

WELL COMPLETION REPORT
WEST KINGFISH W23A
GIPPSLAND BASIN, VICTORIA

Author: Mike Hordern
Compiler: Sheryl Sazenis
March 2007

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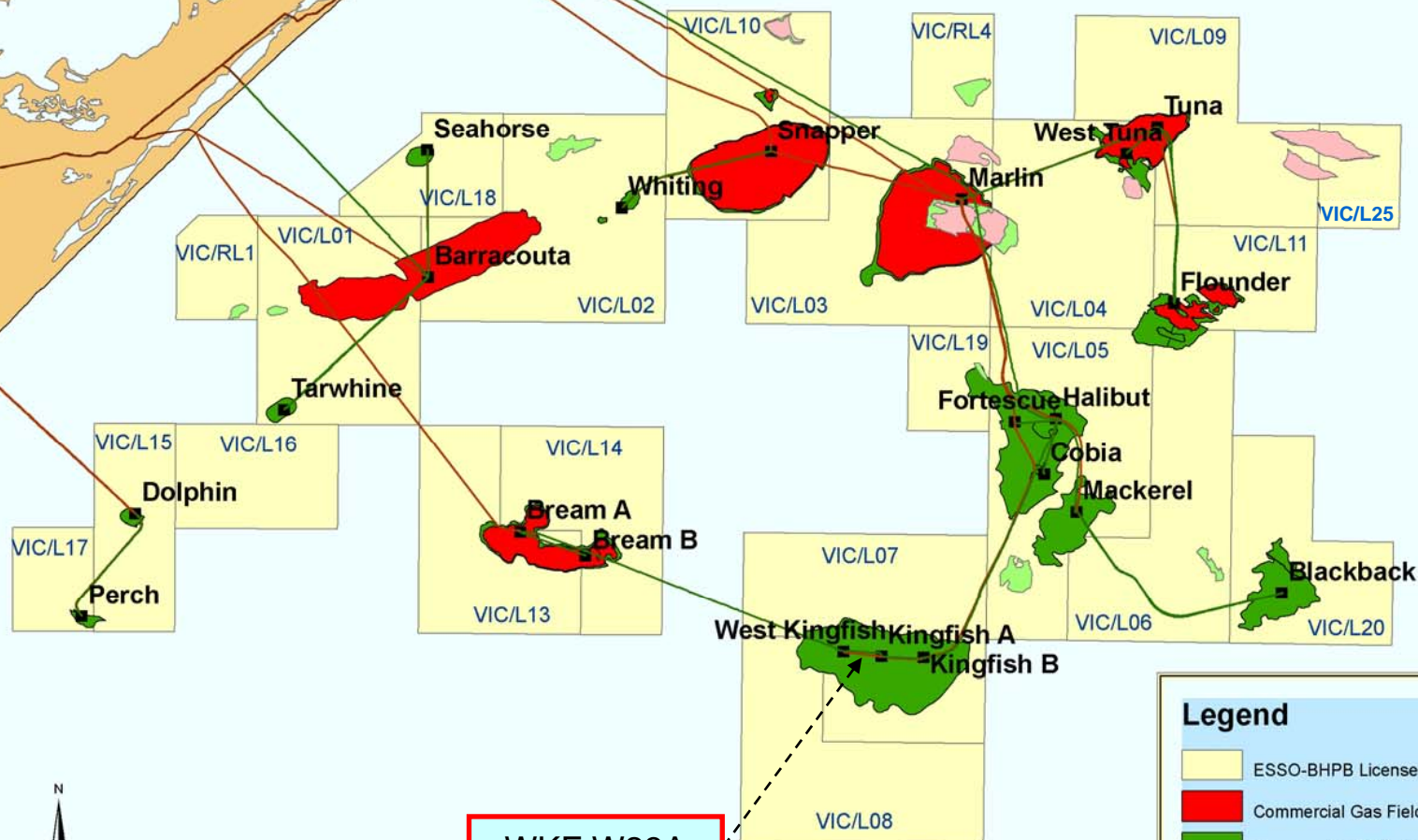
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I. WELL COMPLETION REPORT (W23A).
Fig.1: WEST KINGFISH FIELD LOCATION MAP



WKF W23A
(VIC/L7)

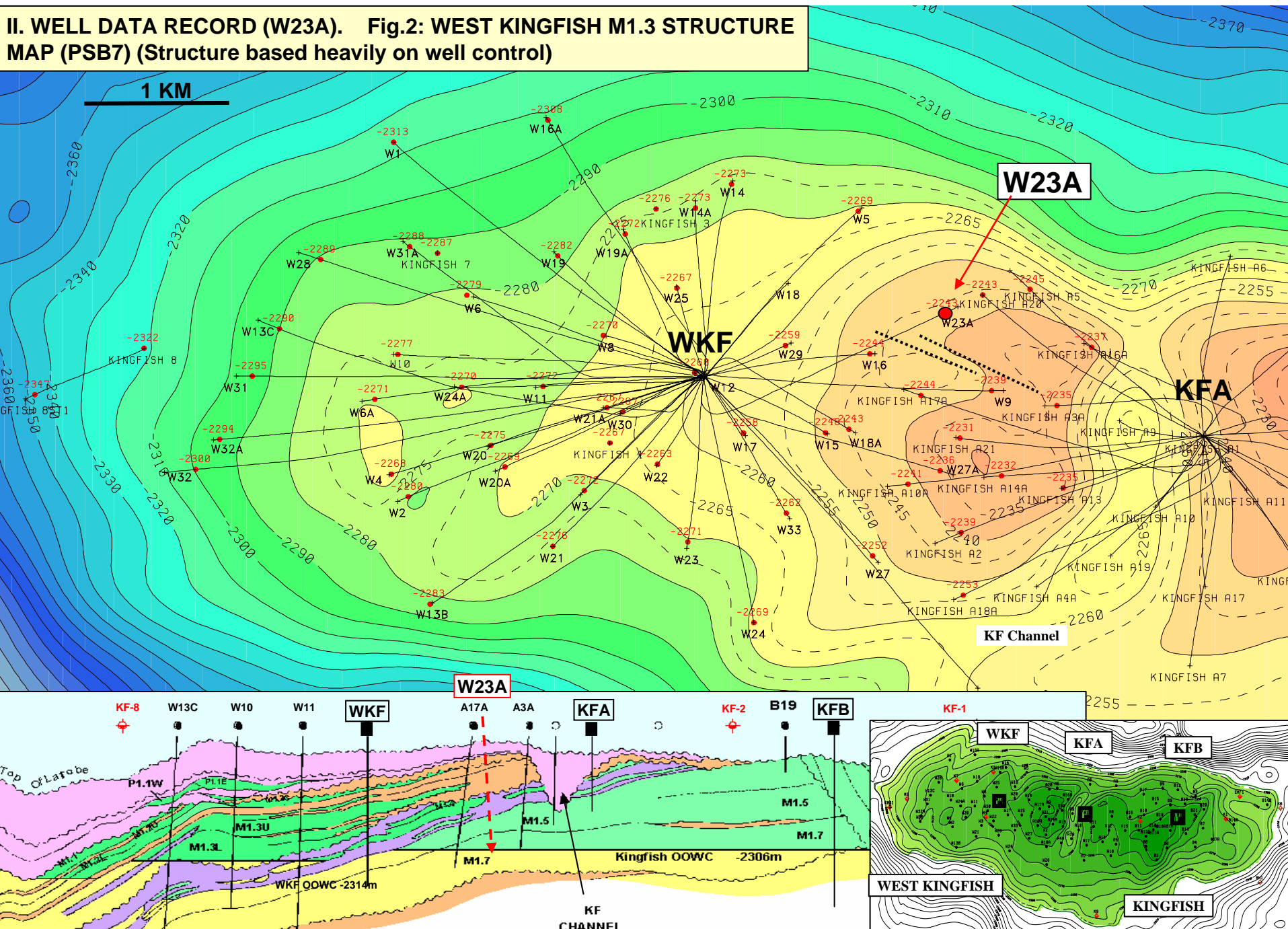
Legend

- ESSO-BHPB License Blocks & Retention Release Areas
- Commercial Gas Fields
- Commercial Oil Fields
- Static Gas Fields
- Static Oil Fields
- Gas Pipeline
- Oil Pipeline

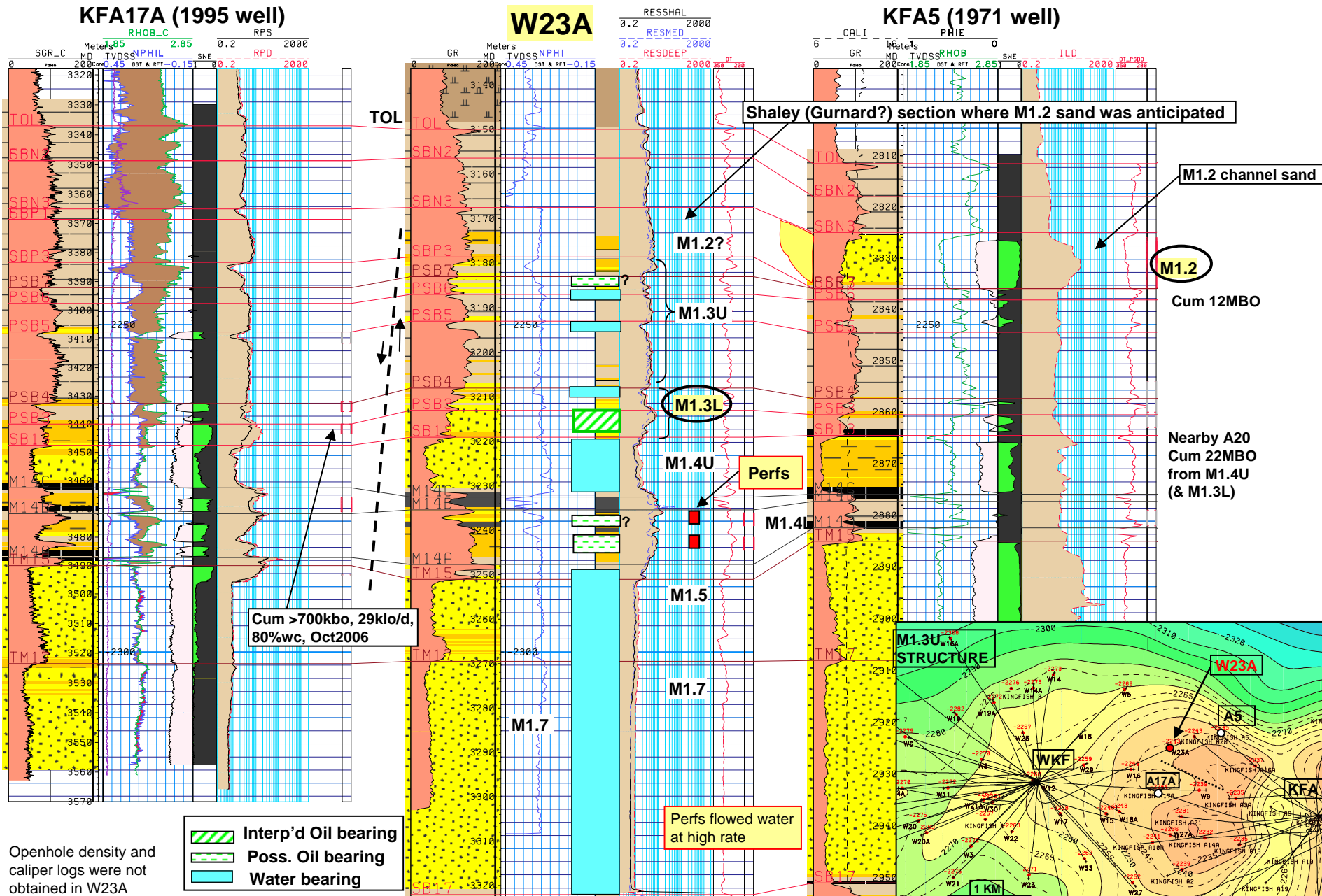
0 2.5 5 10 15 20 25 Kilometers

Gippsland Basin, Australia

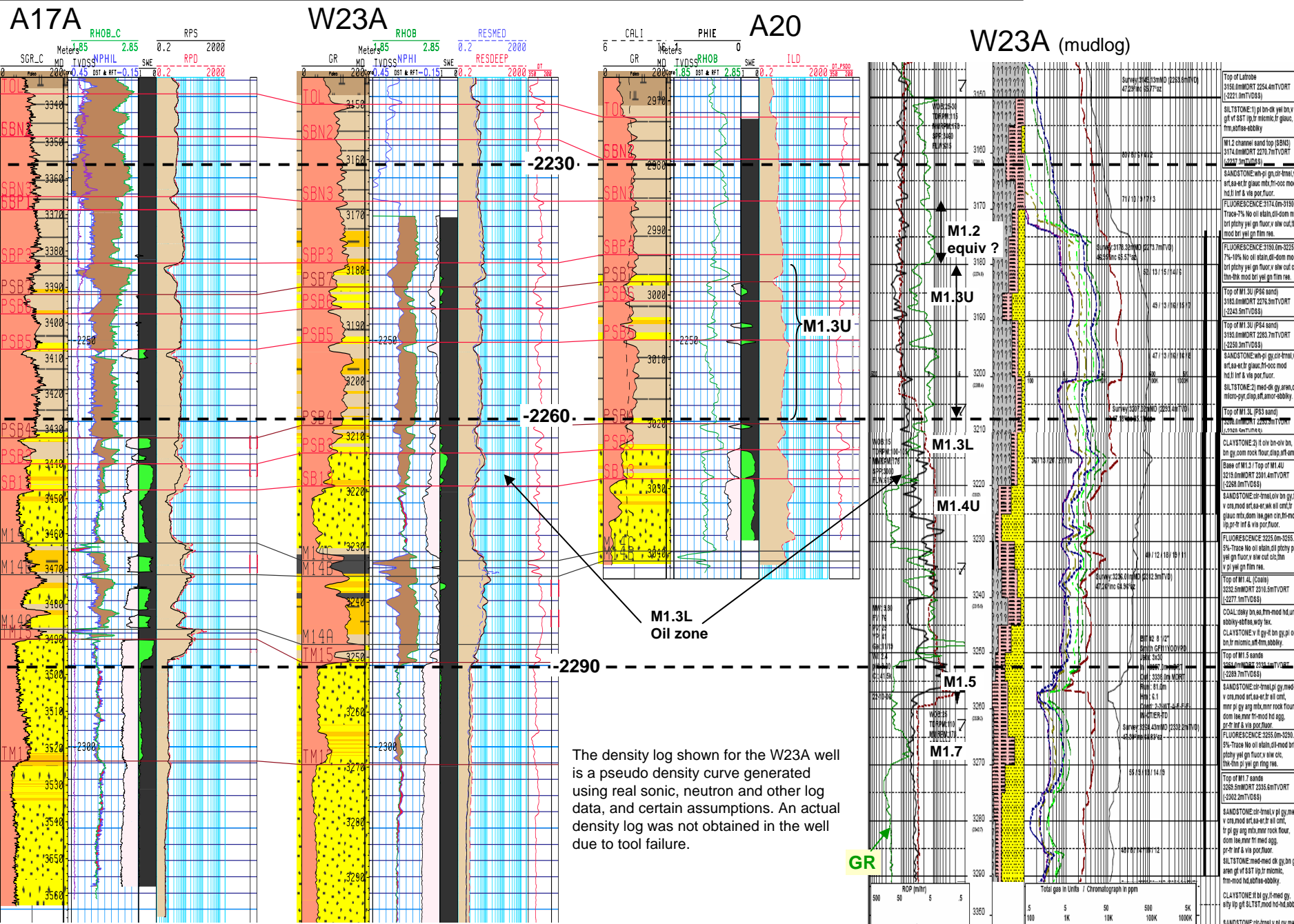
II. WELL DATA RECORD (W23A). Fig.2: WEST KINGFISH M1.3 STRUCTURE MAP (PSB7) (Structure based heavily on well control)



II. WELL DATA RECORD (WEST KINGFISH W23A). Fig.3: WELL LOG CROSS-SECTION



II. WELL DATA RECORD (WEST KINGFISH W23A). Fig.3A: NEARBY WELLS & W23A MUDLOG



II. WELL DATA RECORD – W23A (cont'd)

LOCATION

Field	West Kingfish	Conductor #23 Surface Coordinates	
Well Name	W23A (Predrill Location R)	(MGA94) X	596271.36 m E
Conductor Number	Slot 23	(MGA94) Y	5727806.41 m N
State	Victoria	Latitude	38° 35' 34.84" S
Permit/Licence	Vic/L7	Longitude	148° 06' 19.67" E
Geological Basin	Gippsland	Perforations (driller)	3236.0 - 3239.0m MDRT
Top of Latrobe	3150.0m MDRT		2312.9 - 2314.9m TVDRT
	2254.4m TVDRT		(-2279.5 - 2281.5m TVDSS)
	-2221.0m TVDSS		3241.5 - 3244.5m MDRT
(MGA94) X	597875 m E	(commingled)	2316.6 - 2318.7m TVDRT
(MGA94) Y	5728226 m N		(-2283.2 - 2285.2m TVDSS)
Latitude	38° 35' 20.58" S	Datum	GDA94 (Geocentric Datum of Australia)
Longitude	148° 07' 25.77" E	Spheroid	GRS80 (Geodetic Ref. System 1980)
		Projection	UTM (Universal Transverse Mercator)
		Map Grid / Zone	MGA Zone 55
		Central Meridian	147 deg E

ELEVATIONS & DEPTHS

Water Depth	76.13 m
Main Deck Rel to MSL	25.12m
RT Relative to MSL	33.43m
Average Well Angle	47 deg in Latrobe
Max Well Angle	60.8 deg at 1311m
Total Depth	3338.0m MDRT
	2382.0m TVDRT
	(-2348.6 TVDSS)
Plug Back Depth	3288.8m (PBD tagged with drillpipe)
	(3288 wireline tag)

DATES

Skid Rig	04 Oct 2006 (P&A W23)
Drillwell Opns W23A	11 Oct 2006
Kicked Off	11 Oct 2006
Development Rig Days	21.2
NPT Days	1.1
Rig Released	01 Nov 2006
I.P. Established	10 Nov 2006

MISCELLANEOUS

Operator	Esso Australia Pty Ltd	Contractor	International Sea Drilling Ltd
Esso Interest	50%	Rig Name	Nabors Rig 453
Licensee	Esso / BHPBilliton	Equipment Type	Platform
Other JV Interest	50% (BHPB)	Completion Type	Single
Overriding Royalty	2.5% (Weeks)	Completion Size	2 7/8 "
Drilling AFE No.	L0501G660		

WELL CLASSIFICATION

Before Drilling	Oil Development	After Drilling	Cased & Completed - Oil well
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II. WELL DATA RECORD – W23A (cont.)

CASING RECORD

Type	Size (Inches)	Weight (lb/ft)	Grade	Thread	Depth (mMDRT)
Conductor *	20				167.0
Surface *	10 ³ / ₄	40.5	K-55	Buttress	651.6
Production	7	26.0	L-80	Vam Top HC	3334.0
Tubing	2 ⁷ / ₈	6.4	13Cr-95	Vam Ace	3161.4

* Pre-existing W23 casing strings

CEMENTING RECORD

Casing details	Cement Type	Dry Cement Volume (sacks)	Cement Additives	Mix Water (bbls)	Slurry Volume (bbls)	Slurry Density (ppg)	Cement to/from (m MDRT)	Casing Pressure Test (psi)
7" 26 lb/ft	AB CLASS G Lead	745	Gascon-469 50gal / 10 bbl HALAD-413L 20gal / 10 bbl NF-5 0.25 gal/10 bbl SCR-100L 6.0 gal / 10 bbl	220 (fresh water)	284	12.5	3079 * to 980 *	3000
7" 26 lb/ft	AB CLASS G Tail	282	Gascon-469 20gal / 10 bbl HALAD-413L 30gal / 10 bbl NF-5 0.25 gal/10 bbl CFR-3L 5.0 gal/10bbl SCR-100L 4.0 gal / 10 bbl	34.5 (fresh water)	57	15.8	TD 3288 to 2950 *	3000

* estimate

II. WELL DATA RECORD (cont.)

DRILLING PERFORMANCE WEST KINGFISH W23A - Final Well Report

GENERAL

Platform:	West Kingfish	Rig:	453	Reservoir:	M1.2, M1.3 Sands
Well:	W23A	Well Slot:	#23	RT-MSL (Rig453)	33.43
Drilling Complexity Index	3.2	Wellwork Complexity Index	2.8		

DEPTH		PERFORMANCE		MUD	
m MDRT	3338	20" Cond. Hole	N/A	Max Wt (ppg)	9.85
m TVDRT	2382	12-1/4" Surf. Hole	N/A	Type (Surf. Hole)	N/A
Vert. Section (m)	1793.8	8-1/2" Prod. Hole	251 m/day *	Type (Inter. Hole)	N/A
INCLINATION		6" Liner Hole	N/A	Type (Prod. Hole)	KCI/PHPA/Poly/Glycol
Max (deg) / Ave (deg)	60.8 at 1311m/ 47 (average in Latrobe)	* time to drill interval, incl's Connections & NPT.		Type (Liner Hole)	N/A

* Comments: 8.5" New hole drilled: 652m to 3338mMDRT (2686m MD drilled in 10.7 days).

