.14	1548.47	-1515.65	-475.82	-909.29	5737985.86	566435.71
2015	55.25	228.34	1551.32	-1518.5	-478.55	-912.36	5737983.13	566432.65
2020	55.38	228.53	1554.17	-1521.35	-481.28	-915.42	5737980.4	566429.58
2025	55.51	228.73	1557.02	-1524.2	-484.01	-918.49	5737977.67	566426.51
2030	55.58	228.86	1559.87	-1527.05	-486.74	-921.57	5737974.94	566423.44
2035	55.5	228.82	1562.71	-1529.89	-489.45	-924.66	5737972.23	566420.34
2040	55.42	228.78	1565.55	-1532.73	-492.16	-927.75	5737969.52	566417.25
2045	55.34	228.73	1568.39	-1535.57	-494.88	-930.85	5737966.81	566414.16
2050	55.27	228.69	1571.23	-1538.41	-497.59	-933.94	5737964.09	566411.06
2055	55.19	228.65	1574.07	-1541.25	-500.3	-937.03	5737961.38	566407.97
2060	55.24	228.61	1576.9	-1544.08	-503.03	-940.13	5737958.66	566404.88
2065	55.42	228.56	1579.73	-1546.91	-505.76	-943.22	5737955.92	566401.78
2070	55.59	228.52	1582.55	-1549.73	-508.5	-946.31	5737953.19	566398.69
2075	55.77	228.47	1585.37	-1552.55	-511.23	-949.4	5737950.45	566395.6
2080	55.95	228.43	1588.19	-1555.37	-513.97	-952.49	5737947.72	566392.51
2085	56.13	228.39	1591.01	-1558.19	-516.7	-955.59	5737944.98	566389.42
2090	56.06	228.36	1593.82	-1561	-519.45	-958.68	5737942.23	566386.33
2095	55.95	228.33	1596.63	-1563.81	-522.2	-961.76	5737939.48	566383.24
2100	55.84	228.3	1599.43	-1566.61	-524.96	-964.85	5737936.73	566380.15
2105	55.73	228.27	1602.24	-1569.42	-527.71	-967.94	5737933.97	566377.06
2110	55.62	228.24	1605.05	-1572.23	-530.46	-971.03	5737931.22	566373.97
2115	55.58	228.21	1607.85	-1575.03	-533.22	-974.12	5737928.46	566370.88
2120	55.83	228.15	1610.63	-1577.81	-536	-977.21	5737925.69	566367.79
2125	56.08	228.1	1613.41	-1580.59	-538.78	-980.3	5737922.91	566364.7
2130	56.33	228.04	1616.19	-1583.37	-541.55	-983.4	5737920.13	566361.61
2135	56.58	227.98	1618.97	-1586.15	-544.33	-986.49	5737917.35	566358.51
2140	56.83	227.93	1621.74	-1588.92	-547.11	-989.58	5737914.57	566355.42
2145	56.91	227.89	1624.5	-1591.68	-549.9	-992.68	5737911.78	566352.33
2150	56.84	227.88	1627.25	-1594.43	-552.71	-995.78	5737908.98	566349.22
2155	56.77	227.87	1629.99	-1597.17	-555.51	-998.88	5737906.17	566346.12
2160	56.69	227.86	1632.73	-1599.91	-558.31	-1001.98	5737903.37	566343.02
2165	56.62	227.85	1635.47	-1602.65	-561.12	-1005.08	5737900.56	566339.92
2170	56.54	227.84	1638.22	-1605.4	-563.92	-1008.18	5737897.76	566336.82
2175	56.5	227.8	1640.98	-1608.16	-566.73	-1011.26	5737894.95	566333.74
2180	56.47	227.74	1643.74	-1610.92	-569.53	-1014.34	5737892.15	566330.66
2185	56.43	227.68	1646.5	-1613.68	-572.34	-1017.43	5737889.34	566327.58
2190	56.4	227.63	1649.27	-1616.45	-575.14	-1020.51	5737886.54	566324.5
2195	56.36	227.57	1652.03	-1619.21	-577.95	-1023.59	5737883.73	566321.42
2200	56.33	227.52	1654.8	-1621.98	-580.75	-1026.67	5737880.93	566318.34
2205	56.3	227.47	1657.58	-1624.76	-583.57	-1029.72	5737878.11	566315.28
2210	56.27	227.43	1660.36	-1627.54	-586.38	-1032.78	5737875.3	566312.22
2215	56.24	227.39	1663.14	-1630.32	-589.2	-1035.84	5737872.49	566309.16
2220	56.21	227.34	1665.91	-1633.09	-592.01	-1038.9	5737869.67	566306.1
2225	56.18	227.3	1668.69	-1635.87	-594.82	-1041.96	5737866.86	566303.04
2230	56.15	227.27	1671.47	-1638.65	-597.64	-1045.02	5737864.04	566299.98
2235	56.11	227.25	1674.27	-1641.45	-600.46	-1048.06	5737861.23	566296.94
2240	56.08	227.23	1677.06	-1644.24	-603.27	-1051.11	5737858.41	566293.89
2245	56.04	227.22	1679.85	-1647.03	-606.09	-1054.15	5737855.59	566290.85
2250	56.01	227.2	1682.64	-1649.82	-608.91	-1057.2	5737852.77	566287.8
2255	55.97	227.19	1685.43	-1652.61	-611.73	-1060.24	5737849.96	566284.76
2260	55.92	227.3	1688.24	-1655.42	-614.52	-1063.3	5737847.16	566281.7

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2265	55.86	227.5	1691.05	-1658.23	-617.3	-1066.36	5737844.38	566278.64
2270	55.79	227.69	1693.86	-1661.04	-620.08	-1069.42	5737841.6	566275.58
2275	55.73	227.88	1696.67	-1663.85	-622.86	-1072.48	5737838.82	566272.53
2280	55.66	228.08	1699.49	-1666.67	-625.64	-1075.54	5737836.04	566269.47
2285	55.6	228.27	1702.3	-1669.48	-628.42	-1078.6	5737833.26	566266.41
2290	55.6	228.36	1705.12	-1672.3	-631.16	-1081.68	5737830.52	566263.32
2295	55.62	228.42	1707.94	-1675.12	-633.9	-1084.77	5737827.79	566260.23
2300	55.63	228.49	1710.76	-1677.94	-636.63	-1087.86	5737825.05	566257.14
2305	55.65	228.56	1713.59	-1680.77	-639.37	-1090.95	5737822.32	566254.05
2310	55.67	228.62	1716.41	-1683.59	-642.1	-1094.04	5737819.58	566250.96
2315	55.68	228.68	1719.23	-1686.41	-644.84	-1097.14	5737816.85	566247.87
2320	55.68	228.67	1722.05	-1689.23	-647.56	-1100.24	5737814.12	566244.77
2325	55.68	228.67	1724.87	-1692.05	-650.29	-1103.34	5737811.39	566241.66
2330	55.67	228.66	1727.69	-1694.87	-653.02	-1106.44	5737808.66	566238.56
2335	55.67	228.65	1730.51	-1697.69	-655.75	-1109.54	5737805.94	566235.46
2340	55.67	228.64	1733.33	-1700.51	-658.48	-1112.64	5737803.21	566232.36
2345	55.65	228.7	1736.15	-1703.33	-661.19	-1115.74	5737800.49	566229.26
2350	55.62	228.85	1738.98	-1706.16	-663.89	-1118.86	5737797.79	566226.14
2355	55.58	229	1741.81	-1708.99	-666.6	-1121.97	5737795.09	566223.03
2360	55.54	229.14	1744.63	-1711.81	-669.3	-1125.09	5737792.38	566219.91
2365	55.5	229.29	1747.46	-1714.64	-672	-1128.2	5737789.68	566216.8
2370	55.46	229.44	1750.29	-1717.47	-674.7	-1131.32	5737786.98	566213.68
2375	55.44	229.42	1753.12	-1720.3	-677.39	-1134.44	5737784.29	566210.57
2380	55.42	229.34	1755.96	-1723.14	-680.08	-1137.55	5737781.6	566207.45
2385	55.4	229.26	1758.8	-1725.98	-682.77	-1140.67	5737778.92	566204.33
2390	55.39	229.18	1761.64	-1728.82	-685.45	-1143.79	5737776.23	566201.21
2395	55.37	229.1	1764.48	-1731.66	-688.14	-1146.91	5737773.54	566198.1
2400	55.35	229.02	1767.32	-1734.5	-690.83	-1150.02	5737770.86	566194.98
2405	55.33	228.98	1770.17	-1737.35	-693.53	-1153.12	5737768.16	566191.88
2410	55.3	228.94	1773.02	-1740.2	-696.23	-1156.22	5737765.45	566188.78
2415	55.28	228.89	1775.86	-1743.04	-698.93	-1159.32	5737762.75	566185.69
2420	55.26	228.85	1778.71	-1745.89	-701.63	-1162.41	5737760.05	566182.59
2425	55.23	228.81	1781.56	-1748.74	-704.33	-1165.51	5737757.35	566179.49
2430	55.21	228.77	1784.41	-1751.59	-707.04	-1168.6	5737754.65	566176.4
2435	55.17	228.8	1787.27	-1754.45	-709.74	-1171.69	5737751.95	566173.31
2440	55.13	228.82	1790.13	-1757.31	-712.43	-1174.78	5737749.25	566170.22
2445	55.09	228.85	1792.99	-1760.17	-715.13	-1177.87	5737746.55	566167.14
2450	55.05	228.87	1795.85	-1763.03	-717.83	-1180.95	5737743.85	566164.05
2455	55.01	228.9	1798.71	-1765.89	-720.53	-1184.04	5737741.15	566160.96
2460	55.02	229	1801.57	-1768.75	-723.22	-1187.14	5737738.47	566157.86
2465	55.11	229.2	1804.42	-1771.6	-725.88	-1190.27	5737735.8	566154.73
2470	55.19	229.41	1807.27	-1774.45	-728.55	-1193.39	5737733.13	566151.61
2475	55.27	229.62	1810.12	-1777.3	-731.22	-1196.51	5737730.47	566148.49
2480	55.36	229.83	1812.98	-1780.16	-733.88	-1199.64	5737727.8	566145.36
2485	55.44	230.04	1815.83	-1783.01	-736.55	-1202.76	5737725.13	566142.24
2490	55.56	230.16	1818.65	-1785.83	-739.2	-1205.93	5737722.48	566139.08
2495	55.7	230.23	1821.45	-1788.63	-741.84	-1209.11	5737719.84	566135.89
2496	55.73	230.24	1822.01	-1789.19	-742.37	-1209.75	5737719.31	566135.25
2497	55.76	230.26	1822.58	-1789.76	-742.9	-1210.39	5737718.78	566134.62
2498	55.78	230.27	1823.14	-1790.32	-743.43	-1211.02	5737718.25	566133.98
2499	55.81	230.29	1823.7	-1790.88	-743.96	-1211.66	5737717.72	566133.34
2500	55.84	230.3	1824.26	-1791.44	-744.49	-1212.3	5737717.2	566132.71
2501	55.87	230.31	1824.82	-1792	-745.02	-1212.93	5737716.67	566132.07
2502	55.9	230.33	1825.38	-1792.56	-745.54	-1213.57	5737716.14	566131.43
2503	55.92	230.34	1825.94	-1793.12	-746.07	-1214.21	5737715.61	566130.79
2504	55.95	230.36	1826.5	-1793.68	-746.6	-1214.84	5737715.08	566130.16
2505	55.98	230.37	1827.06	-1794.24	-747.13	-1215.48	5737714.55	566129.52
2506	56.01	230.39	1827.62	-1794.8	-747.66	-1216.12	5737714.02	566128.88

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2507	56.04	230.4	1828.19	-1795.37	-748.19	-1216.76	5737713.5	566128.25
2508	56.06	230.41	1828.75	-1795.93	-748.72	-1217.39	5737712.97	566127.61
2509	56.09	230.43	1829.31	-1796.49	-749.24	-1218.03	5737712.44	566126.97
2510	56.12	230.44	1829.87	-1797.05	-749.77	-1218.67	5737711.91	566126.34
2511	56.15	230.46	1830.43	-1797.61	-750.3	-1219.3	5737711.38	566125.7
2512	56.18	230.47	1830.99	-1798.17	-750.83	-1219.94	5737710.85	566125.06
2513	56.2	230.49	1831.55	-1798.73	-751.36	-1220.58	5737710.32	566124.42
2514	56.23	230.5	1832.11	-1799.29	-751.89	-1221.21	5737709.8	566123.79
2515	56.26	230.51	1832.67	-1799.85	-752.42	-1221.85	5737709.27	566123.15
2516	56.29	230.52	1833.23	-1800.41	-752.95	-1222.49	5737708.74	566122.51
2517	56.32	230.53	1833.78	-1800.96	-753.48	-1223.14	5737708.21	566121.86
2518	56.35	230.53	1834.33	-1801.51	-754.01	-1223.79	5737707.68	566121.22
2519	56.38	230.53	1834.87	-1802.05	-754.54	-1224.43	5737707.14	566120.57
2520	56.42	230.54	1835.42	-1802.6	-755.07	-1225.08	5737706.61	566119.92
2521	56.45	230.54	1835.97	-1803.15	-755.6	-1225.72	5737706.08	566119.28
2522	56.48	230.55	1836.52	-1803.7	-756.13	-1226.37	5737705.55	566118.63
2523	56.51	230.55	1837.07	-1804.25	-756.66	-1227.02	5737705.02	566117.99
2524	56.54	230.56	1837.62	-1804.8	-757.19	-1227.66	5737704.49	566117.34
2525	56.57	230.56	1838.17	-1805.35	-757.72	-1228.31	5737703.96	566116.69
2526	56.6	230.56	1838.71	-1805.89	-758.25	-1228.95	5737703.43	566116.05
2527	56.64	230.57	1839.26	-1806.44	-758.79	-1229.6	5737702.9	566115.4
2528	56.67	230.57	1839.81	-1806.99	-759.32	-1230.24	5737702.37	566114.76
2529	56.7	230.58	1840.36	-1807.54	-759.85	-1230.89	5737701.84	566114.11
2530	56.73	230.58	1840.91	-1808.09	-760.38	-1231.54	5737701.3	566113.47
2531	56.76	230.58	1841.46	-1808.64	-760.91	-1232.18	5737700.77	566112.82
2532	56.79	230.59	1842.01	-1809.19	-761.44	-1232.83	5737700.24	566112.17
2533	56.83	230.59	1842.56	-1809.74	-761.97	-1233.47	5737699.71	566111.53
2534	56.86	230.6	1843.1	-1810.28	-762.5	-1234.12	5737699.18	566110.88
2535	56.89	230.6	1843.65	-1810.83	-763.03	-1234.77	5737698.65	566110.24
2536	56.92	230.61	1844.2	-1811.38	-763.56	-1235.41	5737698.12	566109.59
2537	56.95	230.61	1844.75	-1811.93	-764.09	-1236.06	5737697.59	566108.94
2538	56.98	230.61	1845.3	-1812.48	-764.62	-1236.7	5737697.06	566108.3
2539	57.01	230.62	1845.85	-1813.03	-765.16	-1237.35	5737696.53	566107.65
2540	57.05	230.62	1846.4	-1813.58	-765.69	-1237.99	5737696	566107.01
2541	57.08	230.63	1846.94	-1814.12	-766.22	-1238.64	5737695.47	566106.36
2542	57.11	230.63	1847.49	-1814.67	-766.75	-1239.29	5737694.93	566105.72
2543	57.14	230.63	1848.04	-1815.22	-767.28	-1239.93	5737694.4	566105.07
2544	57.17	230.64	1848.59	-1815.77	-767.81	-1240.58	5737693.87	566104.42
2545	57.16	230.63	1849.14	-1816.32	-768.34	-1241.22	5737693.34	566103.78
2546	57.13	230.62	1849.69	-1816.87	-768.87	-1241.87	5737692.81	566103.13
2547	57.11	230.61	1850.23	-1817.41	-769.41	-1242.51	5737692.28	566102.49
2548	57.08	230.6	1850.78	-1817.96	-769.94	-1243.16	5737691.74	566101.84
2549	57.05	230.59	1851.33	-1818.51	-770.47	-1243.81	5737691.21	566101.2
2550	57.03	230.58	1851.88	-1819.06	-771	-1244.45	5737690.68	566100.55
2551	57	230.57	1852.42	-1819.6	-771.54	-1245.1	5737690.15	566099.9
2552	56.97	230.56	1852.97	-1820.15	-772.07	-1245.74	5737689.61	566099.26
2553	56.94	230.55	1853.52	-1820.7	-772.6	-1246.39	5737689.08	566098.61
2554	56.92	230.54	1854.07	-1821.25	-773.13	-1247.03	5737688.55	566097.97
2555	56.89	230.53	1854.61	-1821.79	-773.67	-1247.68	5737688.02	566097.32
2556	56.86	230.52	1855.16	-1822.34	-774.2	-1248.32	5737687.49	566096.68
2557	56.84	230.51	1855.71	-1822.89	-774.73	-1248.97	5737686.95	566096.03
2558	56.81	230.5	1856.26	-1823.44	-775.26	-1249.62	5737686.42	566095.39
2559	56.78	230.49	1856.81	-1823.99	-775.79	-1250.26	5737685.89	566094.74
2560	56.76	230.47	1857.35	-1824.53	-776.33	-1250.91	5737685.36	566094.09
2561	56.73	230.46	1857.9	-1825.08	-776.86	-1251.55	5737684.82	566093.45
2562	56.7	230.45	1858.45	-1825.63	-777.39	-1252.2	5737684.29	566092.8
2563	56.67	230.44	1859	-1826.18	-777.92	-1252.84	5737683.76	566092.16
2564	56.65	230.43	1859.54	-1826.72	-778.46	-1253.49	5737683.23	566091.51

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2565	56.62	230.42	1860.09	-1827.27	-778.99	-1254.13	5737682.69	566090.87
2566	56.59	230.41	1860.64	-1827.82	-779.52	-1254.78	5737682.16	566090.22
2567	56.57	230.4	1861.19	-1828.37	-780.05	-1255.43	5737681.63	566089.58
2568	56.54	230.39	1861.73	-1828.91	-780.59	-1256.07	5737681.1	566088.93
2569	56.51	230.38	1862.28	-1829.46	-781.12	-1256.72	5737680.57	566088.29
2570	56.49	230.37	1862.83	-1830.01	-781.65	-1257.36	5737680.03	566087.64
2571	56.46	230.36	1863.38	-1830.56	-782.18	-1258.01	5737679.5	566086.99
2572	56.43	230.35	1863.92	-1831.1	-782.71	-1258.65	5737678.97	566086.35
2573	56.41	230.34	1864.47	-1831.65	-783.25	-1259.3	5737678.44	566085.7
2574	56.41	230.34	1865.03	-1832.21	-783.78	-1259.94	5737677.9	566085.06
2575	56.41	230.34	1865.58	-1832.76	-784.31	-1260.58	5737677.37	566084.42
2576	56.42	230.34	1866.13	-1833.31	-784.84	-1261.22	5737676.84	566083.78
2577	56.42	230.33	1866.68	-1833.86	-785.38	-1261.86	5737676.31	566083.14
2578	56.42	230.33	1867.24	-1834.42	-785.91	-1262.5	5737675.78	566082.5
2579	56.42	230.33	1867.79	-1834.97	-786.44	-1263.15	5737675.24	566081.86
2580	56.42	230.33	1868.34	-1835.52	-786.97	-1263.79	5737674.71	566081.21
2581	56.42	230.33	1868.9	-1836.08	-787.5	-1264.43	5737674.18	566080.57
2582	56.43	230.33	1869.45	-1836.63	-788.04	-1265.07	5737673.65	566079.93
2583	56.43	230.33	1870	-1837.18	-788.57	-1265.71	5737673.12	566079.29
2584	56.43	230.32	1870.55	-1837.73	-789.1	-1266.35	5737672.58	566078.65
2585	56.43	230.32	1871.11	-1838.29	-789.63	-1266.99	5737672.05	566078.01
2586	56.43	230.32	1871.66	-1838.84	-790.16	-1267.63	5737671.52	566077.37
2587	56.43	230.32	1872.21	-1839.39	-790.7	-1268.28	5737670.99	566076.73
2588	56.44	230.32	1872.77	-1839.95	-791.23	-1268.92	5737670.46	566076.08
2589	56.44	230.32	1873.32	-1840.5	-791.76	-1269.56	5737669.92	566075.44
2590	56.44	230.32	1873.87	-1841.05	-792.29	-1270.2	5737669.39	566074.8
2591	56.44	230.31	1874.42	-1841.6	-792.82	-1270.84	5737668.86	566074.16
2592	56.44	230.31	1874.98	-1842.16	-793.36	-1271.48	5737668.33	566073.52
2593	56.45	230.31	1875.53	-1842.71	-793.89	-1272.12	5737667.79	566072.88
2594	56.45	230.31	1876.08	-1843.26	-794.42	-1272.76	5737667.26	566072.24
2595	56.45	230.31	1876.64	-1843.82	-794.95	-1273.41	5737666.73	566071.6
2596	56.45	230.31	1877.19	-1844.37	-795.48	-1274.05	5737666.2	566070.95
2597	56.45	230.31	1877.74	-1844.92	-796.02	-1274.69	5737665.67	566070.31
2598	56.45	230.3	1878.3	-1845.48	-796.55	-1275.33	5737665.13	566069.67
2599	56.46	230.3	1878.85	-1846.03	-797.08	-1275.97	5737664.6	566069.03
2600	56.46	230.3	1879.4	-1846.58	-797.61	-1276.61	5737664.07	566068.39
2601	56.46	230.3	1879.95	-1847.13	-798.14	-1277.25	5737663.54	566067.75
2602	56.46	230.3	1880.51	-1847.69	-798.68	-1277.89	5737663.01	566067.11
2603	56.46	230.29	1881.06	-1848.24	-799.21	-1278.54	5737662.47	566066.47
2604	56.47	230.28	1881.61	-1848.79	-799.74	-1279.18	5737661.94	566065.83
2605	56.47	230.28	1882.16	-1849.34	-800.28	-1279.82	5737661.4	566065.18
2606	56.48	230.27	1882.71	-1849.89	-800.81	-1280.46	5737660.87	566064.54
2607	56.48	230.26	1883.27	-1850.45	-801.35	-1281.1	5737660.34	566063.9
2608	56.48	230.25	1883.82	-1851	-801.88	-1281.74	5737659.8	566063.26
2609	56.49	230.25	1884.37	-1851.55	-802.41	-1282.38	5737659.27	566062.62
2610	56.49	230.24	1884.92	-1852.1	-802.95	-1283.02	5737658.73	566061.98
2611	56.49	230.23	1885.47	-1852.65	-803.48	-1283.66	5737658.2	566061.34
2612	56.5	230.22	1886.02	-1853.2	-804.02	-1284.3	5737657.67	566060.7
2613	56.5	230.22	1886.58	-1853.76	-804.55	-1284.94	5737657.13	566060.06
2614	56.5	230.21	1887.13	-1854.31	-805.08	-1285.58	5737656.6	566059.42
2615	56.51	230.2	1887.68	-1854.86	-805.62	-1286.22	5737656.07	566058.78
2616	56.51	230.19	1888.23	-1855.41	-806.15	-1286.86	5737655.53	566058.14
2617	56.51	230.19	1888.78	-1855.96	-806.69	-1287.51	5737655	566057.5
2618	56.52	230.18	1889.33	-1856.51	-807.22	-1288.15	5737654.46	566056.86
2619	56.52	230.17	1889.89	-1857.07	-807.75	-1288.79	5737653.93	566056.21
2620	56.52	230.17	1890.44	-1857.62	-808.29	-1289.43	5737653.4	566055.57
2621	56.53	230.16	1890.99	-1858.17	-808.82	-1290.07	5737652.86	566054.93
2622	56.53	230.15	1891.54	-1858.72	-809.35	-1290.71	5737652.33	566054.29