TIME ANALYSIS

Start Drillwell Opns Date:	11/10/2006, 0100hrs	Finish Date (Rig Release):	01/11/2006, 0500hrs	Kick Off (spud): Reach TD:	11/10/2006, 2345hrs 22/10/2006, 1600hrs
Target Days (P10):	19	Total Days:	21.2	% Under Target:	11.5 % (over)
AFE Days (P50):	22.3	NPT Days:	1.1	% of Total Days:	5%
Supplementary AFE Days (P50):					

COSTS *(based on projected)*

AFE No.:	L0501G660	Revisions:	--	\$ per m	A \$2.1 k / metre (new hole)
\$ per day:	A\$ 241 k/day	\$ per day (excl. T + L) * Equipment, LWD & Reeves	A\$ 180 k/day		A\$ 1.7 k / metre* * based on TD not new hole

	Equipment	Materials	Contracts	Allocations	Contingency	Total
AFE (Original)	930,300	577,290	3,190,273	1,005,770	223,060	A\$5,926,700
AFE (Supplement)	-	-	-	-	-	-
Projected	1,066,600	640,700	2,881,000	868,000	211,700	A\$5,668,000

CASING *(all depths herein are based on Rig 453 elevations: RT-MSL=33.43m)*

	Size / Weight / Grade / Thread	m MDRT	m TVDRT	PIT (ppg)
Conductor Casing *	22"	167	167	N/A
Surface Casing *	10.75", 40.5 ppf, K-55, BTC	652	620	12.5 (PIT)
Prod Casing	7", 26.0 ppf, L80, Vam Top HC	3334	2379.3	N/A

Comments: * Pre-existing W23 casing strings.

COMPLETION

	Size / Weight / Grade / Thread	EOT mMDRT	mTVDRT	Type
Completion	2-7/8", 6.4ppf, 13Cr95, Vam Ace	3161.4	2262.2	Single oil

	Upper Interval [m MDRT]	Upper Interval [m TVDRT]	Lower Interval [mMDRT]	Lower Interval [mTVDRT]	Gun Type
Perforation Interval:	3236.0 - 3239.0	2312.9 - 2314.9	3241.5 - 3244.5	2316.6 - 2318.7	MAXR

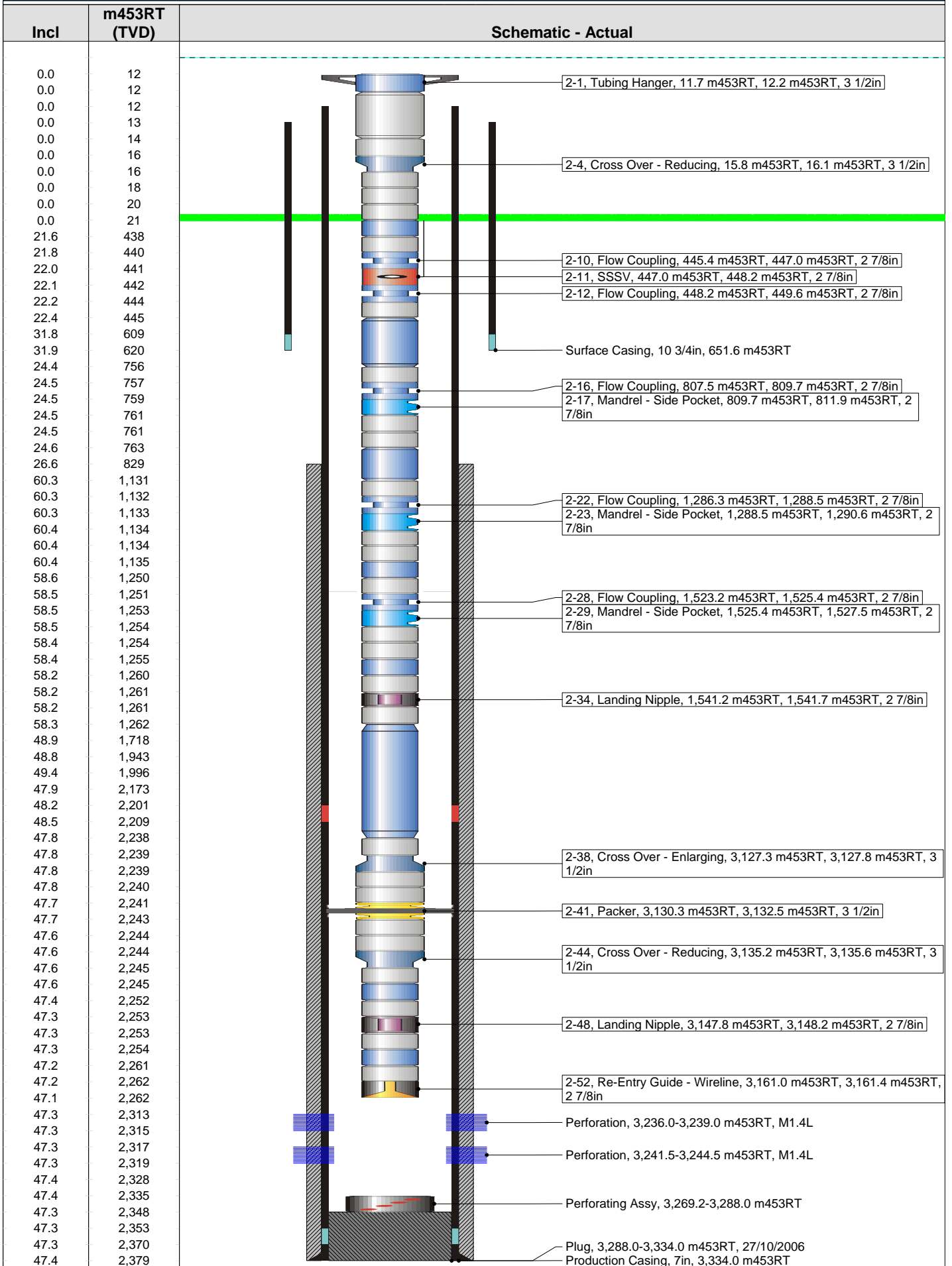
Comments: Completion was 2-7/8" 13Cr95 with TR-SSSV and 3 SPMs for gas lift, and one packer.

ADDITIONAL

		Top of Interval [m MDRT]	Base of Interval [m MDRT]
Logs Run	GR-Resistivity-Density-Neutron-Sonic-Caliper	651	3338 TD

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

West Kingfish W23A: Existing Schematic



III. SAMPLES – W23A

The cuttings sampling programme for WEST KINGFISH W23A are detailed in the following table:

CUTTINGS SAMPLES

Interval	Formation	Sampling Details
KOP to ~150 m above predicted Top of Latrobe (TOL prognosed at 3148.8m MDRT) 660.0 – 3000.0m MDRT	Gippsland Limestone & Lakes Entrance	Cuttings samples for description only at 30 m intervals.
~150 m above predicted Top of Latrobe to Top of Latrobe (TOL prognosed at 3148.8m MDRT) 3000.0 – 3150.0 mMDRT	Lakes Entrance Formation	Three sets of washed and oven dried cuttings at 10 m intervals.
~Top of Latrobe to Total Depth (TD) (TOL prognosed at 3148.8m MDRT) 3150 – 3338.0 mMDRT	Latrobe Group	Three sets of washed and oven dried cuttings at 5 m intervals.

Detailed cuttings descriptions for the interval 660.0 to 3338.0mMDRT (TD) are contained in Appendix 3a.

CONVENTIONAL CORING

No conventional cores were cut in WEST KINGFISH W23A.

SIDEWALL CORING

No sidewall core samples were shot in WEST KINGFISH W23A.

IV. LOGS AND SURVEYS – W23A

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
MWD Run 1, Powerpulse (Directional & GR)	Schlumberger/Anadrill	651	3257 (GR to 3237)
MWD Run 2, Powerpulse (Directional & GR)	Schlumberger/Anadrill	3257 (GR from 3237)	TD 3338 (GR to 3318)
Run 1: Drillpipe conveyed Logging: MCG-MDN-(MPD)- MSS - MDL- MAI (*Note: – No Density and Caliper logs obtained –Tools and backups damaged/failed when RIH. Decision made not to source new tools)	Precision Energy Services Compact logging (wireline tools run on drillpipe with Shuttle System, memory mode)	651 (2995m top of main logging)	3338 TD (3330m bottom of log interval - sonic; 3321m - laterolog). Incomplete log suite (no density).

(Precision logs = Compact GR - Dual Neutron - Photo Density - Sonic - Dual Laterolog Resistivity - Induction Resistivity)

V. RESERVOIR & FORMATION TOPS - W23A

Horizon	m TVDSS			m MDRT	mTVT net oil	
	Predicted Tops	ACTUAL	Diff. (m)		Predicted	ACTUAL
Base of Miocene High Velocity Channel		-1463.8		2000.5		
Lakes Entrance Formation	-1930	-1927.4	2.6 high	2709.0		
Top of Latrobe Group (TOL)	-2219	-2221.0	2.0 low	3150.0		
M1.2 sand, predicted below SBN3 (N.asperus Sequence Boundary)	-2232	Not present	-	Not present	4.5 (5m sand)	No sand
SBN3 – Encountered mostly shale with minor sand only (3174m)	-2232	-2232.9	0.9 low	3167.5		Minor sand at 3174 (non-net)
M1.3U PS7 section (SBP3)	-	-2240.4	-	3178.6	-	swept
M1.3U PS6 sand (PSB7)	-2243	-2243.4	0.4 low	3183.0	-	swept
PS5 sand (PSB6)	-	-2246.2	-	3187.0	-	swept
PS4 sand (PSB5)	-2249	-2250.2	1.2 low	3193.0	0.75 (1m sand)	swept
Top M1.3L PS3 sand (PSB4)	-2260	-2260.5	0.5 low	3208.0	1.4 (1.5m sand)	swept
PS2 sand (PSB3)	-	-2263.9	-	3213.0	Poss swept	2.3 net oil
PS2 (M1.3L) COWC	-	-2266.4	-	3216.7		
Base of M1.3L (SB13) / Top of M1.4U	-2267	-2267.9	0.9 low	3219.0	swept	swept
M1.4C Coal (Top of M1.4L)	-2275	-2277.1	2.1 low	3232.5		
M1.4L sands and silstones	-	-2279.8	-	3236.5	~1	(poss.) - but flowed water
Top of M1.5 sand (TM15)	-2287	-2289.6	2.6 low	3251.0	swept	swept
Top of M1.7 sand (TM17)	-2302	-2302.2	0.2 low	3269.5	swept	swept
KF OOWC -2306m	-2306	-2306.0	-	3275.1		
Base of M1.7 (SB17)	-	-2337.8	-	3322.0		
TD	-2345	-2348.6	3.6 low	3338.0		

Net pay thickness is based on 10% porosity cutoff because sands are often thin or shaly yet productive.

OOWC = Original Oil-Water Contact

COWC = Current Oil-Water Contact

U = Upper L = Lower

(The reason predicted depths were not provided for some tops predrill is that the horizons or zones were of less importance than others, rather than they were unexpected).

VI. GEOLOGICAL ANALYSIS – WEST KINGFISH W23A

Objectives

West Kingfish W23A (predrill Location R) was designed to capture potential oil reserves in M1.2, M1.3 and M1.4 reservoirs on an interpreted fault-controlled structural ridge east of the WKF platform, between W16, KFA A17A and A20 (Fig.2). The primary objective was an M1.2 channel sand interpreted from 3D seismic to be present on this high, in a position updip of the KFA A5 and W18 wells where M1.2 channel sands had been exceptional producers in the past, with 12MBO recovered from A5 (Fig.3). The moderately thick (8-11m TVD) good quality M1.2 sands in these wells were thought to be quite narrow channel bodies, although presumably linearly extensive.

Low seismic impedance, interpreted to be indicative of channel sands, was utilised to help optimise the proposed W23A well target. However, because W23A was to be located close to wells where channel sand was not encountered (W16, KFA A17A, A20), a significant risk on sand presence was recognised predrill. Offsetting this risk was the excellent potential productivity of M1.2 channel sand and a moderate volume updip of W18, if the well was successful.

The other important objective for the W23A well was the M1.3Lower sands, which continue to be modestly productive at KFA A17A to the south. The W23A location was interpreted to be slightly updip of A17A. Furthermore, the W23A location was interpreted to be in a different fault block to A17A, in an area of the field where there were no other M1.3 producers, reducing sweep risk for the well. The M1.3Upper PS4 sand was also considered an objective, with success dependent on this reservoir being updip of A17A, or isolated from it, as the sand was swept at A17A. The M1.3U and M1.3L sands were expected to be thin and rather shaley in this eastern part of the field where the environment of deposition for the M1.3 is predominantly lower shoreface.

Minor potential was also identified for thin oil sands in the M1.4L section.

Results

West Kingfish oil development well W23A kicked off below the W23 existing surface casing on 11 October 2006 and drilled an 8 ½" production hole to the Total Depth of 3338m MDRT (-2348.6mTVDSS). The well was logged with Precision Energy Services' compact wireline tools on drillpipe (Shuttle system) and was cased and completed with 7" casing and 2 7/8" tubing. The well was handed over to production operations on 1 November 2006.

The Top of Latrobe was intersected at 3150.0m MDRT (-2221.0m TVDSS), 2mTVD low to prediction. The objective M1.2 channel sand was not present, although minor cuttings of very fine grained sandstone with mudlog gas readings and shows were encountered within the comparable zone between SBN3 and SBP3 (Figs.3,3A). This interval is predominantly shaley and may be either M1.2 channel edge equivalent (overbank) sediments or perhaps younger marine shales and fine clastics of the P. asperopolus age Gurnard Formation. The interpreted N. asperus Sequence Boundary (SBN3) is at 3167.5m MDRT (-2232.9m TVDSS), 0.9mTVD low to prediction, and the SBP3 (top of the M1.3Upper section) at 3178.6mMDRT (-2240.4m TVDSS).

Despite the presence of mudlog shows, based on the available log data this shaley M1.2-equivalent section is interpreted to be tight and non-productive, with any sands present probably having very high water saturation. Full reservoir evaluation is difficult because only an incomplete suite of log curves was obtained in the well due to failure of the density/caliper tools during the logging operation, including the backup tool set. Only GR, Resistivity, Neutron and Sonic data were obtained, although a pseudo Density log has been generated.

The M1.3Upper section beneath the SBP3, (the PS7- PS4 parasequences), consists of thin sands interspersed with thicker shales and siltstones. The sands appear to be wet based on log analysis (88-100% water saturation), while the siltstones may have minor oil saturation, as evidenced by the elevated gas readings and shows (see Fig.3A with mudlog, 400-500 units mudgas). It is considered that these siltstones are unlikely to be productive.

(continued next page)

VI. GEOLOGICAL ANALYSIS – WEST KINGFISH W23A (continued)

Results (continued)

The top of the M1.3Lower section, which is the PSB4 correlation horizon (the top of PS3 sand), is at 3208m MDRT (-2260.5m TVDSS) and is essentially on prediction (0.5mTVD low). This structural outcome is encouraging as it confirms the presence of the mapped ridge in this area at the M1.3 level, and supports the potential for oil to continue to migrate into this area from the north flank of the field.

Although the PS3 sand is interpreted as swept (92%Sw residual oil zone), the underlying PS2 sand at 3213.0m MDRT (-2263.9mTVDSS) is considered to be oil-bearing, based on available logs and the moderate gas readings through the sand. The PS2 zone is interpreted to contain 2.3mTVD net oil sand, with average porosity 12.2% and water saturation 67%, down to a current OWC at 3216.7m MDRT. The zone is interpreted to be shaley, however the low porosity may be slightly pessimistic as calculated porosity is driven by clay content derived from the Gamma Ray log.

The depth of the PS2 sand is slightly shallower than the PS2 in A17A where the sand is currently perforated and commingled with PS3. The A17A well is still productive and the most recent quarterly well test rate was 29kl oil /day in October 2006. It is interpreted that W23A is separated from A17A by a fault-related syncline, with W23A located on the high side block to the north, where W23A may preferentially access oil from the north flank.

Although the M1.3L PS2 sand was considered the most prospective oil-bearing zone intersected in the well, two zones in the M1.4L section were also initially interpreted as possibly oil-bearing based on the resistivity and sonic logs. It was decided to adopt a bottoms-up approach and initially perforate these two M1.4L zones to evaluate their potential (via 2 7/8" tubing). Unfortunately the perforations (two commingled intervals) flowed 100% water at high test rates of 336 and 409 kl/day. This high production of water was unexpected, given the apparent poor quality of these sands, possibly suggesting that the water may have come from the thick M1.4U or M1.5 water sands above or below the perforated intervals (possible diagnostic logging is to be considered). The well will be recompleted upwards to the M1.3L oil zone in the future.

APPENDIX 1a

WEST KINGFISH W23A

Survey Data



WKF W-23A Final DMAG Geodetic Survey

Report Date: October 23, 2006	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: Esso Australia Pty Ltd	Vertical Section Azimuth: 74.630°
Field: Kingfish GDA 94	Vertical Section Origin: S 4.640 m, E 8.320 m
Structure / Slot: West Kingfish / 23	TVD Reference Datum: RKB
Well: 23	TVD Reference Elevation: 33.43 m relative to MSL
Borehole: WKF W-23A	Sea Bed / Ground Level Elevation: -76.130 m relative to MSL
UWI/API#:	Magnetic Declination: 13.217°
Survey Name / Date: WKF W-23A Final DMAG / October 13, 2006	Total Field Strength: 60096.817 nT
Tort / AHD / DDI / ERD ratio: 179.433° / 2121.13 m / 6.243 / 0.890	Magnetic Dip: -69.056°
Grid Coordinate System: GDA94/MGA94 Zone 55	Declination Date: October 13, 2006
Location Lat/Long: S 38 35 34.842, E 148 6 19.670	Magnetic Declination Model: BGGM 2005
Location Grid N/E Y/X: N 5727806.411 m, E 596271.358 m	North Reference: Grid North
Grid Convergence Angle: -0.68962395°	Total Corr Mag North -> Grid North: +13.907°
Grid Scale Factor: 0.99971413	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	-4.64	8.32	0.00	5727806.41	596271.36	S 38 35 34.842	E 148 6 19.670
	24.53	0.00	0.00	24.53	0.00	-4.64	8.32	0.00	5727806.41	596271.36	S 38 35 34.842	E 148 6 19.670
	108.33	0.10	43.00	108.33	0.06	-4.59	8.37	0.04	5727806.46	596271.41	S 38 35 34.840	E 148 6 19.672
	118.33	0.10	312.80	118.33	0.07	-4.57	8.37	0.43	5727806.48	596271.41	S 38 35 34.840	E 148 6 19.672
	128.33	0.30	317.40	128.33	0.05	-4.55	8.35	0.60	5727806.50	596271.38	S 38 35 34.839	E 148 6 19.671
	138.33	0.70	302.00	138.33	0.00	-4.50	8.28	1.26	5727806.55	596271.31	S 38 35 34.837	E 148 6 19.668
	148.33	0.80	301.70	148.33	-0.09	-4.43	8.16	0.30	5727806.62	596271.20	S 38 35 34.835	E 148 6 19.664
	158.33	1.10	309.20	158.33	-0.20	-4.33	8.03	0.97	5727806.72	596271.07	S 38 35 34.832	E 148 6 19.658
	168.33	1.30	294.10	168.33	-0.34	-4.22	7.85	1.12	5727806.83	596270.89	S 38 35 34.828	E 148 6 19.651
	173.33	1.40	290.70	173.33	-0.43	-4.18	7.74	0.77	5727806.87	596270.78	S 38 35 34.827	E 148 6 19.646
	180.33	2.25	302.40	180.32	-0.59	-4.08	7.55	3.96	5727806.98	596270.59	S 38 35 34.824	E 148 6 19.638
	209.33	2.50	280.40	209.30	-1.55	-3.66	6.45	0.97	5727807.39	596269.48	S 38 35 34.811	E 148 6 19.592
	219.33	3.50	258.40	219.29	-2.05	-3.68	5.93	4.52	5727807.37	596268.97	S 38 35 34.812	E 148 6 19.571
	229.33	4.00	247.40	229.26	-2.70	-3.87	5.31	2.62	5727807.18	596268.35	S 38 35 34.818	E 148 6 19.546
	238.33	3.75	217.40	238.24	-3.24	-4.23	4.84	6.73	5727806.82	596267.88	S 38 35 34.830	E 148 6 19.526
	248.33	4.25	202.90	248.22	-3.73	-4.83	4.50	3.37	5727806.22	596267.54	S 38 35 34.849	E 148 6 19.512
	258.33	4.75	201.90	258.19	-4.21	-5.55	4.20	1.52	5727805.50	596267.24	S 38 35 34.873	E 148 6 19.500
	267.33	5.75	188.40	267.15	-4.62	-6.35	4.00	5.28	5727804.71	596267.03	S 38 35 34.899	E 148 6 19.492
	277.33	6.75	185.40	277.09	-5.03	-7.43	3.87	3.15	5727803.62	596266.91	S 38 35 34.934	E 148 6 19.488
	297.33	7.75	188.90	296.93	-6.00	-9.93	3.55	1.64	5727801.12	596266.59	S 38 35 35.015	E 148 6 19.476
	316.33	9.25	188.40	315.72	-7.15	-12.71	3.13	2.37	5727798.35	596266.17	S 38 35 35.105	E 148 6 19.460
	345.99	12.00	187.90	344.87	-9.32	-18.12	2.35	2.78	5727792.94	596265.39	S 38 35 35.281	E 148 6 19.430
	374.92	14.75	187.40	373.01	-11.94	-24.75	1.47	2.85	5727786.31	596264.51	S 38 35 35.497	E 148 6 19.397
	403.85	17.75	186.90	400.79	-15.04	-32.78	0.46	3.11	5727778.28	596263.50	S 38 35 35.757	E 148 6 19.360
	432.78	20.50	186.40	428.12	-18.59	-42.20	-0.63	2.86	5727768.86	596262.41	S 38 35 36.063	E 148 6 19.319
	461.71	23.50	185.90	454.94	-22.56	-52.97	-1.79	3.12	5727758.09	596261.25	S 38 35 36.413	E 148 6 19.277
	490.64	26.75	185.40	481.13	-26.96	-65.19	-3.00	3.38	5727745.87	596260.04	S 38 35 36.810	E 148 6 19.233
	519.57	29.25	185.40	506.67	-31.78	-78.71	-4.27	2.59	5727732.36	596258.77	S 38 35 37.249	E 148 6 19.187
	548.50	31.25	184.40	531.66	-36.82	-93.23	-5.52	2.14	5727717.84	596257.53	S 38 35 37.720	E 148 6 19.143
	577.43	31.25	184.90	556.39	-41.96	-108.19	-6.73	0.27	5727702.89	596256.31	S 38 35 38.206	E 148 6 19.100
Tie-In	606.36	31.50	185.40	581.09	-47.24	-123.19	-8.08	0.37	5727687.89	596254.96	S 38 35 38.693	E 148 6 19.051
	635.29	31.75	185.40	605.72	-52.62	-138.30	-9.51	0.26	5727672.79	596253.53	S 38 35 39.183	E 148 6 19.000
	660.00	31.96	185.83	626.71	-57.29	-151.27	-10.79	0.38	5727659.82	596252.26	S 38 35 39.604	E 148 6 18.954
	679.90	29.81	177.86	643.79	-60.33	-161.46	-11.14	6.96	5727649.63	596251.91	S 38 35 39.935	E 148 6 18.944
	708.35	29.69	170.01	668.50	-62.61	-175.47	-9.65	4.11	5727635.63	596253.39	S 38 35 40.389	E 148 6 19.013
	737.28	28.08	158.70	693.85	-62.58	-188.88	-5.93	5.90	5727622.22	596257.11	S 38 35 40.822	E 148 6 19.173
	765.80	25.13	150.97	719.36	-60.45	-200.44	-0.55	4.78	5727610.67	596262.49	S 38 35 41.195	E 148 6 19.401
	794.69	24.20	147.62	745.61	-57.27	-210.80	5.60	1.74	5727600.31	596268.64	S 38 35 41.528	E 148 6 19.660
	823.23	24.77	139.64	771.59	-53.03	-220.30	12.60	3.53	5727590.81	596275.64	S 38 35 41.834	E 148 6 19.954
	851.78	25.93	133.85	797.40	-47.31	-229.19	20.98	2.87	5727581.93	596284.01	S 38 35 42.118	E 148 6 20.305
	880.66	26.43	128.75	823.32	-40.31	-237.58	30.55	2.39	5727573.53	596293.58	S 38 35 42.387	E 148 6 20.705
	909.36	27.11	120.78	848.95	-32.03	-244.93	41.15	3.82	5727566.19	596304.18	S 38 35 42.621	E 148 6 21.146
	937.91	28.16	111.63	874.25	-22.14	-250.75	53.01	4.59	5727560.38	596316.03	S 38 35 42.805	E 148 6 21.639
	966.41	29.24	104.27	899.26	-10.72	-254.94	66.01	3.89	5727556.18	596329.03	S 38 35 42.936	E 148 6 22.178
	995.23	30.66	94.95	924.24	2.30	-257.31	80.16	5.06	5727553.81	596343.18	S 38 35 43.007	E 148 6 22.764
	1023.76	32.75	87.34	948.53	16.66	-257.58	95.12	4.74	5727553.54	596358.14	S 38 35 43.010	E 148 6 23.383
	1052.58	35.29	81.62	972.42	32.53	-256.01	111.15	4.25	5727555.12	596374.16	S 38 35 42.953	E 148 6 24.044
	1081.24	37.68	77.58	995.46	49.50	-252.92	127.90	3.55	5727558.21	596390.91	S 38 35 42.846	E 148 6 24.735

1109.34	39.84	75.02	1017.37	67.08	-248.74	144.99	2.87	5727562.38	596407.99	S 38 35 42.704	E 148 6 25.439
1138.46	41.78	74.55	1039.41	86.11	-243.75	163.35	2.02	5727567.37	596426.34	S 38 35 42.535	E 148 6 26.195
1167.83	44.24	72.35	1060.89	106.14	-238.03	182.55	2.94	5727573.09	596445.54	S 38 35 42.342	E 148 6 26.986
1196.40	47.70	70.47	1080.74	126.64	-231.48	202.01	3.90	5727579.64	596464.99	S 38 35 42.122	E 148 6 27.786
1225.34	53.16	70.09	1099.17	148.88	-223.95	223.00	5.67	5727587.17	596485.98	S 38 35 41.870	E 148 6 28.650
1253.69	57.54	69.00	1115.29	172.10	-215.79	244.84	4.73	5727595.32	596507.81	S 38 35 41.597	E 148 6 29.549
1282.77	60.23	66.28	1130.32	196.80	-206.32	267.86	3.67	5727604.79	596530.82	S 38 35 41.280	E 148 6 30.495
1311.50	60.76	65.10	1144.47	221.50	-196.02	290.65	1.21	5727615.08	596553.60	S 38 35 40.938	E 148 6 31.431
1340.34	60.63	64.85	1158.58	246.30	-185.39	313.44	0.26	5727625.72	596576.39	S 38 35 40.584	E 148 6 32.367
1368.96	60.09	65.12	1172.74	270.82	-174.87	335.98	0.62	5727636.23	596598.92	S 38 35 40.234	E 148 6 33.294
1397.70	59.52	64.47	1187.19	295.29	-164.29	358.45	0.84	5727646.81	596621.39	S 38 35 39.882	E 148 6 34.217
1426.34	58.55	64.49	1201.93	319.47	-153.71	380.61	1.02	5727657.39	596643.55	S 38 35 39.530	E 148 6 35.127
1455.20	60.07	64.68	1216.65	343.90	-143.06	403.03	1.59	5727668.03	596665.95	S 38 35 39.176	E 148 6 36.048
1483.55	59.43	64.20	1230.94	368.01	-132.49	425.12	0.81	5727678.60	596688.04	S 38 35 38.825	E 148 6 36.956
1512.77	58.76	64.38	1245.94	392.67	-121.62	447.71	0.71	5727689.47	596710.62	S 38 35 38.463	E 148 6 37.884
1541.42	58.16	64.44	1260.93	416.70	-111.07	469.73	0.63	5727700.01	596732.64	S 38 35 38.113	E 148 6 38.789
1570.15	59.56	65.25	1275.79	440.93	-100.62	491.99	1.63	5727710.46	596754.89	S 38 35 37.765	E 148 6 39.703
1599.34	58.92	65.47	1290.72	465.69	-90.16	514.79	0.69	5727720.92	596777.68	S 38 35 37.417	E 148 6 40.640
1627.43	58.47	65.54	1305.31	489.39	-80.21	536.63	0.48	5727730.86	596799.52	S 38 35 37.086	E 148 6 41.537
1656.41	57.78	65.23	1320.62	513.68	-69.96	559.00	0.76	5727741.11	596821.88	S 38 35 36.744	E 148 6 42.457
1684.98	60.11	66.13	1335.35	537.85	-59.88	581.31	2.58	5727751.18	596844.18	S 38 35 36.409	E 148 6 43.373
1713.77	60.35	66.65	1349.65	562.58	-49.87	604.21	0.53	5727761.19	596867.07	S 38 35 36.075	E 148 6 44.314
1742.29	60.38	67.16	1363.75	587.15	-40.15	627.01	0.47	5727770.91	596889.87	S 38 35 35.751	E 148 6 45.252
1770.98	60.52	67.58	1377.90	611.91	-30.55	650.04	0.41	5727780.51	596912.90	S 38 35 35.431	E 148 6 46.199
1799.28	60.10	66.37	1391.92	636.27	-20.93	672.67	1.20	5727790.12	596935.52	S 38 35 35.110	E 148 6 47.129
1828.41	59.54	66.28	1406.56	661.19	-10.82	695.73	0.58	5727800.23	596958.57	S 38 35 34.773	E 148 6 48.077
1857.33	59.89	66.49	1421.15	685.90	-0.82	718.61	0.41	5727810.23	596981.45	S 38 35 34.440	E 148 6 49.017
1886.05	59.19	65.41	1435.71	710.38	9.27	741.22	1.22	5727820.32	597004.05	S 38 35 34.104	E 148 6 49.946
1914.57	58.08	63.98	1450.55	734.36	19.68	763.24	1.74	5727830.72	597026.06	S 38 35 33.757	E 148 6 50.850
1942.79	56.99	63.41	1465.70	757.74	30.23	784.58	1.27	5727841.27	597047.40	S 38 35 33.407	E 148 6 51.727
1972.36	57.18	64.01	1481.77	782.11	41.22	806.84	0.55	5727852.26	597069.65	S 38 35 33.042	E 148 6 52.641
2001.37	55.99	63.22	1497.74	805.88	51.98	828.53	1.41	5727863.02	597091.33	S 38 35 32.684	E 148 6 53.532
2029.77	51.71	62.69	1514.49	828.33	62.40	848.95	4.54	5727873.44	597111.75	S 38 35 32.338	E 148 6 54.371
2058.74	50.93	62.28	1532.60	850.44	72.85	869.01	0.87	5727883.88	597131.80	S 38 35 31.991	E 148 6 55.194
2086.72	48.80	65.03	1550.63	871.44	82.35	888.17	3.21	5727893.38	597150.95	S 38 35 31.676	E 148 6 55.981
2115.75	48.15	65.08	1569.88	892.87	91.52	907.87	0.67	5727902.54	597170.65	S 38 35 31.371	E 148 6 56.791
2144.40	49.73	64.84	1588.70	914.16	100.66	927.45	1.67	5727911.68	597190.22	S 38 35 31.067	E 148 6 57.595
2173.43	49.76	65.17	1607.46	936.01	110.02	947.53	0.26	5727921.04	597210.29	S 38 35 30.755	E 148 6 58.420
2201.57	49.37	64.61	1625.71	957.12	119.11	966.92	0.62	5727930.13	597229.68	S 38 35 30.453	E 148 6 59.216
2230.27	49.06	64.74	1644.45	978.52	128.41	986.56	0.34	5727939.42	597249.32	S 38 35 30.144	E 148 7 0.023
2259.39	48.64	64.07	1663.62	1000.10	137.88	1006.34	0.68	5727948.89	597269.09	S 38 35 29.829	E 148 7 0.836
2288.01	48.25	64.15	1682.60	1021.15	147.23	1025.60	0.41	5727958.24	597288.35	S 38 35 29.518	E 148 7 1.627
2316.76	49.07	66.21	1701.59	1042.44	156.29	1045.20	1.83	5727967.29	597307.94	S 38 35 29.216	E 148 7 2.432
2344.65	48.89	66.52	1719.90	1063.27	164.72	1064.47	0.32	5727975.73	597327.21	S 38 35 28.935	E 148 7 3.224
2373.58	48.25	66.28	1739.04	1084.74	173.41	1084.35	0.69	5727984.41	597347.08	S 38 35 28.646	E 148 7 4.041
2402.92	49.20	66.13	1758.39	1106.55	182.30	1104.53	0.98	5727993.30	597367.25	S 38 35 28.349	E 148 7 4.870
2431.08	48.62	66.30	1776.90	1127.54	190.86	1123.95	0.63	5728001.86	597386.66	S 38 35 28.064	E 148 7 5.668
2460.13	49.95	65.85	1795.85	1149.32	199.79	1144.07	1.42	5728010.79	597406.78	S 38 35 27.767	E 148 7 6.495
2488.84	49.35	65.62	1814.44	1170.93	208.78	1164.02	0.65	5728019.78	597426.73	S 38 35 27.467	E 148 7 7.315
2517.23	48.63	65.62	1833.07	1192.09	217.63	1183.53	0.76	5728028.62	597446.23	S 38 35 27.173	E 148 7 8.117
2546.07	47.83	65.31	1852.28	1213.33	226.56	1203.10	0.87	5728037.54	597465.79	S 38 35 26.875	E 148 7 8.921
2574.83	47.11	65.06	1871.72	1234.23	235.45	1222.34	0.78	5728046.44	597485.03	S 38 35 26.579	E 148 7 9.711
2603.43	48.24	65.36	1890.98	1255.09	244.32	1241.53	1.21	5728055.30	597504.22	S 38 35 26.284	E 148 7 10.500
2632.59	48.17	65.27	1910.41	1276.55	253.40	1261.29	0.10	5728064.38	597523.96	S 38 35 25.982	E 148 7 11.311
2661.39	49.16	65.60	1929.43	1297.89	262.39	1280.95	1.06	5728073.36	597543.63	S 38 35 25.683	E 148 7 12.120
2690.29	48.68	65.74	1948.42	1319.41	271.36	1300.80	0.51	5728082.34	597563.47	S 38 35 25.384	E 148 7 12.935
2718.76	48.01	65.80	1967.35	1340.43	280.09	1320.20	0.71	5728091.06	597582.86	S 38 35 25.093	E 148 7 13.732
2747.67	49.43	64.78	1986.42	1361.86	289.18	1339.93	1.67	5728100.14	597602.59	S 38 35 24.791	E 148 7 14.543
2776.45	49.38	65.05	2005.15	1383.40	298.44	1359.73	0.22	5728109.41	597622.38	S 38 35 24.482	E 148 7 15.356
2805.33	48.72	64.80	2024.07	1404.91	307.69	1379.48	0.71	5728118.65	597642.13	S 38 35 24.175	E 148 7 16.168
2833.87	48.21	64.83	2043.00	1425.96	316.78	1398.82	0.54	5728127.74	597661.46	S 38 35 23.872	E 148 7 16.962
2862.63	47.55	64.64	2062.29	1446.97	325.88	1418.11	0.70	5728136.84	597680.74	S 38 35 23.569	E 148 7 17.754
2891.32	47.05	64.46	2081.74	1467.73	334.94	1437.15	0.54	5728145.90	597699.78	S 38 35 23.268	E 148 7 18.536
2919.83	47.96	64.99	2101.00	1488.44	343.92	1456.16	1.04	5728154.87	597718.78	S 38 35 22.970	E 148 7 19.317
2948.29	47.96	65.05	2120.06	1509.28	352.84	1475.32	0.05	5728163.79	597737.93	S 38 35 22.673	E 148 7 20.104
2976.25	49.01	65.54	2138.59	1529.94	361.59	1494.33	1.19	5728172.54	597756.95	S 38 35 22.381	E 148 7 20.886
3005.57	48.62	65.49	2157.90	1551.72	370.74	1514.42	0.40	5728181.68	597777.02	S 38 35 22.077	E 148 7 21.711

3034.29	47.73	65.38	2177.05	1572.85	379.63	1533.88	0.93	5728190.57	597796.48	S 38 35 21.781	E 148 7 22.511
3063.17	48.05	65.15	2196.42	1593.99	388.60	1553.34	0.38	5728199.54	597815.94	S 38 35 21.482	E 148 7 23.310
3092.20	48.72	65.42	2215.70	1615.40	397.67	1573.06	0.72	5728208.61	597835.65	S 38 35 21.180	E 148 7 24.120
3120.37	47.95	65.58	2234.42	1636.18	406.40	1592.20	0.83	5728217.33	597854.79	S 38 35 20.889	E 148 7 24.907
3149.13	47.29	65.77	2253.81	1657.17	415.15	1611.56	0.70	5728226.08	597874.14	S 38 35 20.598	E 148 7 25.702
3178.32	46.95	65.57	2273.67	1678.30	423.96	1631.05	0.38	5728234.89	597893.63	S 38 35 20.304	E 148 7 26.503
3207.32	47.18	65.18	2293.43	1699.25	432.81	1650.35	0.38	5728243.74	597912.92	S 38 35 20.010	E 148 7 27.296
3236.01	47.26	64.96	2312.91	1720.02	441.69	1669.45	0.19	5728252.61	597932.01	S 38 35 19.715	E 148 7 28.080
3264.43	47.39	64.83	2332.18	1740.61	450.55	1688.37	0.17	5728261.47	597950.93	S 38 35 19.420	E 148 7 28.858
3293.06	47.29	64.14	2351.58	1761.34	459.62	1707.37	0.54	5728270.54	597969.92	S 38 35 19.118	E 148 7 29.638
3316.55	47.33	63.97	2367.50	1778.31	467.17	1722.90	0.17	5728278.09	597985.44	S 38 35 18.867	E 148 7 30.276
3338.00	47.36	63.82	2382.04	1793.81	474.11	1737.06	0.16	5728285.03	597999.61	S 38 35 18.636	E 148 7 30.858

Survey Type: Definitive Survey

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

Surveying Prog:

MD From (m)	MD To (m)	EOU Freq	Survey Tool Type	Borehole -> Survey
0.00	109.56	Act-Stns	SLB_MWD-STD-Depth Only	WKF-23 -> WKF-23 Final
109.56	316.33	Act-Stns	SLB_MWD-STD	WKF-23 -> WKF-23 Final
316.33	660.00	Act-Stns	SLB_MWD-POOR	WKF-23 -> WKF-23 Final
660.00	708.35	Act-Stns	SLB_MWD-POOR	WKF W-23A -> WKF W-23A Final DMAG
708.35	3338.00	Act-Stns	SLB_MWD+DMAG	WKF W-23A -> WKF W-23A Final DMAG

APPENDIX 1b

WEST KINGFISH W23A

Survey Data Listing

Report Date:	25 January 2007
Well:	West Kingfish W23A
Structure / Slot:	NABORS Rig 453
TVD Reference Datum:	Drillsite Elevation
TVD Reference Elevation:	33.43 m relative to MSL
Sea Bed / Ground Level Elevation:	76.13 m relative to MSL
Grid Coordinate System:	GDA94/MGA94 Zone 55
Location Lat/Long:	S 38 35' 34.842", E 148 6' 19.670"
Location Grid N/E:	N 5727806.411 m, E 596271.358 m
Survey Azimuth Reference:	Grid North

*Dnorth and Deast are with respect to top of conductor W23, whereas NS and EW offsets on Anadrill/Schlumberger survey data are with respect to No. 1 conductor. Northings and Eastings are absolute grid coordinates.

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
0	0	360	0	33.43	0	0	5727806.41	596271.36
5	0	0	5	28.43	0	0	5727806.41	596271.36
10	0	0	10	23.43	0	0	5727806.41	596271.36
15	0	0	15	18.43	0	0	5727806.41	596271.36
20	0	0	20	13.43	0	0	5727806.41	596271.36
25	0	0.24	25	8.43	0	0	5727806.41	596271.36
30	0.01	2.81	30.00	3.43	0	0	5727806.41	596271.36
35	0.01	5.37	35.00	-1.57	0	0	5727806.41	596271.36
40	0.02	7.94	40.00	-6.57	0	0	5727806.41	596271.36
45	0.02	10.50	45.00	-11.57	0	0	5727806.41	596271.37
50	0.03	13.07	50.00	-16.57	0.01	0.01	5727806.42	596271.37
55	0.04	15.63	55.00	-21.57	0.01	0.01	5727806.42	596271.37
60	0.04	18.20	60.00	-26.57	0.01	0.01	5727806.42	596271.37
65	0.05	20.76	65.00	-31.57	0.01	0.01	5727806.42	596271.37
70	0.05	23.33	70.00	-36.57	0.02	0.01	5727806.43	596271.38
75	0.06	25.90	75.00	-41.57	0.02	0.02	5727806.43	596271.38
80	0.07	28.46	80.00	-46.57	0.02	0.02	5727806.43	596271.38
85	0.07	31.03	85.00	-51.57	0.03	0.03	5727806.44	596271.39
90	0.08	33.59	90.00	-56.57	0.03	0.03	5727806.44	596271.39
95	0.08	36.16	95.00	-61.57	0.04	0.04	5727806.45	596271.40
100	0.09	38.72	100.00	-66.57	0.04	0.04	5727806.45	596271.40
105	0.10	41.29	105.00	-71.57	0.05	0.05	5727806.46	596271.41
110	0.10	58.04	110.00	-76.57	0.05	0.05	5727806.46	596271.41
115	0.10	103.14	115.00	-81.57	0.06	0.05	5727806.47	596271.42
120	0.13	313.57	120.00	-86.57	0.07	0.05	5727806.48	596271.41
125	0.23	315.87	125.00	-91.57	0.08	0.04	5727806.49	596271.40
130	0.37	314.83	130.00	-96.57	0.10	0.02	5727806.51	596271.38
135	0.57	307.13	135.00	-101.57	0.12	-0.01	5727806.53	596271.35
140	0.72	301.95	140.00	-106.57	0.15	-0.06	5727806.56	596271.30
145	0.77	301.80	145.00	-111.57	0.19	-0.12	5727806.60	596271.25
150	0.85	302.95	150.00	-116.57	0.22	-0.18	5727806.63	596271.19
155	1.00	306.70	155.00	-121.57	0.27	-0.24	5727806.68	596271.12
160	1.13	306.68	160.00	-126.57	0.33	-0.31	5727806.74	596271.05
165	1.23	299.13	165.00	-131.57	0.38	-0.40	5727806.79	596270.96
170	1.33	292.97	170.00	-136.57	0.43	-0.50	5727806.84	596270.86
175	1.60	293.49	174.99	-141.56	0.48	-0.62	5727806.89	596270.75
180	2.21	301.84	179.99	-146.56	0.56	-0.76	5727806.97	596270.60
185	2.29	298.86	184.99	-151.56	0.66	-0.93	5727807.07	596270.43
190	2.33	295.07	189.98	-156.55	0.75	-1.11	5727807.16	596270.25
195	2.38	291.27	194.98	-161.55	0.82	-1.29	5727807.23	596270.07
200	2.42	287.48	199.97	-166.54	0.89	-1.49	5727807.30	596269.87
205	2.46	283.69	204.97	-171.54	0.94	-1.69	5727807.35	596269.67
210	2.57	278.93	209.97	-176.54	0.99	-1.90	5727807.40	596269.46
215	3.07	267.93	214.96	-181.53	1.00	-2.14	5727807.41	596269.22
220	3.53	257.67	219.95	-186.52	0.95	-2.43	5727807.36	596268.93
225	3.78	252.17	224.94	-191.51	0.87	-2.73	5727807.28	596268.63
230	3.98	245.18	229.93	-196.50	0.75	-3.05	5727807.16	596268.31