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2623	56.53	230.14	1892.09	-1859.27	-809.89	-1291.35	5737651.79	566053.65
2624	56.54	230.14	1892.65	-1859.83	-810.42	-1291.99	5737651.26	566053.01
2625	56.54	230.13	1893.2	-1860.38	-810.96	-1292.63	5737650.73	566052.37
2626	56.54	230.12	1893.75	-1860.93	-811.49	-1293.27	5737650.19	566051.73
2627	56.55	230.11	1894.3	-1861.48	-812.02	-1293.91	5737649.66	566051.09
2628	56.55	230.11	1894.85	-1862.03	-812.56	-1294.55	5737649.12	566050.45
2629	56.56	230.1	1895.4	-1862.58	-813.09	-1295.19	5737648.59	566049.81
2630	56.56	230.09	1895.96	-1863.14	-813.63	-1295.83	5737648.06	566049.17
2631	56.55	230.06	1896.51	-1863.69	-814.16	-1296.47	5737647.52	566048.53
2632	56.53	230.03	1897.07	-1864.25	-814.7	-1297.1	5737646.98	566047.9
2633	56.51	229.99	1897.62	-1864.8	-815.24	-1297.74	5737646.44	566047.27
2634	56.49	229.95	1898.18	-1865.36	-815.78	-1298.37	5737645.9	566046.63
2635	56.47	229.91	1898.73	-1865.91	-816.32	-1299	5737645.36	566046
2636	56.45	229.88	1899.29	-1866.47	-816.86	-1299.64	5737644.82	566045.37
2637	56.43	229.84	1899.84	-1867.02	-817.4	-1300.27	5737644.28	566044.73
2638	56.41	229.8	1900.4	-1867.58	-817.94	-1300.9	5737643.74	566044.1
2639	56.39	229.76	1900.95	-1868.13	-818.48	-1301.53	5737643.2	566043.47
2640	56.38	229.72	1901.51	-1868.69	-819.02	-1302.17	5737642.66	566042.83
2641	56.36	229.69	1902.06	-1869.24	-819.56	-1302.8	5737642.12	566042.2
2642	56.34	229.65	1902.62	-1869.8	-820.1	-1303.43	5737641.58	566041.57
2643	56.32	229.61	1903.17	-1870.35	-820.64	-1304.07	5737641.04	566040.93
2644	56.3	229.57	1903.73	-1870.91	-821.18	-1304.7	5737640.5	566040.3
2645	56.28	229.53	1904.28	-1871.46	-821.72	-1305.33	5737639.96	566039.67
2646	56.26	229.5	1904.83	-1872.01	-822.26	-1305.97	5737639.43	566039.04
2647	56.24	229.46	1905.39	-1872.57	-822.8	-1306.6	5737638.89	566038.4
2648	56.22	229.42	1905.94	-1873.12	-823.34	-1307.23	5737638.35	566037.77
2649	56.2	229.38	1906.5	-1873.68	-823.88	-1307.87	5737637.81	566037.14
2650	56.18	229.34	1907.05	-1874.23	-824.42	-1308.5	5737637.27	566036.5
2651	56.16	229.31	1907.61	-1874.79	-824.96	-1309.13	5737636.73	566035.87
2652	56.15	229.27	1908.16	-1875.34	-825.5	-1309.76	5737636.19	566035.24
2653	56.13	229.23	1908.72	-1875.9	-826.03	-1310.4	5737635.65	566034.6
2654	56.11	229.19	1909.27	-1876.45	-826.57	-1311.03	5737635.11	566033.97
2655	56.09	229.15	1909.83	-1877.01	-827.11	-1311.66	5737634.57	566033.34
2656	56.07	229.12	1910.38	-1877.56	-827.65	-1312.3	5737634.03	566032.71
2657	56.05	229.08	1910.94	-1878.12	-828.19	-1312.93	5737633.49	566032.07
2658	56.03	229.04	1911.49	-1878.67	-828.73	-1313.56	5737632.95	566031.44
2659	56.02	229.01	1912.05	-1879.23	-829.28	-1314.19	5737632.41	566030.81
2660	56.02	228.97	1912.61	-1879.79	-829.83	-1314.81	5737631.86	566030.19
2661	56.02	228.94	1913.17	-1880.35	-830.37	-1315.43	5737631.31	566029.57
2662	56.02	228.91	1913.73	-1880.91	-830.92	-1316.06	5737630.76	566028.95
2663	56.02	228.88	1914.29	-1881.47	-831.47	-1316.68	5737630.21	566028.32
2664	56.03	228.84	1914.85	-1882.03	-832.02	-1317.3	5737629.66	566027.7
2665	56.03	228.81	1915.4	-1882.58	-832.57	-1317.92	5737629.11	566027.08
2666	56.03	228.78	1915.96	-1883.14	-833.12	-1318.54	5737628.56	566026.46
2667	56.03	228.75	1916.52	-1883.7	-833.67	-1319.16	5737628.01	566025.84
2668	56.03	228.71	1917.08	-1884.26	-834.22	-1319.79	5737627.47	566025.22
2669	56.03	228.68	1917.64	-1884.82	-834.77	-1320.41	5737626.92	566024.59
2670	56.03	228.65	1918.2	-1885.38	-835.32	-1321.03	5737626.37	566023.97
2671	56.03	228.62	1918.76	-1885.94	-835.86	-1321.65	5737625.82	566023.35
2672	56.03	228.58	1919.31	-1886.49	-836.41	-1322.27	5737625.27	566022.73
2673	56.04	228.55	1919.87	-1887.05	-836.96	-1322.89	5737624.72	566022.11
2674	56.04	228.52	1920.43	-1887.61	-837.51	-1323.52	5737624.17	566021.49
2675	56.04	228.49	1920.99	-1888.17	-838.06	-1324.14	5737623.62	566020.86
2676	56.04	228.45	1921.55	-1888.73	-838.61	-1324.76	5737623.07	566020.24
2677	56.04	228.42	1922.11	-1889.29	-839.16	-1325.38	5737622.52	566019.62
2678	56.04	228.39	1922.67	-1889.85	-839.71	-1326	5737621.98	566019
2679	56.04	228.36	1923.23	-1890.41	-840.26	-1326.62	5737621.43	566018.38
2680	56.04	228.32	1923.78	-1890.96	-840.8	-1327.25	5737620.88	566017.76

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2681	56.04	228.29	1924.34	-1891.52	-841.35	-1327.87	5737620.33	566017.13
2682	56.04	228.26	1924.9	-1892.08	-841.9	-1328.49	5737619.78	566016.51
2683	56.05	228.23	1925.46	-1892.64	-842.45	-1329.11	5737619.23	566015.89
2684	56.05	228.19	1926.02	-1893.2	-843	-1329.73	5737618.68	566015.27
2685	56.05	228.16	1926.58	-1893.76	-843.55	-1330.35	5737618.13	566014.65
2686	56.05	228.13	1927.14	-1894.32	-844.1	-1330.98	5737617.58	566014.03
2687	56.05	228.1	1927.7	-1894.88	-844.65	-1331.6	5737617.04	566013.4
2688	56.06	228.08	1928.25	-1895.43	-845.2	-1332.22	5737616.48	566012.79
2689	56.06	228.07	1928.81	-1895.99	-845.76	-1332.83	5737615.92	566012.17
2690	56.07	228.07	1929.37	-1896.55	-846.31	-1333.45	5737615.37	566011.55
2691	56.08	228.06	1929.92	-1897.1	-846.87	-1334.07	5737614.81	566010.94
2692	56.08	228.05	1930.48	-1897.66	-847.43	-1334.68	5737614.26	566010.32
2693	56.09	228.04	1931.04	-1898.22	-847.98	-1335.3	5737613.7	566009.7
2694	56.1	228.03	1931.59	-1898.77	-848.54	-1335.92	5737613.14	566009.09
2695	56.1	228.02	1932.15	-1899.33	-849.09	-1336.53	5737612.59	566008.47
2696	56.11	228.01	1932.71	-1899.89	-849.65	-1337.15	5737612.03	566007.85
2697	56.12	228.01	1933.27	-1900.45	-850.21	-1337.77	5737611.48	566007.23
2698	56.12	228	1933.82	-1901	-850.76	-1338.38	5737610.92	566006.62
2699	56.13	227.99	1934.38	-1901.56	-851.32	-1339	5737610.36	566006
2700	56.14	227.98	1934.94	-1902.12	-851.88	-1339.62	5737609.81	566005.38
2701	56.14	227.97	1935.49	-1902.67	-852.43	-1340.23	5737609.25	566004.77
2702	56.15	227.96	1936.05	-1903.23	-852.99	-1340.85	5737608.7	566004.15
2703	56.16	227.96	1936.61	-1903.79	-853.54	-1341.47	5737608.14	566003.53
2704	56.16	227.95	1937.16	-1904.34	-854.1	-1342.09	5737607.58	566002.92
2705	56.17	227.94	1937.72	-1904.9	-854.66	-1342.7	5737607.03	566002.3
2706	56.18	227.93	1938.28	-1905.46	-855.21	-1343.32	5737606.47	566001.68
2707	56.18	227.92	1938.84	-1906.02	-855.77	-1343.94	5737605.91	566001.07
2708	56.19	227.91	1939.39	-1906.57	-856.32	-1344.55	5737605.36	566000.45
2709	56.2	227.9	1939.95	-1907.13	-856.88	-1345.17	5737604.8	565999.83
2710	56.21	227.9	1940.51	-1907.69	-857.44	-1345.79	5737604.25	565999.22
2711	56.21	227.89	1941.06	-1908.24	-857.99	-1346.4	5737603.69	565998.6
2712	56.22	227.88	1941.62	-1908.8	-858.55	-1347.02	5737603.13	565997.98
2713	56.23	227.87	1942.18	-1909.36	-859.1	-1347.64	5737602.58	565997.37
2714	56.23	227.86	1942.73	-1909.91	-859.66	-1348.25	5737602.02	565996.75
2715	56.24	227.85	1943.29	-1910.47	-860.22	-1348.87	5737601.47	565996.13
2716	56.25	227.85	1943.85	-1911.03	-860.77	-1349.49	5737600.91	565995.51
2717	56.26	227.84	1944.4	-1911.58	-861.33	-1350.1	5737600.35	565994.9
2718	56.28	227.84	1944.95	-1912.13	-861.89	-1350.72	5737599.79	565994.28
2719	56.31	227.83	1945.5	-1912.68	-862.45	-1351.34	5737599.23	565993.66
2720	56.33	227.83	1946.06	-1913.24	-863.01	-1351.96	5737598.67	565993.04
2721	56.36	227.83	1946.61	-1913.79	-863.57	-1352.58	5737598.11	565992.42
2722	56.38	227.83	1947.16	-1914.34	-864.13	-1353.2	5737597.55	565991.8
2723	56.4	227.83	1947.71	-1914.89	-864.69	-1353.82	5737596.99	565991.19
2724	56.43	227.82	1948.26	-1915.44	-865.25	-1354.43	5737596.43	565990.57
2725	56.45	227.82	1948.81	-1915.99	-865.82	-1355.05	5737595.87	565989.95
2726	56.48	227.82	1949.36	-1916.54	-866.38	-1355.67	5737595.31	565989.33
2727	56.5	227.82	1949.91	-1917.09	-866.94	-1356.29	5737594.75	565988.71
2728	56.52	227.82	1950.46	-1917.64	-867.5	-1356.91	5737594.19	565988.09
2729	56.55	227.81	1951.01	-1918.19	-868.06	-1357.53	5737593.63	565987.48
2730	56.57	227.81	1951.56	-1918.74	-868.62	-1358.14	5737593.06	565986.86
2731	56.6	227.81	1952.11	-1919.29	-869.18	-1358.76	5737592.5	565986.24
2732	56.62	227.81	1952.66	-1919.84	-869.74	-1359.38	5737591.94	565985.62
2733	56.64	227.8	1953.21	-1920.39	-870.3	-1360	5737591.38	565985
2734	56.67	227.8	1953.77	-1920.95	-870.86	-1360.62	5737590.82	565984.38
2735	56.69	227.8	1954.32	-1921.5	-871.42	-1361.24	5737590.26	565983.77
2736	56.72	227.8	1954.87	-1922.05	-871.98	-1361.85	5737589.7	565983.15
2737	56.74	227.8	1955.42	-1922.6	-872.54	-1362.47	5737589.14	565982.53
2738	56.76	227.79	1955.97	-1923.15	-873.1	-1363.09	5737588.58	565981.91

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2739	56.79	227.79	1956.52	-1923.7	-873.66	-1363.71	5737588.02	565981.29
2740	56.81	227.79	1957.07	-1924.25	-874.22	-1364.33	5737587.46	565980.67
2741	56.84	227.79	1957.62	-1924.8	-874.78	-1364.95	5737586.9	565980.05
2742	56.86	227.79	1958.17	-1925.35	-875.35	-1365.57	5737586.34	565979.44
2743	56.88	227.78	1958.72	-1925.9	-875.91	-1366.18	5737585.78	565978.82
2744	56.91	227.78	1959.27	-1926.45	-876.47	-1366.8	5737585.22	565978.2
2745	56.93	227.78	1959.82	-1927	-877.03	-1367.42	5737584.65	565977.58
2746	56.96	227.77	1960.36	-1927.54	-877.6	-1368.04	5737584.09	565976.96
2747	56.99	227.76	1960.9	-1928.08	-878.16	-1368.67	5737583.52	565976.33
2748	57.01	227.75	1961.44	-1928.62	-878.73	-1369.29	5737582.95	565975.71
2749	57.04	227.75	1961.98	-1929.16	-879.3	-1369.91	5737582.39	565975.09
2750	57.06	227.74	1962.52	-1929.7	-879.86	-1370.53	5737581.82	565974.47
2751	57.09	227.73	1963.06	-1930.24	-880.43	-1371.16	5737581.25	565973.85
2752	57.12	227.73	1963.6	-1930.78	-881	-1371.78	5737580.69	565973.22
2753	57.14	227.72	1964.14	-1931.32	-881.56	-1372.4	5737580.12	565972.6
2754	57.17	227.71	1964.68	-1931.86	-882.13	-1373.02	5737579.55	565971.98
2755	57.19	227.7	1965.22	-1932.4	-882.7	-1373.64	5737578.99	565971.36
2756	57.22	227.7	1965.76	-1932.94	-883.26	-1374.27	5737578.42	565970.74
2757	57.25	227.69	1966.3	-1933.48	-883.83	-1374.89	5737577.85	565970.11
2758	57.27	227.68	1966.84	-1934.02	-884.4	-1375.51	5737577.29	565969.49
2759	57.3	227.67	1967.38	-1934.56	-884.96	-1376.13	5737576.72	565968.87
2760	57.32	227.67	1967.92	-1935.1	-885.53	-1376.75	5737576.15	565968.25
2761	57.35	227.66	1968.46	-1935.64	-886.1	-1377.38	5737575.59	565967.63
2762	57.38	227.65	1969	-1936.18	-886.66	-1378	5737575.02	565967
2763	57.4	227.64	1969.54	-1936.72	-887.23	-1378.62	5737574.45	565966.38
2764	57.43	227.64	1970.08	-1937.26	-887.8	-1379.24	5737573.89	565965.76
2765	57.46	227.63	1970.62	-1937.8	-888.36	-1379.87	5737573.32	565965.14
2766	57.48	227.62	1971.16	-1938.34	-888.93	-1380.49	5737572.75	565964.51
2767	57.51	227.62	1971.7	-1938.88	-889.5	-1381.11	5737572.19	565963.89
2768	57.53	227.61	1972.24	-1939.42	-890.06	-1381.73	5737571.62	565963.27
2769	57.56	227.6	1972.78	-1939.96	-890.63	-1382.35	5737571.05	565962.65
2770	57.59	227.59	1973.32	-1940.5	-891.2	-1382.98	5737570.49	565962.03
2771	57.61	227.59	1973.87	-1941.05	-891.76	-1383.6	5737569.92	565961.4
2772	57.64	227.58	1974.41	-1941.59	-892.33	-1384.22	5737569.35	565960.78
2773	57.66	227.57	1974.95	-1942.13	-892.9	-1384.84	5737568.79	565960.16
2774	57.69	227.56	1975.48	-1942.66	-893.47	-1385.47	5737568.22	565959.54
2775	57.71	227.55	1976.01	-1943.19	-894.04	-1386.09	5737567.64	565958.91
2776	57.74	227.55	1976.54	-1943.72	-894.61	-1386.71	5737567.07	565958.29
2777	57.76	227.54	1977.08	-1944.26	-895.18	-1387.34	5737566.5	565957.66
2778	57.78	227.53	1977.61	-1944.79	-895.75	-1387.96	5737565.93	565957.04
2779	57.81	227.52	1978.14	-1945.32	-896.33	-1388.59	5737565.36	565956.41
2780	57.83	227.51	1978.67	-1945.85	-896.9	-1389.21	5737564.78	565955.79
2781	57.85	227.5	1979.2	-1946.38	-897.47	-1389.84	5737564.21	565955.17
2782	57.88	227.49	1979.73	-1946.91	-898.04	-1390.46	5737563.64	565954.54
2783	57.9	227.48	1980.27	-1947.45	-898.62	-1391.08	5737563.07	565953.92
2784	57.92	227.47	1980.8	-1947.98	-899.19	-1391.71	5737562.49	565953.29
2785	57.95	227.47	1981.33	-1948.51	-899.76	-1392.33	5737561.92	565952.67
2786	57.97	227.46	1981.86	-1949.04	-900.33	-1392.96	5737561.35	565952.04
2787	58	227.45	1982.39	-1949.57	-900.9	-1393.58	5737560.78	565951.42
2788	58.02	227.44	1982.93	-1950.11	-901.48	-1394.21	5737560.21	565950.8
2789	58.04	227.43	1983.46	-1950.64	-902.05	-1394.83	5737559.63	565950.17
2790	58.07	227.42	1983.99	-1951.17	-902.62	-1395.46	5737559.06	565949.55
2791	58.08	227.41	1984.52	-1951.7	-903.2	-1396.08	5737558.49	565948.92
2792	58.1	227.41	1985.04	-1952.22	-903.77	-1396.71	5737557.91	565948.3
2793	58.12	227.4	1985.57	-1952.75	-904.35	-1397.33	5737557.33	565947.67
2794	58.13	227.4	1986.1	-1953.28	-904.92	-1397.96	5737556.76	565947.05
2795	58.15	227.39	1986.62	-1953.8	-905.5	-1398.58	5737556.18	565946.42
2796	58.17	227.38	1987.15	-1954.33	-906.08	-1399.21	5737555.61	565945.79

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2797	58.18	227.38	1987.68	-1954.86	-906.65	-1399.83	5737555.03	565945.17
2798	58.2	227.37	1988.2	-1955.38	-907.23	-1400.46	5737554.46	565944.54
2799	58.22	227.37	1988.73	-1955.91	-907.8	-1401.08	5737553.88	565943.92
2800	58.23	227.36	1989.25	-1956.43	-908.38	-1401.71	5737553.3	565943.29
2801	58.25	227.35	1989.78	-1956.96	-908.96	-1402.33	5737552.73	565942.67
2802	58.27	227.35	1990.31	-1957.49	-909.53	-1402.96	5737552.15	565942.04
2803	58.28	227.34	1990.83	-1958.01	-910.11	-1403.59	5737551.58	565941.42
2804	58.3	227.34	1991.36	-1958.54	-910.68	-1404.21	5737551	565940.79
2805	58.32	227.33	1991.89	-1959.07	-911.26	-1404.84	5737550.42	565940.17
2806	58.33	227.32	1992.41	-1959.59	-911.83	-1405.46	5737549.85	565939.54
2807	58.35	227.32	1992.94	-1960.12	-912.41	-1406.09	5737549.27	565938.91
2808	58.37	227.31	1993.47	-1960.65	-912.99	-1406.71	5737548.7	565938.29
2809	58.38	227.31	1993.99	-1961.17	-913.56	-1407.34	5737548.12	565937.66
2810	58.4	227.3	1994.52	-1961.7	-914.14	-1407.96	5737547.54	565937.04

APPENDIX 2a

BREAM A5A

Petrophysics Evaluation Summary



Esso Australia Pty Ltd.
Exploration Department

**Bream A5A
Formation Evaluation
Log Interpretation Report**

**Petrophysicist: A. Cernovskis
November 2005**

Bream A5A Log Interpretation

The Bream A5A well is a re-drill directional well sidetracked from the existing A5 well. The primary objective of the well was to access the N-1 reservoir in a crestal location. Bream A5A well kicked off from 898m and was drilled in 8½" hole with one bit run to a total depth of 2810 mMDRT (1994.5 mTVDRT). Reeves Compact Shuttle system was run on drill pipe to bottom where the tools were deployed and the hole logged upwards from 2807 m to 2416 m. The well was completed with a 7" production casing to 2809mMD and 3½" tubing to 2470mMD.

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	Run	Company	Top (m MDRT)	Bottom (m MDRT)
MCG-MDN-MPD-MSS-MDL	1	REEVES	2791.3	2806.4

Deviation

The well angle across the N-1 gas reservoir ranged from 56.27⁰ at 2515.4mMD to 58.07⁰ at 2790.16mMD.

Mud Data

Mud Type 8½" hole section: PHPA, Glycol-CP and BARACOR-129
BARA CARB 25 and BARACARB 100
Mud Weight: 9.9-10.1 ppg
Rm: 0.115 @ 25⁰ C
Rmf: 0.089 @ 25⁰ C
Rmc: 0.181 @ 25⁰ C
BHT: 83 ⁰C @ 2763mMD

Hole Size

8½ inch 895.0 –2810.0mMDRT (Driller's Depth)

Data Acquisition & Log Quality

No problems were encountered with acquisition of key well log data. Data quality of the GR, Density-Neutron and Resistivity logs is acceptable, all logs were depth correlated to Anadrill MWD) GR.

Data Processing

The GRGC (Gamma Ray) was depth aligned with the Anadrill MWD GR then the DEN (bulk density, bottom quadrant) and NPRL (thermal neutron porosity) curves were depth aligned to the GRGC curve. Depth alignment has been achieved through qualitative assessment of log character across sand shale dolomite and coal.

All coals were manually picked from the logs and Flag_Coal was created, a temperature curve (Temperature) was also generated and all new curves were included as inputs for the final petrophysical interpretation.

INTERPRETATION

Logs Used

The primary logs used in the interpretation were DGLL (Groningen Laterolog Resistivity), GRGC (Gamma Ray), DEN (Bulk Density) and NPRL (thermal neutron porosity in LPU).

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 40,000ppm NaCl equivalent (Figure 1).

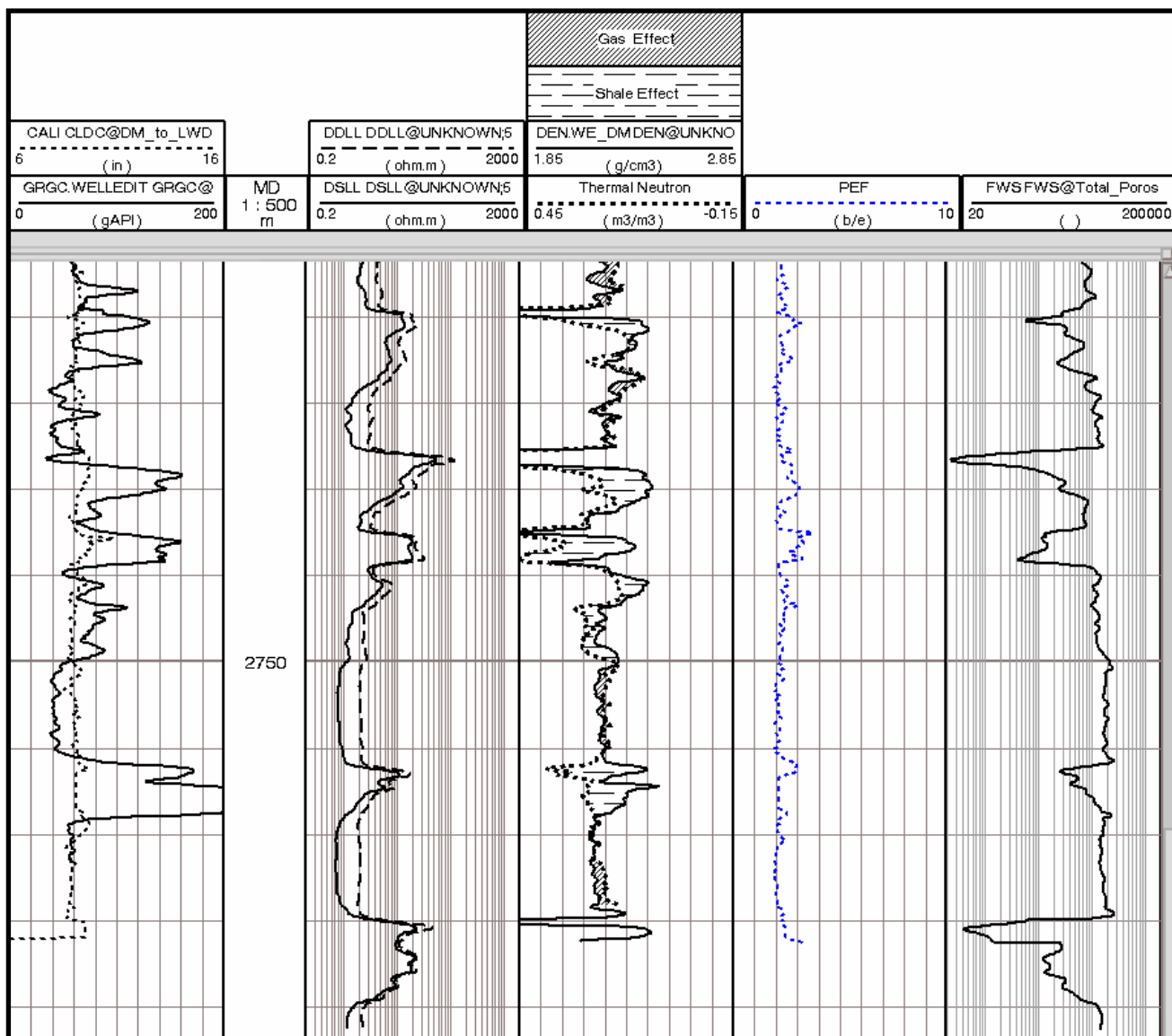


Figure 1. Apparent Formation Water Salinity (FWS)

Hydrocarbon Type Identification

Gurnard Formation 2508-2529.6mMDRT

The reservoir sand units within this interval are interpreted as gas saturated, based on the Density-Neutron log character, separation of near and far Neutron curves (DNFD and DNND), PHIX-DT log methodology and associated elevated ditch gas readings. Hydrocarbon fluorescence was not described in the ditch cuttings.