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
235	3.84	228.51	234.92	-201.49	0.57	-3.33	5727806.98	596268.03
240	3.83	214.98	239.91	-206.48	0.32	-3.54	5727806.73	596267.82
245	4.08	207.73	244.90	-211.47	0.03	-3.72	5727806.44	596267.64
250	4.33	202.73	249.88	-216.45	-0.30	-3.87	5727806.11	596267.49
255	4.58	202.23	254.87	-221.44	-0.66	-4.02	5727805.75	596267.35
260	4.94	199.40	259.85	-226.42	-1.05	-4.17	5727805.36	596267.19
265	5.49	191.90	264.83	-231.40	-1.48	-4.28	5727804.93	596267.08
270	6.02	187.60	269.81	-236.38	-1.98	-4.36	5727804.43	596267.00
275	6.52	186.10	274.77	-241.35	-2.52	-4.42	5727803.89	596266.94
280	6.88	185.87	279.74	-246.31	-3.10	-4.48	5727803.31	596266.88
285	7.13	186.74	284.70	-251.27	-3.71	-4.55	5727802.70	596266.81
290	7.38	187.62	289.66	-256.23	-4.33	-4.63	5727802.08	596266.73
295	7.63	188.49	294.62	-261.19	-4.98	-4.72	5727801.43	596266.64
300	7.96	188.83	299.57	-266.14	-5.65	-4.83	5727800.76	596266.54
305	8.36	188.70	304.52	-271.09	-6.35	-4.93	5727800.06	596266.43
310	8.75	188.57	309.47	-276.04	-7.09	-5.05	5727799.32	596266.32
315	9.14	188.44	314.41	-280.98	-7.85	-5.16	5727798.56	596266.20
320	9.59	188.34	319.34	-285.91	-8.66	-5.28	5727797.75	596266.08
325	10.05	188.25	324.27	-290.84	-9.50	-5.40	5727796.91	596265.96
330	10.52	188.17	329.19	-295.76	-10.38	-5.53	5727796.03	596265.83
335	10.98	188.09	334.10	-300.67	-11.31	-5.66	5727795.10	596265.70
340	11.44	188.00	339.00	-305.57	-12.27	-5.80	5727794.14	596265.57
345	11.91	187.92	343.90	-310.47	-13.27	-5.94	5727793.14	596265.43
350	12.38	187.83	348.79	-315.36	-14.31	-6.08	5727792.09	596265.28
355	12.86	187.74	353.67	-320.24	-15.40	-6.23	5727791.01	596265.14
360	13.33	187.66	358.54	-325.11	-16.52	-6.38	5727789.89	596264.98
365	13.81	187.57	363.40	-329.97	-17.68	-6.53	5727788.73	596264.83
370	14.28	187.49	368.25	-334.82	-18.88	-6.69	5727787.53	596264.67
375	14.76	187.40	373.09	-339.66	-20.13	-6.85	5727786.28	596264.51
380	15.28	187.31	377.92	-344.49	-21.41	-7.02	5727785.00	596264.34
385	15.79	187.23	382.74	-349.31	-22.74	-7.19	5727783.67	596264.17
390	16.31	187.14	387.54	-354.11	-24.11	-7.36	5727782.30	596264.00
395	16.83	187.05	392.33	-358.90	-25.53	-7.54	5727780.88	596263.83
400	17.35	186.97	397.11	-363.68	-26.98	-7.72	5727779.43	596263.65
405	17.86	186.88	401.88	-368.45	-28.49	-7.90	5727777.92	596263.47
410	18.33	186.79	406.63	-373.20	-30.03	-8.08	5727776.38	596263.28
415	18.81	186.71	411.37	-377.94	-31.61	-8.27	5727774.80	596263.09
420	19.28	186.62	416.10	-382.67	-33.23	-8.46	5727773.18	596262.90
425	19.76	186.53	420.81	-387.38	-34.89	-8.65	5727771.52	596262.71
430	20.24	186.45	425.51	-392.08	-36.59	-8.84	5727769.82	596262.52
435	20.73	186.36	430.19	-396.76	-38.32	-9.04	5727768.09	596262.33
440	21.25	186.28	434.86	-401.43	-40.10	-9.23	5727766.31	596262.13
445	21.77	186.19	439.51	-406.08	-41.93	-9.43	5727764.48	596261.93
450	22.29	186.10	444.15	-410.72	-43.79	-9.63	5727762.62	596261.73
455	22.80	186.02	448.76	-415.33	-45.70	-9.83	5727760.71	596261.53
460	23.32	185.93	453.36	-419.93	-47.64	-10.04	5727758.77	596261.32
465	23.87	185.84	457.95	-424.52	-49.63	-10.24	5727756.78	596261.12
470	24.43	185.76	462.51	-429.08	-51.67	-10.45	5727754.74	596260.91
475	24.99	185.67	467.05	-433.62	-53.75	-10.66	5727752.66	596260.71
480	25.55	185.58	471.57	-438.14	-55.87	-10.87	5727750.54	596260.50
485	26.12	185.50	476.07	-442.64	-58.04	-11.07	5727748.37	596260.29
490	26.68	185.41	480.55	-447.12	-60.25	-11.29	5727746.16	596260.08
495	27.13	185.40	485.01	-451.58	-62.51	-11.50	5727743.90	596259.86
500	27.56	185.40	489.45	-456.02	-64.79	-11.71	5727741.62	596259.65
505	27.99	185.40	493.88	-460.44	-67.11	-11.93	5727739.30	596259.43
510	28.42	185.40	498.28	-464.85	-69.46	-12.16	5727736.95	596259.21
515	28.85	185.40	502.67	-469.24	-71.85	-12.38	5727734.56	596258.98
520	29.28	185.39	507.04	-473.61	-74.27	-12.61	5727732.14	596258.75
525	29.63	185.21	511.39	-477.96	-76.71	-12.84	5727729.70	596258.53

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
530	29.97	185.04	515.73	-482.30	-79.19	-13.06	5727727.22	596258.30
535	30.32	184.87	520.06	-486.63	-81.69	-13.28	5727724.72	596258.09
540	30.66	184.69	524.37	-490.94	-84.22	-13.49	5727722.19	596257.88
545	31.01	184.52	528.66	-495.23	-86.77	-13.69	5727719.64	596257.67
550	31.25	184.43	532.94	-499.51	-89.35	-13.89	5727717.06	596257.47
555	31.25	184.51	537.21	-503.78	-91.93	-14.09	5727714.47	596257.27
560	31.25	184.60	541.49	-508.06	-94.52	-14.30	5727711.89	596257.06
565	31.25	184.69	545.76	-512.33	-97.11	-14.51	5727709.30	596256.85
570	31.25	184.77	550.03	-516.61	-99.69	-14.72	5727706.72	596256.64
575	31.25	184.86	554.31	-520.88	-102.27	-14.94	5727704.14	596256.42
580	31.27	184.94	558.58	-525.15	-104.86	-15.16	5727701.55	596256.20
585	31.32	185.03	562.86	-529.43	-107.44	-15.39	5727698.97	596255.97
590	31.36	185.12	567.13	-533.70	-110.03	-15.62	5727696.38	596255.74
595	31.40	185.20	571.40	-537.97	-112.63	-15.85	5727693.78	596255.51
600	31.45	185.29	575.66	-542.23	-115.22	-16.09	5727691.19	596255.27
605	31.49	185.38	579.93	-546.50	-117.82	-16.33	5727688.59	596255.03
610	31.53	185.40	584.19	-550.76	-120.42	-16.58	5727685.99	596254.78
615	31.57	185.40	588.45	-555.02	-123.03	-16.83	5727683.38	596254.54
620	31.62	185.40	592.71	-559.28	-125.63	-17.07	5727680.78	596254.29
625	31.66	185.40	596.97	-563.54	-128.24	-17.32	5727678.17	596254.04
630	31.70	185.40	601.22	-567.79	-130.86	-17.57	5727675.55	596253.80
635	31.75	185.40	605.47	-572.04	-133.47	-17.81	5727672.94	596253.55
640	31.79	185.48	609.73	-576.29	-136.09	-18.06	5727670.32	596253.30
645	31.83	185.57	613.97	-580.54	-138.72	-18.32	5727667.69	596253.05
650	31.88	185.65	618.22	-584.79	-141.34	-18.57	5727665.07	596252.79
655	31.92	185.74	622.47	-589.04	-143.97	-18.84	5727662.44	596252.53
660	31.96	185.83	626.71	-593.28	-146.60	-19.10	5727659.81	596252.26
665	31.42	183.82	630.96	-597.53	-149.22	-19.33	5727657.19	596252.04
670	30.88	181.82	635.25	-601.82	-151.80	-19.46	5727654.61	596251.90
675	30.34	179.82	639.55	-606.12	-154.34	-19.50	5727652.07	596251.86
680	29.81	177.83	643.88	-610.45	-156.84	-19.45	5727649.57	596251.91
685	29.79	176.45	648.22	-614.79	-159.32	-19.33	5727647.09	596252.03
690	29.77	175.07	652.56	-619.13	-161.79	-19.14	5727644.62	596252.22
695	29.75	173.69	656.90	-623.47	-164.26	-18.90	5727642.15	596252.46
700	29.73	172.31	661.25	-627.82	-166.71	-18.60	5727639.70	596252.76
705	29.70	170.93	665.59	-632.16	-169.16	-18.24	5727637.25	596253.12
710	29.60	169.36	669.94	-636.51	-171.60	-17.82	5727634.81	596253.54
715	29.32	167.41	674.29	-640.86	-174.01	-17.33	5727632.40	596254.03
720	29.04	165.46	678.66	-645.23	-176.37	-16.77	5727630.04	596254.60
725	28.76	163.50	683.04	-649.62	-178.69	-16.13	5727627.72	596255.24
730	28.49	161.55	687.44	-654.01	-180.97	-15.41	5727625.44	596255.95
735	28.21	159.59	691.84	-658.41	-183.20	-14.63	5727623.21	596256.73
740	27.80	157.96	696.26	-662.83	-185.39	-13.78	5727621.02	596257.58
745	27.28	156.61	700.69	-667.26	-187.52	-12.89	5727618.89	596258.47
750	26.76	155.25	705.15	-671.72	-189.60	-11.97	5727616.81	596259.39
755	26.25	153.90	709.62	-676.19	-191.61	-11.02	5727614.80	596260.34
760	25.73	152.54	714.12	-680.69	-193.57	-10.04	5727612.84	596261.32
765	25.21	151.19	718.63	-685.20	-195.46	-9.03	5727610.95	596262.33
770	24.99	150.48	723.16	-689.73	-197.31	-8.00	5727609.10	596263.36
775	24.83	149.90	727.70	-694.27	-199.14	-6.95	5727607.27	596264.41
780	24.67	149.32	732.24	-698.81	-200.94	-5.90	5727605.47	596265.47
785	24.51	148.74	736.78	-703.35	-202.73	-4.83	5727603.68	596266.54
790	24.35	148.16	741.34	-707.91	-204.49	-3.75	5727601.92	596267.62
795	24.21	147.53	745.89	-712.47	-206.23	-2.65	5727600.18	596268.71
800	24.31	146.14	750.45	-717.02	-207.95	-1.53	5727598.46	596269.83
805	24.41	144.74	755.01	-721.58	-209.64	-0.36	5727596.77	596271.00
810	24.51	143.34	759.56	-726.13	-211.31	0.85	5727595.10	596272.21
815	24.61	141.94	764.11	-730.68	-212.96	2.11	5727593.45	596273.47
820	24.71	140.54	768.66	-735.23	-214.58	3.42	5727591.83	596274.78

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
825	24.84	139.28	773.20	-739.77	-216.18	4.77	5727590.23	596276.13
830	25.05	138.27	777.73	-744.30	-217.77	6.16	5727588.64	596277.52
835	25.25	137.25	782.26	-748.83	-219.34	7.58	5727587.07	596278.95
840	25.45	136.24	786.78	-753.35	-220.89	9.05	5727585.52	596280.41
845	25.65	135.22	791.29	-757.86	-222.43	10.56	5727583.97	596281.92
850	25.86	134.21	795.80	-762.37	-223.96	12.10	5727582.45	596283.46
855	25.99	133.28	800.29	-766.86	-225.47	13.68	5727580.94	596285.04
860	26.07	132.40	804.79	-771.36	-226.96	15.29	5727579.45	596286.65
865	26.16	131.52	809.28	-775.85	-228.43	16.92	5727577.98	596288.29
870	26.25	130.63	813.76	-780.33	-229.88	18.59	5727576.53	596289.95
875	26.33	129.75	818.25	-784.82	-231.31	20.28	5727575.10	596291.64
880	26.42	128.87	822.73	-789.30	-232.71	22.00	5727573.70	596293.36
885	26.53	127.54	827.20	-793.77	-234.09	23.75	5727572.32	596295.11
890	26.65	126.16	831.67	-798.25	-235.43	25.53	5727570.98	596296.90
895	26.77	124.77	836.14	-802.71	-236.73	27.36	5727569.68	596298.72
900	26.89	123.38	840.61	-807.18	-237.99	29.23	5727568.42	596300.59
905	27.01	121.99	845.07	-811.64	-239.21	31.13	5727567.20	596302.50
910	27.13	120.57	849.52	-816.09	-240.39	33.08	5727566.02	596304.44
915	27.32	118.97	853.97	-820.54	-241.53	35.06	5727564.88	596306.42
920	27.50	117.37	858.41	-824.98	-242.61	37.09	5727563.80	596308.45
925	27.69	115.77	862.84	-829.41	-243.64	39.15	5727562.77	596310.52
930	27.87	114.17	867.27	-833.84	-244.62	41.26	5727561.79	596312.62
935	28.05	112.56	871.69	-838.26	-245.54	43.41	5727560.87	596314.77
940	28.24	111.09	876.10	-842.67	-246.42	45.60	5727559.99	596316.96
945	28.43	109.80	880.50	-847.07	-247.24	47.82	5727559.17	596319.19
950	28.62	108.51	884.89	-851.46	-248.02	50.07	5727558.39	596321.44
955	28.81	107.22	889.28	-855.85	-248.76	52.36	5727557.65	596323.72
960	29.00	105.93	893.66	-860.23	-249.44	54.67	5727556.97	596326.03
965	29.19	104.63	898.03	-864.60	-250.08	57.01	5727556.33	596328.38
970	29.42	103.11	902.39	-868.96	-250.67	59.39	5727555.74	596330.75
975	29.66	101.49	906.74	-873.31	-251.19	61.79	5727555.22	596333.16
980	29.91	99.88	911.09	-877.66	-251.65	64.23	5727554.76	596335.59
985	30.16	98.26	915.42	-881.99	-252.04	66.69	5727554.37	596338.06
990	30.40	96.64	919.74	-886.31	-252.36	69.19	5727554.05	596340.55
995	30.65	95.02	924.05	-890.62	-252.61	71.71	5727553.80	596343.08
1000	31.01	93.68	928.34	-894.91	-252.81	74.27	5727553.60	596345.63
1005	31.38	92.34	932.62	-899.19	-252.94	76.85	5727553.47	596348.21
1010	31.74	91.01	936.88	-903.45	-253.01	79.46	5727553.40	596350.82
1015	32.11	89.68	941.13	-907.70	-253.02	82.10	5727553.39	596353.46
1020	32.47	88.34	945.36	-911.93	-252.97	84.77	5727553.44	596356.13
1025	32.86	87.09	949.57	-916.14	-252.86	87.46	5727553.55	596358.82
1030	33.30	86.10	953.76	-920.33	-252.70	90.18	5727553.71	596361.55
1035	33.74	85.11	957.93	-924.50	-252.48	92.94	5727553.93	596364.30
1040	34.18	84.12	962.08	-928.65	-252.22	95.71	5727554.19	596367.07
1045	34.62	83.12	966.20	-932.77	-251.90	98.52	5727554.51	596369.88
1050	35.06	82.13	970.31	-936.88	-251.53	101.35	5727554.88	596372.71
1055	35.49	81.28	974.39	-940.96	-251.11	104.20	5727555.30	596375.57
1060	35.91	80.57	978.45	-945.02	-250.65	107.08	5727555.76	596378.45
1065	36.33	79.87	982.49	-949.06	-250.15	109.99	5727556.26	596381.35
1070	36.74	79.16	986.51	-953.08	-249.60	112.91	5727556.81	596384.27
1075	37.16	78.46	990.51	-957.08	-249.02	115.86	5727557.39	596387.22
1080	37.58	77.75	994.48	-961.05	-248.39	118.83	5727558.02	596390.19
1085	37.97	77.24	998.43	-965.00	-247.73	121.82	5727558.68	596393.18
1090	38.35	76.78	1002.36	-968.93	-247.03	124.82	5727559.38	596396.19
1095	38.74	76.33	1006.27	-972.84	-246.30	127.85	5727560.11	596399.22
1100	39.12	75.87	1010.16	-976.73	-245.55	130.90	5727560.86	596402.27
1105	39.51	75.42	1014.03	-980.60	-244.76	133.97	5727561.65	596405.33
1110	39.88	75.01	1017.88	-984.45	-243.94	137.06	5727562.47	596408.42
1115	40.22	74.93	1021.71	-988.28	-243.11	140.16	5727563.30	596411.53

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1120	40.55	74.85	1025.52	-992.09	-242.27	143.29	5727564.14	596414.65
1125	40.88	74.77	1029.31	-995.88	-241.41	146.44	5727565.00	596417.80
1130	41.22	74.69	1033.08	-999.65	-240.55	149.61	5727565.86	596420.97
1135	41.55	74.61	1036.83	-1003.40	-239.67	152.79	5727566.74	596424.16
1140	41.91	74.43	1040.56	-1007.13	-238.78	156.00	5727567.63	596427.36
1145	42.33	74.06	1044.27	-1010.84	-237.87	159.23	5727568.54	596430.59
1150	42.75	73.69	1047.95	-1014.52	-236.93	162.47	5727569.48	596433.83
1155	43.17	73.31	1051.61	-1018.18	-235.96	165.74	5727570.45	596437.10
1160	43.58	72.94	1055.25	-1021.82	-234.97	169.02	5727571.44	596440.39
1165	44.00	72.56	1058.86	-1025.43	-233.94	172.33	5727572.47	596443.69
1170	44.50	72.21	1062.44	-1029.01	-232.88	175.65	5727573.53	596447.01
1175	45.11	71.88	1065.99	-1032.56	-231.80	179.00	5727574.61	596450.36
1180	45.71	71.55	1069.50	-1036.07	-230.68	182.38	5727575.73	596453.74
1185	46.32	71.22	1072.97	-1039.54	-229.53	185.79	5727576.88	596457.15
1190	46.92	70.89	1076.41	-1042.97	-228.35	189.23	5727578.06	596460.59
1195	47.53	70.56	1079.80	-1046.37	-227.14	192.69	5727579.27	596464.05
1200	48.38	70.42	1083.15	-1049.72	-225.90	196.19	5727580.51	596467.55
1205	49.32	70.36	1086.44	-1053.01	-224.63	199.73	5727581.78	596471.10
1210	50.27	70.29	1089.67	-1056.24	-223.35	203.33	5727583.06	596474.69
1215	51.21	70.23	1092.83	-1059.40	-222.04	206.97	5727584.37	596478.33
1220	52.15	70.16	1095.93	-1062.50	-220.71	210.66	5727585.70	596482.02
1225	53.10	70.09	1098.97	-1065.54	-219.36	214.40	5727587.05	596485.76
1230	53.88	69.91	1101.94	-1068.51	-217.98	218.17	5727588.43	596489.54
1235	54.65	69.72	1104.86	-1071.43	-216.58	221.98	5727589.83	596493.34
1240	55.42	69.53	1107.73	-1074.30	-215.15	225.82	5727591.25	596497.19
1245	56.20	69.33	1110.54	-1077.11	-213.70	229.69	5727592.71	596501.06
1250	56.97	69.14	1113.29	-1079.86	-212.22	233.60	5727594.19	596504.96
1255	57.66	68.88	1115.99	-1082.56	-210.72	237.53	5727595.69	596508.89
1260	58.12	68.41	1118.65	-1085.22	-209.17	241.47	5727597.24	596512.83
1265	58.59	67.94	1121.27	-1087.84	-207.59	245.42	5727598.82	596516.78
1270	59.05	67.47	1123.86	-1090.43	-205.97	249.38	5727600.44	596520.74
1275	59.51	67.01	1126.42	-1092.98	-204.30	253.34	5727602.11	596524.70
1280	59.97	66.54	1128.93	-1095.51	-202.60	257.31	5727603.81	596528.67
1285	60.27	66.19	1131.42	-1097.99	-200.86	261.28	5727605.55	596532.64
1290	60.36	65.98	1133.90	-1100.47	-199.10	265.25	5727607.31	596536.61
1295	60.46	65.78	1136.37	-1102.94	-197.32	269.22	5727609.09	596540.58
1300	60.55	65.57	1138.83	-1105.40	-195.53	273.18	5727610.88	596544.55
1305	60.64	65.37	1141.28	-1107.85	-193.72	277.15	5727612.69	596548.51
1310	60.73	65.16	1143.73	-1110.30	-191.90	281.10	5727614.51	596552.47
1315	60.74	65.07	1146.18	-1112.74	-190.06	285.06	5727616.35	596556.42
1320	60.72	65.03	1148.62	-1115.19	-188.22	289.02	5727618.19	596560.38
1325	60.70	64.98	1151.07	-1117.64	-186.38	292.97	5727620.03	596564.33
1330	60.68	64.94	1153.51	-1120.08	-184.53	296.92	5727621.88	596568.28
1335	60.65	64.90	1155.96	-1122.53	-182.69	300.86	5727623.72	596572.23
1340	60.63	64.85	1158.42	-1124.98	-180.84	304.81	5727625.57	596576.17
1345	60.54	64.89	1160.87	-1127.44	-178.99	308.75	5727627.42	596580.11
1350	60.45	64.94	1163.33	-1129.90	-177.14	312.69	5727629.27	596584.06
1355	60.35	64.99	1165.80	-1132.37	-175.30	316.63	5727631.11	596588.00
1360	60.26	65.04	1168.28	-1134.85	-173.47	320.57	5727632.94	596591.93
1365	60.16	65.08	1170.76	-1137.33	-171.64	324.50	5727634.77	596595.87
1370	60.07	65.10	1173.25	-1139.82	-169.81	328.44	5727636.59	596599.80
1375	59.97	64.98	1175.75	-1142.32	-167.99	332.36	5727638.42	596603.72
1380	59.87	64.87	1178.26	-1144.83	-166.15	336.28	5727640.26	596607.64
1385	59.77	64.76	1180.77	-1147.34	-164.32	340.19	5727642.09	596611.55
1390	59.67	64.64	1183.29	-1149.86	-162.47	344.10	5727643.94	596615.46
1395	59.57	64.53	1185.82	-1152.39	-160.62	347.99	5727645.79	596619.35
1400	59.44	64.47	1188.36	-1154.93	-158.76	351.88	5727647.65	596623.24
1405	59.27	64.48	1190.91	-1157.48	-156.91	355.76	5727649.50	596627.12
1410	59.10	64.48	1193.47	-1160.04	-155.06	359.64	5727651.35	596631.00

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1415	58.93	64.48	1196.04	-1162.61	-153.21	363.50	5727653.20	596634.87
1420	58.76	64.49	1198.63	-1165.20	-151.37	367.37	5727655.04	596638.73
1425	58.60	64.49	1201.23	-1167.80	-149.53	371.22	5727656.88	596642.58
1430	58.74	64.51	1203.83	-1170.40	-147.70	375.07	5727658.71	596646.43
1435	59.01	64.55	1206.41	-1172.98	-145.86	378.94	5727660.55	596650.30
1440	59.27	64.58	1208.98	-1175.55	-144.01	382.81	5727662.40	596654.17
1445	59.53	64.61	1211.52	-1178.09	-142.17	386.70	5727664.24	596658.06
1450	59.80	64.65	1214.05	-1180.62	-140.32	390.60	5727666.09	596661.96
1455	60.06	64.68	1216.56	-1183.13	-138.47	394.51	5727667.94	596665.87
1460	59.96	64.60	1219.05	-1185.62	-136.61	398.42	5727669.80	596669.78
1465	59.85	64.51	1221.56	-1188.13	-134.75	402.33	5727671.66	596673.69
1470	59.74	64.43	1224.08	-1190.65	-132.89	406.23	5727673.52	596677.59
1475	59.62	64.34	1226.60	-1193.17	-131.03	410.12	5727675.38	596681.48
1480	59.51	64.26	1229.13	-1195.70	-129.16	414.00	5727677.25	596685.37
1485	59.40	64.21	1231.68	-1198.24	-127.29	417.88	5727679.12	596689.24
1490	59.28	64.24	1234.22	-1200.80	-125.41	421.75	5727681.00	596693.11
1495	59.17	64.27	1236.78	-1203.35	-123.55	425.62	5727682.86	596696.98
1500	59.05	64.30	1239.35	-1205.92	-121.69	429.49	5727684.72	596700.85
1505	58.94	64.33	1241.93	-1208.49	-119.83	433.35	5727686.58	596704.71
1510	58.82	64.36	1244.51	-1211.08	-117.98	437.21	5727688.43	596708.57
1515	58.71	64.38	1247.10	-1213.67	-116.13	441.06	5727690.28	596712.43
1520	58.61	64.40	1249.70	-1216.27	-114.28	444.91	5727692.13	596716.28
1525	58.50	64.41	1252.31	-1218.88	-112.44	448.76	5727693.97	596720.12
1530	58.40	64.42	1254.93	-1221.50	-110.60	452.60	5727695.81	596723.97
1535	58.29	64.43	1257.55	-1224.12	-108.76	456.44	5727697.65	596727.80
1540	58.19	64.44	1260.18	-1226.75	-106.93	460.28	5727699.48	596731.64
1545	58.33	64.54	1262.82	-1229.39	-105.10	464.11	5727701.31	596735.48
1550	58.58	64.68	1265.43	-1232.00	-103.27	467.96	5727703.14	596739.32
1555	58.82	64.82	1268.03	-1234.60	-101.45	471.83	5727704.96	596743.19
1560	59.07	64.96	1270.61	-1237.18	-99.63	475.70	5727706.78	596747.07
1565	59.31	65.10	1273.17	-1239.74	-97.82	479.60	5727708.59	596750.96
1570	59.55	65.25	1275.71	-1242.28	-96.01	483.50	5727710.40	596754.87
1575	59.45	65.29	1278.25	-1244.82	-94.21	487.42	5727712.20	596758.78
1580	59.34	65.32	1280.80	-1247.37	-92.41	491.33	5727714.00	596762.69
1585	59.23	65.36	1283.35	-1249.92	-90.62	495.23	5727715.79	596766.60
1590	59.12	65.40	1285.91	-1252.48	-88.83	499.14	5727717.58	596770.50
1595	59.02	65.44	1288.48	-1255.05	-87.05	503.04	5727719.36	596774.40
1600	58.91	65.47	1291.06	-1257.63	-85.27	506.93	5727721.14	596778.30
1605	58.83	65.48	1293.64	-1260.21	-83.50	510.83	5727722.91	596782.19
1610	58.75	65.50	1296.23	-1262.80	-81.72	514.72	5727724.69	596786.08
1615	58.67	65.51	1298.83	-1265.40	-79.95	518.61	5727726.46	596789.97
1620	58.59	65.52	1301.43	-1268.00	-78.18	522.49	5727728.23	596793.85
1625	58.51	65.53	1304.04	-1270.61	-76.41	526.37	5727730.00	596797.73
1630	58.41	65.51	1306.66	-1273.23	-74.65	530.25	5727731.76	596801.61
1635	58.29	65.46	1309.28	-1275.85	-72.88	534.12	5727733.53	596805.49
1640	58.17	65.41	1311.91	-1278.48	-71.12	537.99	5727735.29	596809.35
1645	58.05	65.35	1314.56	-1281.13	-69.35	541.85	5727737.06	596813.21
1650	57.93	65.30	1317.21	-1283.78	-67.58	545.70	5727738.83	596817.06
1655	57.81	65.25	1319.87	-1286.43	-65.81	549.55	5727740.60	596820.91
1660	58.07	65.34	1322.52	-1289.09	-64.04	553.39	5727742.37	596824.76
1665	58.48	65.50	1325.15	-1291.72	-62.27	557.26	5727744.14	596828.62
1670	58.89	65.66	1327.75	-1294.32	-60.50	561.15	5727745.91	596832.51
1675	59.30	65.82	1330.32	-1296.89	-58.74	565.06	5727747.67	596836.43
1680	59.70	65.97	1332.86	-1299.43	-56.98	568.99	5727749.43	596840.36
1685	60.11	66.13	1335.36	-1301.93	-55.23	572.95	5727751.18	596844.31
1690	60.15	66.22	1337.85	-1304.42	-53.48	576.91	5727752.93	596848.28
1695	60.19	66.31	1340.34	-1306.91	-51.73	580.88	5727754.68	596852.25
1700	60.24	66.40	1342.82	-1309.39	-49.99	584.86	5727756.42	596856.22
1705	60.28	66.49	1345.31	-1311.88	-48.26	588.84	5727758.15	596860.20

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1710	60.32	66.58	1347.78	-1314.35	-46.53	592.82	5727759.88	596864.19
1715	60.35	66.67	1350.26	-1316.83	-44.80	596.81	5727761.61	596868.17
1720	60.36	66.76	1352.73	-1319.30	-43.09	600.80	5727763.32	596872.17
1725	60.36	66.85	1355.20	-1321.77	-41.38	604.80	5727765.03	596876.16
1730	60.37	66.94	1357.68	-1324.24	-39.67	608.79	5727766.74	596880.16
1735	60.37	67.03	1360.15	-1326.72	-37.97	612.79	5727768.44	596884.16
1740	60.38	67.12	1362.62	-1329.19	-36.28	616.80	5727770.13	596888.16
1745	60.39	67.20	1365.09	-1331.66	-34.59	620.80	5727771.82	596892.17
1750	60.42	67.27	1367.56	-1334.13	-32.91	624.81	5727773.50	596896.17
1755	60.44	67.35	1370.03	-1336.60	-31.23	628.82	5727775.18	596900.19
1760	60.47	67.42	1372.49	-1339.06	-29.56	632.84	5727776.85	596904.20
1765	60.49	67.49	1374.96	-1341.53	-27.89	636.86	5727778.52	596908.22
1770	60.52	67.57	1377.42	-1343.99	-26.23	640.88	5727780.18	596912.24
1775	60.46	67.41	1379.88	-1346.45	-24.57	644.90	5727781.84	596916.26
1780	60.39	67.19	1382.35	-1348.92	-22.89	648.91	5727783.52	596920.27
1785	60.31	66.98	1384.82	-1351.39	-21.20	652.91	5727785.21	596924.27
1790	60.24	66.77	1387.30	-1353.87	-19.49	656.91	5727786.92	596928.27
1795	60.16	66.55	1389.79	-1356.36	-17.78	660.89	5727788.63	596932.25
1800	60.09	66.37	1392.28	-1358.85	-16.04	664.86	5727790.37	596936.23
1805	59.99	66.35	1394.77	-1361.34	-14.31	668.83	5727792.10	596940.19
1810	59.89	66.34	1397.28	-1363.85	-12.57	672.80	5727793.84	596944.16
1815	59.80	66.32	1399.79	-1366.36	-10.84	676.75	5727795.57	596948.12
1820	59.70	66.31	1402.31	-1368.88	-9.10	680.71	5727797.31	596952.07
1825	59.61	66.29	1404.84	-1371.41	-7.37	684.66	5727799.04	596956.02
1830	59.56	66.29	1407.37	-1373.94	-5.63	688.61	5727800.78	596959.97
1835	59.62	66.33	1409.90	-1376.47	-3.90	692.56	5727802.51	596963.92
1840	59.68	66.36	1412.43	-1378.99	-2.17	696.51	5727804.24	596967.87
1845	59.74	66.40	1414.95	-1381.52	-0.44	700.46	5727805.97	596971.83
1850	59.80	66.44	1417.46	-1384.03	1.29	704.42	5727807.70	596975.79
1855	59.86	66.47	1419.98	-1386.55	3.01	708.39	5727809.42	596979.75
1860	59.82	66.39	1422.49	-1389.06	4.74	712.35	5727811.15	596983.71
1865	59.70	66.20	1425.01	-1391.58	6.47	716.31	5727812.88	596987.67
1870	59.58	66.01	1427.53	-1394.10	8.22	720.25	5727814.63	596991.61
1875	59.46	65.83	1430.07	-1396.64	9.98	724.18	5727816.39	596995.55
1880	59.34	65.64	1432.61	-1399.18	11.75	728.11	5727818.16	596999.47
1885	59.22	65.45	1435.17	-1401.74	13.53	732.02	5727819.94	597003.38
1890	59.04	65.21	1437.73	-1404.30	15.32	735.92	5727821.73	597007.28
1895	58.84	64.96	1440.31	-1406.88	17.12	739.81	5727823.53	597011.17
1900	58.65	64.71	1442.91	-1409.48	18.94	743.67	5727825.35	597015.04
1905	58.45	64.46	1445.52	-1412.09	20.77	747.53	5727827.18	597018.89
1910	58.26	64.21	1448.14	-1414.71	22.61	751.36	5727829.02	597022.73
1915	58.06	63.97	1450.78	-1417.35	24.47	755.18	5727830.88	597026.55
1920	57.87	63.87	1453.43	-1420.00	26.33	758.99	5727832.74	597030.35
1925	57.68	63.77	1456.10	-1422.67	28.19	762.79	5727834.60	597034.15
1930	57.48	63.67	1458.78	-1425.35	30.06	766.57	5727836.47	597037.93
1935	57.29	63.57	1461.47	-1428.04	31.93	770.34	5727838.34	597041.71
1940	57.10	63.47	1464.18	-1430.75	33.81	774.10	5727840.22	597045.47
1945	57.00	63.45	1466.90	-1433.47	35.68	777.86	5727842.09	597049.22
1950	57.04	63.56	1469.62	-1436.19	37.55	781.61	5727843.96	597052.97
1955	57.07	63.66	1472.34	-1438.91	39.42	785.37	5727845.83	597056.73
1960	57.10	63.76	1475.06	-1441.63	41.28	789.13	5727847.69	597060.49
1965	57.13	63.86	1477.78	-1444.35	43.13	792.90	5727849.54	597064.26
1970	57.16	63.96	1480.49	-1447.06	44.98	796.67	5727851.39	597068.03
1975	57.07	63.94	1483.20	-1449.77	46.82	800.45	5727853.23	597071.81
1980	56.87	63.80	1485.93	-1452.49	48.66	804.21	5727855.07	597075.57
1985	56.66	63.67	1488.67	-1455.23	50.51	807.96	5727856.92	597079.32
1990	56.46	63.53	1491.42	-1457.99	52.37	811.70	5727858.78	597083.06
1995	56.25	63.39	1494.19	-1460.76	54.23	815.42	5727860.64	597086.78
2000	56.05	63.26	1496.98	-1463.55	56.09	819.13	5727862.50	597090.49

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2005	55.44	63.15	1499.79	-1466.36	57.95	822.82	5727864.36	597094.19
2010	54.69	63.06	1502.65	-1469.22	59.81	826.48	5727866.22	597097.84
2015	53.94	62.97	1505.57	-1472.14	61.65	830.10	5727868.06	597101.46
2020	53.18	62.87	1508.54	-1475.11	63.48	833.68	5727869.89	597105.04
2025	52.43	62.78	1511.56	-1478.13	65.30	837.22	5727871.71	597108.59
2030	51.70	62.69	1514.63	-1481.20	67.10	840.73	5727873.51	597112.09
2035	51.57	62.62	1517.74	-1484.31	68.90	844.21	5727875.31	597115.57
2040	51.43	62.55	1520.85	-1487.42	70.71	847.68	5727877.12	597119.05
2045	51.30	62.47	1523.97	-1490.54	72.51	851.15	5727878.92	597122.51
2050	51.17	62.40	1527.10	-1493.67	74.31	854.60	5727880.72	597125.97
2055	51.03	62.33	1530.24	-1496.81	76.12	858.05	5727882.53	597129.41
2060	50.83	62.40	1533.39	-1499.96	77.92	861.49	5727884.33	597132.85
2065	50.45	62.90	1536.56	-1503.13	79.70	864.92	5727886.11	597136.29
2070	50.07	63.39	1539.76	-1506.33	81.43	868.35	5727887.84	597139.72
2075	49.69	63.88	1542.98	-1509.55	83.13	871.78	5727889.54	597143.14
2080	49.31	64.37	1546.23	-1512.80	84.79	875.20	5727891.20	597146.56
2085	48.93	64.86	1549.50	-1516.07	86.41	878.61	5727892.82	597149.98
2090	48.73	65.04	1552.80	-1519.37	88.00	882.02	5727894.41	597153.39
2095	48.61	65.04	1556.10	-1522.67	89.59	885.43	5727896.00	597156.79
2100	48.50	65.05	1559.41	-1525.98	91.17	888.82	5727897.58	597160.19
2105	48.39	65.06	1562.72	-1529.29	92.74	892.22	5727899.15	597163.58
2110	48.28	65.07	1566.05	-1532.62	94.32	895.61	5727900.73	597166.97
2115	48.17	65.08	1569.38	-1535.95	95.89	898.99	5727902.30	597170.35
2120	48.38	65.04	1572.71	-1539.28	97.46	902.37	5727903.87	597173.73
2125	48.66	65.00	1576.02	-1542.59	99.04	905.77	5727905.45	597177.13
2130	48.94	64.96	1579.31	-1545.88	100.64	909.17	5727907.04	597180.54
2135	49.21	64.92	1582.59	-1549.16	102.23	912.60	5727908.64	597183.96
2140	49.49	64.88	1585.85	-1552.42	103.84	916.03	5727910.25	597187.39
2145	49.73	64.85	1589.09	-1555.66	105.46	919.48	5727911.87	597190.84
2150	49.74	64.90	1592.32	-1558.89	107.08	922.93	5727913.49	597194.30
2155	49.74	64.96	1595.55	-1562.12	108.70	926.39	5727915.11	597197.75
2160	49.75	65.02	1598.78	-1565.35	110.31	929.85	5727916.72	597201.21
2165	49.75	65.07	1602.01	-1568.58	111.92	933.31	5727918.33	597204.67
2170	49.76	65.13	1605.24	-1571.81	113.52	936.77	5727919.93	597208.13
2175	49.74	65.14	1608.47	-1575.04	115.13	940.23	5727921.54	597211.60
2180	49.67	65.04	1611.70	-1578.27	116.73	943.69	5727923.14	597215.05
2185	49.60	64.94	1614.94	-1581.51	118.34	947.14	5727924.75	597218.51
2190	49.53	64.84	1618.18	-1584.76	119.96	950.59	5727926.37	597221.95
2195	49.46	64.74	1621.43	-1588.00	121.58	954.03	5727927.99	597225.39
2200	49.39	64.64	1624.68	-1591.26	123.20	957.46	5727929.61	597228.83
2205	49.33	64.63	1627.94	-1594.51	124.83	960.89	5727931.24	597232.25
2210	49.28	64.65	1631.20	-1597.77	126.45	964.32	5727932.86	597235.68
2215	49.22	64.67	1634.46	-1601.04	128.07	967.74	5727934.48	597239.10
2220	49.17	64.69	1637.73	-1604.30	129.69	971.16	5727936.10	597242.53
2225	49.12	64.72	1641.00	-1607.57	131.30	974.58	5727937.71	597245.94
2230	49.06	64.74	1644.28	-1610.85	132.92	978.00	5727939.33	597249.36
2235	48.99	64.63	1647.56	-1614.13	134.53	981.41	5727940.94	597252.77
2240	48.92	64.52	1650.84	-1617.41	136.15	984.82	5727942.56	597256.18
2245	48.85	64.40	1654.13	-1620.70	137.77	988.22	5727944.18	597259.58
2250	48.78	64.29	1657.42	-1623.99	139.40	991.61	5727945.81	597262.97
2255	48.70	64.17	1660.72	-1627.29	141.04	994.99	5727947.45	597266.35
2260	48.63	64.07	1664.02	-1630.59	142.67	998.37	5727949.08	597269.73
2265	48.56	64.09	1667.33	-1633.90	144.31	1001.74	5727950.72	597273.11
2270	48.50	64.10	1670.64	-1637.21	145.95	1005.11	5727952.36	597276.48
2275	48.43	64.11	1673.95	-1640.52	147.58	1008.48	5727953.99	597279.84
2280	48.36	64.13	1677.27	-1643.84	149.21	1011.84	5727955.62	597283.21
2285	48.29	64.14	1680.60	-1647.17	150.84	1015.21	5727957.25	597286.57
2290	48.31	64.29	1683.93	-1650.49	152.47	1018.56	5727958.88	597289.93
2295	48.45	64.65	1687.25	-1653.82	154.08	1021.94	5727960.49	597293.30