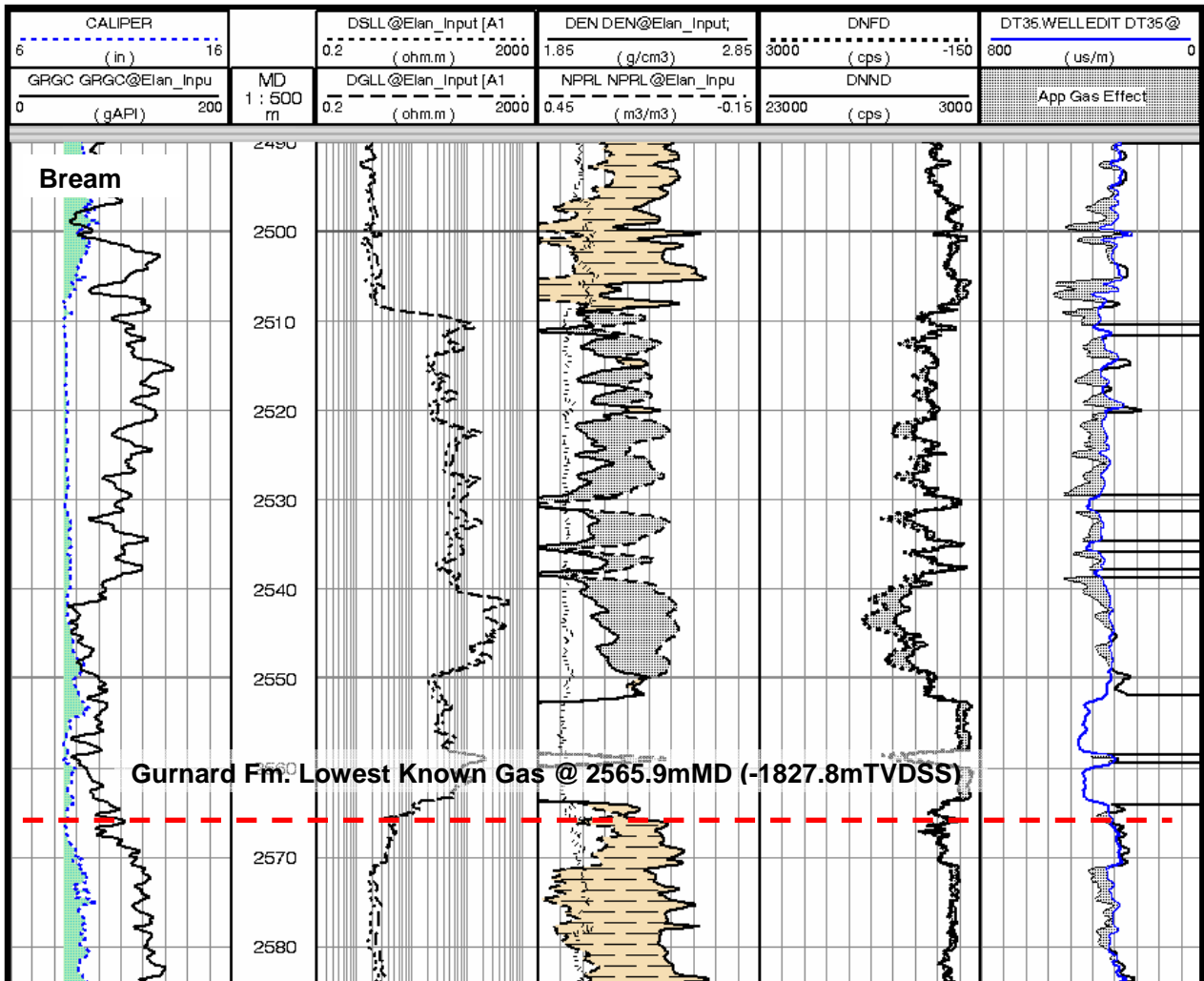


Figure 2. Gurnard Formation, Hydrocarbon Type and Lowest Known Gas Determination

N-1 Zone 2632.3 - 2761.7mMDRT

The reservoir units across this interval contain both gas and oil. The Gas-Oil Contact is interpreted at 2692.0mMDRT (-1897.7mTVDSS) and the Oil-Water Contact is interpreted at 2701.2mMDRT (-1902.8mTVDSS), refer Figure 3. Hydrocarbon fluorescence was described in the ditch cuttings across the interval 2630-2640mMDRT; trace dull pale green yellow-white fluorescence, no direct cut, very slow diffuse yellow crush cut, moderate thick yellow ring residue.

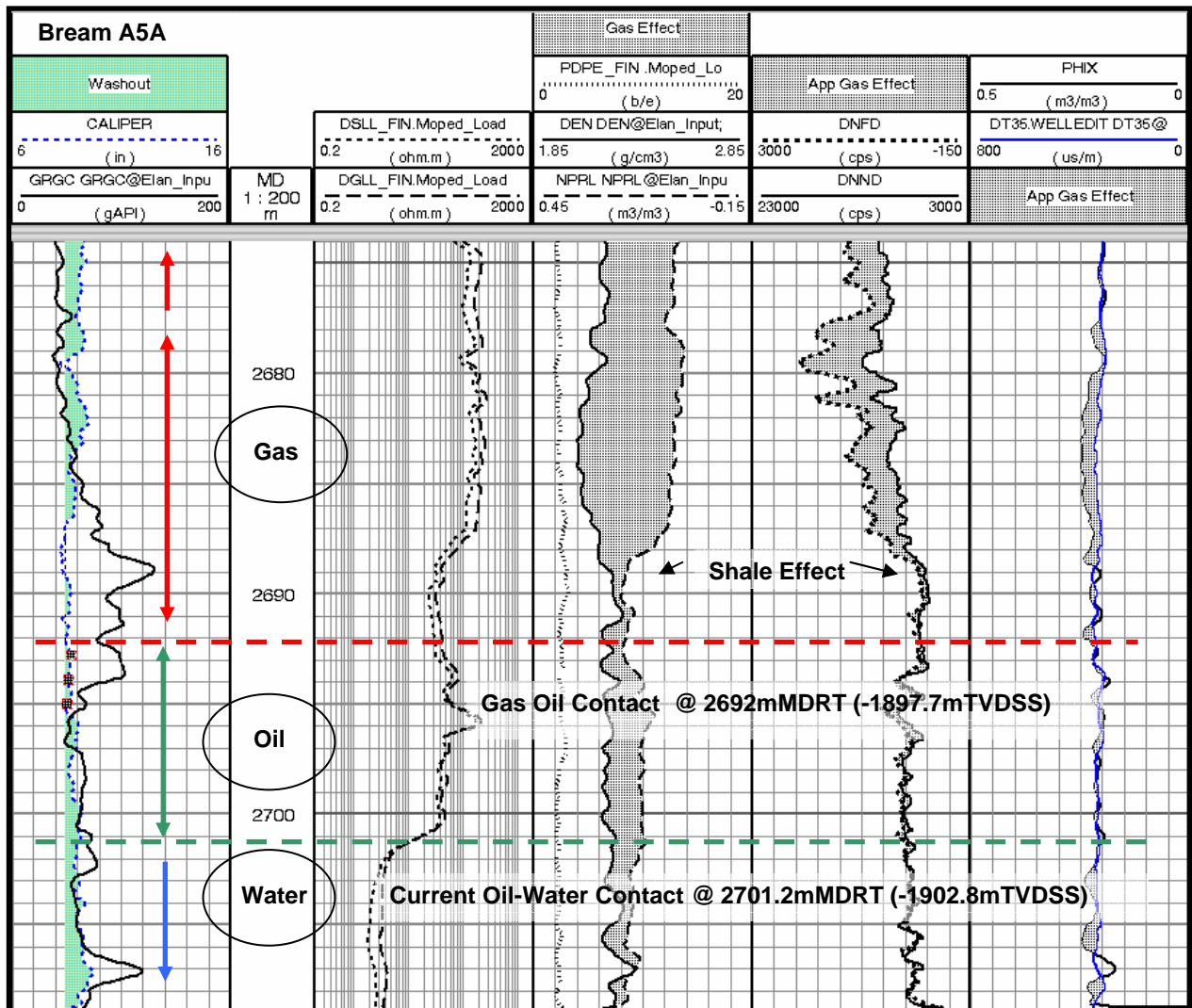


Figure 3. N-1 Reservoir, Hydrocarbon Type, Gas-Oil Contact, Oil-Water Contact Determination

Shale 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 Processes

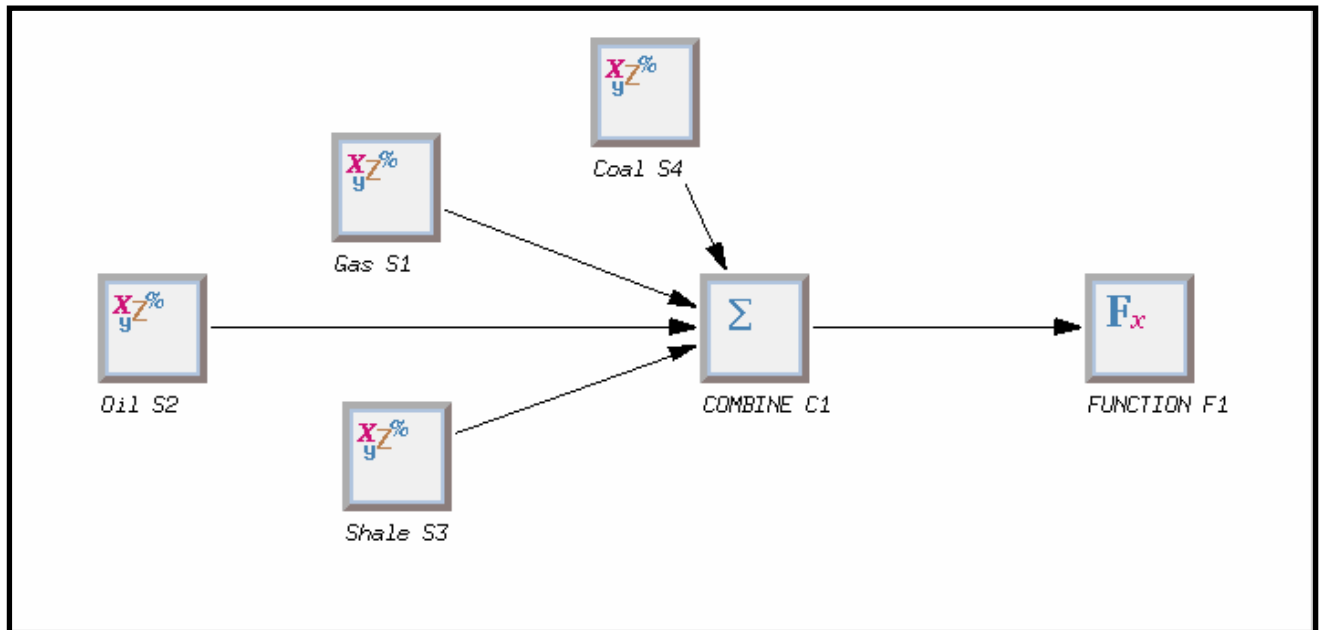


Figure 4. Elan + Model and Module Configuration

ELAN Input Channels

	Compound Name Spec	BREAM A5A	
TEMP_CH	TEMP;*	TEMP.WELLEDIT TEMP@Elan_Input;1 .WELLEDIT	▼
RHOB_IFAC_CH	IFRH;*		▼
NPHI_IFAC_CH	INPH;*		▼
RHOB_CH	DEN:BPB;*	DEN DEN@Elan_Input;8 [A1266731]	▼
NPHI_CH	NPRL:BPB;*	NPRL NPRL@Elan_Input;9 [A1266733]	▼
CUDC_CH/RT_CH	DGLL:BPB;*	DGLL DGLL@Elan_Input;4 [A1266725]	▼
GR_CH	GRGC:BPB;*	GRGC GRGC@Elan_Input;8 [A1266729]	▼
PRB1_CH	FLAG_RHOH;*	FLAG_RHOH FLAG_RHOH@Elan_Input;4 [A1266731]	▼
PRB2_CH	PRB2;*		▼
PRB3_CH	PRB3;*		▼
PRB4_CH	FLAG_COAL;*	FLAG_COAL FLAG_COAL@Elan_Input;5 [A1266731]	▼
M_CH	MXP;*		▼
N_CH	SXP;*		▼

ELAN Global Parameters

Reference Index	MD
Processing Interval	2490 – 2790m
Sampling Rate	0.1m
Uncertainty Channel	FALSE
Clay Input	DRY
Special Fluids	IMMOVABLE_HYDROCARBON

ELAN Zone Definition

Name	Bottom To Top
N-1 Oil/Water	2790.0000(m) To 2692.0002(m)
N-1 Gas	2692.0002(m) To 2680.0002(m)
N-1Mid	2680.0002(m) To 2660.0000(m)
N-1Upper	2660.0000(m) To 2632.0000(m)
Shale	2632.0000(m) To 2565.9998(m)
Gurnard Gas	2565.9998(m) To 2509.0000(m)
TOL	2509.0000(m) To 2490.0000(m)

ELAN Process Definition

Process	SOLVE1 "Gas"
Equations	RHOB NPHI CUDC_DWA GR CT1 CT3
Volumes	QUAR ORTH ILLI XWAT UWAT XGAS UGAS
Constraint Zones	Bottom Top
UNDEFINED	2790.0000(m) 2490.0000(m)
Constraints Applied	
	UNDEFINED - WaterBaseMud_SXO_gt_SW
	UNDEFINED - IrreducibleXWater
	UNDEFINED - IrreducibleUWater
Process	SOLVE2 "Oil"
Equations	RHOB NPHI CUDC_DWA GR CT2 CT3
Volumes	QUAR ORTH ILLI XWAT UWAT XOIL UOIL
Constraint Zones	Bottom Top
UNDEFINED	2790.0000(m) 2490.0000(m)
Constraints Applied	
	UNDEFINED - IrreducibleXWater
	UNDEFINED - IrreducibleUWater
	UNDEFINED - WaterBaseMud_SXO_gt_SW
Process	SOLVE3 "Shale"
Equations	RHOB NPHI CUDC_DWA GR
Volumes	QUAR ILLI XWAT UWAT
Constraint Zones	Bottom Top
UNDEFINED	2790.0000(m) 2490.0000(m)

Process	SOLVE4 "Coal"
Equations	RHOB
Volumes	COAL
Constraint Zones	Bottom Top
UNDEFINED	2790.0000(m) 2490.0000(m)
Process	COMBINE 1 "COMBINE"
Order	SOL.2 SOL.1 SOL.3 SOL.4
Combine Method	
	Internal Average
Probability Functions	
	probability(SOL.4, PRB4_CH)

Probability Functions

```

probability(SOL.4, PRB4_CH)

prob3 = linear(ILLI_VOL,SOL.3, 0.3, 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 SWT SUWI PIGN PHIT

User-defined Function