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2300	48.59	65.01	1690.56	-1657.13	155.67	1025.33	5727962.08	597296.69
2305	48.73	65.37	1693.86	-1660.43	157.24	1028.74	5727963.65	597300.10
2310	48.88	65.73	1697.16	-1663.72	158.80	1032.16	5727965.21	597303.52
2315	49.02	66.08	1700.44	-1667.01	160.34	1035.60	5727966.75	597306.96
2320	49.05	66.25	1703.71	-1670.29	161.86	1039.06	5727968.27	597310.42
2325	49.02	66.30	1706.99	-1673.56	163.38	1042.51	5727969.79	597313.88
2330	48.98	66.36	1710.27	-1676.84	164.90	1045.97	5727971.31	597317.33
2335	48.95	66.41	1713.56	-1680.13	166.41	1049.43	5727972.82	597320.79
2340	48.92	66.47	1716.84	-1683.41	167.91	1052.88	5727974.32	597324.24
2345	48.88	66.52	1720.13	-1686.70	169.42	1056.34	5727975.83	597327.70
2350	48.77	66.48	1723.42	-1689.99	170.92	1059.79	5727977.33	597331.15
2355	48.66	66.43	1726.72	-1693.29	172.42	1063.23	5727978.83	597334.60
2360	48.55	66.39	1730.02	-1696.59	173.92	1066.67	5727980.33	597338.03
2365	48.44	66.35	1733.34	-1699.91	175.42	1070.10	5727981.83	597341.47
2370	48.33	66.31	1736.66	-1703.23	176.92	1073.53	5727983.33	597344.89
2375	48.30	66.27	1739.98	-1706.56	178.42	1076.94	5727984.83	597348.31
2380	48.46	66.25	1743.31	-1709.88	179.92	1080.37	5727986.33	597351.73
2385	48.62	66.22	1746.62	-1713.19	181.43	1083.79	5727987.84	597355.16
2390	48.78	66.20	1749.92	-1716.49	182.95	1087.23	5727989.36	597358.59
2395	48.94	66.17	1753.21	-1719.78	184.47	1090.68	5727990.88	597362.04
2400	49.11	66.14	1756.48	-1723.06	185.99	1094.13	5727992.40	597365.49
2405	49.16	66.14	1759.75	-1726.32	187.52	1097.59	5727993.93	597368.95
2410	49.05	66.17	1763.03	-1729.60	189.05	1101.05	5727995.46	597372.41
2415	48.95	66.20	1766.31	-1732.88	190.57	1104.50	5727996.98	597375.86
2420	48.85	66.23	1769.60	-1736.17	192.09	1107.95	5727998.50	597379.31
2425	48.75	66.26	1772.89	-1739.46	193.61	1111.39	5728000.02	597382.75
2430	48.64	66.29	1776.19	-1742.76	195.12	1114.83	5728001.53	597386.19
2435	48.80	66.24	1779.49	-1746.06	196.63	1118.27	5728003.04	597389.63
2440	49.03	66.16	1782.78	-1749.35	198.15	1121.72	5728004.56	597393.08
2445	49.26	66.08	1786.05	-1752.62	199.68	1125.18	5728006.09	597396.54
2450	49.49	66.01	1789.30	-1755.87	201.22	1128.64	5728007.63	597400.01
2455	49.72	65.93	1792.54	-1759.11	202.77	1132.12	5728009.18	597403.48
2460	49.94	65.85	1795.77	-1762.34	204.33	1135.61	5728010.74	597406.97
2465	49.85	65.81	1798.99	-1765.56	205.90	1139.10	5728012.30	597410.46
2470	49.74	65.77	1802.22	-1768.79	207.46	1142.58	5728013.87	597413.94
2475	49.64	65.73	1805.45	-1772.02	209.03	1146.06	5728015.44	597417.42
2480	49.53	65.69	1808.69	-1775.26	210.59	1149.53	5728017.00	597420.89
2485	49.43	65.65	1811.94	-1778.51	212.16	1152.99	5728018.57	597424.35
2490	49.32	65.62	1815.20	-1781.77	213.72	1156.45	5728020.13	597427.81
2495	49.19	65.62	1818.46	-1785.03	215.29	1159.90	5728021.69	597431.26
2500	49.07	65.62	1821.73	-1788.30	216.84	1163.34	5728023.25	597434.71
2505	48.94	65.62	1825.01	-1791.58	218.40	1166.78	5728024.81	597438.14
2510	48.81	65.62	1828.30	-1794.87	219.96	1170.21	5728026.37	597441.57
2515	48.69	65.62	1831.60	-1798.17	221.51	1173.64	5728027.92	597445.00
2520	48.55	65.59	1834.90	-1801.47	223.06	1177.05	5728029.47	597448.42
2525	48.41	65.54	1838.21	-1804.79	224.60	1180.46	5728031.01	597451.82
2530	48.28	65.48	1841.54	-1808.11	226.15	1183.86	5728032.56	597455.22
2535	48.14	65.43	1844.87	-1811.44	227.70	1187.25	5728034.11	597458.62
2540	48.00	65.38	1848.21	-1814.78	229.25	1190.64	5728035.66	597462.00
2545	47.86	65.32	1851.56	-1818.13	230.80	1194.01	5728037.21	597465.37
2550	47.73	65.28	1854.92	-1821.49	232.34	1197.37	5728038.75	597468.74
2555	47.61	65.23	1858.29	-1824.86	233.89	1200.73	5728040.30	597472.09
2560	47.48	65.19	1861.66	-1828.23	235.44	1204.08	5728041.85	597475.44
2565	47.36	65.15	1865.05	-1831.62	236.98	1207.42	5728043.39	597478.78
2570	47.23	65.10	1868.44	-1835.01	238.53	1210.76	5728044.94	597482.12
2575	47.12	65.06	1871.84	-1838.41	240.07	1214.08	5728046.48	597485.44
2580	47.31	65.11	1875.23	-1841.80	241.62	1217.41	5728048.03	597488.77
2585	47.51	65.17	1878.62	-1845.19	243.16	1220.75	5728049.57	597492.11
2590	47.71	65.22	1881.99	-1848.56	244.71	1224.10	5728051.12	597495.46

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2595	47.91	65.27	1885.35	-1851.92	246.26	1227.47	5728052.67	597498.83
2600	48.10	65.32	1888.69	-1855.26	247.81	1230.84	5728054.22	597502.21
2605	48.24	65.36	1892.02	-1858.59	249.37	1234.23	5728055.78	597505.59
2610	48.22	65.34	1895.36	-1861.93	250.93	1237.62	5728057.33	597508.98
2615	48.21	65.32	1898.69	-1865.26	252.48	1241.01	5728058.89	597512.37
2620	48.20	65.31	1902.02	-1868.59	254.04	1244.40	5728060.45	597515.76
2625	48.19	65.29	1905.35	-1871.92	255.59	1247.78	5728062.00	597519.15
2630	48.18	65.28	1908.68	-1875.26	257.15	1251.17	5728063.56	597522.53
2635	48.25	65.30	1912.02	-1878.59	258.71	1254.55	5728065.12	597525.92
2640	48.42	65.35	1915.34	-1881.91	260.27	1257.95	5728066.68	597529.31
2645	48.60	65.41	1918.66	-1885.22	261.83	1261.35	5728068.24	597532.72
2650	48.77	65.47	1921.96	-1888.53	263.39	1264.77	5728069.80	597536.13
2655	48.94	65.53	1925.25	-1891.82	264.95	1268.20	5728071.36	597539.56
2660	49.11	65.58	1928.52	-1895.09	266.51	1271.63	5728072.92	597543.00
2665	49.10	65.62	1931.80	-1898.37	268.07	1275.08	5728074.48	597546.44
2670	49.02	65.64	1935.07	-1901.64	269.63	1278.52	5728076.04	597549.88
2675	48.93	65.67	1938.35	-1904.92	271.18	1281.95	5728077.59	597553.32
2680	48.85	65.69	1941.64	-1908.21	272.73	1285.39	5728079.14	597556.75
2685	48.77	65.71	1944.93	-1911.50	274.28	1288.82	5728080.69	597560.18
2690	48.68	65.74	1948.23	-1914.80	275.83	1292.24	5728082.24	597563.60
2695	48.57	65.75	1951.54	-1918.11	277.37	1295.66	5728083.78	597567.03
2700	48.45	65.76	1954.85	-1921.42	278.91	1299.08	5728085.31	597570.44
2705	48.33	65.77	1958.17	-1924.74	280.44	1302.49	5728086.85	597573.85
2710	48.22	65.78	1961.50	-1928.07	281.97	1305.89	5728088.38	597577.26
2715	48.10	65.79	1964.83	-1931.40	283.50	1309.29	5728089.91	597580.65
2720	48.07	65.76	1968.18	-1934.75	285.02	1312.68	5728091.43	597584.04
2725	48.32	65.58	1971.51	-1938.08	286.56	1316.08	5728092.97	597587.44
2730	48.56	65.40	1974.83	-1941.40	288.11	1319.48	5728094.52	597590.85
2735	48.81	65.23	1978.13	-1944.70	289.68	1322.89	5728096.09	597594.26
2740	49.05	65.05	1981.41	-1947.98	291.26	1326.32	5728097.67	597597.68
2745	49.30	64.87	1984.68	-1951.25	292.86	1329.74	5728099.27	597601.11
2750	49.43	64.80	1987.93	-1954.51	294.48	1333.18	5728100.89	597604.54
2755	49.42	64.85	1991.19	-1957.76	296.09	1336.62	5728102.50	597607.98
2760	49.41	64.90	1994.44	-1961.01	297.70	1340.05	5728104.11	597611.42
2765	49.40	64.94	1997.69	-1964.26	299.31	1343.49	5728105.72	597614.86
2770	49.39	64.99	2000.95	-1967.52	300.92	1346.93	5728107.33	597618.30
2775	49.38	65.04	2004.20	-1970.77	302.52	1350.37	5728108.93	597621.74
2780	49.30	65.02	2007.46	-1974.03	304.12	1353.81	5728110.53	597625.18
2785	49.18	64.98	2010.72	-1977.29	305.72	1357.25	5728112.13	597628.61
2790	49.07	64.93	2014.00	-1980.57	307.32	1360.67	5728113.73	597632.03
2795	48.96	64.89	2017.28	-1983.85	308.92	1364.09	5728115.33	597635.45
2800	48.84	64.85	2020.56	-1987.13	310.52	1367.50	5728116.93	597638.87
2805	48.73	64.80	2023.86	-1990.43	312.12	1370.91	5728118.53	597642.27
2810	48.64	64.80	2027.16	-1993.73	313.72	1374.30	5728120.13	597645.67
2815	48.55	64.81	2030.46	-1997.04	315.31	1377.70	5728121.72	597649.06
2820	48.46	64.82	2033.78	-2000.35	316.91	1381.09	5728123.32	597652.45
2825	48.37	64.82	2037.10	-2003.67	318.50	1384.47	5728124.91	597655.83
2830	48.28	64.83	2040.42	-2006.99	320.09	1387.85	5728126.50	597659.21
2835	48.18	64.82	2043.75	-2010.32	321.67	1391.23	5728128.08	597662.59
2840	48.07	64.79	2047.09	-2013.66	323.26	1394.60	5728129.67	597665.96
2845	47.95	64.76	2050.43	-2017.00	324.84	1397.96	5728131.25	597669.32
2850	47.84	64.72	2053.79	-2020.36	326.42	1401.32	5728132.83	597672.68
2855	47.73	64.69	2057.15	-2023.72	328.00	1404.66	5728134.41	597676.03
2860	47.61	64.66	2060.51	-2027.08	329.59	1408.01	5728136.00	597679.37
2865	47.51	64.63	2063.89	-2030.46	331.16	1411.34	5728137.57	597682.70
2870	47.42	64.59	2067.27	-2033.84	332.74	1414.67	5728139.15	597686.03
2875	47.33	64.56	2070.65	-2037.22	334.32	1417.99	5728140.73	597689.35
2880	47.25	64.53	2074.05	-2040.62	335.90	1421.31	5728142.31	597692.67
2885	47.16	64.50	2077.44	-2044.01	337.48	1424.62	5728143.89	597695.98

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2890	47.07	64.47	2080.84	-2047.42	339.06	1427.93	5728145.47	597699.29
2895	47.17	64.53	2084.25	-2050.82	340.63	1431.23	5728147.04	597702.60
2900	47.33	64.62	2087.64	-2054.21	342.21	1434.55	5728148.62	597705.91
2905	47.49	64.71	2091.03	-2057.60	343.78	1437.88	5728150.19	597709.24
2910	47.65	64.81	2094.40	-2060.97	345.36	1441.22	5728151.77	597712.58
2915	47.81	64.90	2097.76	-2064.33	346.93	1444.57	5728153.34	597715.93
2920	47.96	64.99	2101.12	-2067.69	348.50	1447.93	5728154.91	597719.29
2925	47.96	65.00	2104.47	-2071.03	350.07	1451.29	5728156.48	597722.66
2930	47.96	65.01	2107.81	-2074.38	351.64	1454.66	5728158.04	597726.02
2935	47.96	65.02	2111.16	-2077.73	353.20	1458.02	5728159.61	597729.39
2940	47.96	65.03	2114.51	-2081.08	354.77	1461.39	5728161.18	597732.75
2945	47.96	65.04	2117.86	-2084.43	356.34	1464.76	5728162.75	597736.12
2950	48.02	65.08	2121.21	-2087.78	357.90	1468.13	5728164.31	597739.49
2955	48.21	65.17	2124.54	-2091.11	359.47	1471.50	5728165.88	597742.87
2960	48.40	65.26	2127.87	-2094.44	361.03	1474.89	5728167.44	597746.26
2965	48.59	65.34	2131.18	-2097.75	362.60	1478.30	5728169.01	597749.66
2970	48.78	65.43	2134.48	-2101.05	364.16	1481.71	5728170.57	597753.07
2975	48.96	65.52	2137.77	-2104.34	365.72	1485.14	5728172.13	597756.50
2980	48.96	65.53	2141.05	-2107.62	367.28	1488.57	5728173.69	597759.93
2985	48.89	65.53	2144.34	-2110.91	368.85	1492.00	5728175.26	597763.37
2990	48.83	65.52	2147.63	-2114.20	370.41	1495.43	5728176.82	597766.79
2995	48.76	65.51	2150.92	-2117.49	371.96	1498.85	5728178.37	597770.22
3000	48.69	65.50	2154.22	-2120.79	373.52	1502.27	5728179.93	597773.64
3005	48.63	65.49	2157.52	-2124.09	375.08	1505.69	5728181.49	597777.05
3010	48.48	65.47	2160.83	-2127.40	376.63	1509.10	5728183.04	597780.47
3015	48.33	65.45	2164.15	-2130.72	378.19	1512.50	5728184.60	597783.87
3020	48.17	65.43	2167.48	-2134.05	379.74	1515.90	5728186.15	597787.26
3025	48.02	65.42	2170.82	-2137.39	381.28	1519.28	5728187.69	597790.64
3030	47.86	65.40	2174.17	-2140.74	382.83	1522.66	5728189.24	597794.02
3035	47.74	65.37	2177.53	-2144.10	384.37	1526.03	5728190.78	597797.39
3040	47.79	65.33	2180.89	-2147.46	385.91	1529.39	5728192.32	597800.75
3045	47.85	65.29	2184.25	-2150.82	387.46	1532.76	5728193.87	597804.12
3050	47.90	65.25	2187.60	-2154.17	389.01	1536.13	5728195.42	597807.49
3055	47.96	65.22	2190.95	-2157.52	390.56	1539.50	5728196.97	597810.86
3060	48.01	65.18	2194.30	-2160.87	392.12	1542.87	5728198.53	597814.23
3065	48.09	65.17	2197.64	-2164.21	393.68	1546.25	5728200.09	597817.61
3070	48.21	65.21	2200.98	-2167.55	395.25	1549.63	5728201.66	597820.99
3075	48.32	65.26	2204.30	-2170.88	396.81	1553.02	5728203.22	597824.38
3080	48.44	65.31	2207.63	-2174.20	398.37	1556.41	5728204.78	597827.77
3085	48.55	65.35	2210.94	-2177.51	399.93	1559.81	5728206.34	597831.18
3090	48.67	65.40	2214.24	-2180.82	401.50	1563.22	5728207.91	597834.59
3095	48.64	65.44	2217.55	-2184.12	403.06	1566.64	5728209.47	597838.00
3100	48.51	65.46	2220.85	-2187.42	404.61	1570.05	5728211.02	597841.41
3105	48.37	65.49	2224.17	-2190.74	406.17	1573.46	5728212.58	597844.82
3110	48.23	65.52	2227.50	-2194.07	407.71	1576.85	5728214.12	597848.22
3115	48.10	65.55	2230.83	-2197.40	409.25	1580.24	5728215.66	597851.61
3120	47.96	65.58	2234.18	-2200.75	410.79	1583.63	5728217.20	597854.99
3125	47.84	65.61	2237.53	-2204.10	412.33	1587.01	5728218.73	597858.37
3130	47.73	65.64	2240.89	-2207.46	413.85	1590.38	5728220.26	597861.75
3135	47.61	65.68	2244.26	-2210.82	415.38	1593.75	5728221.79	597865.11
3140	47.50	65.71	2247.63	-2214.20	416.89	1597.11	5728223.30	597868.48
3145	47.38	65.74	2251.01	-2217.58	418.41	1600.47	5728224.82	597871.83
3150	47.28	65.76	2254.40	-2220.97	419.92	1603.82	5728226.33	597875.19
3151	47.27	65.76	2255.08	-2221.65	420.22	1604.49	5728226.63	597875.86
3152	47.26	65.75	2255.76	-2222.33	420.52	1605.16	5728226.93	597876.53
3153	47.24	65.74	2256.43	-2223.01	420.82	1605.83	5728227.23	597877.20
3154	47.23	65.74	2257.11	-2223.68	421.12	1606.50	5728227.53	597877.87
3155	47.22	65.73	2257.79	-2224.36	421.42	1607.17	5728227.83	597878.54
3156	47.21	65.72	2258.47	-2225.04	421.72	1607.84	5728228.13	597879.20
3157	47.20	65.72	2259.15	-2225.72	422.03	1608.51	5728228.44	597879.87
3158	47.19	65.71	2259.83	-2226.40	422.33	1609.18	5728228.74	597880.54

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3159	47.18	65.70	2260.51	-2227.08	422.63	1609.85	5728229.04	597881.21
3160	47.16	65.70	2261.19	-2227.76	422.93	1610.52	5728229.34	597881.88
3161	47.15	65.69	2261.87	-2228.44	423.23	1611.19	5728229.64	597882.55
3162	47.14	65.68	2262.55	-2229.12	423.54	1611.85	5728229.95	597883.22
3163	47.13	65.67	2263.23	-2229.80	423.84	1612.52	5728230.25	597883.88
3164	47.12	65.67	2263.91	-2230.48	424.14	1613.19	5728230.55	597884.55
3165	47.11	65.66	2264.59	-2231.16	424.44	1613.86	5728230.85	597885.22
3166	47.09	65.65	2265.27	-2231.84	424.74	1614.52	5728231.15	597885.89
3167	47.08	65.65	2265.95	-2232.52	425.04	1615.19	5728231.45	597886.55
3168	47.07	65.64	2266.64	-2233.20	425.35	1615.86	5728231.76	597887.22
3169	47.06	65.63	2267.32	-2233.89	425.65	1616.53	5728232.06	597887.89
3170	47.05	65.63	2268.00	-2234.57	425.95	1617.19	5728232.36	597888.56
3171	47.04	65.62	2268.68	-2235.25	426.25	1617.86	5728232.66	597889.22
3172	47.02	65.61	2269.36	-2235.93	426.55	1618.53	5728232.96	597889.89
3173	47.01	65.61	2270.04	-2236.61	426.86	1619.19	5728233.27	597890.56
3174	47.00	65.60	2270.72	-2237.30	427.16	1619.86	5728233.57	597891.22
3175	46.99	65.59	2271.41	-2237.98	427.46	1620.53	5728233.87	597891.89
3176	46.98	65.59	2272.09	-2238.66	427.76	1621.19	5728234.17	597892.55
3177	46.97	65.58	2272.77	-2239.34	428.06	1621.86	5728234.47	597893.22
3178	46.95	65.57	2273.45	-2240.02	428.37	1622.52	5728234.78	597893.88
3179	46.96	65.56	2274.14	-2240.71	428.67	1623.19	5728235.08	597894.55
3180	46.96	65.55	2274.82	-2241.39	428.97	1623.85	5728235.38	597895.22
3181	46.97	65.53	2275.50	-2242.07	429.27	1624.52	5728235.68	597895.88
3182	46.98	65.52	2276.18	-2242.75	429.58	1625.18	5728235.99	597896.55
3183	46.99	65.51	2276.87	-2243.44	429.88	1625.85	5728236.29	597897.21
3184	47.00	65.49	2277.55	-2244.12	430.18	1626.51	5728236.59	597897.88
3185	47.00	65.48	2278.23	-2244.80	430.49	1627.18	5728236.90	597898.54
3186	47.01	65.47	2278.91	-2245.48	430.79	1627.85	5728237.20	597899.21
3187	47.02	65.45	2279.59	-2246.16	431.09	1628.51	5728237.50	597899.87
3188	47.03	65.44	2280.28	-2246.84	431.40	1629.18	5728237.81	597900.54
3189	47.03	65.43	2280.96	-2247.53	431.70	1629.84	5728238.11	597901.21
3190	47.04	65.41	2281.64	-2248.21	432.01	1630.51	5728238.42	597901.87
3191	47.05	65.40	2282.32	-2248.89	432.31	1631.17	5728238.72	597902.54
3192	47.06	65.39	2283.00	-2249.57	432.61	1631.84	5728239.02	597903.20
3193	47.07	65.37	2283.68	-2250.25	432.92	1632.50	5728239.33	597903.87
3194	47.07	65.36	2284.36	-2250.93	433.22	1633.17	5728239.63	597904.53
3195	47.08	65.35	2285.04	-2251.61	433.53	1633.84	5728239.94	597905.20
3196	47.09	65.33	2285.72	-2252.30	433.83	1634.50	5728240.24	597905.86
3197	47.10	65.32	2286.41	-2252.98	434.14	1635.17	5728240.55	597906.53
3198	47.11	65.31	2287.09	-2253.66	434.45	1635.83	5728240.86	597907.20
3199	47.11	65.29	2287.77	-2254.34	434.75	1636.50	5728241.16	597907.86
3200	47.12	65.28	2288.45	-2255.02	435.06	1637.16	5728241.47	597908.53
3201	47.13	65.26	2289.13	-2255.70	435.37	1637.83	5728241.77	597909.19
3202	47.14	65.25	2289.81	-2256.38	435.67	1638.50	5728242.08	597909.86
3203	47.15	65.24	2290.49	-2257.06	435.98	1639.16	5728242.39	597910.53
3204	47.15	65.22	2291.17	-2257.74	436.29	1639.83	5728242.70	597911.19
3205	47.16	65.21	2291.85	-2258.42	436.59	1640.49	5728243.00	597911.86
3206	47.17	65.20	2292.53	-2259.10	436.90	1641.16	5728243.31	597912.52
3207	47.18	65.18	2293.21	-2259.78	437.21	1641.83	5728243.62	597913.19
3208	47.18	65.17	2293.89	-2260.46	437.52	1642.49	5728243.93	597913.85
3209	47.18	65.17	2294.57	-2261.14	437.82	1643.16	5728244.23	597914.52
3210	47.19	65.16	2295.25	-2261.82	438.13	1643.82	5728244.54	597915.19
3211	47.19	65.15	2295.93	-2262.50	438.44	1644.49	5728244.85	597915.85
3212	47.19	65.14	2296.61	-2263.18	438.75	1645.15	5728245.16	597916.52
3213	47.20	65.14	2297.29	-2263.86	439.06	1645.82	5728245.47	597917.18
3214	47.20	65.13	2297.97	-2264.54	439.36	1646.49	5728245.77	597917.85
3215	47.20	65.12	2298.65	-2265.22	439.67	1647.15	5728246.08	597918.52
3216	47.20	65.11	2299.32	-2265.89	439.98	1647.82	5728246.39	597919.18
3217	47.21	65.11	2300.00	-2266.57	440.29	1648.48	5728246.70	597919.85
3218	47.21	65.10	2300.68	-2267.25	440.60	1649.15	5728247.01	597920.51
3219	47.21	65.09	2301.36	-2267.93	440.91	1649.82	5728247.32	597921.18