```

swt_cmp=(UWAT_VOL+XBWA_VOL)/(UWAT_VOL+XBWA_VOL+UGAS_VOL)
output(SWT,swt_cmp)

```

ELAN Different Parameters

Parameters	N-1 Oil/W	N-1 Gas	N-1Mid	N-1Upper	Shale	Gurnard G	TOL
RHOB_UWAT (g/cm ³)	0.968	0.958	0.958	0.958	0.958	0.958	0.958
CXDC_XWAT (mS/m)	20.038	19.444	19.371	19.249	19.079	18.68	18.336
CXDC_XBWA (mS/m)	11.445	11.105	11.064	10.994	10.897	10.669	10.471
CUDC_UWAT (mS/m)	11.812	11.5	11.462	11.397	11.308	11.095	10.911
CUDC_UBWA (mS/m)	3.092	3	2.989	2.97	2.944	2.882	2.829
GR_QUAR (gAPI)	40	45	40	40	40	40	40
GR_COAL (gAPI)	40	40	40	40	40	10	10
CT1_UGAS ()	-0.7	-0.9	-0.6	-0.9	-0.7	-0.7	-0.7
CT2_UOIL ()	-0.9	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
CUDC_UNC_ZP (mS/m)	0.052	0.051	0.051	0.051	0.05	0.05	0.05
CUDC_UNC_WM ()	0.8	0.8	0.8	0.8	0.8	1	0.8
GR_UNC_WM ()	0.3	0.3	0.3	0.3	0.3	0	0
CT2_UNC_WM ()	0.9	0.1	0.1	0.1	0.1	0.1	0.1
NPHI_IFAC_ZP()	0.5	0.1	0.9	0.9	0.5	0.5	0.5

ELAN Same Parameters

Parameter	Value	Parameter	Value
RHOB_QUAR	2.650(g/cm ³)	RHOB_CALC	2.710(g/cm ³)
RHOB_DOLO	2.847(g/cm ³)	RHOB_ORTH	2.570(g/cm ³)
RHOB_PYRI	4.990(g/cm ³)	RHOB_GLAU	2.650(g/cm ³)
RHOB_ILLI	2.780(g/cm ³)	RHOB_KAOL	2.620(g/cm ³)
RHOB_COAL	1.200(g/cm ³)	RHOB_IGNE	3.000(g/cm ³)
RHOB_XWAT	1.000(g/cm ³)	RHOB_XOIL	0.600(g/cm ³)
RHOB_UOIL	0.600(g/cm ³)	RHOB_XGAS	-0.026(g/cm ³)
RHOB_UGAS	-0.026(g/cm ³)	RHOB_XBWA	1.000(g/cm ³)
NPHI_QUAR	-0.059(m ³ /m ³)	NPHI_CALC	0.000(m ³ /m ³)
NPHI_DOLO	0.032(m ³ /m ³)	NPHI_ORTH	-0.010(m ³ /m ³)
NPHI_PYRI	0.008(m ³ /m ³)	NPHI_GLAU	0.410(m ³ /m ³)
NPHI_ILLI	0.247(m ³ /m ³)	NPHI_KAOL	0.450(m ³ /m ³)
NPHI_COAL	0.450(m ³ /m ³)	NPHI_XWAT	1.000(m ³ /m ³)
NPHI_UWAT	1.000(m ³ /m ³)	NPHI_XOIL	1.000(m ³ /m ³)
NPHI_UOIL	1.000(m ³ /m ³)	NPHI_XGAS	0.142(m ³ /m ³)
NPHI_UGAS	0.142(m ³ /m ³)	NPHI_XBWA	1.000(m ³ /m ³)
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_ILLI	9.900()	U_KAOL	5.100()
U_COAL	1.000()	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_CALC	11.000(gAPI)

Parameter	Value	Parameter	Value
GR_DOLO	3.000(gAPI)	GR_ORTH	200.000(gAPI)
GR_PYRI	0.000(gAPI)	GR_GLAU	150.000(gAPI)
GR_ILLI	235.000(gAPI)	GR_KAOL	98.000(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()
CT1_UOIL	0.000()	CT1_XGAS	1.000()
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	-0.050()
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	0.154(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	0.410(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)

Parameter	Value	Parameter	Value
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)	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)
RHOB_UNC_WM	1.000()	NPHI_UNC_WM	1.000()
DT_UNC_WM	0.300()	U_UNC_WM	0.400()
CXDC_UNC_WM	0.500()	EX1_UNC_WM	1.000()
CT1_UNC_WM	0.900()	CT3_UNC_WM	0.900()
CT4_UNC_WM	1.000()	VOLS_UNC_WM	1.000()
RHOB_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

A summary of the results of the interpretation is presented in Table 1.

An additional 39.9mMD (22.0m TVT) net gas saturated sand was intersected within the Gurnard Formation across the interval 2508.4-2529.6mMDRT (-1796.2-1807.9mTVDSS).

The top of the N-1 reservoir was intersected at 2632.3mMDRT (--1864.4mTVDSS) and the top of the Base Waste Zone was intersected at 2639.3mMDRT (-1868.3mTVDSS). Within the N-1 reservoir there is a total 52.1mMD (29.0mTVT) net gas and 9.2mMD (5.1mTVT) net oil sand. The gas-oil contact was intersected at 2692.0mMD (-1897.7mTVDSS) and the oil-water contact was intersected at 2701.2mMD (-1902.8mTVDSS).

Graphical presentations of the interpretation are presented in Figures 4 and 5.

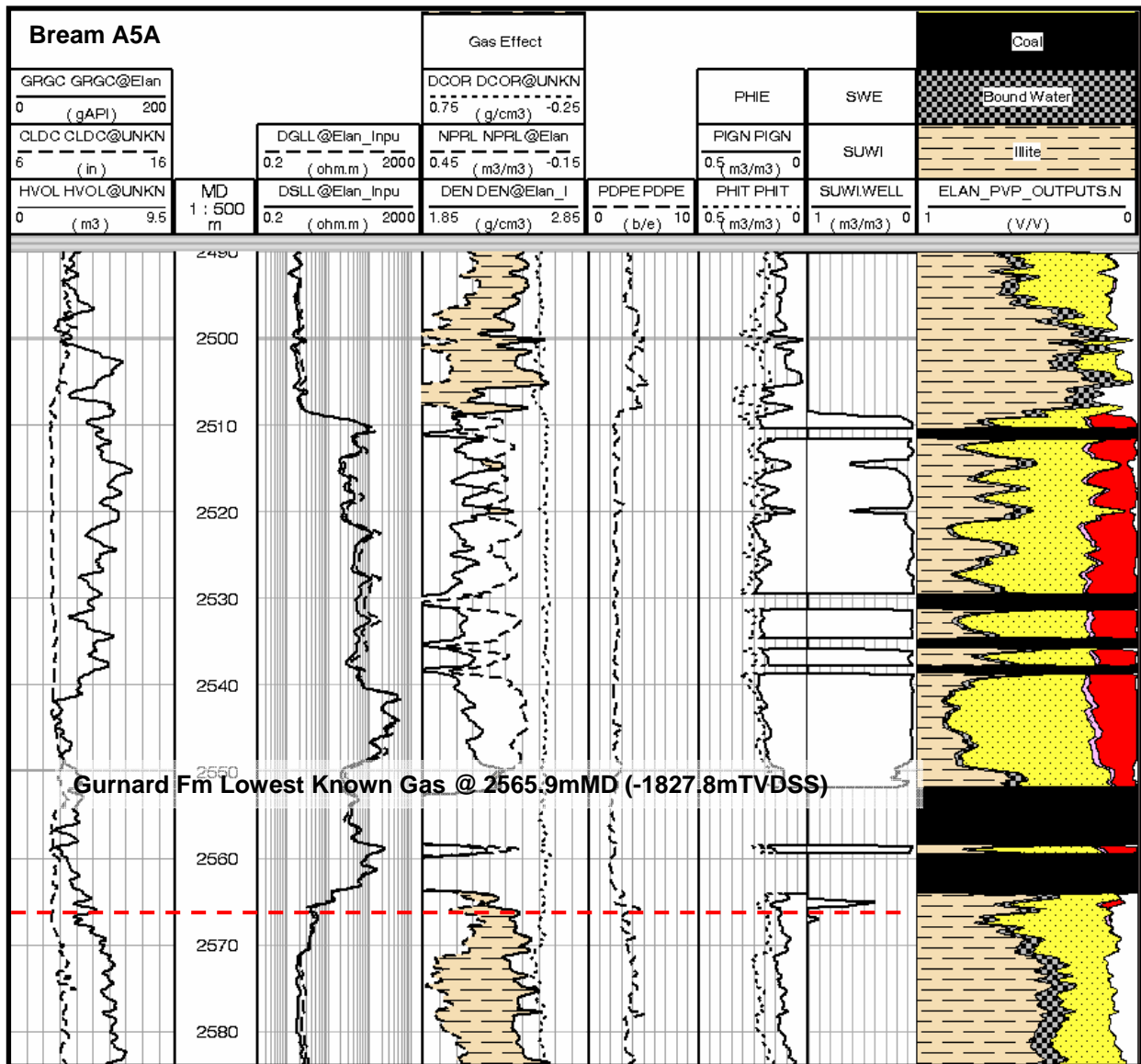


Figure 4. Gurnard Fm Petrophysical Interpretation

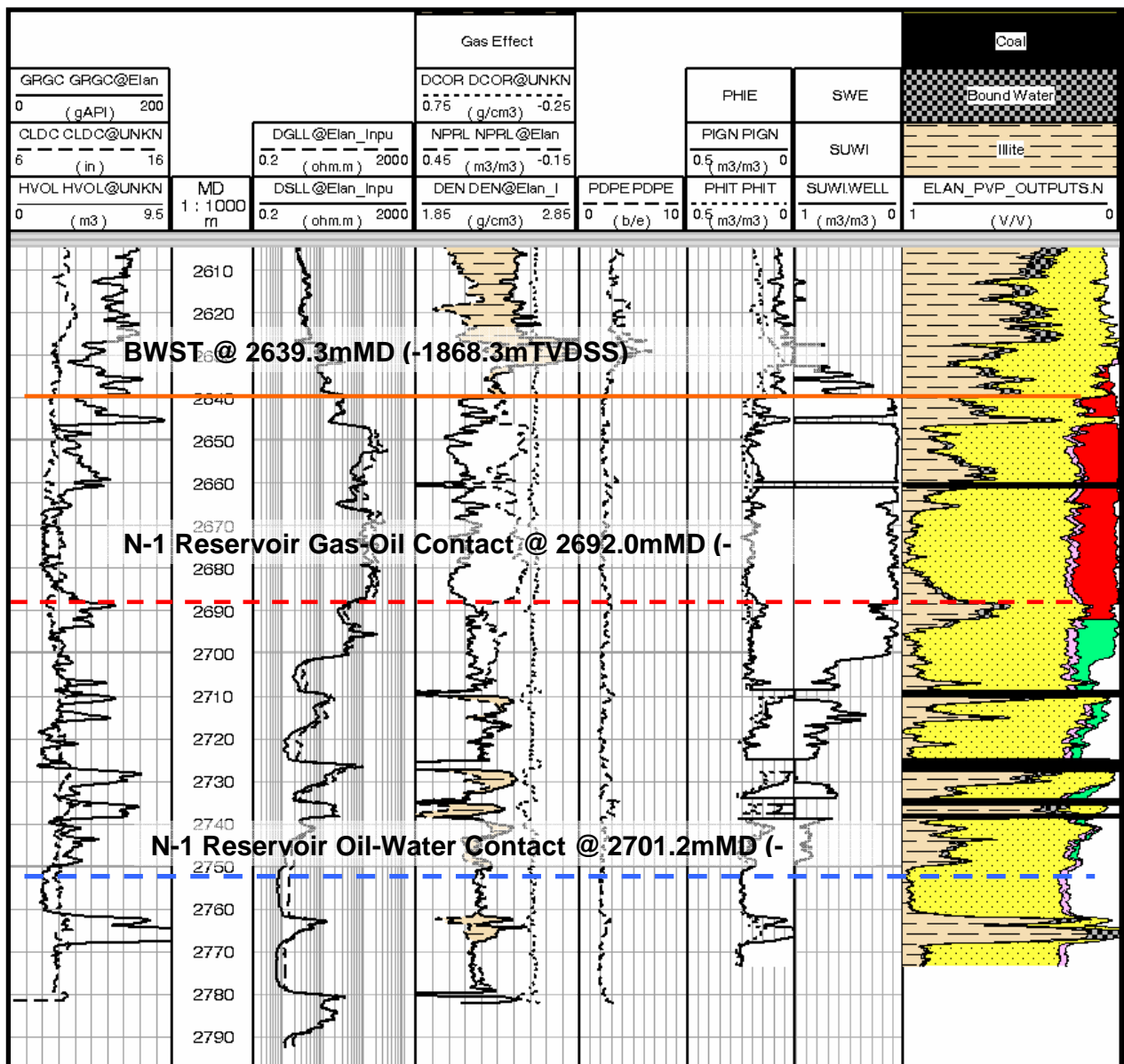


Figure 5. N-1 Reservoir Petrophysical Interpretation

Bream A5A													
Petrophysical Summary 2490 - 2800m MD													
Depth Reference:									Primary: MDRT				
Mean VCL, Mean PHIE (or PIGN), Mean SWE (or SUWI) is based on a PHIE or PIGN cutoff:									0.08 for Gas, 0.12 for oil and water				
Zone	Top Depth mMD	Bottom Depth mMD	Top Depth mTVDSS	Bottom Depth mTVDSS	Gross Thickness mMD	Gross Thickness mTVD	Net/Gross	Mean VCL	Mean PHIE	Mean SWE	Comments	Net Pay Thickness mMD	Net Pay Thickness mTVT
TOL_TCC	2508.4	2529.6	1796.2	1807.9	21.2	11.7	0.92	0.36	0.195	0.10	Gas	19.5	10.7
TOL_TCC	2531.2	2537.9	1808.8	1812.4	6.7	3.7	0.79	0.33	0.200	0.08	Gas	5.3	2.9
TOL_TCC	2538.8	2551.7	1812.9	1820.0	12.9	7.1	1.00	0.24	0.182	0.07	Gas	12.9	7.1
TOL_TCC	2558.6	2559.5	1823.8	1824.3	0.9	0.5	1.00	0.37	0.156	0.15	Gas	0.9	0.5
TOL_TCC	2564.5	2565.9	1827.0	1827.8	1.4	0.8	1.00	0.51	0.130	0.69	Gas	1.4	0.8
	Lowest Known Gas @ 2565.9mMD (-1827.8mTVDSS)												
N-1	2632.3	2639.3	1864.4	1868.3	7.0	3.9	0.37	0.43	0.095	0.42	Gas	2.6	1.4
	BWST @ 2639.3mMD (-1868.3mTVDSS)												
N-1	2639.3	2659.9	1868.3	1879.7	20.6	11.4	0.91	0.29	0.174	0.07	Gas	18.8	10.4
N-1	2661.2	2688.4	1880.5	1895.7	27.2	15.2	1.00	0.10	0.198	0.09	Gas	27.2	15.2
N-1	2688.4	2692.0	1895.7	1897.7	3.6	2.0	1.00	0.43	0.151	0.22	Gas	3.6	2.0
	GOC @ 2692.0mMD (-1897.7mTVDSS)												
N-1	2692.0	2701.2	1897.7	1902.8	9.2	5.1	1.00	0.09	0.194	0.12	Oil	9.2	5.1
	Current OWC @ 2701.2mMD (-1902.8mTVDSS)												
N-1	2701.2	2708.9	1902.8	1907.1	7.7	4.3	0.95	0.12	0.200	0.64	Residual Oil		
N-1	2710.7	2719.0	1908.1	1912.7	8.3	4.6	0.74	0.14	0.151	0.63	Residual Oil		
N-1	2719.0	2725.0	1912.7	1916.0	6.0	3.3	0.99	0.07	0.213	0.80	Residual Oil		
N-1	2730.5	2734.3	1919.0	1921.1	3.8	2.1	0.74	0.23	0.192	0.65	Residual Oil		
N-1	2738.8	2749.2	1923.6	1929.3	10.4	5.7	0.86	0.23	0.194	0.87	Residual Oil		
N-1	2749.2	2761.7	1929.3	1936.0	12.5	6.8	1.00	0.05	0.232	1.00	Water		



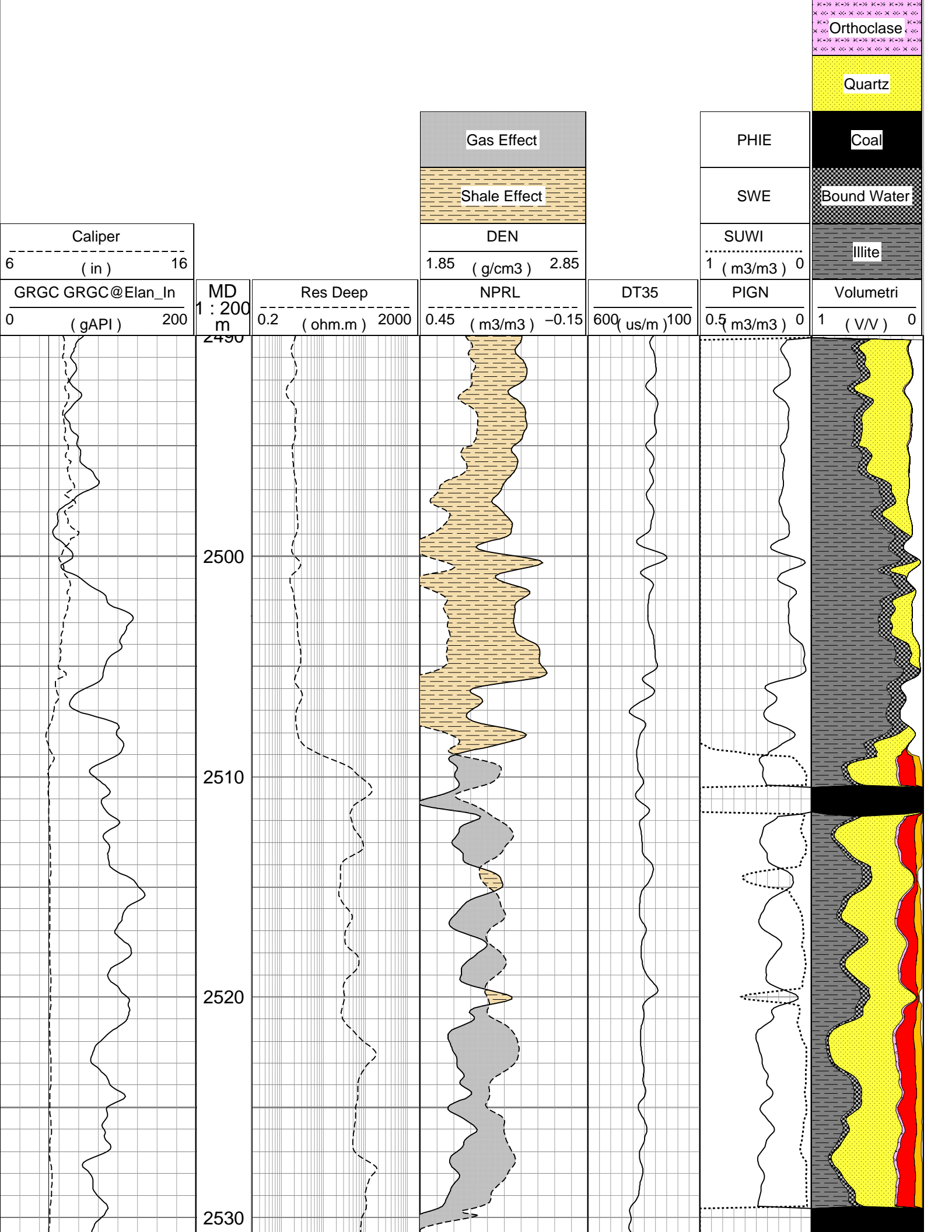
BREAM A5A

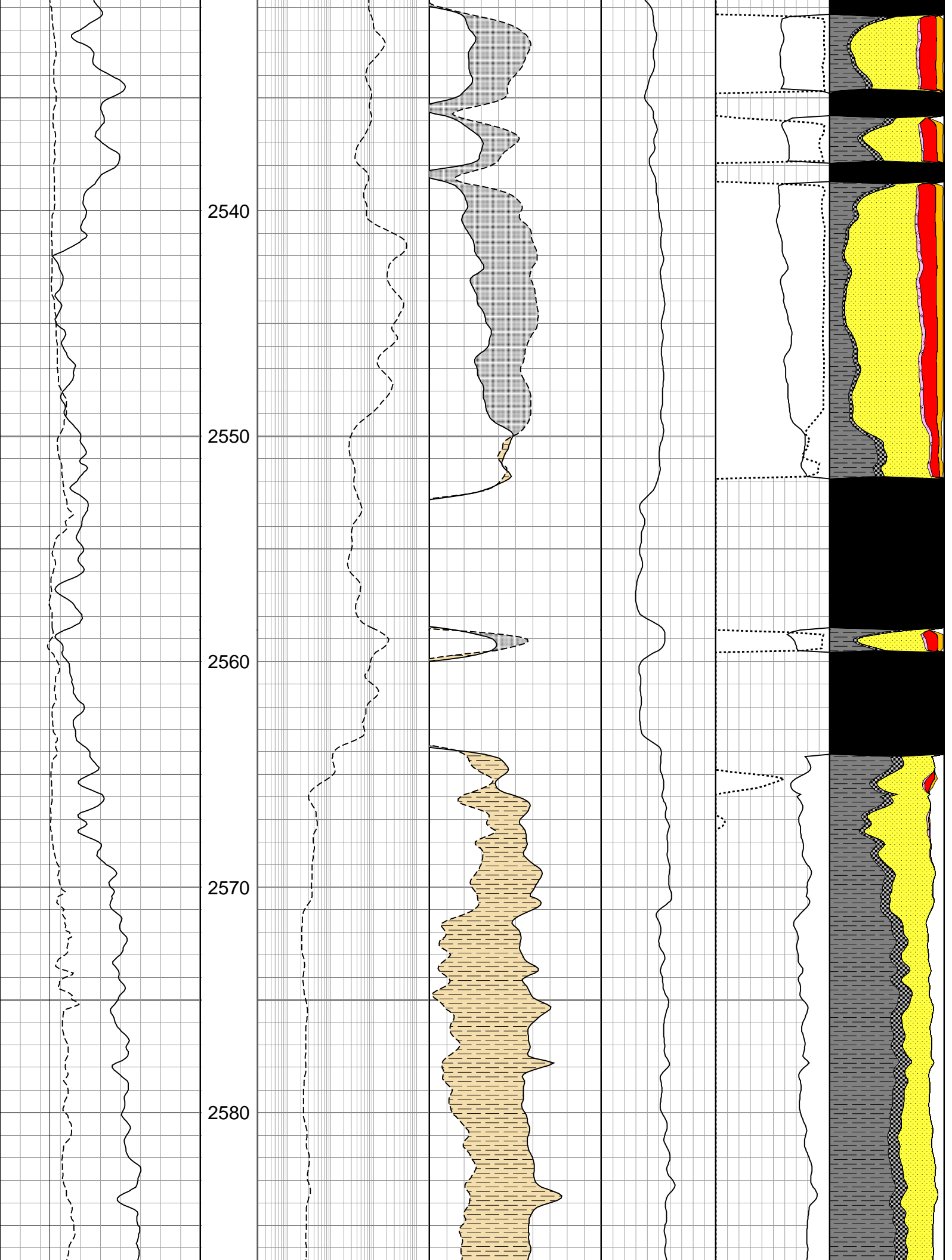
Petrophysical Analysis

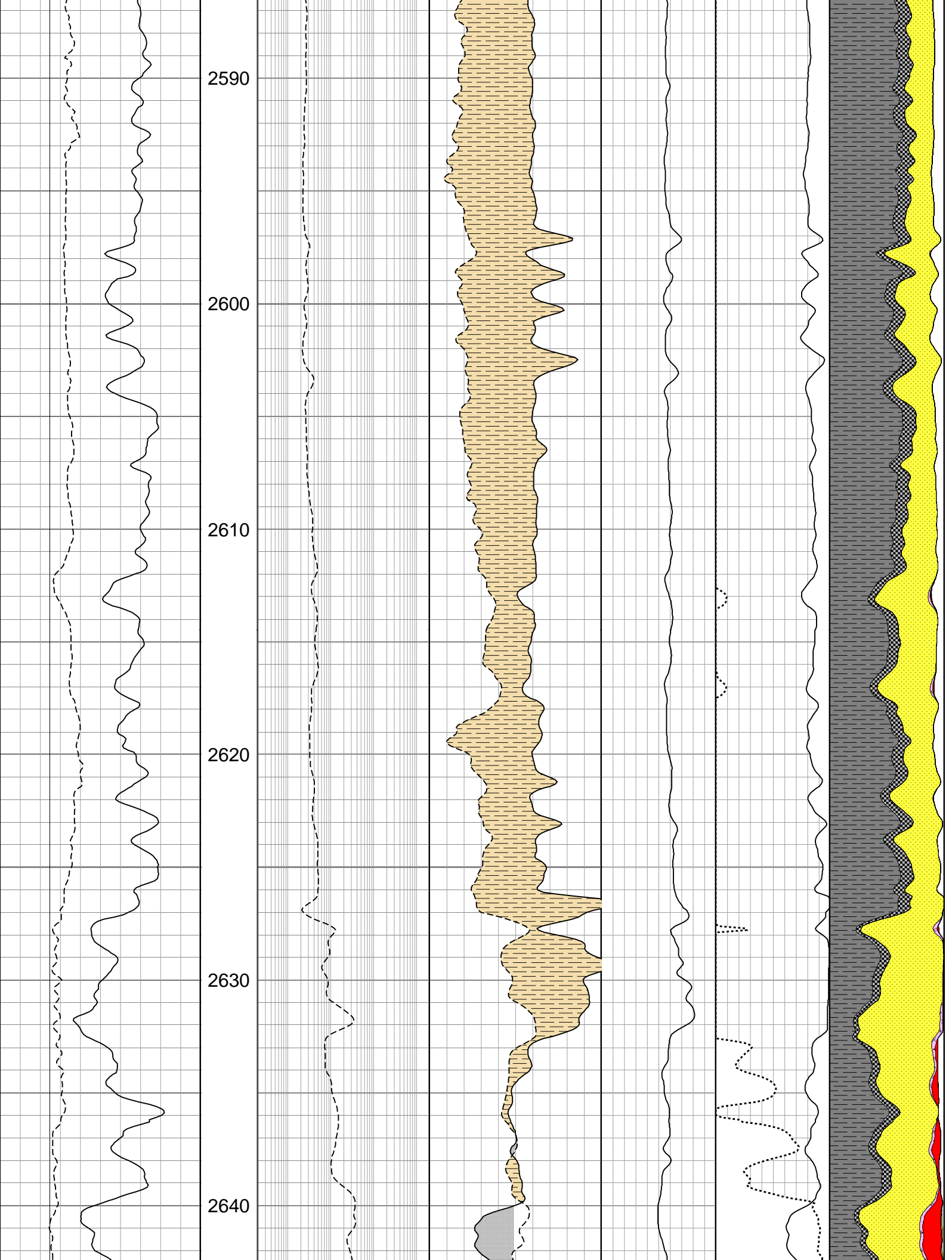
COMPANY:	Esso Australia Pty. Ltd.
WELL:	Bream A5A
BOREHOLE:	
FIELD:	Bream
STATE:	Victoria
COUNTRY:	Australia
PETROPHYSICIST:	Angie Cernovskis

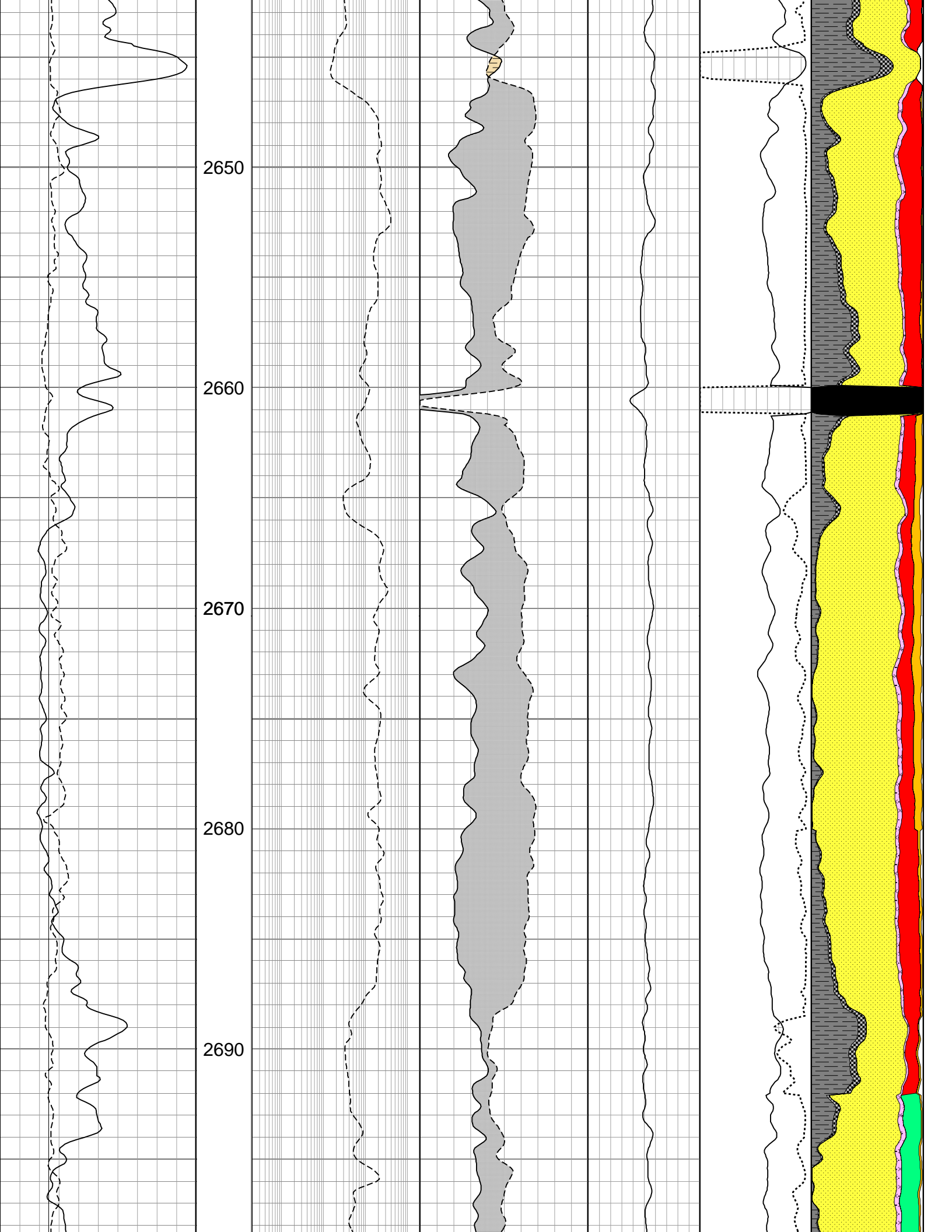
Date Logged:	June 2005	Date of Analysis:	November 2005
Well Location:	Gippsland Basin		
Elevations:	R.T. 32.82m		
Latitude:	38 29'58.778"S	RT to MSL :	92.22m
Longitude:	147 46'20.334"E		

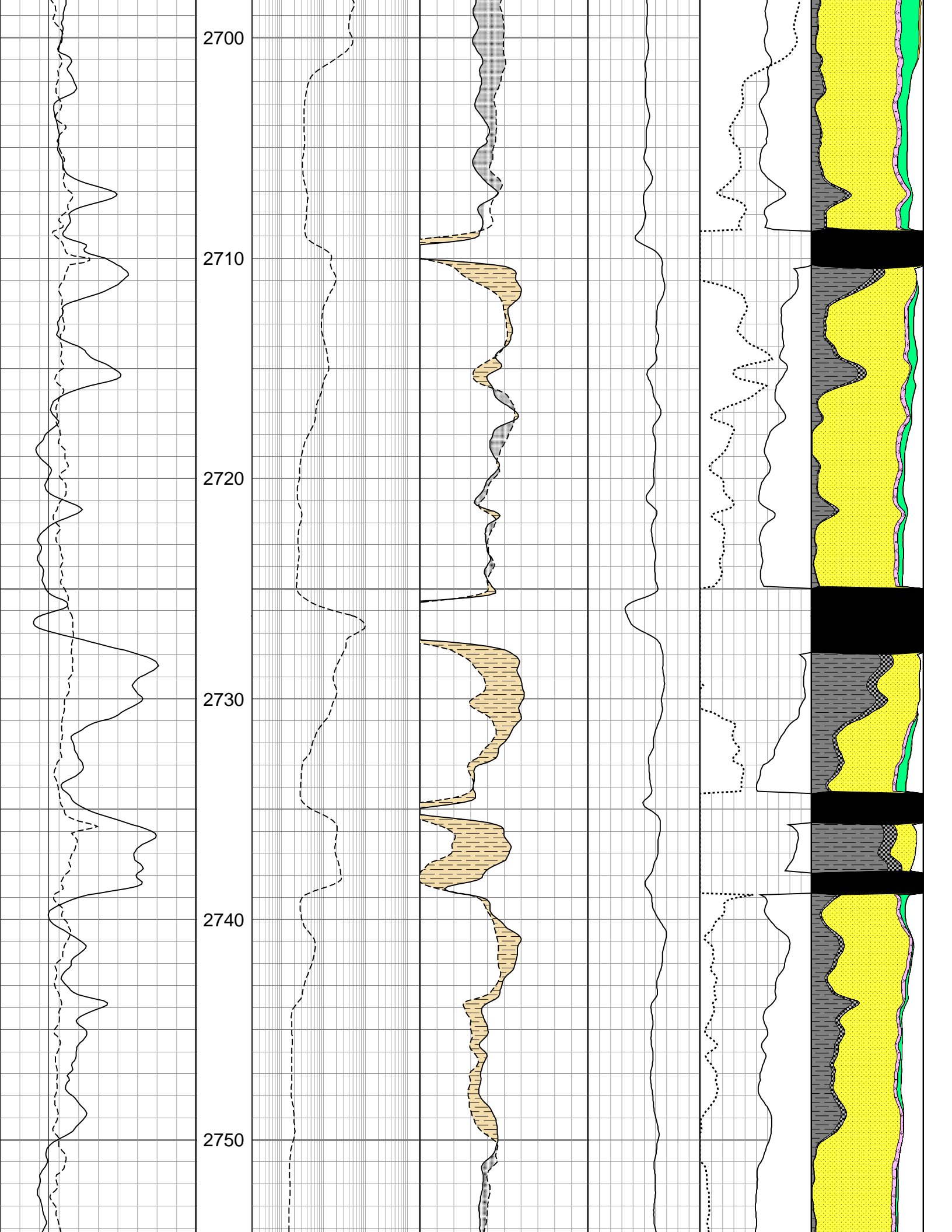
Moved Water
Moved Hydrocarbon
Water
Oil
Gas

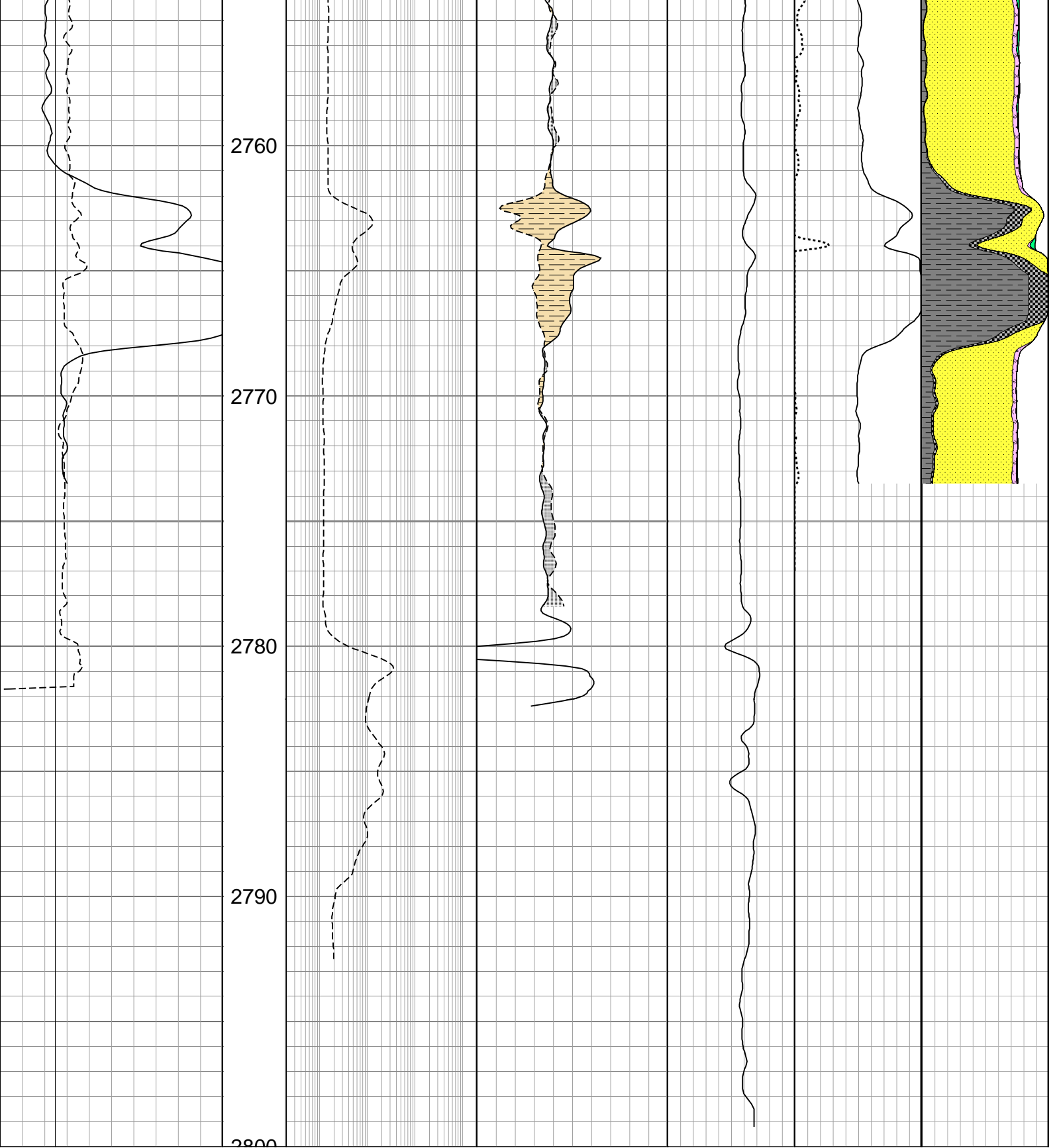












APPENDIX 3a

BREAM A5A

Lithology/Show Descriptions

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
			Previous Well History:
			Bream A5 Plugged and Abandoned on 03 June 2005.
			Top of Cement plug tagged/drilled at/from 867.0 mMDRT at 2245 hrs 10 June 2005.
			13.375" Casing set at 895.0 mMDRT (853.2 mTVDRT).
			9.625" Casing cut at 964.0 mMDRT.
			BMA A5A Kick-off point at 898.0 mMDRT at 0015 hrs on 11 June 2005.
			Drilled from 895.0 mMDRT (853.2.0 mTVDRT), to the TD of 2810.0 mMDRT (1994.5mTVDRT), with a Smith PDC bit on steerable motor assembly.
			Bit Details:
			Bit # 1, Size: 8.5", Manufacturer / Type: Smith S73 PSX. Serial #: JW0241
			Jets: 18 x 6, TFA: 1.850 sq.in, HOB: 53.60, Grading: 1-1-WT-A-X-I-NO-TD.
			Krevs: 881.0, RPM: 70-120 (+ 175 RPM DHM).
			Average ROP: 1914.0 / 53.60 = 35.71 m/hr.
			Rotating: 1705.0 metres / Rotating HOB = 42.34, Average Rotating ROP = 40.27 m/hr.
			Steering: 209.0 metres / Steering HOB = 11.26 , Average Steering ROP = 18.56 m/hr.
			Spot 1 metre samples from 896.0-915.0 mMDRT.
			Spot 2.5 metre samples from 915.0-920.0 mMDRT.
			Spot 5 metre samples from 920.0-930.0 mMDRT.
			Cuttings samples for description only at 30 m intervals from 930.0 to 2370.0 mMDRT (150 mMD above the Top of Latrobe prognosed at 2526 mMDRT).
			Geologist on Rig from 895.0 mMDRT (853.2 mTVDRT), at 1030 hrs 09 June 2005.
			Rotate and drill cement from 867.0 m to 898.0 mMDRT.
			Start sliding from 898.0 mMDRT at 0015 hrs 11 June 2005.
			Drilled to 908.8 mMDRT and performed a PIT.
			PIT details:
			MD at 895.0 mMDRT (= 853.2 mTVDRT), 639 psi using 9.5 ppg mud, EMW of 13.8 ppg.
Spot	896	100	Cement.
	897	100	Cement.
	898	100	Cement.
	899	100	Cement.
	900	100	Cement.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		Trace	CALCILUTITE: light grey to light greenish grey, occasionally olive grey, light brown, silty in part, trace glauconite, trace micromica, firm to moderately hard, amorphous to sub blocky.
901		95	Cement.
		5	CALCILUTITE: generally as above.
902		90	Cement.
		10	CALCILUTITE: generally as above.
903		90	Cement.
		10	CALCILUTITE: generally as above.
904		85	Cement.
		15	CALCILUTITE: generally as above.
905		85	Cement.
		15	CALCILUTITE: generally as above, trace forams.
906		80	Cement.
		20	CALCILUTITE: generally as above.
907		80	Cement.
		20	CALCILUTITE: generally as above.
908		75	Cement.
		25	CALCILUTITE: generally as above.
909		75	Cement.
		25	CALCILUTITE: generally as above.
910		75	Cement.
		25	CALCILUTITE: light grey to light greenish grey, occasionally olive grey, silty in part, trace glauconite, trace micromica, common forams, firm to moderately hard, sub blocky.
911		70	Cement.
		30	CALCILUTITE: generally as above.
912		50	Cement.
		50	CALCILUTITE: generally as above.
913		60	Cement.
		40	CALCILUTITE: generally as above.
914		50	Cement.
		50	CALCILUTITE: generally as above.
915		40	Cement.
		60	CALCILUTITE: generally as above.
917.5		40	Cement. Cement cuttings in the possum belly still coming over the shakers, and non-representative of the percentage of the formation drilled.
		60	CALCILUTITE: generally as above.
920		30	Cement.
		70	CALCILUTITE: generally as above.
925		20	Cement.
		80	CALCILUTITE: generally as above.
930		20	Cement.
		80	CALCILUTITE: generally as above.
			Spot 30 m samples from 930.0 m to 2370.0 mMDRT, for description only.
930	960	Trace	Cement.
		100	CALCILUTITE: light grey to light greenish grey, occasionally olive grey, silty in part, common forams, trace glauconite, trace micromica, firm to moderately hard, sub blocky.
960	990	100	CALCILUTITE: generally as above.

Bream A5A Lithology / Show Descriptions

Interval (m)		%	Lithology / Show Description
From	To		
990	1020	100	CALCILUTITE: light grey to light greenish grey, occasionally olive grey, 10% silt grading to CALCISILTITE in part, common forams, trace glauconite, trace micromica, firm to moderately hard, sub blocky.
1020	1050	100	CALCILUTITE: generally as above.
1050	1080	100	CALCILUTITE: generally as above.
1080	1110	100	CALCILUTITE: generally as above.
		Trace	CALCAREOUS CLAYSTONE: medium grey to medium dark grey, 20% calcareous, silty in part, trace fossil fragments, trace micromica, moderately hard, sub blocky to blocky.
			Top of Lakes Entrance at 1109.0 mMDRT (1031.2 mTVDRT, - 998.4 mTVDSS).
1110	1140	80	CALCILUTITE: generally as above.
		20	CALCAREOUS CLAYSTONE: as above.
1140	1170	40	CALCILUTITE: generally as above.
		60	CALCAREOUS CLAYSTONE: as above, common fossil fragments.
1170	1200	20	CALCILUTITE: generally as above.
		80	CALCAREOUS CLAYSTONE: as above.
1200	1230	100	CALCAREOUS CLAYSTONE: medium grey, 20% calcareous, silty in part, common fossil fragments, trace forams, trace micromica, moderately hard to firm, sub blocky to blocky.
1230	1260	100	CALCAREOUS CLAYSTONE: as above.
1260	1290	100	CALCAREOUS CLAYSTONE: as above.
1290	1320	100	CALCAREOUS CLAYSTONE: medium grey, 20% calcareous, silty in part, common fossil fragments, trace forams, trace micromica, moderately hard to firm, sub blocky to blocky.
1320	1350	100	CALCAREOUS CLAYSTONE: as above.
1350	1380	100	CALCAREOUS CLAYSTONE: as above.
1380	1410	100	CALCAREOUS CLAYSTONE: medium grey to greenish grey, 20% calcareous, silty in part, common fossil fragments, trace forams, trace micromica, moderately hard to firm, sub blocky to blocky.
1410	1440	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, 20% calcareous, silty in part, trace fossil fragments, trace forams, trace ooids, trace very fine carbonaceous specks, trace micromica, firm to moderately hard, sub blocky to blocky.
1440	1470	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, 20% calcareous, silty in part, trace fossil fragments, trace forams, trace ooids, trace micromica, soft to moderately hard, amorphous to sub blocky.
1470	1500	100	CALCAREOUS CLAYSTONE: as above.
1500	1530	100	CALCAREOUS CLAYSTONE: light grey to medium light grey, occasionally greenish grey, 10% calcareous, silty in part, common ooids, trace fossil fragments, trace micromica, rare glauconite, soft to moderately hard, amorphous to sub blocky.
1530	1560	100	CALCAREOUS CLAYSTONE: light grey to medium light grey, 20% calcareous, silty in part, trace ooids, trace fossil fragments, trace micromica, soft to moderately hard, amorphous to sub blocky.
1560	1590	100	CALCAREOUS CLAYSTONE: generally as above occasionally greenish grey, common fossil fragments, rare ooids, rare glauconite.
1590	1620	100	CALCAREOUS CLAYSTONE: as above, trace fossil fragments.
1620	1650	100	CALCAREOUS CLAYSTONE: light grey to medium light grey, occasionally light brownish grey, 20% calcareous, silty in part, trace ooids, trace fossil fragments, trace micromica, soft to moderately hard, amorphous to sub blocky.
1650	1680	100	CALCAREOUS CLAYSTONE: as above, rare glauconite.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1680	1710	100	CALCAREOUS CLAYSTONE: light grey to medium light grey, 20% calcareous, silty in part, common ooids, common fossil fragments, trace micromica, rare glauconite, rare pyritized ooids , soft to moderately hard, amorphous to sub blocky.
1710	1740	100	CALCAREOUS CLAYSTONE: as above, trace ooids, trace fossil fragments.
1740	1770	100	CALCAREOUS CLAYSTONE: as above, trace ooids, trace fossil fragments, trace carbonaceous specks.
1770	1800	100	CALCAREOUS CLAYSTONE: as above, trace ooids, trace fossil fragments.
1800	1830	100	CALCAREOUS CLAYSTONE: as above, rare ooids, common fossil fragments.
1830	1860	100	CALCAREOUS CLAYSTONE: light grey to medium light grey, 20% calcareous, silty in part, trace fossil fragments, trace micromica, rare glauconite, trace carbonaceous specks, soft to moderately hard, amorphous to sub blocky.
1860	1890	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, occasionally greenish grey, 20% calcareous, silty in part, trace fossil fragments, trace ooids, trace micromica, rare glauconite, trace carbonaceous specks, soft to moderately hard, amorphous to sub blocky.
1890	1920	100	CALCAREOUS CLAYSTONE: generally as above.
1920	1950	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, 20% calcareous, silty in part, common fossil fragments, trace ooids, trace micromica, soft to moderately hard, amorphous to sub blocky.
1950	1980	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, occasionally greenish grey, 20% calcareous, silty in part, common fossil fragments, trace ooids, trace micromica, trace glauconite, soft to moderately hard, amorphous to sub blocky.
1980	2010	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, trace pale brown grey, 20% calcareous, silty in part, trace fossil fragments, trace ooids, trace micromica, rare glauconite, rare disseminated pyrite, soft to moderately hard, amorphous to sub blocky.
2010	2040	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, occasionally pale brown grey, 20% calcareous, silty in part, trace fossil fragments, trace ooids, trace micromica, rare glauconite, soft to moderately hard, amorphous to sub blocky.
2040	2070	100 Trace	CALCAREOUS CLAYSTONE: generally as above. SANDSTONE: trace, clear to translucent, dominantly very fine to occasionally fine, moderately well sorted, sub angular to sub rounded, trace siliceous cement, trace disseminated pyrite, common hard aggregates, tight inferred porosity. No fluorescence.
2070	2100	100	CALCAREOUS CLAYSTONE: generally as above, common fossil fragments, no ooids.
2100	2130	100	CALCAREOUS CLAYSTONE: light grey to medium grey, occasionally pale brown grey, moderately calcareous, silty in part, trace fossil fragments, trace ooids, trace micromica, rare glauconite, soft to moderately hard, amorphous to sub blocky.
2130	2160	100	CALCAREOUS CLAYSTONE: generally as above.
2160	2190	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, occasionally light brownish grey, moderately calcareous, silty in part, trace ooids, trace micromica, trace nodular pyrite, trace glauconite, soft to moderately hard, amorphous to sub blocky.
2190	2220	100	CALCAREOUS CLAYSTONE: generally as above.
2220	2250	100	CALCAREOUS CLAYSTONE: generally as above.
2250	2280	100	CALCAREOUS CLAYSTONE: medium light grey to medium grey, occasionally light brownish grey, moderately calcareous, silty in part, trace ooids, trace micromica, rare glauconite, soft to moderately hard, amorphous to sub blocky
2280	2310	100	CALCAREOUS CLAYSTONE: generally as above, rare nodular pyrite.
2310	2340	100	CALCAREOUS CLAYSTONE: generally as above, rare nodular pyrite.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2340	2370	100	CALCAREOUS CLAYSTONE: medium grey to light brownish grey, moderately calcareous, silty in part, trace ooids, trace micromica, trace nodular pyrite, soft to moderately hard, sub blocky to blocky. Bagged 10 metre samples from 2370 mMDRT (150 mMDRT above prognosed Top of Latrobe at 2526.1 mMDRT)
2370	2380	100	CALCAREOUS CLAYSTONE: medium grey to light brownish grey, moderately calcareous, silty in part, trace micromica, trace disseminated pyrite, soft to moderately hard, sub blocky to blocky.
2380	2390	100	CALCAREOUS CLAYSTONE: generally as above, trace ooids, rare glauconite.
2390	2400	100	CALCAREOUS CLAYSTONE: generally as above, no disseminated pyrite.
2400	2410	100	CALCAREOUS CLAYSTONE: generally as above.
2410	2420	100	CALCAREOUS CLAYSTONE: generally as above.
2420	2430	100	CALCAREOUS CLAYSTONE: medium grey to light brownish grey, moderately calcareous, silty in part, trace micromica, trace disseminated pyrite, rare glauconite, moderately hard to hard, sub blocky to blocky.
2430	2440	100	CALCAREOUS CLAYSTONE: light brownish grey to occasionally medium grey, moderately calcareous, silty in part, trace micromica, trace disseminated pyrite, rare glauconite, moderately hard to hard, sub blocky to blocky.
2440	2450	100	CALCAREOUS CLAYSTONE: generally as above.
2450	2460	100	CALCAREOUS CLAYSTONE: generally as above.
2460	2470	100	CALCAREOUS CLAYSTONE: light brownish grey to occasionally medium grey, moderately calcareous, silty in part, trace micromica, trace ooids, rare glauconite, moderately hard to hard, sub blocky to blocky.
2470	2480	100	CALCAREOUS CLAYSTONE: generally as above.
2480	2490	100	CALCAREOUS CLAYSTONE: generally as above. Top of Latrobe at 2496.5 mMDRT (1822.3 mMDRT, - 1789.5 mTVDSS)
From 2500.0 mMDRT (prognosed Top of Latrobe at 2526.1 mMDRT), bagged 5 metre samples to TD (2810.0 mMDRT).			
2490	2500	70	CALCAREOUS CLAYSTONE: light brownish grey to occasionally medium grey, moderately calcareous, silty in part, trace micromica, trace ooids, rare glauconite, moderately hard to hard, sub blocky to blocky.
		20	SILTSTONE: pale yellowish brown to pale brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, trace nodular pyrite, moderately hard to hard, blocky.
		10	GLAUCONITIC SANDSTONE: dominantly moderate blue green, occasionally clear to translucent, very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, abundant (bit crushed glauconitic clay) and pellets, hard aggregates, occasionally bit crushed to rock flour, poor inferred porosity. No fluorescence. (Trace to common crystalline blue green (volcanics?) grains).
2500	2505	40	CALCAREOUS CLAYSTONE: generally as above.
		30	SILTSTONE: as above.
		30	GLAUCONITIC SANDSTONE: generally as above. (Trace to common crystalline blue green (volcanics?) grains). Baracarb (under the microscope, visually similar to very fine sandstone) added to the mud system at 2507.0 mMDRT, seen in samples from 2515.0 mMDRT.
Increase in gas values from 2508.5 mMDRT.			

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2505	2510	10	CALCAREOUS CLAYSTONE: generally as above.
		70	SILTSTONE: as above.
		20	GLAUCONITIC SANDSTONE: generally as above. (Trace crystalline blue green (volcanics?) grains).
2510	2515	5	CALCAREOUS CLAYSTONE: generally as above.
		35	SILTSTONE: as above.
		60	GLAUCONITIC SANDSTONE: 20%, dominantly moderate blue green, occasionally clear to translucent, very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, abundant (bit crushed glauconitic clay) and pellets, hard aggregates, occasionally bit crushed to rock flour, poor inferred porosity. (Trace crystalline blue green (volcanics?) grains). SANDSTONE: 40%, clear to translucent, very fine to dominantly medium, moderately well sorted, sub angular to sub rounded, nil cement, nil matrix, clean, loose, good inferred porosity. No fluorescence.
2515	2520	Trace	CALCAREOUS CLAYSTONE: generally as above.
		25	SILTSTONE: as above.
		75	GLAUCONITIC SANDSTONE: 20%, generally as above. SANDSTONE: 55%, clear to translucent, fine to occasionally coarse, dominantly medium, poor to fairly well sorted, sub angular to sub rounded, clean, predominantly loose, fair to good inferred porosity. No fluorescence.