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3220	47.22	65.08	2302.04	-2268.61	441.22	1650.48	5728247.63	597921.84
3221	47.22	65.08	2302.72	-2269.29	441.53	1651.15	5728247.94	597922.51
3222	47.22	65.07	2303.40	-2269.97	441.84	1651.81	5728248.25	597923.17
3223	47.22	65.06	2304.08	-2270.65	442.14	1652.48	5728248.55	597923.84
3224	47.23	65.05	2304.76	-2271.33	442.45	1653.14	5728248.86	597924.51
3225	47.23	65.04	2305.44	-2272.01	442.76	1653.81	5728249.17	597925.17
3226	47.23	65.04	2306.12	-2272.69	443.07	1654.47	5728249.48	597925.84
3227	47.23	65.03	2306.80	-2273.37	443.38	1655.14	5728249.79	597926.50
3228	47.24	65.02	2307.47	-2274.05	443.69	1655.81	5728250.10	597927.17
3229	47.24	65.01	2308.15	-2274.72	444.00	1656.47	5728250.41	597927.83
3230	47.24	65.01	2308.83	-2275.40	444.31	1657.14	5728250.72	597928.50
3231	47.25	65.00	2309.51	-2276.08	444.62	1657.80	5728251.03	597929.17
3232	47.25	64.99	2310.19	-2276.76	444.93	1658.47	5728251.34	597929.83
3233	47.25	64.98	2310.87	-2277.44	445.24	1659.13	5728251.65	597930.50
3234	47.25	64.98	2311.55	-2278.12	445.55	1659.80	5728251.96	597931.16
3235	47.26	64.97	2312.23	-2278.80	445.87	1660.47	5728252.28	597931.83
3236	47.26	64.96	2312.91	-2279.47	446.18	1661.13	5728252.59	597932.49
3237	47.26	64.96	2313.58	-2280.15	446.49	1661.80	5728252.90	597933.16
3238	47.27	64.95	2314.26	-2280.83	446.80	1662.46	5728253.21	597933.82
3239	47.27	64.95	2314.94	-2281.51	447.11	1663.13	5728253.52	597934.49
3240	47.28	64.94	2315.62	-2282.19	447.42	1663.79	5728253.83	597935.16
3241	47.28	64.94	2316.30	-2282.87	447.73	1664.46	5728254.14	597935.82
3242	47.29	64.93	2316.98	-2283.55	448.04	1665.12	5728254.45	597936.49
3243	47.29	64.93	2317.65	-2284.22	448.35	1665.79	5728254.76	597937.15
3244	47.30	64.92	2318.33	-2284.90	448.66	1666.46	5728255.07	597937.82
3245	47.30	64.92	2319.01	-2285.58	448.98	1667.12	5728255.39	597938.48
3246	47.31	64.91	2319.69	-2286.26	449.29	1667.79	5728255.70	597939.15
3247	47.31	64.91	2320.37	-2286.94	449.60	1668.45	5728256.01	597939.82
3248	47.31	64.91	2321.05	-2287.61	449.91	1669.12	5728256.32	597940.48
3249	47.32	64.90	2321.72	-2288.29	450.22	1669.79	5728256.63	597941.15
3250	47.32	64.90	2322.40	-2288.97	450.53	1670.45	5728256.94	597941.81
3251	47.33	64.89	2323.08	-2289.65	450.85	1671.12	5728257.26	597942.48
3252	47.33	64.89	2323.76	-2290.33	451.16	1671.78	5728257.57	597943.14
3253	47.34	64.88	2324.43	-2291.00	451.47	1672.45	5728257.88	597943.81
3254	47.34	64.88	2325.11	-2291.68	451.78	1673.11	5728258.19	597944.48
3255	47.35	64.87	2325.79	-2292.36	452.09	1673.78	5728258.50	597945.14
3256	47.35	64.87	2326.47	-2293.04	452.41	1674.45	5728258.82	597945.81
3257	47.36	64.86	2327.14	-2293.71	452.72	1675.11	5728259.13	597946.48
3258	47.36	64.86	2327.82	-2294.39	453.03	1675.78	5728259.44	597947.14
3259	47.37	64.85	2328.50	-2295.07	453.34	1676.44	5728259.75	597947.81
3260	47.37	64.85	2329.18	-2295.75	453.66	1677.11	5728260.07	597948.47
3261	47.37	64.85	2329.85	-2296.42	453.97	1677.78	5728260.38	597949.14
3262	47.38	64.84	2330.53	-2297.10	454.28	1678.44	5728260.69	597949.80
3263	47.38	64.84	2331.21	-2297.78	454.59	1679.11	5728261.00	597950.47
3264	47.39	64.83	2331.89	-2298.45	454.91	1679.77	5728261.32	597951.14
3265	47.39	64.82	2332.56	-2299.13	455.22	1680.44	5728261.63	597951.80
3266	47.38	64.79	2333.24	-2299.81	455.53	1681.11	5728261.94	597952.47
3267	47.38	64.77	2333.92	-2300.49	455.85	1681.77	5728262.26	597953.14
3268	47.38	64.74	2334.59	-2301.16	456.16	1682.44	5728262.57	597953.80
3269	47.37	64.72	2335.27	-2301.84	456.47	1683.10	5728262.88	597954.47
3270	47.37	64.70	2335.95	-2302.52	456.79	1683.77	5728263.20	597955.13
3271	47.37	64.67	2336.63	-2303.20	457.10	1684.43	5728263.51	597955.80
3272	47.36	64.65	2337.30	-2303.87	457.42	1685.10	5728263.83	597956.46
3273	47.36	64.62	2337.98	-2304.55	457.73	1685.76	5728264.14	597957.13
3274	47.36	64.60	2338.66	-2305.23	458.05	1686.43	5728264.46	597957.79
3275	47.35	64.58	2339.34	-2305.91	458.36	1687.09	5728264.77	597958.46
3276	47.35	64.55	2340.01	-2306.58	458.68	1687.76	5728265.09	597959.12
3277	47.35	64.53	2340.69	-2307.26	459.00	1688.42	5728265.41	597959.78
3278	47.34	64.50	2341.37	-2307.94	459.31	1689.09	5728265.72	597960.45
3279	47.34	64.48	2342.05	-2308.61	459.63	1689.75	5728266.04	597961.11
3280	47.34	64.45	2342.72	-2309.29	459.94	1690.41	5728266.35	597961.78

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
3281	47.33	64.43	2343.40	-2309.97	460.26	1691.08	5728266.67	597962.44
3282	47.33	64.41	2344.08	-2310.65	460.58	1691.74	5728266.99	597963.10
3283	47.33	64.38	2344.76	-2311.33	460.90	1692.40	5728267.31	597963.77
3284	47.32	64.36	2345.43	-2312.00	461.22	1693.07	5728267.63	597964.43
3285	47.32	64.33	2346.11	-2312.68	461.53	1693.73	5728267.94	597965.09
3286	47.31	64.31	2346.79	-2313.36	461.85	1694.39	5728268.26	597965.76
3287	47.31	64.29	2347.47	-2314.04	462.17	1695.05	5728268.58	597966.42
3288	47.31	64.26	2348.15	-2314.72	462.49	1695.72	5728268.90	597967.08
3289	47.30	64.24	2348.82	-2315.39	462.81	1696.38	5728269.22	597967.74
3290	47.30	64.21	2349.50	-2316.07	463.13	1697.04	5728269.54	597968.40
3291	47.30	64.19	2350.18	-2316.75	463.45	1697.70	5728269.86	597969.06
3292	47.29	64.17	2350.86	-2317.43	463.77	1698.36	5728270.18	597969.73
3293	47.29	64.14	2351.54	-2318.11	464.09	1699.03	5728270.50	597970.39
3294	47.29	64.13	2352.22	-2318.78	464.41	1699.69	5728270.82	597971.05
3295	47.29	64.13	2352.89	-2319.46	464.73	1700.35	5728271.14	597971.71
3296	47.30	64.12	2353.57	-2320.14	465.05	1701.01	5728271.46	597972.37
3297	47.30	64.11	2354.25	-2320.82	465.37	1701.67	5728271.78	597973.03
3298	47.30	64.10	2354.93	-2321.50	465.69	1702.33	5728272.10	597973.70
3299	47.30	64.10	2355.61	-2322.18	466.01	1702.99	5728272.42	597974.36
3300	47.30	64.09	2356.28	-2322.85	466.33	1703.65	5728272.74	597975.02
3301	47.30	64.08	2356.96	-2323.53	466.65	1704.32	5728273.06	597975.68
3302	47.31	64.08	2357.64	-2324.21	466.97	1704.98	5728273.38	597976.34
3303	47.31	64.07	2358.32	-2324.89	467.30	1705.64	5728273.71	597977.00
3304	47.31	64.06	2359.00	-2325.57	467.62	1706.30	5728274.03	597977.66
3305	47.31	64.05	2359.67	-2326.24	467.94	1706.96	5728274.35	597978.32
3306	47.31	64.05	2360.35	-2326.92	468.26	1707.62	5728274.67	597978.98
3307	47.31	64.04	2361.03	-2327.60	468.58	1708.28	5728274.99	597979.64
3308	47.32	64.03	2361.71	-2328.28	468.90	1708.94	5728275.31	597980.31
3309	47.32	64.02	2362.39	-2328.96	469.23	1709.60	5728275.64	597980.97
3310	47.32	64.02	2363.06	-2329.63	469.55	1710.26	5728275.96	597981.63
3311	47.32	64.01	2363.74	-2330.31	469.87	1710.93	5728276.28	597982.29
3312	47.32	64.00	2364.42	-2330.99	470.19	1711.59	5728276.60	597982.95
3313	47.32	64.00	2365.10	-2331.67	470.51	1712.25	5728276.92	597983.61
3314	47.33	63.99	2365.78	-2332.35	470.84	1712.91	5728277.25	597984.27
3315	47.33	63.98	2366.45	-2333.02	471.16	1713.57	5728277.57	597984.93
3316	47.33	63.97	2367.13	-2333.70	471.48	1714.23	5728277.89	597985.59
3317	47.33	63.97	2367.81	-2334.38	471.80	1714.89	5728278.21	597986.25
3318	47.33	63.96	2368.49	-2335.06	472.13	1715.55	5728278.54	597986.92
3319	47.33	63.95	2369.17	-2335.74	472.45	1716.21	5728278.86	597987.58
3320	47.33	63.95	2369.84	-2336.41	472.77	1716.87	5728279.18	597988.24
3321	47.34	63.94	2370.52	-2337.09	473.09	1717.53	5728279.50	597988.90
3322	47.34	63.93	2371.20	-2337.77	473.42	1718.20	5728279.83	597989.56
3323	47.34	63.92	2371.88	-2338.45	473.74	1718.86	5728280.15	597990.22
3324	47.34	63.92	2372.55	-2339.12	474.06	1719.52	5728280.47	597990.88
3325	47.34	63.91	2373.23	-2339.80	474.39	1720.18	5728280.80	597991.54
3326	47.34	63.90	2373.91	-2340.48	474.71	1720.84	5728281.12	597992.20
3327	47.34	63.90	2374.59	-2341.16	475.03	1721.50	5728281.44	597992.86
3328	47.35	63.89	2375.26	-2341.83	475.36	1722.16	5728281.77	597993.52
3329	47.35	63.88	2375.94	-2342.51	475.68	1722.82	5728282.09	597994.18
3330	47.35	63.88	2376.62	-2343.19	476.00	1723.48	5728282.41	597994.84
3331	47.35	63.87	2377.30	-2343.87	476.33	1724.14	5728282.74	597995.50
3332	47.35	63.86	2377.97	-2344.54	476.65	1724.80	5728283.06	597996.16
3333	47.35	63.85	2378.65	-2345.22	476.98	1725.46	5728283.39	597996.82
3334	47.35	63.85	2379.33	-2345.90	477.30	1726.12	5728283.71	597997.48
3335	47.36	63.84	2380.01	-2346.58	477.62	1726.78	5728284.03	597998.14
3336	47.36	63.83	2380.68	-2347.25	477.95	1727.44	5728284.36	597998.81
3337	47.36	63.83	2381.36	-2347.93	478.27	1728.10	5728284.68	597999.47
3338	47.36	63.82	2382.04	-2348.61	478.60	1728.76	5728285.01	598000.13

APPENDIX 2a

WEST KINGFISH W23A

Petrophysics Evaluation Summary

Esso Australia Pty Ltd.
Exploration Department

West Kingfish W23A
Petrophysics Report

Petrophysicist: K.Kuttan
February 2007

West Kingfish W23A Petrophysical Analysis

West Kingfish W23A was designed to capture potential oil reserves in M1.2 through M1.4 reservoirs on an interpreted fault-controlled structural high in an area East of the West Kingfish platform between W16 and KFA A20.

West Kingfish W23A was kicked off at 651mMD out of the 10.75inch casing of the abandoned West Kingfish W23 well. An 8.5 inch directional hole was drilled from 651 mMD to a total depth of 3338 mMD. The well was logged with Precision Energy Services compact shuttle system from 3321mMD (first reading) to 651m MD. After completing the logging operations, the well was completed with 7" production casing and 3.5 inch tubing.

The Precision Energy Services Shuttle logs have been analysed for porosity, water saturation and net pay over the interval 3178 - 3307mMD.

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

DATA

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

Survey/Log	Suite	Company	Top (m MDRT)	Bottom (m MDRT)
Compact Gamma Ray - Compact Dual Neutron - Compact Photodensity - Compact Sonic - Compact Dual Laterolog- Compact Induction	1	Precision Energy Services	651	3321 (resistivity)

Deviation

The well angle over the West Kingfish reservoirs was about 47 degrees.

Mud Data

Mud Type : KCl/Glycol/PHPA
Mud Weight: 9.7 ppg
Rm: 0.145 @ 25 °C
Rmf: 0.088 @ 25 °C
Rmc: 0.195 @ 25 °C
BHT: 87.7 °C

Hole Size

651- 3338 mMD 8.5 inches

Data Acquisition & Log Quality

All log data except for the density, caliper and PEF were acquired without any problems. While rigging up the logging tools, the caliper arm of the density tool was found to be damaged. The back-up density tool was run in its place. This tool had been checked the day before and it had been found to be working. However, on checking the memory after the tools were recovered at surface, it was found that the back-up density tool had failed and hence there was no density, caliper and all other associated data such as the PEF. After reviewing all of the available log data in town, a decision not to re-run the density logs was made. The overall quality of all the other logs, including sonic, was acceptable.

Data Processing

The MWD GR has been merged with the Precision GR over the bottom part of the borehole (deepest Precision GR or GRGC reading is some 16m above the first reading of the MWD GR).

Because of the shaly and thinly bedded nature of the upper West Kingfish reservoirs a combination of unfiltered and filtered logs (both provided by Precision) as shown below were used in the interpretation. The deep and shallow resistivity (DDL and DSLL), and the neutron porosity logs (NPRL) were depth-matched to the gamma ray (GRGC) which had been depth-matched and merged with LWD gamma ray (GRM1). The sonic log (DT35) was depth matched to the GR-depth-matched neutron porosity log (NPRL)

No environmental corrections other than those applied in the field were applied to the final logs.

Logs	Status
GRGC	filtered
DDL	Unfiltered
DSLL	Unfiltered
DEN	Not available
NPRL	Unfiltered
PDPE	Not available
DT35	Filtered

INTERPRETATION

Logs Used

The primary logs used in the interpretation were the GRGC (gamma ray), DDL (deep laterolog resistivity), NPRL (thermal neutron), DT35 (compressional sonic).

Coal intervals identified from the mudlogs and a combination of the neutron porosity and sonic logs were denoted by a coal flag (flag_coal).

A temperature log was generated using the following parameter:

Depth (mMD)	Temperature (deg. C)
109.5	10
3321	97.7

The temperature at depth 109.5 mMD represents the temperature of the sea-bed and the temperature at 3321m mD (first laterolog reading of the Precision logs) is the estimated formation temperature –log measured BHT +10 deg.

As no density log was acquired because of the density tool failure an attempt was made to generate a density log as an output from Elan+ . In order to generate this density log a dummy density log was created using the following values:

Depth mMD)	Dummy Density(gm/cc)
3170	2.25
3307	2.25

Two constant tools were used in running Elan+ . These two tools were generated within Elan+. The first of these, (CT2) relates the volume of oil in the invaded zone to that in the uninvaded zone:

$$0=0.3\text{UOIL} - \text{XOIL}$$

The second constant tool (CT1) relates to the volume of orthoclase to quartz
 $0=0.1\text{ORTH} - \text{QUAR}$

Formation Water Salinity

Since no density log was available an apparent formation water salinity of 30000 ppm NaCl equivalent was assumed for the sands. Similarly an apparent salinity of 15000 ppm NaCl equivalent was assumed for the bound water. These salinities were used in computing the conductivities of the free water and bound water in Elan+ over the analysis interval.