2520	2525	25	SILTSTONE: pale yellowish brown to pale brown, occasionally ligh brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, moderately hard to hard, sub blocky to blocky.
		75	GLAUCONITIC SANDSTONE: 20%, generally as above. SANDSTONE: 55%, clear to translucent, medium to occasionally very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, clean, predominantly loose, fair to good inferred porosity. No fluorescence.
2525	2530	30	SILTSTONE: as above.
		70	GLAUCONITIC SANDSTONE: 20%, dominantly moderate blue green, occasionally clear to translucent, very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, abundant (bit crushed glauconitic clay) and pellets, hard aggregates, occasionally bit crushed to rock flour, poor inferred porosity. SANDSTONE: 50%, clear to translucent, medium to occasionally very coarse, dominantly coarse, poor to fairly well sorted, sub angular to sub rounded, clean, predominantly loose, fair inferred porosity. No fluorescence.
2530	2535	30	SILTSTONE: as above.
		70	GLAUCONITIC SANDSTONE: 10%, generally as above. SANDSTONE: 60%, clear to translucent, occasionally coarse to dominantly medium, moderately well sorted, sub angular to sub rounded, clean, predominantly loose, fair inferred porosity. No fluorescence.
2535	2540	20	SILTSTONE: pale yellowish brown to pale brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, trace nodular pyrite, moderately hard to hard, blocky.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2540	2545	80	GLAUCONITIC SANDSTONE: 15%, generally as above. SANDSTONE: 65%, clear to translucent, occasionally coarse to dominantly medium, moderately well sorted, sub angular to sub rounded, clean, predominantly loose, fair inferred porosity. No fluorescence.
		30	SILTSTONE: as above.
		70	GLAUCONITIC SANDSTONE: 30%, dominantly moderate blue green, occasionally clear to translucent, very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, abundant (bit crushed glauconitic clay) and pellets, hard aggregates, occasionally bit crushed to rock flour, poor inferred porosity. SANDSTONE: 40%, clear to translucent, fine to occasionally very coarse fractured quartz grains, poorly sorted, predominantly sub angular to sub rounded, moderate siliceous cement, weak pyrite cement, occasionally loose, poor inferred porosity. No fluorescence.
2545	2550	30	SILTSTONE: as above.
		70	GLAUCONITIC SANDSTONE: 20%, generally as above. SANDSTONE: 50%, as above. No fluorescence.
2550	2555	20	SILTSTONE: as above.
		80	GLAUCONITIC SANDSTONE: 20%, generally as above. SANDSTONE: 60%, as above. No fluorescence.
2555	2560	5	COAL: moderate brown to dark reddish brown, earthy, moderately hard, silty in part, grading to CARBONACEOUS SILTSTONE, sub blocky, uneven, woody texture.
		65	SILTSTONE: pale yellowish brown to pale brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, trace nodular pyrite, moderately hard to hard, blocky.
		30	GLAUCONITIC SANDSTONE: 5%, dominantly moderate blue green, occasionally clear to translucent, very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, abundant (bit crushed glauconitic clay) and pellets, hard aggregates, occasionally bit crushed to rock flour, poor inferred porosity. SANDSTONE: 25%, clear to translucent, fine to occasionally very coarse fractured quartz grains, poorly sorted, predominantly sub angular to sub rounded, weak siliceous cement, weak pyrite cement, predominantly loose, poor to fair inferred porosity. No fluorescence.
2560	2565	5	COAL: as above.
		65	SILTSTONE: generally as above, predominantly pale yellowish brown.
		30	GLAUCONITIC SANDSTONE: trace, generally as above. SANDSTONE: 30%, clear to translucent, coarse to dominantly very coarse, moderately well sorted, predominantly sub rounded to sub angular, weak pyrite cement, trace pyrite nodules, predominantly loose, clean, good inferred porosity. No fluorescence.
2565	2570	Trace	COAL: as above.
		5	CLAYSTONE: light grey to light blueish grey, non calcareous, moderately hard to hard, sub blocky to blocky.
		70	SILTSTONE: generally as above, predominantly pale yellowish brown, occasionally light brown.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2570	2575	25	GLAUCONITIC SANDSTONE: 5%, generally as above. SANDSTONE: 20%, clear to translucent, coarse to dominantly very coarse, moderately well sorted, predominantly sub rounded to sub angular, weak pyrite cement, trace pyrite nodules, predominantly loose, clean, good inferred porosity. No fluorescence.
		5	CLAYSTONE: as above.
		60	SILTSTONE: light brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, trace glauconite, soft to moderately hard, amorphous to sub blocky.
2575	2580	35	SANDSTONE: 35%, clear to translucent, coarse to dominantly very coarse, moderately well sorted, predominantly sub rounded to sub angular, common glauconite pellets, weak pyrite cement, trace pyrite nodules, predominantly loose, clean, fair to good inferred porosity. No fluorescence.
		5	CLAYSTONE: as above.
		75	SILTSTONE: generally as above.
2580	2585	20	SANDSTONE: generally as above.
		10	CLAYSTONE: light grey to light blueish grey, common pyrite laminations, non calcareous, hard, blocky.
		80	SILTSTONE: light brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, common glauconite silt, (bit crushed) soft to moderately hard, amorphous to sub blocky.
2585	2590	10	SANDSTONE: clear to translucent, occasionally smokey grey, coarse to dominantly very coarse, moderately well sorted, sub rounded to sub angular, common angular fractured quartz grains, moderate pyrite cement, trace pyrite nodules, hard aggregates, clean, poor inferred porosity. No fluorescence.
		10	CLAYSTONE: as above.
		80	SILTSTONE: generally as above.
2590	2595	10	SANDSTONE: generally as above.
		15	CLAYSTONE: as above.
		70	SILTSTONE: generally as above.
2595	2600	15	SANDSTONE: generally as above.
		10	CLAYSTONE: as above.
		60	SILTSTONE: generally as above.
2600	2605	30	GLAUCONITIC SANDSTONE: 25%, dominantly moderate blue green, occasionally clear to translucent, very fine to fine, moderately well sorted, sub angular to sub rounded, abundant (bit crushed glauconitic clay) and glauconite pellets, hard aggregates, occasionally bit crushed to rock flour, tight to poor inferred porosity. SANDSTONE: 5%, as above. No fluorescence.
		10	CLAYSTONE: as above.
		60	SILTSTONE: generally as above.
2605	2610	30	GLAUCONITIC SANDSTONE: 25%, as above. SANDSTONE: 5%, as above. No fluorescence.
		10	CLAYSTONE: as above.
		70	SILTSTONE: generally as above.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2610	2615	20	GLAUCONITIC SANDSTONE: 20%, as above. SANDSTONE: Trace, as above. No fluorescence.
		5	CLAYSTONE: as above.
		75	SILTSTONE: generally as above.
		20	GLAUCONITIC SANDSTONE: 10%, as above. SANDSTONE: 10%, clear to translucent, occasionally smokey grey, coarse to very coarse, moderately well sorted, sub angular to sub rounded, common angular fractured quartz grains, moderate pyrite cement, trace pyrite nodules, hard aggregates, occasionally loose grains, poor to fair inferred porosity. No fluorescence.
2615	2620	Trace	CLAYSTONE: Trace, as above.
		85	SILTSTONE: generally as above.
		15	GLAUCONITIC SANDSTONE: 10%, as above. SANDSTONE: 5%, as above. No fluorescence.
2620	2625	5	CLAYSTONE: as above.
		90	SILTSTONE: generally as above.
		5	GLAUCONITIC SANDSTONE: 5%, as above. SANDSTONE: Trace, as above. No fluorescence.
2625	2630	10	CLAYSTONE: medium light grey to light blueish grey, common pyrite laminations, commonly bit crushed to rock flour, non calcareous, hard, blocky.
		80	SILTSTONE: light brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, common glauconitic silt (bit crushed) soft to moderately hard, amorphous to sub blocky.
		10	SANDSTONE: clear to translucent, occasionally smokey grey, very fine to occasionally very coarse, poorly sorted, sub angular to sub rounded, strong pyrite cement, abundant pyrite nodules, abundant glauconite pellets, hard aggregates, tight to poor inferred porosity. No fluorescence.
2630	2635		Top Coarse Clastics at 2629.2 mMDRT (1895.5 mTVDR, -1862.7 mTVDS)
		5	CLAYSTONE: medium light grey to light blueish grey, common pyrite laminations, commonly bit crushed to rock flour, non calcareous, hard, blocky.
		55	SILTSTONE: light brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, common glauconitic silt (bit crushed) soft to moderately hard, amorphous to sub blocky.
2635	2640	40	SANDSTONE: clear to translucent, occasionally white to light grey, fine to very coarse, poorly sorted, sub angular to sub rounded, strong pyrite cement, abundant pyrite nodules, abundant glauconite pellets commonly bit crushed to rock flour, predominantly hard aggregates, minor loose, poor to very poor inferred porosity. FLUORESCENCE: trace, dull patchy greenish yellow white fluorescence, no direct cut, very slow diffusive pale yellow green crush cut, moderately thick ring residue.
		Trace	CLAYSTONE: as above
		80	SILTSTONE: as above.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		20	SANDSTONE: as above, clear to translucent, occasionally white to light grey, fine to very coarse, poorly sorted, sub angular to sub rounded, strong pyrite cement, abundant pyrite nodules, abundant glauconite pellets commonly bit crushed to rock flour, predominantly hard aggregates, minor loose, poor to very poor inferred porosity. FLUORESCENCE: as above, trace, dull patchy greenish yellow white fluorescence, no direct cut, very slow diffusive pale yellow green crush cut, thin ring residue. Base of Waste Rock (BWST) at 2639.1 mMDRT (1901.0 mTVDRT, -1868.2 mTVDSS)
2640	2645	5	CLAYSTONE: as above
		35	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, medium to occasionally very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, moderate pyrite cement, common pyrite nodules, commonly hard aggregates, occasionally loose, poor to fair inferred porosity. No fluorescence.
2645	2650	10	CLAYSTONE: as above
		10	SILTSTONE: as above.
		80	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, moderate pyrite cement, common pyrite nodules, occasionally hard aggregates, predominantly loose, fair inferred porosity. No fluorescence.
2650	2655	20	CLAYSTONE: as above
		20	SILTSTONE: as above.
		60	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, common pyrite nodules, occasionally hard aggregates, predominantly loose, fair inferred porosity. No fluorescence.
2655	2660	30	CLAYSTONE: medium light grey to light blueish grey, common pyrite laminations, commonly bit crushed to rock flour, non calcareous, hard, blocky.
		40	SILTSTONE: light brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, common glauconitic silt (bit crushed) soft to moderately hard, amorphous to sub blocky.
		30	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, weak pyrite cement, common pyrite nodules, trace disseminated pyrite, occasionally hard aggregates, predominantly loose, fair inferred porosity. No fluorescence.
2660	2665	10	CLAYSTONE: as above
		10	SILTSTONE: as above.
		80	SANDSTONE: clear to translucent, medium to occasionally very coarse fractured quartz grains, dominantly coarse, moderately well sorted, sub angular to dominantly sub rounded, weak pyrite cement, weak siliceous cement, common pyrite nodules, occasionally hard aggregates, predominantly loose, fair inferred porosity. No fluorescence.
2665	2670	5	CLAYSTONE: as above
		10	SILTSTONE: as above.
		85	SANDSTONE: as above. No fluorescence.
2670	2675	5	CLAYSTONE: as above

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2675	2680	5	SILTSTONE: as above.
		90	SANDSTONE: as above. No fluorescence.
		10	CLAYSTONE: medium light grey to light blueish grey, trace pyrite laminations, non calcareous, hard, blocky.
		90	SANDSTONE: clear to translucent, rare opaque, coarse to dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, weak pyrite cement, trace pyrite nodules, occasionally hard aggregates, predominantly loose, generally clean, fair inferred porosity. No fluorescence.
2680	2685	10	CLAYSTONE: as above
		90	SANDSTONE: as above, coarse to very coarse, common pyrite nodules, clean, loose, fair inferred porosity. No fluorescence.
2685	2690	5	CLAYSTONE: as above
		95	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, occasionally fractured quartz grains, weak pyrite cement, weak siliceous cement, trace pyrite nodules, predominantly loose, generally clean, fair inferred porosity. No fluorescence.
2690	2695	CbF2 horizon (Cobalt sand- current GOC with 4 metre oil leg) at 2692.4 mMDRT (1930.7 mTVDRT, -1897.9 mTVDSS)	
		10	CLAYSTONE: as above
		90	SANDSTONE: as above, medium to coarse, trace very coarse, common pyrite nodules, generally clean, loose, fair inferred porosity. No fluorescence.
2695	2700	25	CLAYSTONE: medium light grey to light blueish grey, trace pyrite, rare glauconite, non calcareous, hard, blocky.
		75	SANDSTONE: clear to translucent, rare opaque, medium to very coarse, dominantly coarse, moderately well sorted, sub angular to sub rounded, commonly fractured quartz grains, weak pyrite cement, moderate siliceous cement, trace pyrite nodules, predominantly loose, generally clean, fair inferred porosity. No fluorescence.
2700	2705	5	CLAYSTONE: as above
		95	SANDSTONE: as above, coarse to very coarse, common pyrite nodules, clean, loose, fair inferred porosity. No fluorescence.
2705	2710	10	CLAYSTONE: as above
		90	SANDSTONE: as above, coarse to very coarse, common pyrite nodules, clean, loose, fair inferred porosity. No fluorescence.
2710	2715	20	CLAYSTONE: medium light grey to light blueish grey, trace pyrite, rare glauconite, non calcareous, hard, blocky.
		20	SILTSTONE: light brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, (bit crushed) soft to moderately hard, amorphous to sub blocky.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2715	2720	60	SANDSTONE: clear to translucent, coarse to dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, weak pyrite cement, common pyrite nodules, predominantly loose, generally clean, fair to good inferred porosity. No fluorescence.
		10	CLAYSTONE: as above
		20	SILTSTONE: as above.
		70	SANDSTONE: as above, coarse to dominantly very coarse, common pyrite nodules, clean, loose, fair to good inferred porosity. No fluorescence.
2720	2725	Cbsb horizon (Base of Cobalt sand-Top of pink) at 2724.6 mMDRT, (1948.6 mTVDRT, -1915.8 mTVDSS)	
		5	COAL: black to blackish red, sub vitreous, brittle, sub fissile, uneven.
		5	CLAYSTONE: as above
		10	SILTSTONE: as above.
2725	2730	80	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, rare pyrite nodules, loose, clean, fair to good inferred porosity. No fluorescence.
		20	SILTSTONE: light brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, (bit crushed) soft to moderately hard, amorphous to sub blocky.
		80	SANDSTONE: as above, coarse to dominantly very coarse, occasionally medium, rare pyrite nodules, clean, loose, fair to good inferred porosity. No fluorescence.
		20	SILTSTONE: light brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, (bit crushed) soft to moderately hard, amorphous to sub blocky.
2730	2735	5	COAL: black to blackish red, sub vitreous, brittle, sub fissile, uneven.
		5	CLAYSTONE: medium light grey to light blueish grey, trace pyrite, rare glauconite, non calcareous, hard, blocky.
		35	SILTSTONE: as above.
		55	SANDSTONE: clear to translucent, coarse to dominantly very coarse, occasionally medium, moderately well sorted, sub angular to dominantly sub rounded, weak pyrite cement, common pyrite nodules, trace glauconite, dominantly loose, clean, fair to good inferred porosity. No fluorescence.
2735	2740	Trace	COAL: as above.
		10	CLAYSTONE: as above
		40	SILTSTONE: as above.
		50	SANDSTONE: clear to translucent, coarse to dominantly very coarse, occasionally medium, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite nodules, loose, clean, fair to good inferred porosity. No fluorescence.
2740	2745	20	CLAYSTONE: as above
		30	SILTSTONE: as above.
		50	SANDSTONE: clear to translucent, coarse to dominantly very coarse, occasionally medium, moderately well sorted, sub angular to dominantly sub rounded, trace pyrite nodules, loose, clean, fair to good inferred porosity. No fluorescence.
2745	2750	Original OWC at 2748.6 mMDRT, (1961.8 mTVDRT, -1929.0 mTVDSS)	
		15	CLAYSTONE: medium light grey to light blueish grey, trace pyrite, rare glauconite, non calcareous, hard, blocky.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2750	2755	30	SILTSTONE: pale yellowish brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, (bit crushed) soft to moderately hard, amorphous to sub blocky.
		55	SANDSTONE: clear to translucent, coarse to dominantly very coarse, occasionally medium, trace fractured quartz grains, moderately well sorted, sub angular to sub rounded, moderate pyrite cement, common pyrite nodules, rare glauconite, occasionally hard aggregates, commonly loose, poor to fair inferred porosity. No fluorescence.
		5	CLAYSTONE: as above
		5	SILTSTONE: as above.
		90	SANDSTONE: as above. No fluorescence.
		5	SILTSTONE: as above.
		95	SANDSTONE: clear to translucent, dominantly medium to occasionally very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, occasionally hard aggregates, commonly loose, generally clean, fair inferred porosity. No fluorescence.
		5	CLAYSTONE: medium light grey to light blueish grey, trace pyrite, rare glauconite, non calcareous, hard, blocky.
		5	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, dominantly medium, occasionally fine to rare very coarse, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, occasionally hard aggregates, commonly loose, generally clean, fair inferred porosity. No fluorescence.
2765	2770	5	CLAYSTONE: as above.
		10	SILTSTONE: pale yellowish brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, (bit crushed) soft to moderately hard, amorphous to sub blocky.
		85	SANDSTONE: clear to translucent, medium to occasionally very coarse, poorly sorted, sub angular to sub rounded, weak pyrite cement, trace pyrite nodules, dominantly loose, clean, fair inferred porosity. No fluorescence.
2770	2775	5	COAL: black, sub vitreous, brittle, sub blocky, angular.
		5	CLAYSTONE: as above.
		90	SANDSTONE: clear to translucent, fine to occasionally very coarse, dominantly medium, moderately well sorted, sub angular to sub rounded, weak pyrite cement, trace white argillaceous matrix, generally loose, poor to fair inferred porosity. No fluorescence.
2775	2780	5	COAL: as above.
		5	CLAYSTONE: as above.
		90	SANDSTONE: generally as above, rare glauconite grains. No fluorescence.
2780	2785	5	CLAYSTONE: medium light grey to light blueish grey, occasionally greenish grey, trace pyrite, rare glauconite, non calcareous, hard, blocky.
		5	SILTSTONE: pale yellowish brown to pale brown, occasionally moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, soft to moderately hard, amorphous to sub blocky.

Bream A5A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2785	2790	90	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately well sorted, sub angular to dominantly sub rounded, weak pyrite cement, trace pyrite nodules, rare glauconite pellets, predominantly loose, clean, fair to good inferred porosity. No fluorescence.
		10	CLAYSTONE: as above.
		70	SILTSTONE: pale yellowish brown to pale brown, moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, trace glauconite, soft to moderately hard, amorphous to sub blocky.
2790	2795	20	SANDSTONE: as above. No fluorescence.
		5	CLAYSTONE: as above.
		20	SILTSTONE: as above.
2795	2800	75	SANDSTONE: as above. No fluorescence.
		10	CLAYSTONE: as above.
		35	SILTSTONE: as above.
2800	2805	55	SANDSTONE: clear to translucent, rare pinkish grey, fine to very coarse, poorly sorted, sub angular to sub rounded, weak pyrite cement, trace light brown argillaceous matrix, occasionally hard aggregates, predominantly loose, clean, poor inferred porosity. No fluorescence.
		10	COAL: brownish black to dusky brown, earthy, firm to moderately hard, sub blocky to blocky, silty in part grading to CARBONACEOUS SILTSTONE, common micromicaceous, uneven, woody texture.
		10	CLAYSTONE: as above.
2805	2810	10	SILTSTONE: as above.
		70	SANDSTONE: as above. No fluorescence.
		5	COAL: as above.
TD		10	CLAYSTONE: medium light grey to light blueish grey, trace pyrite, rare glauconite, non calcareous, hard, blocky.
		20	SILTSTONE: pale yellowish brown to moderate brown, very arenaceous grading to very fine SANDSTONE, common micromicaceous, (bit crushed) soft to moderately hard, amorphous to sub blocky.
		65	SANDSTONE: clear to translucent, rare pinkish grey, medium to dominantly very coarse, poorly sorted, occasionally fractured quartz grains, sub angular to dominantly sub rounded, weak pyrite cement, trace nodular pyrite, occasionally hard aggregates, predominantly loose, generally clean, fair to good inferred porosity. No fluorescence.

Bream A5A Lithology / Show Descriptions

Interval (m) From To	%	Lithology / Show Description
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BMA A5A TD criterion:

The OOWC contact is at 1961.82 mTVDRT. This depth is fixed.

Based on the Inclination, the MD (for the equivalent TVDRT of 1961.82 m) was 2748.6 mMDRT.

TD is defined as: 55 mMDRT + the mMDRT equivalent to 1961.82 mTVDRT.

Hence TD = 2748.6 + 55 = 2803.6 mMDRT.

The Drilling Supervisor decided to drill to 2810.0 mMDRT based on the casing tally.

The final Schlumberger Direction Driller's projected TVDRT was 1994.52 m for the drilled TD of 2810.0 mMDRT.

BMA A10A reached a TD of 2810.0 mMDRT = 1994.5 mTVDRT (-1961.7 mTVDSS) at 16:30 hrs on 14 June 2005.

CBU. POOH to shoe.

Wiper Trip.

Start circulating at bottom at 1300 hrs 15 June 2005.

Trip gas 246 units at 14:05 hrs, 15 June 2005.

Last circulation at 16:30 hrs, 15 June 2005. Total circulating time on bottom = 3 ½ hrs.

Start POOH at 16:30 hrs, 15 June 2005 for Reeves Wireline Logging Run #1.

At 19:50 hrs, 16 June 2005, start Reeves Logging at Logging speed (0.1 metre/second) from 2807.0 to 2390.8 mMDRT (103.7 mMDRT metres above the Top of Latrobe at 2496.5 mMDRT (1822.3 mTVDRT)).

At 21:30 hrs, 16 June 2005, at Tripping speed from 2390.8 mMDRT, to 843.1 mMDRT, 2 stands inside the Casing shoe at 895.0 mMDRT.

IN ALL OF THE ABOVE FLUORESCENCE DESCRIPTIONS, "TRACE TO 5%" IN QUANTITY WOULD MOST LIKELY BE CAVINGS AND SHOULD BE DISREGARDED. THE "TRACE TO 5%" IN QUANTITY HAS BEEN RECORDED AS SEEN IN THE SAMPLES.

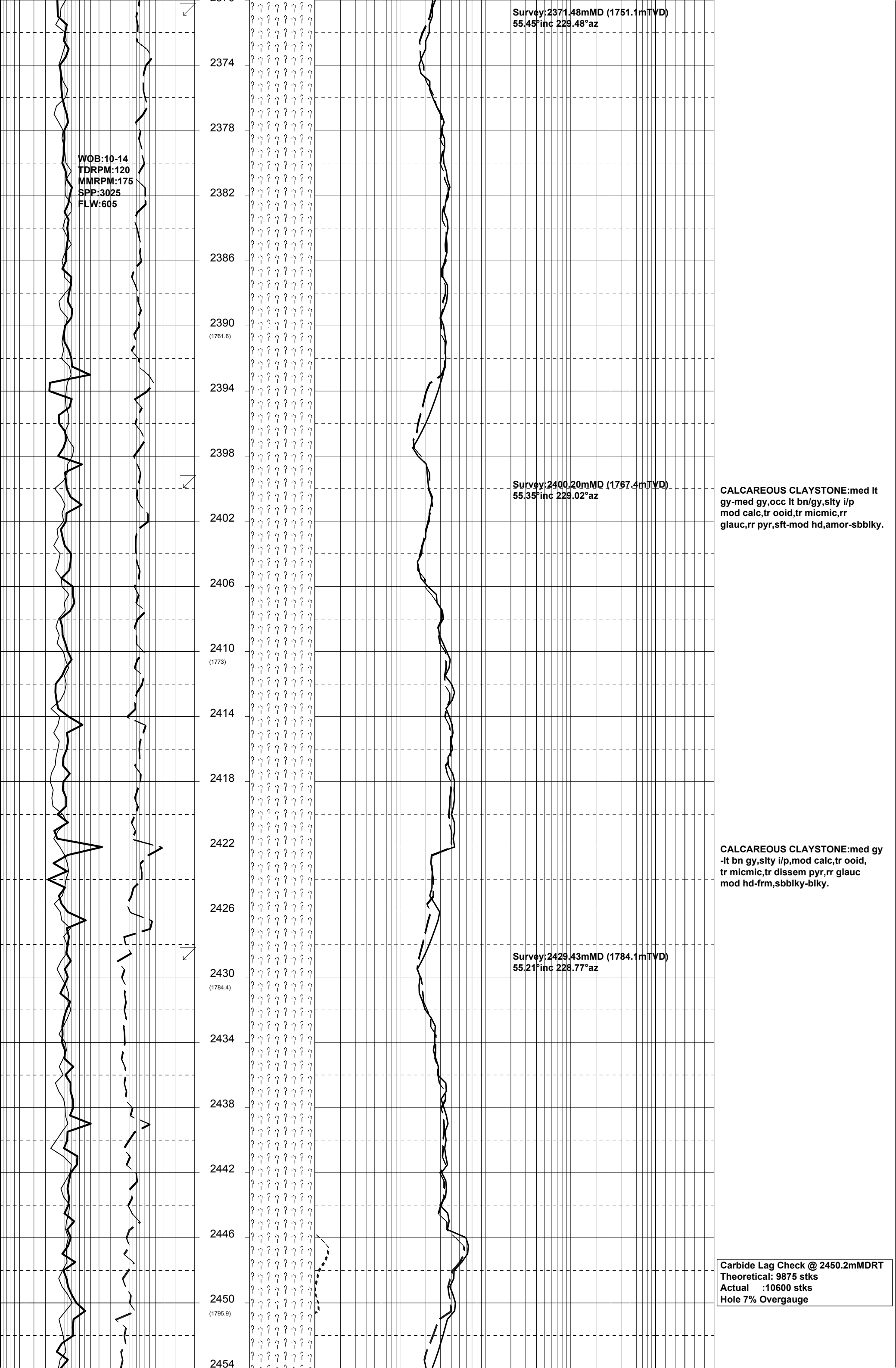
APPENDIX 4a

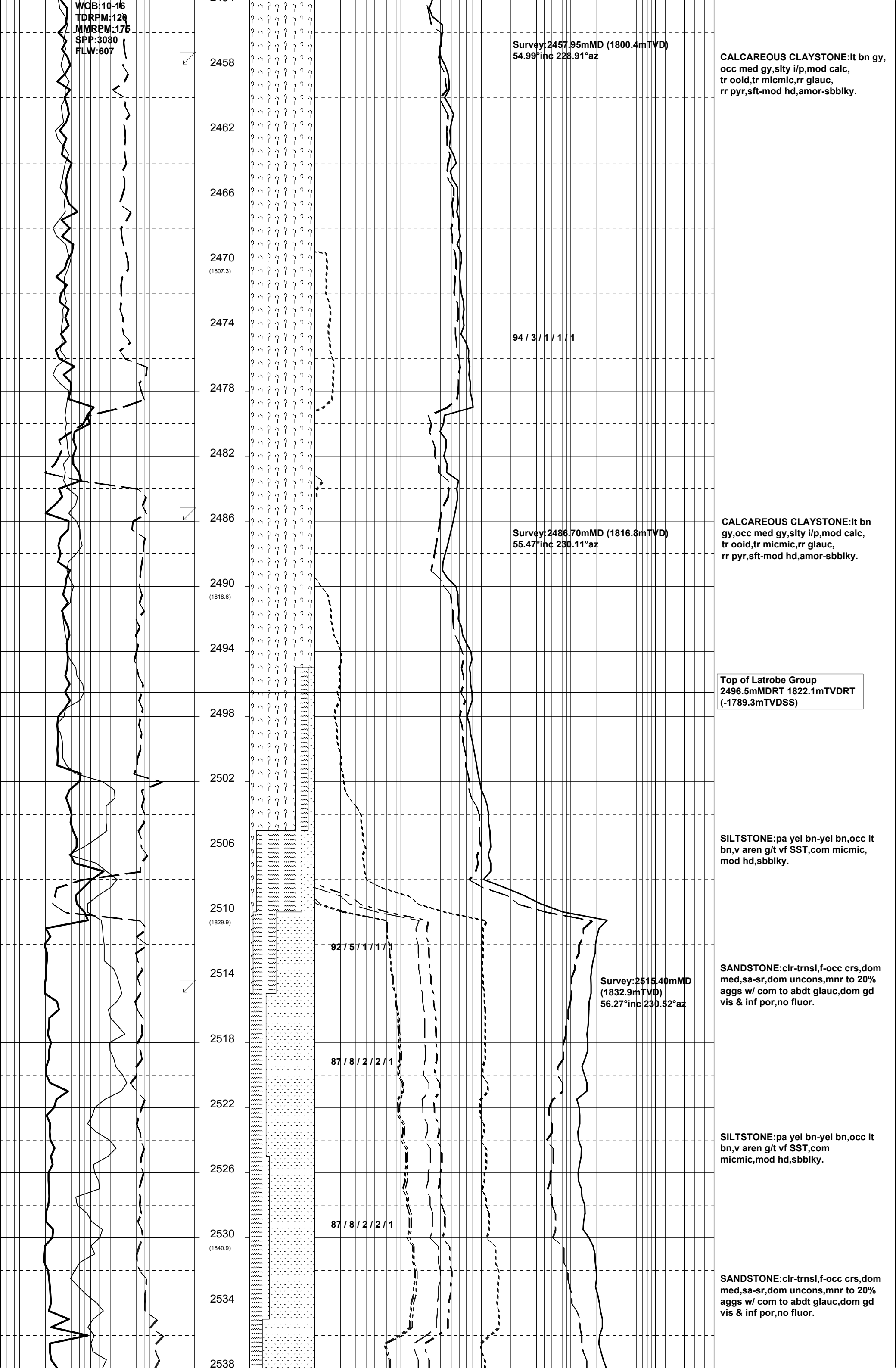
BREAM A5A

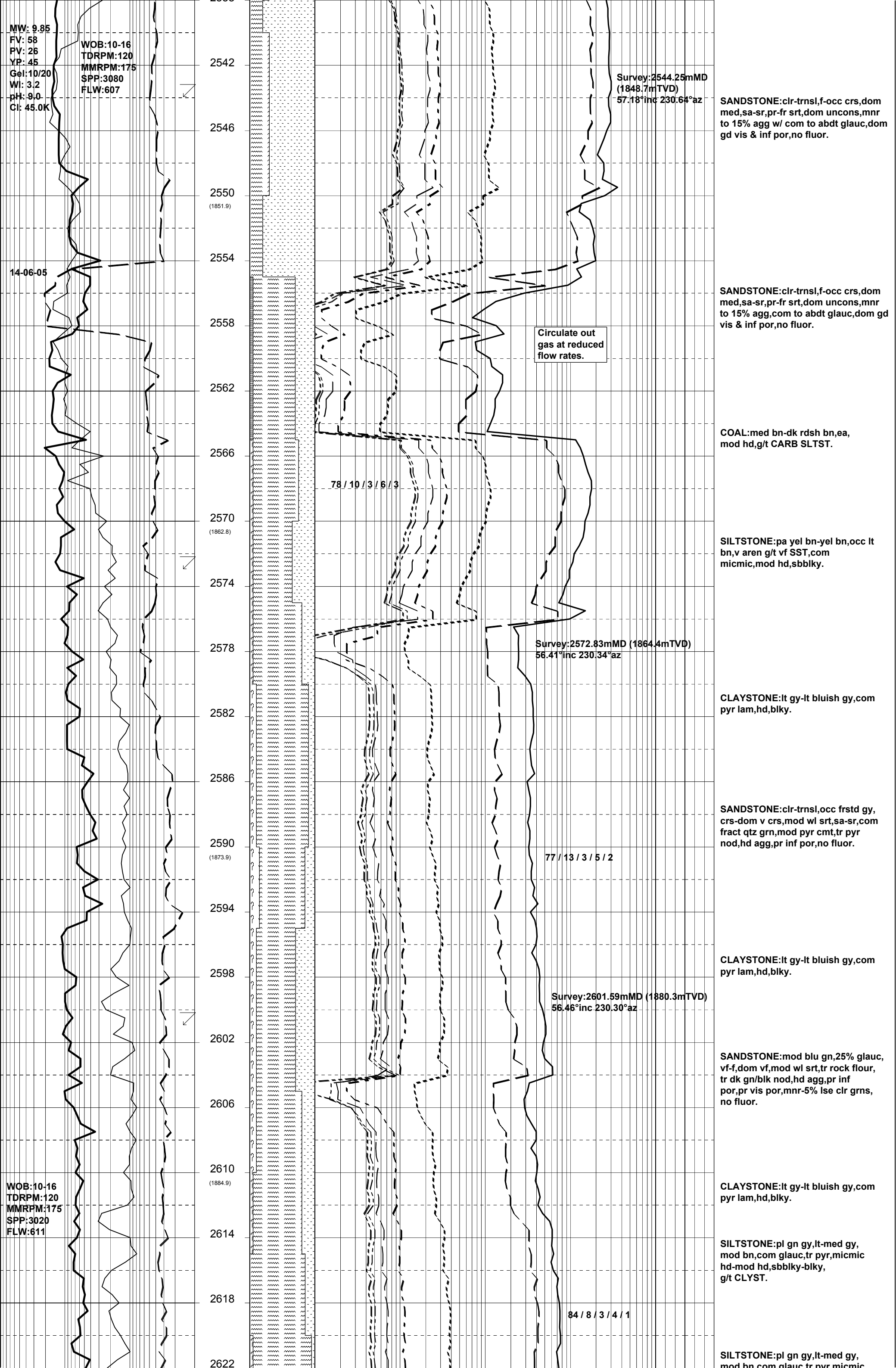
Mud Log

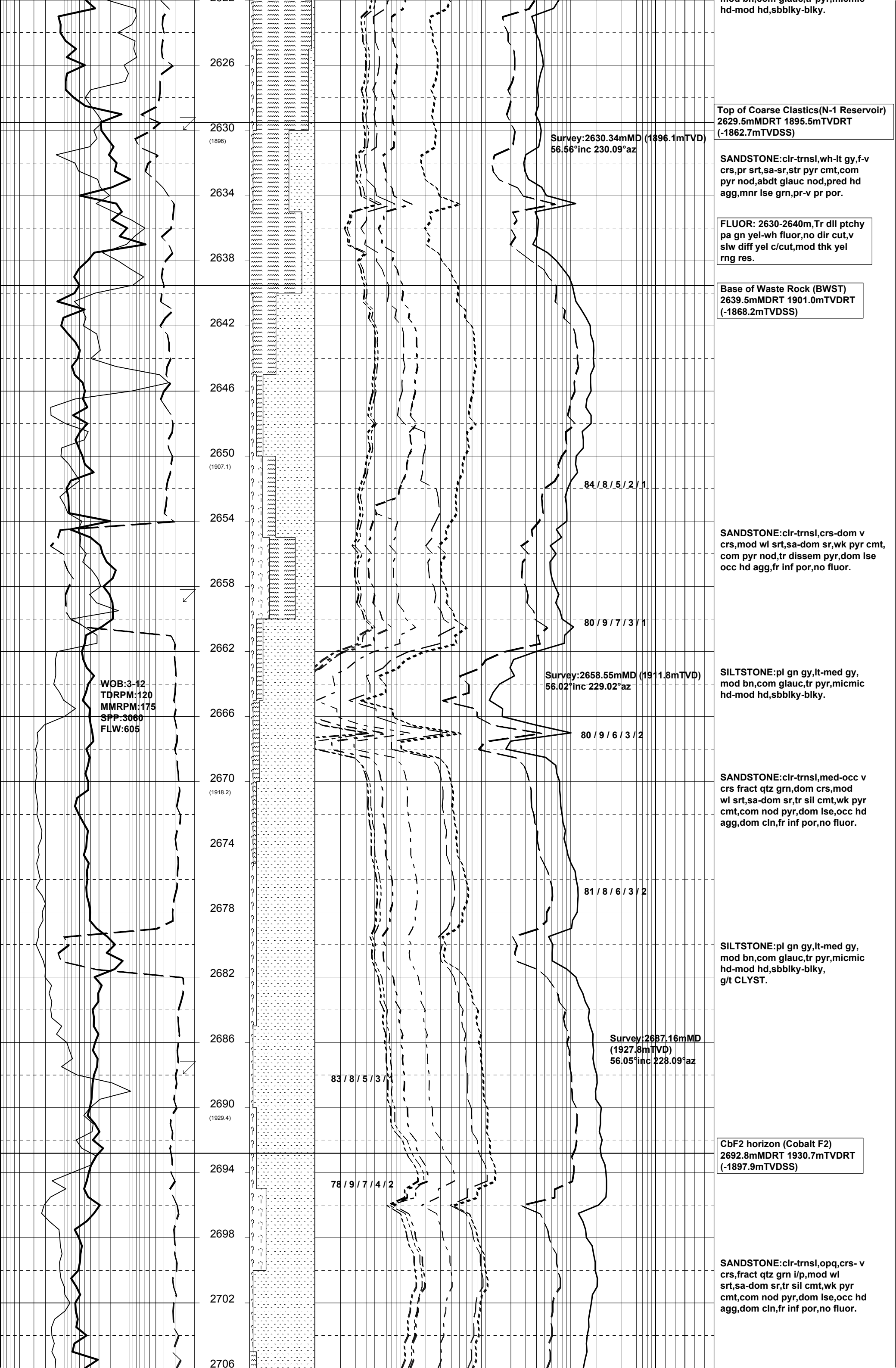


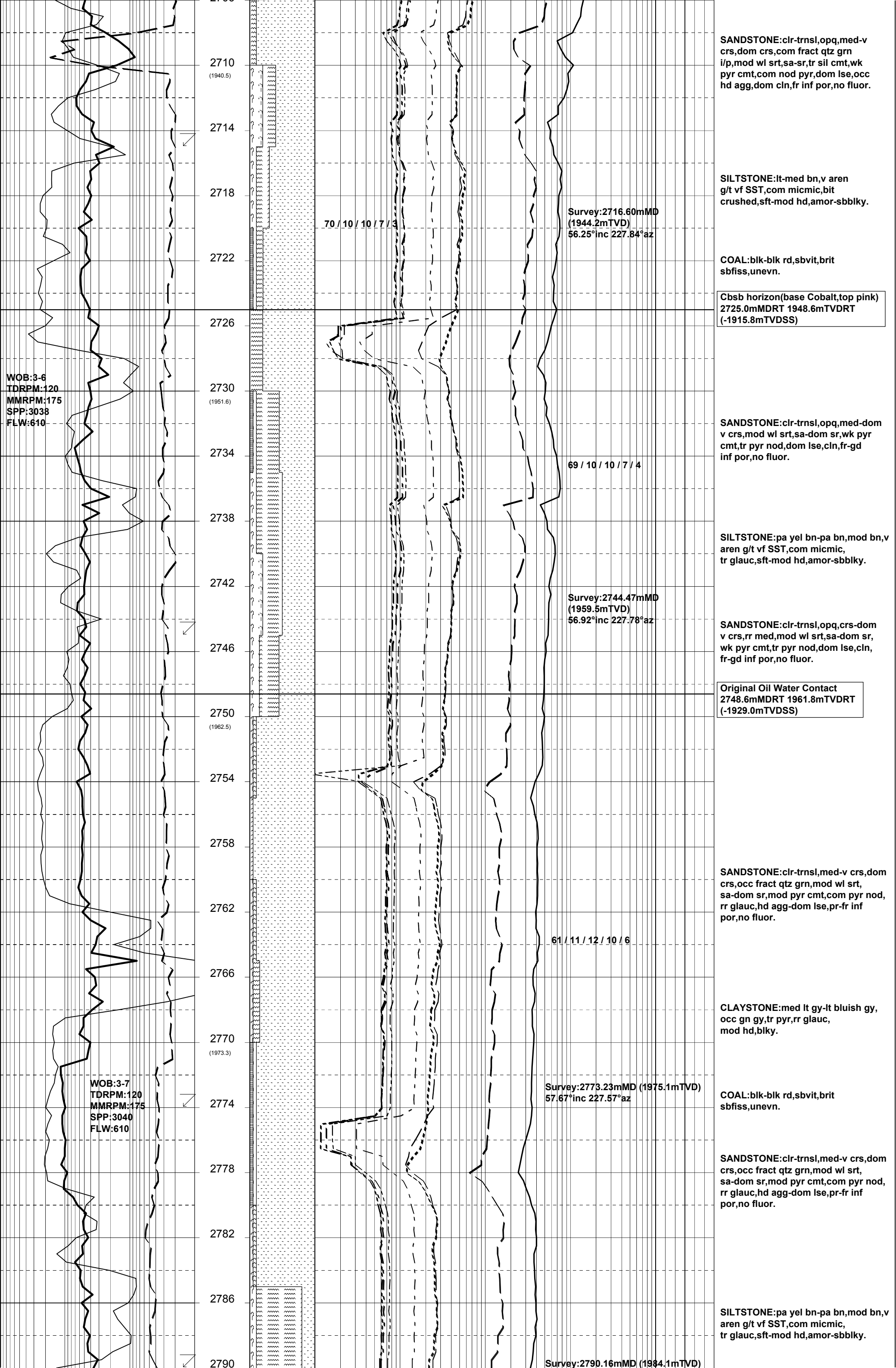
GENERAL		SURFACE POSITION		HOLE / CASING INFO		DATE / DEPTH		ENGINEERS			
Country : AUSTRALIA Permit : VIC L13 Field : Bream Basin : GIPPSLAND Well Type : DEVELOPMENT Rig Name : NABORS 453		Local Co-ord X : 147 46 20.334 E Local Co-ord Y : 38 29 58.778 S MGA Co-ord X : 567345.00 mE MGA Co-ord Y : 5738461.68 mN RT to MSL : 32.82 m RT to Sea Bed : 92.22 m		8-1/2" Hole to 2810 m 13-3/8" Surface Csg at 896 m 7" Production Csg at 2809 m		Kick Off Date : 11-06-2005 Total Depth Date : 14-06-2005 Total Depth : 2810 mMDRT True Vertical Depth : 1994.5 m Log Scale : 1/ 200		Steve Oades V.B. Jagarlamudi Paul McGilveray Mark Smith			
ABBREVIATIONS			LITHOLOGY LEGEND				ENGINEERING LEGEND				
MW Mud Weight FV Funnel Viscosity PV Plastic Viscosity YP Yield Point Gel Gel Strength WL Water Loss KCl Potassium Chloride Cl Chlorides Incl Inclination Az Azimuth		WOB Weight on Bit (klbs) RPM Rotations Per Min FLW Flow Rate (gpm) SPP Pump Pressure (psi) RR Re-Run Bit TG Trip Gas CG Connection Gas BG Background Gas DGP Drilled Gas Peak MM Mud Motor		<div><div> CLAYSTONE</div><div> SILTSTONE</div><div> SST: F - V FINE</div><div> SST: MEDIUM</div><div> SST: COARSE</div><div> SHALE</div><div> MARL</div><div> LIMESTONE</div><div> DOLOMITE</div><div> CHERT</div><div> CONGLOMERATE</div><div> COAL</div><div> BRYOZOA</div><div> RADIOLARITES</div><div> ECHINOIDS</div><div> CORALS</div><div> FORAMINIFERA</div><div> LITHIC FRAGMENT</div><div> CARB FRAGMENT</div><div> QUARTZITE</div><div> INTRUSIVES</div><div> GLAUCONITE</div><div> PYRITE</div><div> CEMENT</div></div>				<div><div> CASING SHOE</div><div> LINER HANGER</div><div> BIT CHANGE</div><div> DEVIA. SURVEY</div><div> SWC UNRECOV</div><div> SIDEWALL CORE</div><div> CORE</div><div> WIRELINE LOGS</div><div>MDT POINTS:</div><div> PRESSURE ONLY</div><div> SAMPLE</div><div> SEAL FAILURE</div><div> TIGHT</div></div>			
<div>ROP (m/hr)</div> <div>500505</div> <div>WOB (tons)</div> <div>50250</div> <div>MWD Gamma Ray (api)</div> <div>0100200</div>		DEPTH (m) (TVD)	CUTTINGS	RESERVAL GAS DATA					CUT FLUOR	DIRECT FLUOR	LITHOLOGICAL DESCRIPTIONS and REMARKS
			LITHOLOGY	C1 ———— C2 ----- C3 _____ iC4 - - - - - nC4 - - - - - iC5 ----- nC5 ----- TG _____ <div>Total Gas in Units Chromatograph in PPM</div>							
			%	.5100	51K	5010K	500100K	5K1000K	goodpoorfair	goodpoorfair	
		2350									<div>No H2S or CO2 Detected</div>
		2354									
		2358									
		2362									
		2366									
		2370									

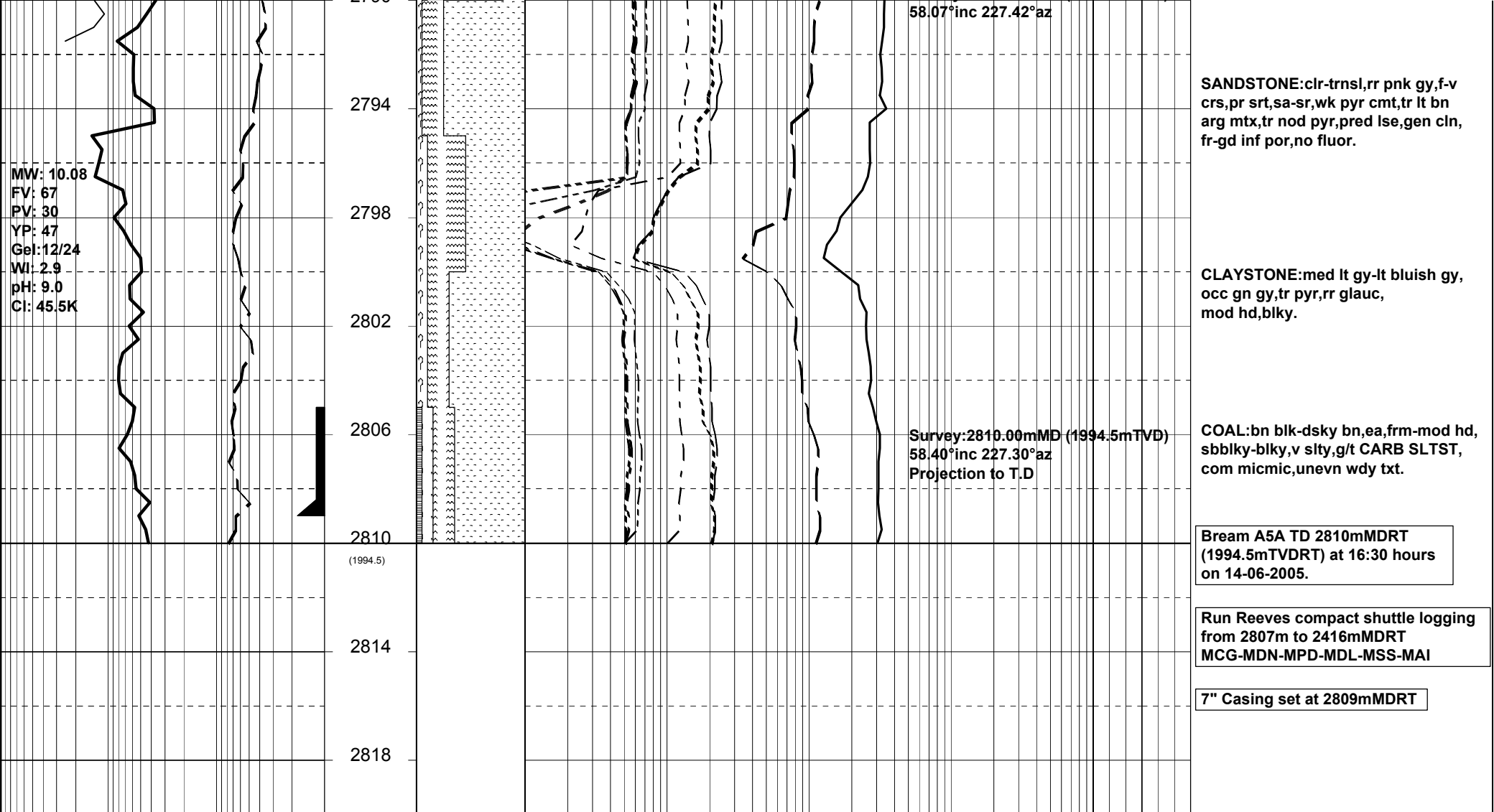












APPENDIX 4b

BREAM A5A

Well Completion Log

WELL COMPLETION LOG
Scale – 1:200
BREAM A-5A

Gippsland Basin, Victoria
Concession: VIC/L13



POST-DRILL
LOCATION:
Top of Latrobe

Latitude: 38° 30' 23.200" S
Longitude: 147° 45' 30.628" E
MGA X: 566134.81 mE
MGA Y: 5737718.94 mN
Depth: 2496.7m MDRT
1822.4m TVDRT
(-1789.6mTVDSS)
G.L.: -59.40 m
R.T.: 32.82 m above MSL
Water Depth: 59.40 m

ELEVATION:

DATES:

Spudded: 09/06/2005
Rig Released: 24/06/2005

I.P. Established: 05/07/2005
(Initial production)

COMPILED BY: Sheryl Sazenis
DRAFTED BY: Andrew Hodgson
DRILLED BY: Nabors Rig 453
DATUM: GDA94 (GRS80)
PROJECTION: Transverse Mercator
MGA/ UTM Zone 55 (S)

TOTAL DEPTH: 2810.0 mMDRT / 1994.5 mTVDRT
LATER PLUGGED 2709.0m MDRT
BACK T.D.:
INITIAL PLUGGED 2775.5m MDRT
BACK T.D.:

CLASSIFICATION: Oil Development

STATUS: Cased and Completed

SERVICE COMPANIES:

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

No Rec.

CORE

Rec.

PERFORATED INTERVAL

PLUG

←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

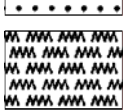
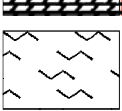
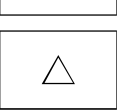
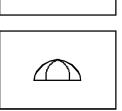
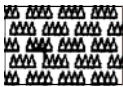
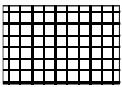

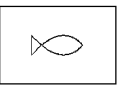
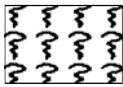

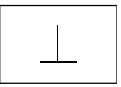
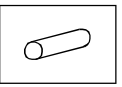
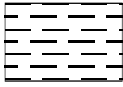
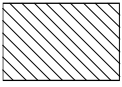
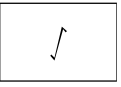


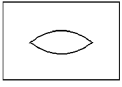
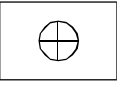

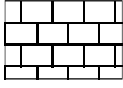
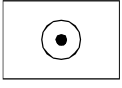
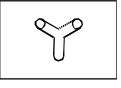
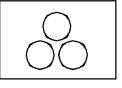
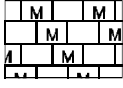



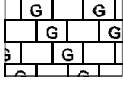


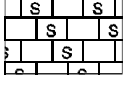
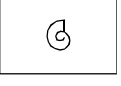
LITHOLOGICAL SYMBOLS

Sandstone

Dolomite

Mica

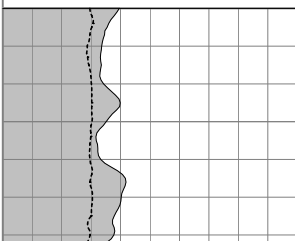
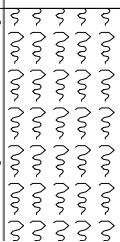
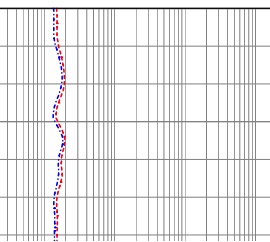
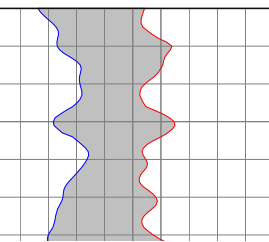
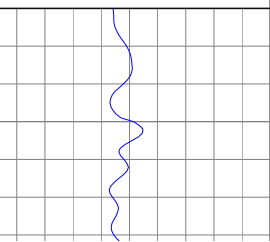
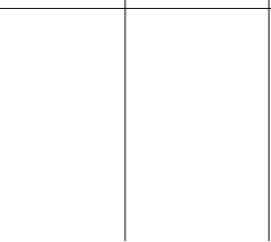
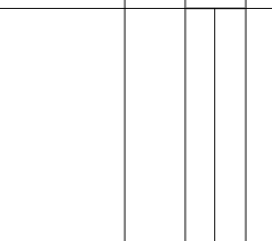

Pelecypods

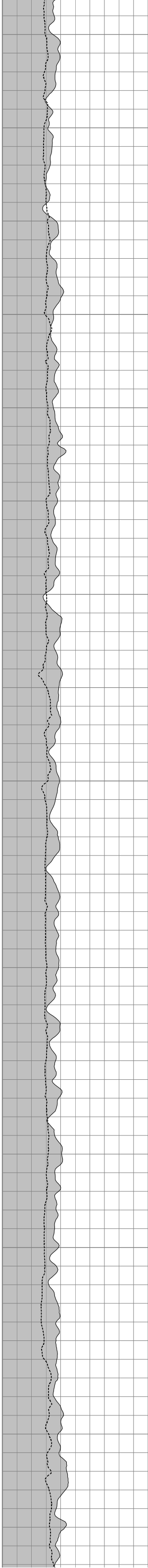
	Siltstone		Marl		Chert		Echinoids
	Mudstone		Anhydrite		Carbonaceous Matter		Fish Remains
	Claystone		Volcanics		Calcareous		Plant Remains
	Shale		Basement		Glauconite		Spores
	Coal		Granule		Corals		Leaves
	Limestone		Oolites		Bryozoans		Foram
	Micritic Limestone		Dolomitic		Brachiopods		Fossils
	Grain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

LOGGING AND SURVEYING				
Anadrill Schlumberger		Interval (mMDRT)	Reeves (wireline tools drillpipe conveyed,memory)	Interval (mMDRT)
MWD (Directional, GR & APWD) – 1 Run		898.0 - 2790.16 mMDRT	MCG-MDN-MPD-MSS-MDL (GR-Dual Neutron-Photo Density-Sonic-Dual Laterolog	2807.0 - 843.1 mMDRT
Date	11 June 2005 - 14 June 2005	16 June 2005 - 17 June 2005		
Run	MWD #1	Reeves log Run #1 on shuttle		
Log	Powerpulse Directional / GR	MCG-MDN-MPD-MSS-MDL		
Depth Driller	2810.0 mMDRT	2810.0 mMDRT		
Depth Logger	2790.16 mMDRT	2810.0 mMDRT		
Bottom Log Interval	2790.16 mMDRT	2807.0 mMDRT		
Top Log Interval	898.0 mMDRT	843.1 mMDRT		
Casing Driller	895.5 mMDRT	895.5 mMDRT		
Casing Logger	895.5 mMDRT	895.5 mMDRT		
Casing Size	13 3/8"	13 3/8"		
Casing Weight	54.5 ppf	54.5 ppf		
Bit Size	8.5"	8.5"		
Type of Fluid in Hole	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL		
Density	10.1ppg	10.1 ppg		
Rm @ Measured Temp.	N/A	0.115 ohmm @ 25°C		
Rmf @ Measured Temp.	N/A	0.089 ohmm @ 25°C		
Rmc @ Measured Temp.	N/A	0.181 ohmm @ 25°C		
Max. Recorded Temp.	83.0°C	83.0°C		
Equipment / Location	Sale	Sale		
Recorded By	R.Borjas / L.Johnston	R. Tench / B. Moss		
Witnessed By	Trevor Lobo	Trevor Lobo		

CORES			PERFORATIONS		
From (mMDRT)	To (mMDRT)	Rec %	From (mMDRT)	To (mMDRT)	Shots/ft
----	----	---	2691.5	2695.0	(2) Wireline 2 1/8”
			2711.8	2714.6	(1) MaxR 4 ½”

CASING				PLUGS		
Size	Set @ (mMDRT)	Sx Cmt	Formation	From (mMDRT)	To (mMDRT)	Sx Cmt
13.375"	895.0*	---	Gippsland Limestone	2709.0	2711.5	Bridge Plug and Cement
7”	2809.0	550	Latrobe Group	2775.5	2810.0	Casing Collars
	(* Original A5 casing)					

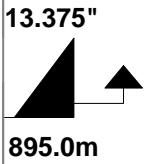
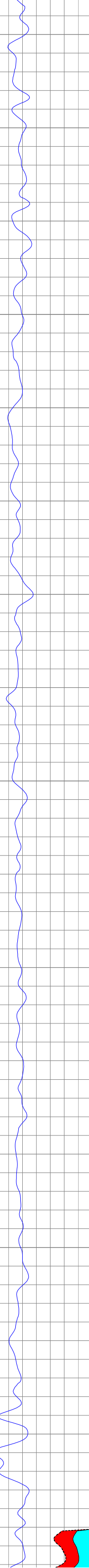
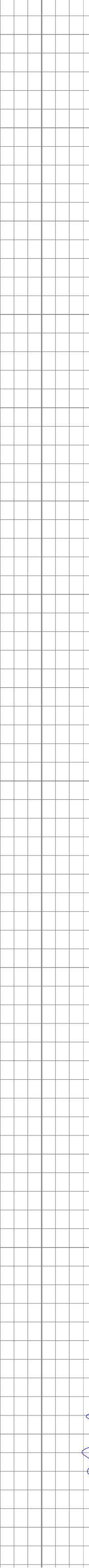
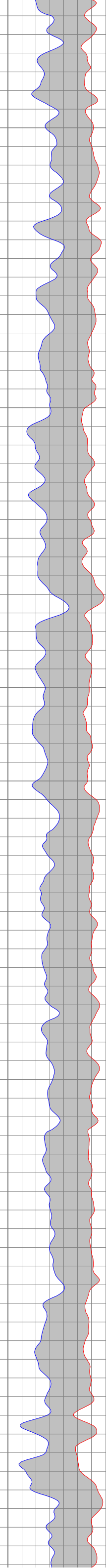
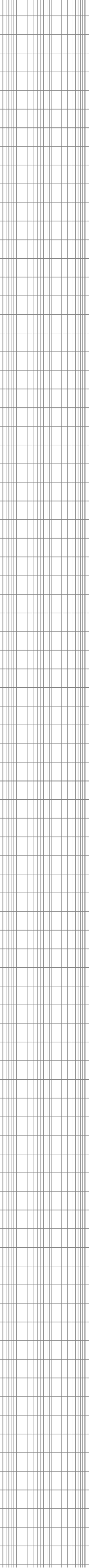
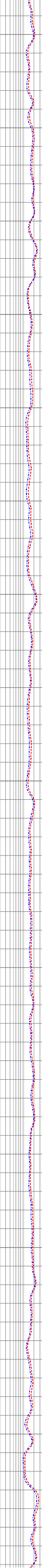
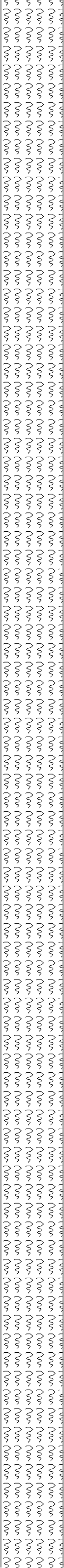
Caliper IN 6-----16	DEPTH	LITHOLOGY	Goningen Deep Resistivity		Formation Density		Compensated Sonic		TEST	COMPLETION	MUD / SURVEY DATA	PLUGS	FORMATION	PALYNOLOGY	AGE			
			0.2	OHMM	2000	1.85	G/C3	2.85								500	US/M	100
			Shallow Resistivity			Neutron Porosity		Effective Porosity										
			0.2	OHMM	2000	0.45	V/V	-0.15								0.5	V/V	0
Gamma Ray GAPI 0-----200							Volume of Water											
							1	V/V	0									
	mMDRT (mTVDS)																	



2425
(-1748.8)

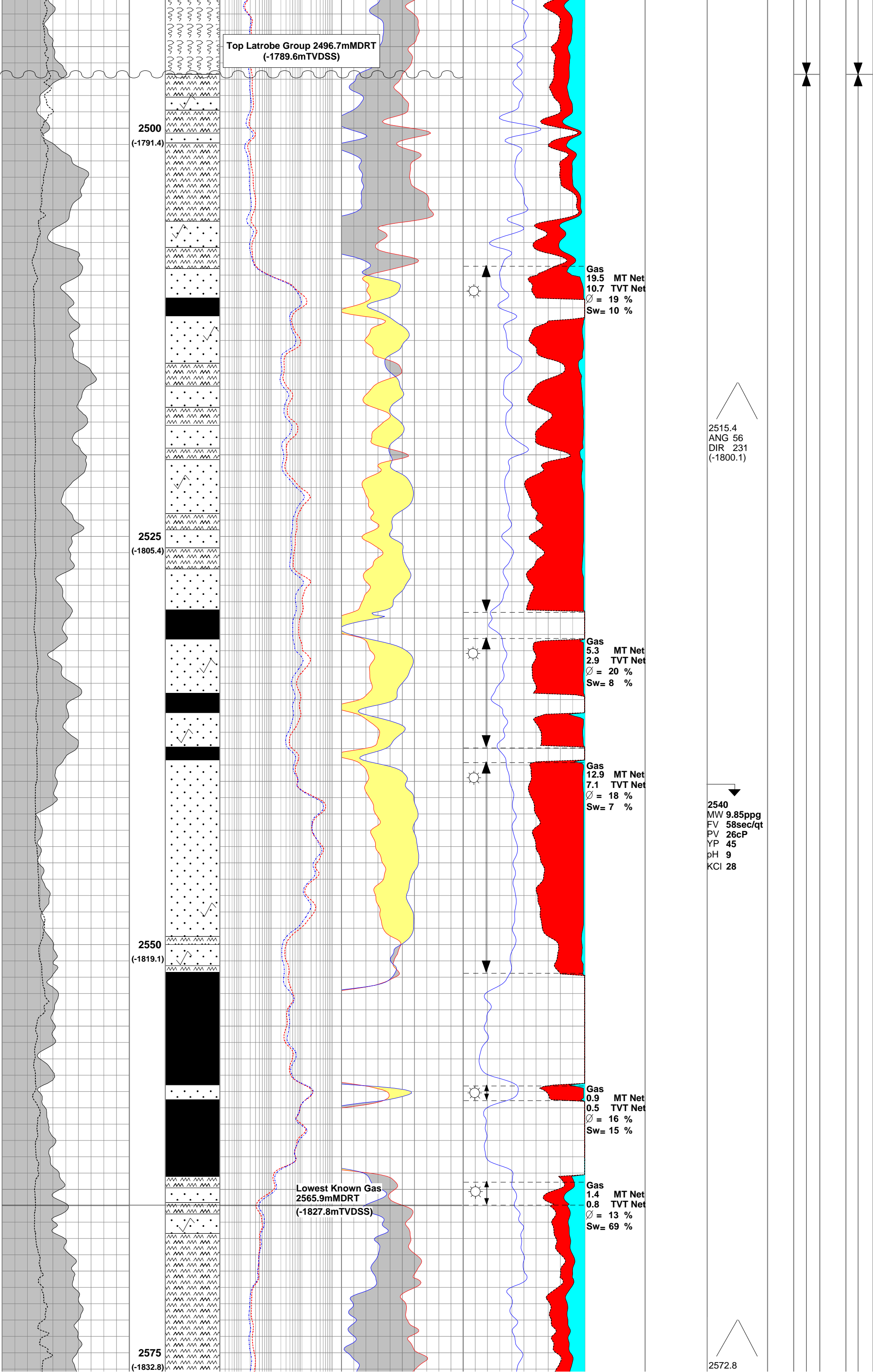
2450
(-1763.0)

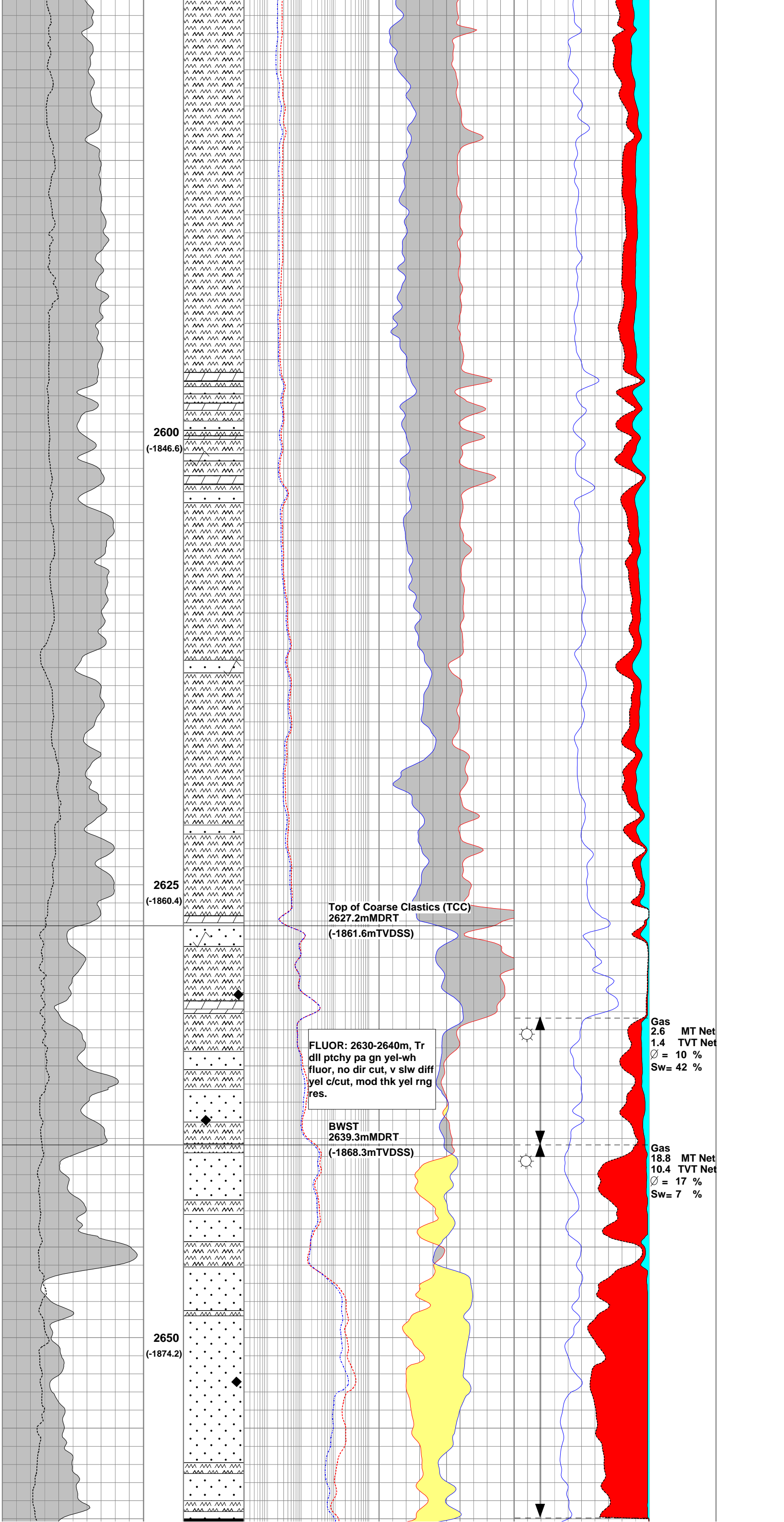
2475
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LAKES ENTRANCE FM

OLIGOCENE - MIOCENE



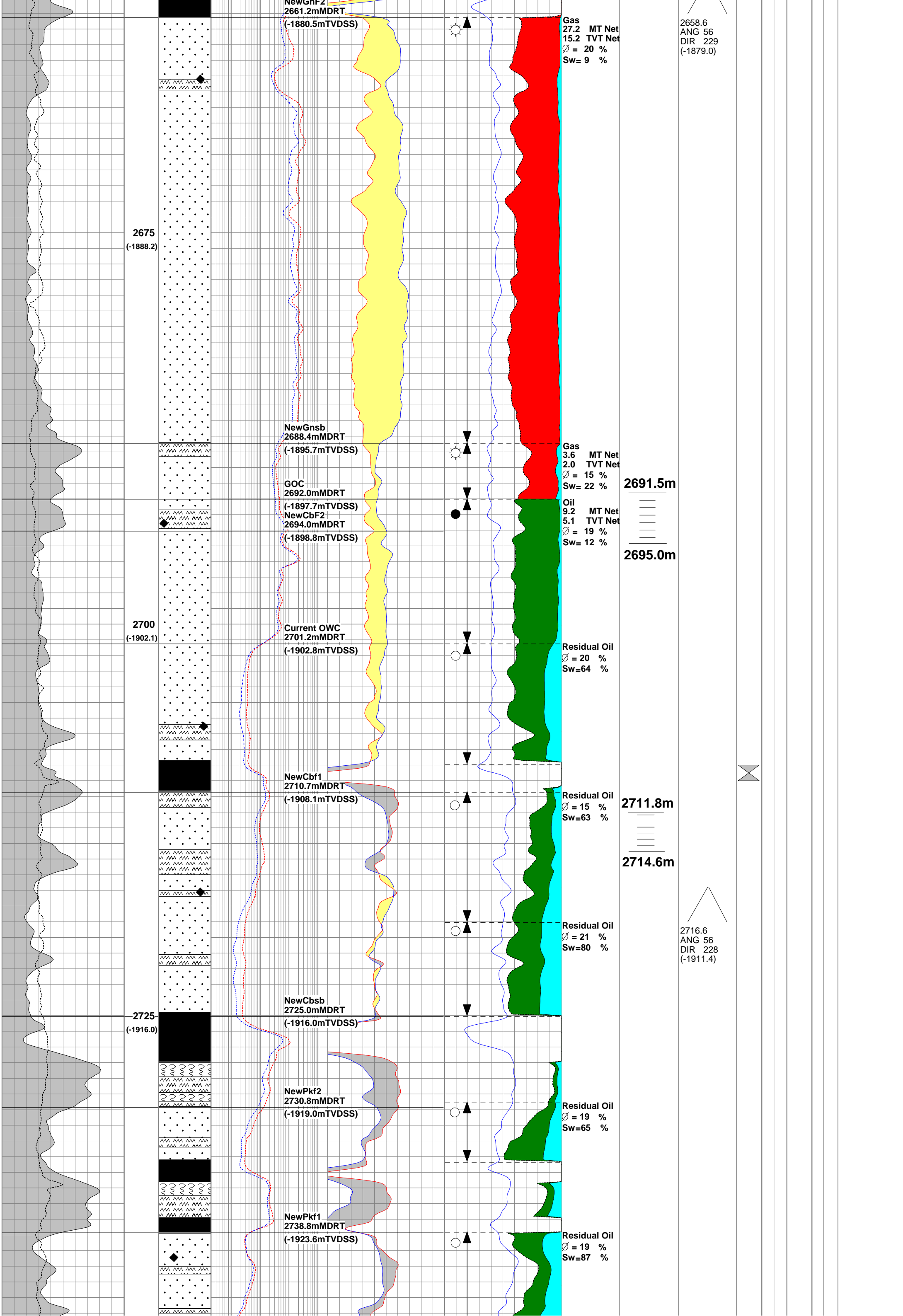


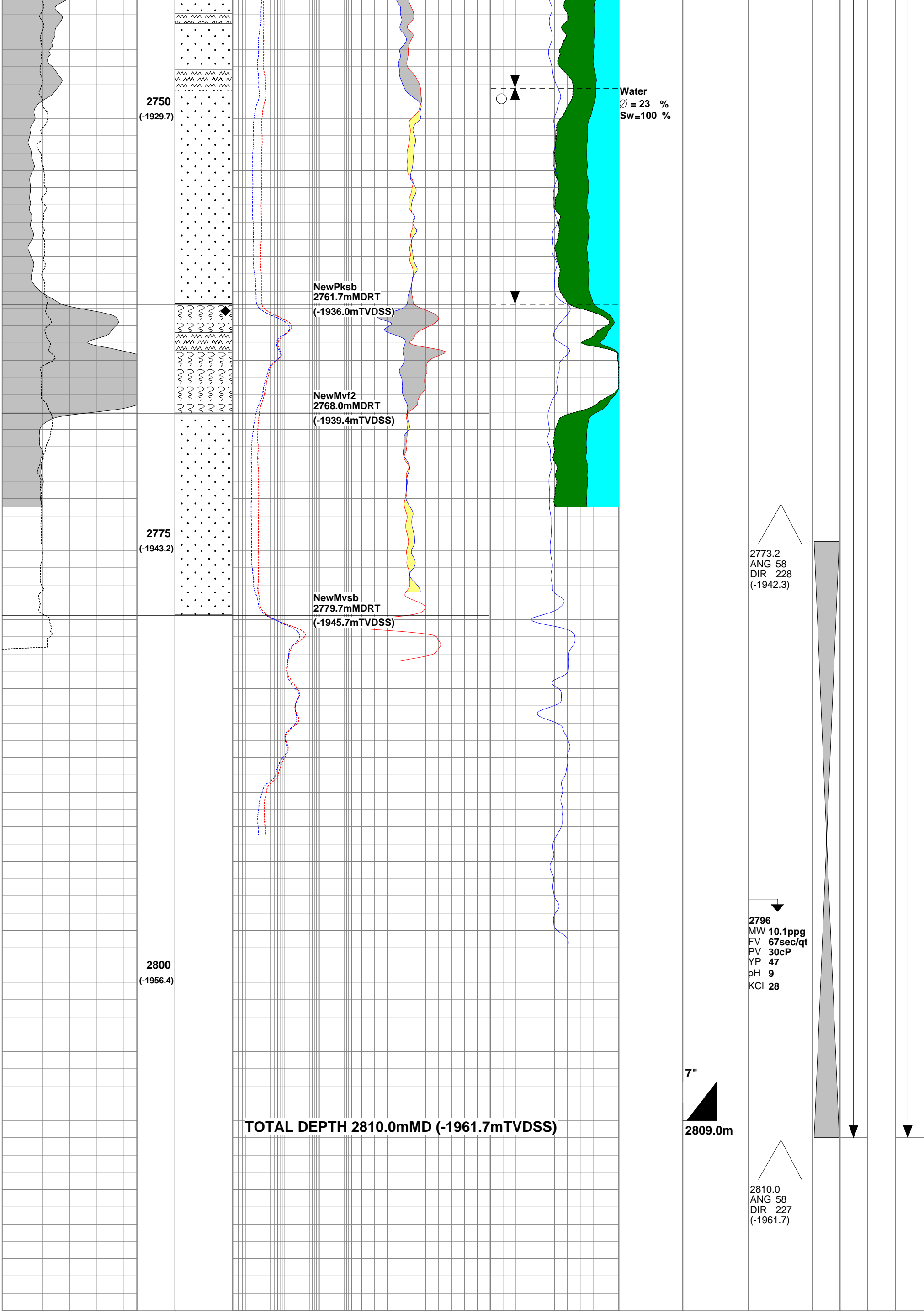
ANG 56
DIR 230
(-1831.6)

2630.3
ANG 57
DIR 230
(-1863.3)

LATROBE GROUP

EARLY EOCENE





GRGC
DSLL
DGLL
DEN
NPRL
DT35
PHIE

Gamma Ray
Shallow Laterolog
Groningen Deep Laterolog
Compensated Density
Limestone Neutron Porosity
Compensated Sonic
Effective Porosity

Bream A5A
Initial Production Date: 05/07/2005
Production Zone N-1
Initial Total Liquid Rate 210 kl/day, 95%watercut
Subsequent Perforation Zone Production 25/07/2005
Total Liquid Rate 427 kl/day, 0% watercut

VUWA	Bulk Volume of Water	
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