Hydrocarbon Type Identification

In West Kingfish the only hydrocarbon to be found is oil

Shale Volume, Porosity and Water Saturation

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

ELAN+ MODEL

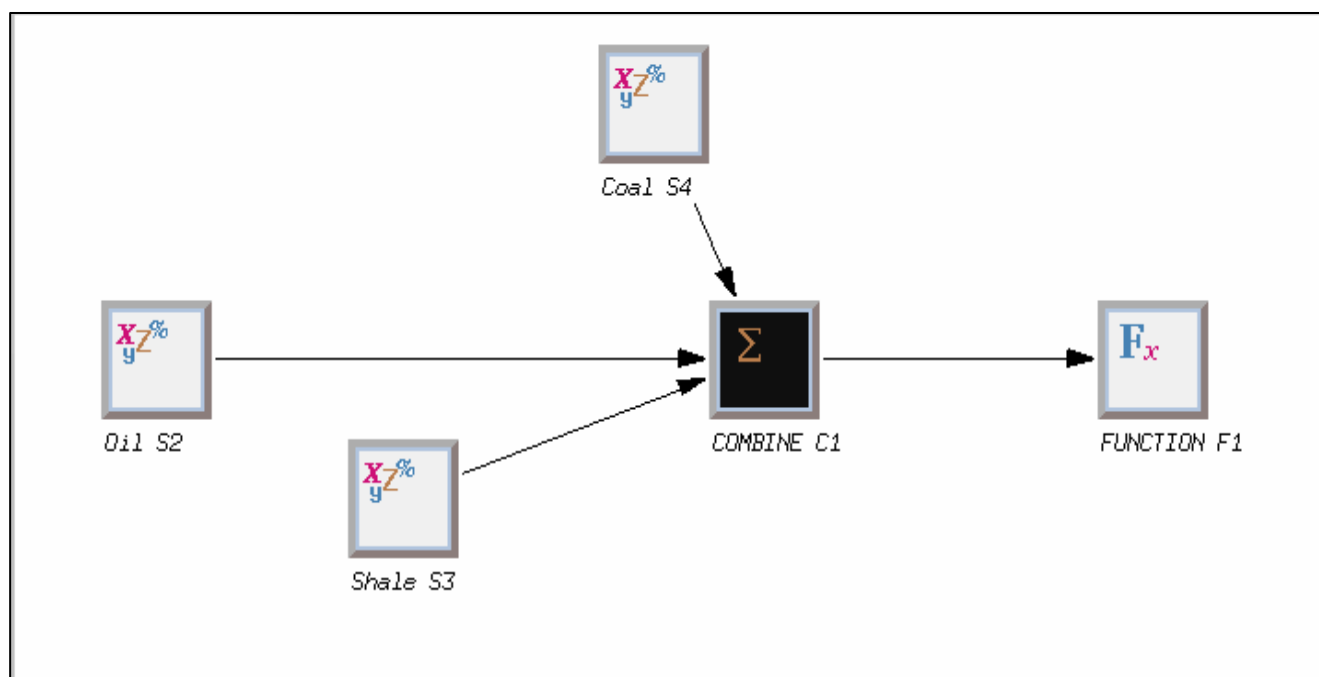


Figure 1: Elan + Model and Module Configuration

ELAN Input Channels

Log Curve Selector		Selector Options	
		Compound Name Spec	WEST KINGFISH W23A
TEMP_CH	TEMP;*	TEMP TEMP TEMP@Elan_Input;2 [A1963335]	
RHOB_IFAC_CH	IFRH;*		
NPHI_IFAC_CH	INPH;*		
RHOB_CH	RHOB;*	RHOB RHOB.WELLEDIT RHOB@TYPE-IN;1 [A1963335]	
NPHI_CH	NPRL:BPB;*	NPRL NPRL NPRL@Elan_Input;5 [A1963337]	
DT_CH	DT35:BPB;*	DT35 DT35 DT35@Elan_Input;5 [A1963347]	
CUDC_CH/RT_CH	DDLL:BPB;*	DDLL DDLL DDLL@Elan_Input;5 [A1963339]	
GR_CH	GRGC:BPB;*	GRGC GRGC GRGC@Elan_Input;6 [A1963333]	
PRB2_CH	DEPT:BPB;*	DEPT DEPT DEPT@ASCII_Load;1 [A1828840]	
PRB3_CH	PRB3;*		
PRB4_CH	FLAG_COAL;*	FLAG_COAL FLAG_COAL FLAG_COAL@Elan_In	
M_CH	MXP;*		

ELAN Global Parameters

Reference Index	MD
Processing Interval	3170.0000(m) To 3307.0000(m)
Sampling Rate	0.1(m)
Uncertainty Channel	FALSE
Clay Input	DRY
Special Fluids	IMMOVABLE_HYDROCARBONReference Index MD

ELAN Zone Definition

Name	Bottom To Top
Pyr_Shale	3310.0000(m) To 3170.0000(m)

ELAN Process Definition

Process SOLVE2 "Oil"

Equations	RHOB	NPHI	DT	CUDC_DWA	GR	CT1	CT2
Volumes	QUAR	ORTH	ILLI	XWAT	UWAT	XOIL	UOIL
Constraint Zones	Bottom				Top		
UNDEFINED	3310.0000(m)			3170.0000(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	

Process	SOLVE4 "Coal"				
----------------	----------------------	--	--	--	--

Equations	NPHI
Volumes	COAL

Process	COMBINE 1 "COMBINE"			
----------------	----------------------------	--	--	--

Order	SOL.2	SOL.3	SOL.4
-------	-------	-------	-------

Combine Method

Internal Average

Probability Functions

probability(SOL.4, PRB4_CH)
prob3 = linear((ILLI_VOL.SOL.3), 0.2, 0, 0.5, 1)
probability(SOL.3, prob3)

Process	FUNCTION 1 "FUNCTION"					
Outputs	VCL	SXWI	SWT	SUWI	PIGN	PHIT

User-defined Function/n

swt_cmp=if((PRB4_CH > 0),1,(UWAT_VOL + XBWA_VOL)/(UWAT_VOL + XBWA_VOL + UOIL_VOL))
output(SWT, swt_cmp)

RESULTS AND DISCUSSION

A summary of the petrophysical analysis is detailed in Table 1 and illustrated in Fig. 2.

The only sand that is clearly oil bearing is the PS2 sand over the intervals 3213 – 3216.7mMD (PS2Oil) with an OWC at 3216.7mMD. It is important to note that the calculated average effective porosity over this interval is only 12.2%, and it is possible that average effective porosity could be higher. The low porosity is driven by the clay content which has been derived from the gamma ray. Normally the gamma ray would not have been used over this interval due to the presence of radioactive minerals in the sands. However, due to the unavailability of the density and PEF logs, the gamma ray had to be used in the analysis.

The only other zone which could be interpreted to be a possible oil zone is in the interval 3236.5 - 3238.0 mMD. However, the perforations (3236 – 3239mMD) in this sand only produced water and hence it has been interpreted as water bearing.

Although there were significant mud log shows in the PS7, PS6 and PS5 shaly sands (3178.6 – 3188mMD) the analysis indicates that these sands are most probably water bearing.

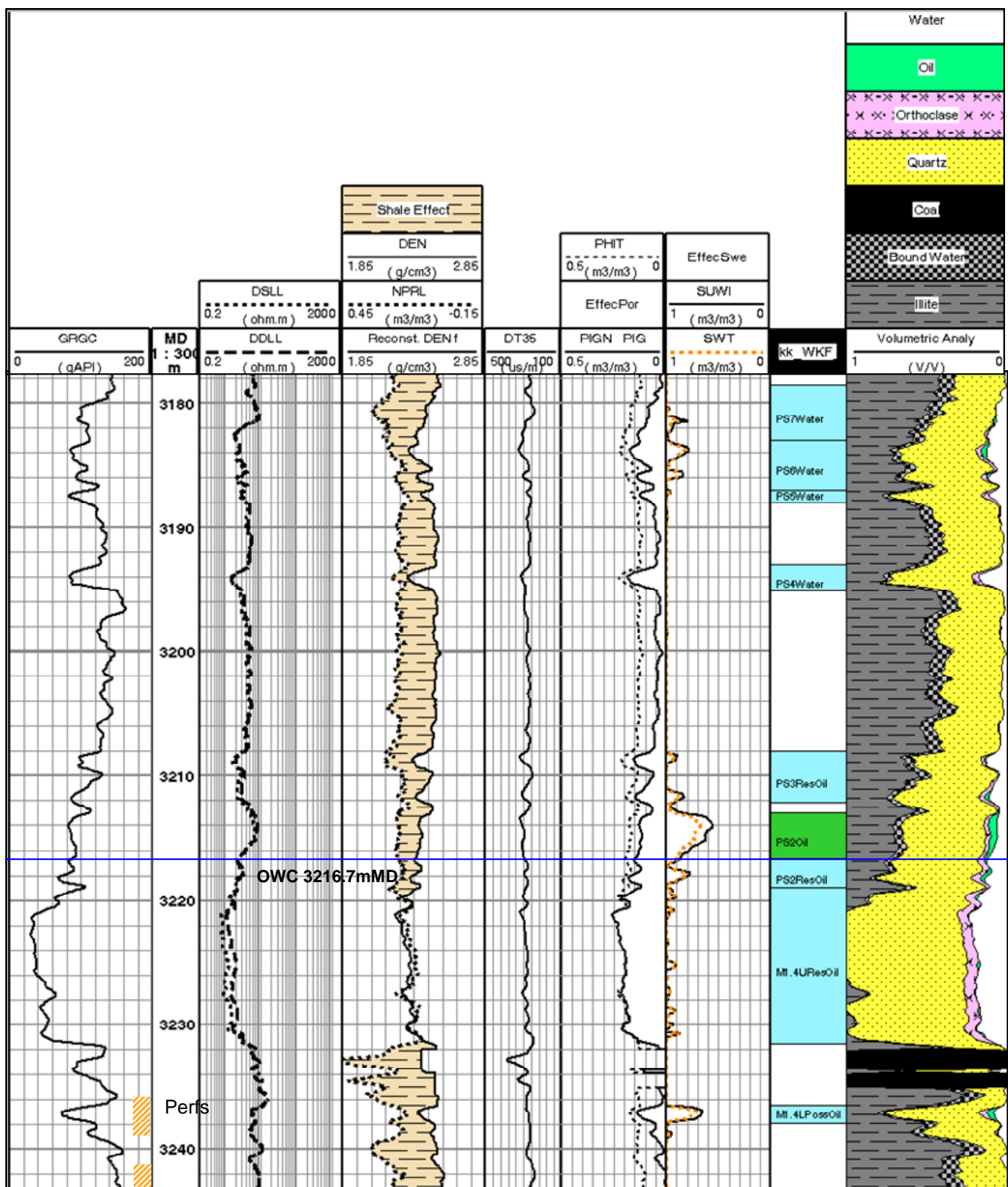


Fig. 2 West Kingfish W32A Interval 3178.0 – 3244.0 mMD

West Kingfish W23A

Petrophysical Summary 3178 - 3307m MD

Depth Reference:

Mean VCL, Mean PHIE (or PIGN), Mean SWE (or SUWI) is based on a PHIE or PIGN cutoff:

Primary: mDKB

0.10 for oil & water

Zone	Top Depth mMD	Top Depth mTVDSS	Bottom Depth mMD	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 mTVD
PS7Water	3178.6	2240.4	3183.0	2243.4	4.4	3.0	0.24	0.47	0.127	0.97	Water bearing		
PS6Water	3183.0	2243.4	3187.0	2246.2	4.0	2.7	0.69	0.37	0.140	0.88	Water bearing		
PS5Water	3187.0	2246.2	3188.0	2246.8	1.0	0.7	0.60	0.28	0.118	0.99	Water bearing		
PS4Water	3193.0	2250.2	3195.1	2251.7	2.1	1.4	0.67	0.29	0.157	1.00	Water bearing		
PS3ResOil	3208.0	2260.5	3212.2	2263.3	4.2	2.9	0.58	0.37	0.133	0.92	Water bearing, residual oil		
PS2Oil	3213.0	2263.9	3216.7	2266.4	3.7	2.5	0.93	0.35	0.122	0.67	Oil productive, OWC @3216.7mMD	3.4	2.3
PS2ResOil	3216.7	2266.4	3219.0	2267.9	2.3	1.6	1.00	0.28	0.144	0.89	Water bearing, residual oil		
M1.4UResOil	3219.0	2267.9	3231.6	2276.5	12.6	8.6	0.99	0.04	0.199	0.98	Water bearing, residual oil		
M1.4LPossOil	3236.5	2279.8	3238.0	2280.8	1.5	1.0	0.60	0.29	0.123	0.68	Probably water bearing, based on production results		
M1.5ResOil	3251.0	2289.6	3269.5	2302.2	18.5	12.5	1.00	0.11	0.224	0.97	Water bearing, residual oil		
M1.7ResOil	3269.5	2302.2	3275.1	2306.0	5.6	3.8	1.00	0.00	0.232	1.00	Water bearing, residual oil, OOWC of KF field at 3275.1mMD		
M1.7Water	3275.1	2306.0	3307.0	2327.6	31.9	21.6	1.00	0.01	0.261	1.00	Original water bearing sands		

Table 1



ExxonMobil

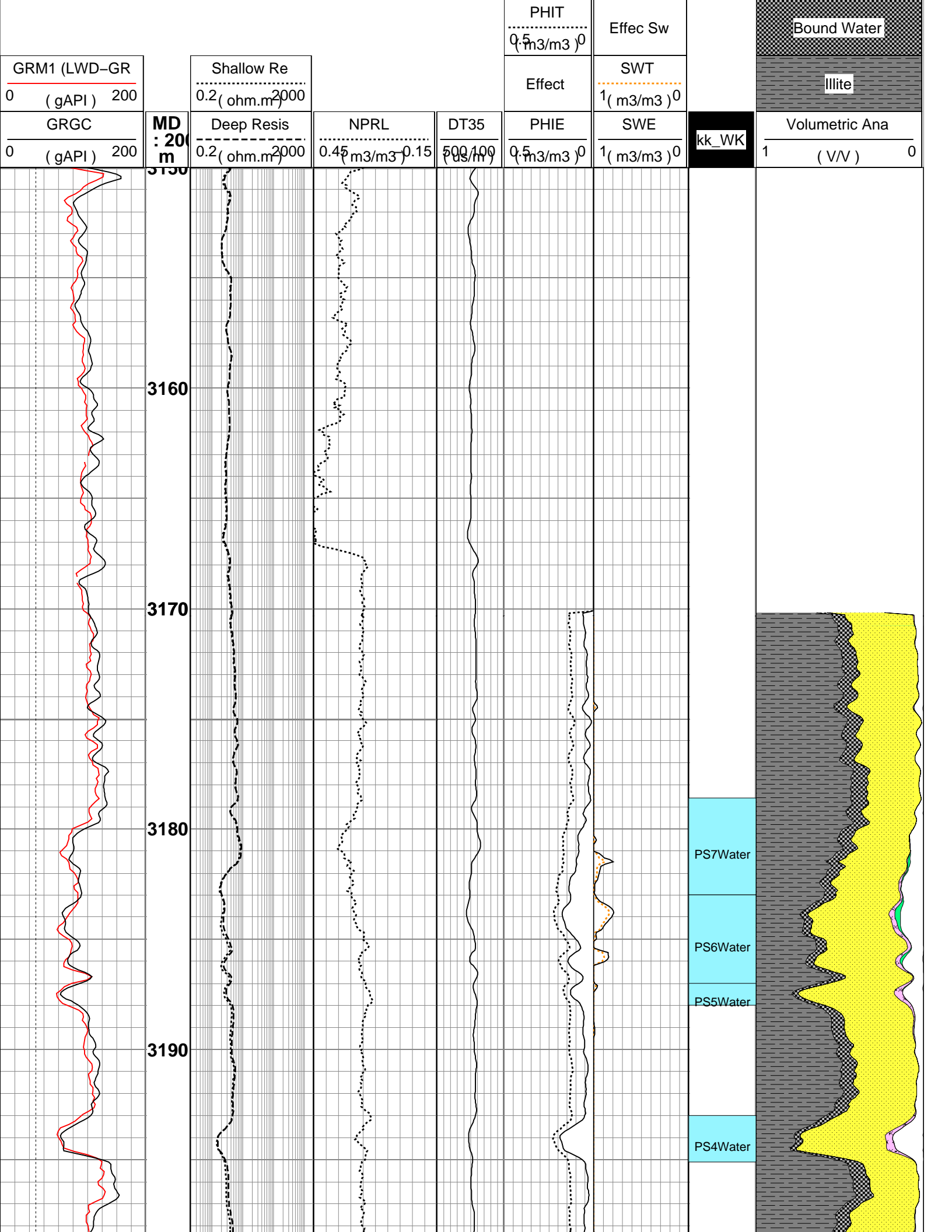
WEST KINGFISH W23A

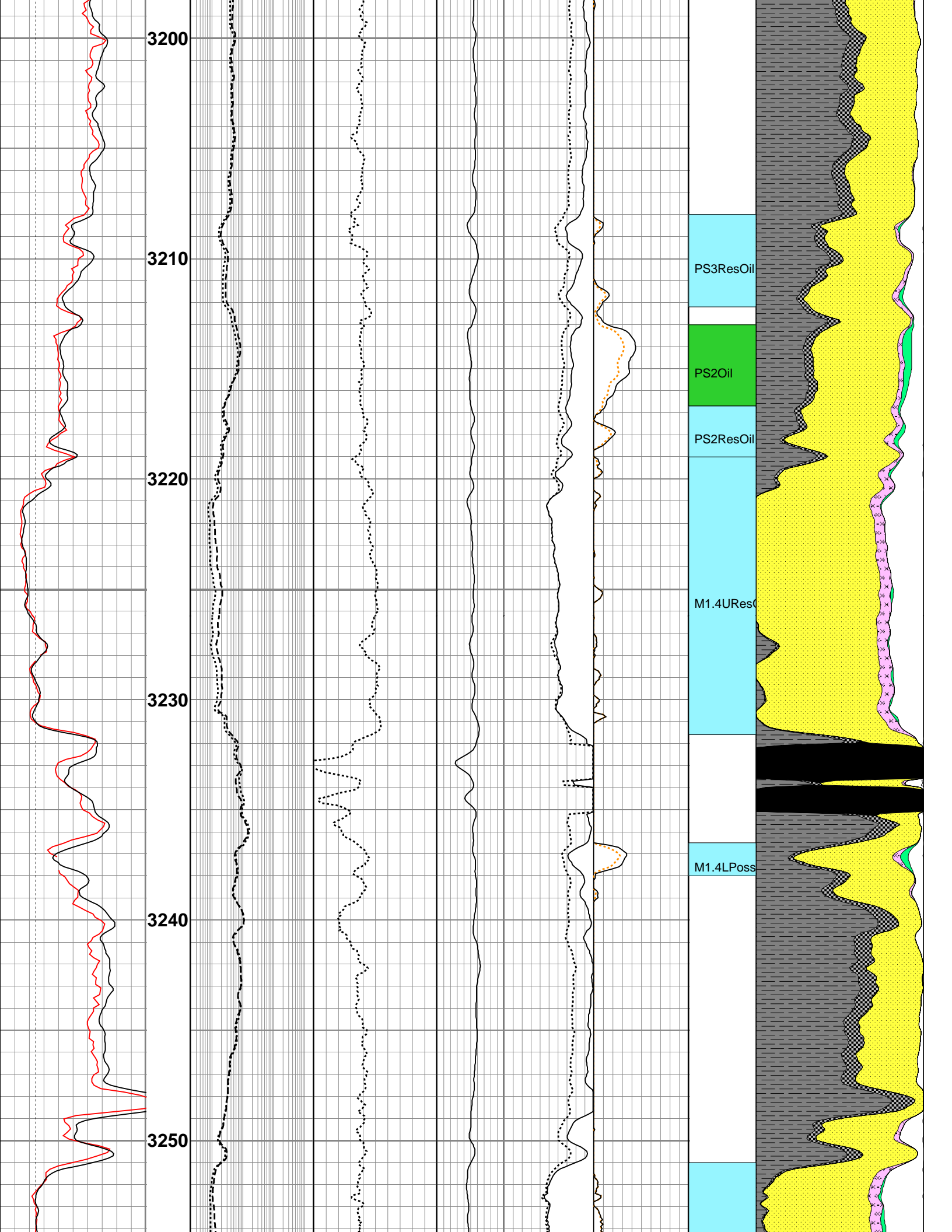
Petrophysical Analysis

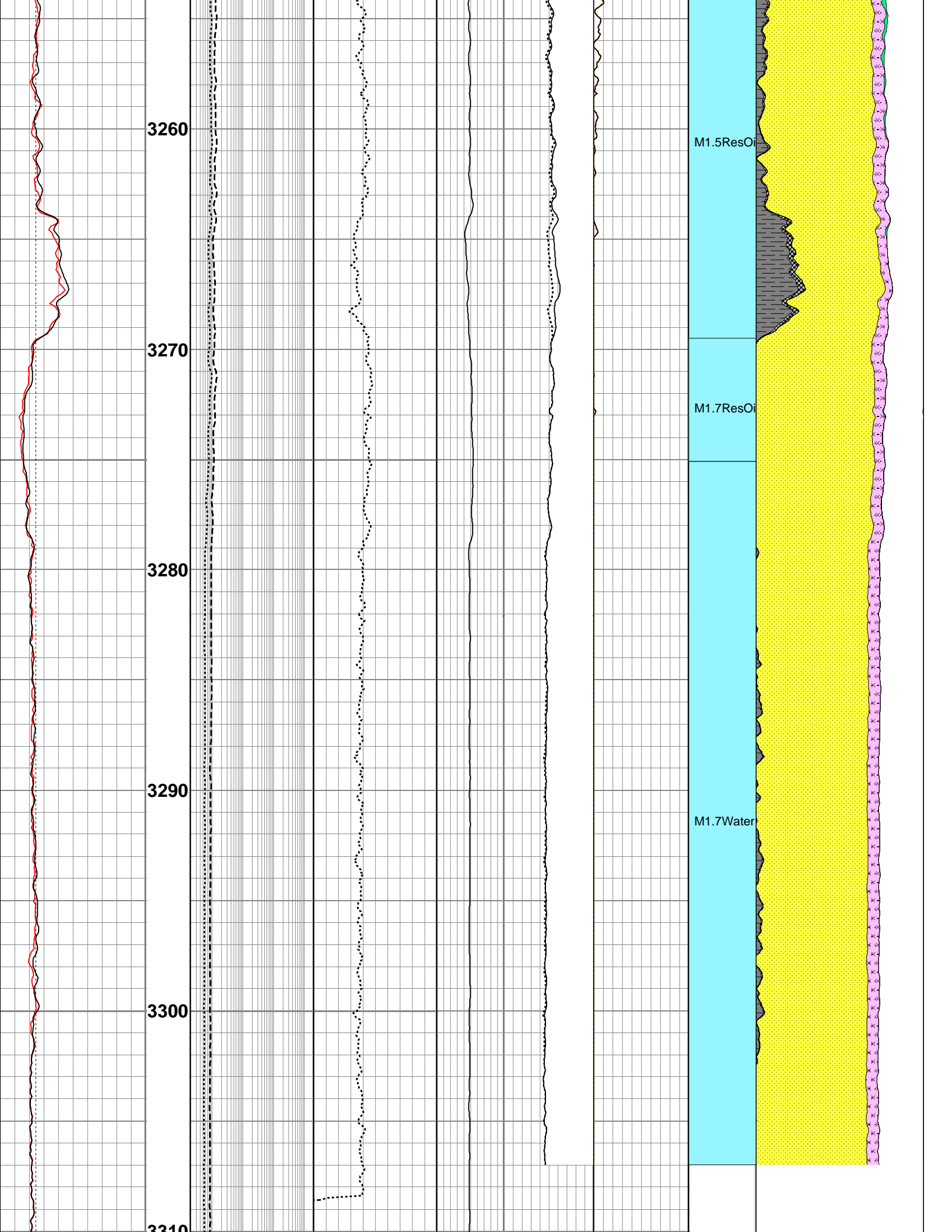
COMPANY:	Esso Australia Pty. Ltd.
WELL:	WEST KINGFISH W23A
BOREHOLE:	
FIELD:	WEST KINGFISH
STATE:	VIC
COUNTRY:	AUSTRALIA
PETROPHYSICIST:	KUMAR KUTTAN

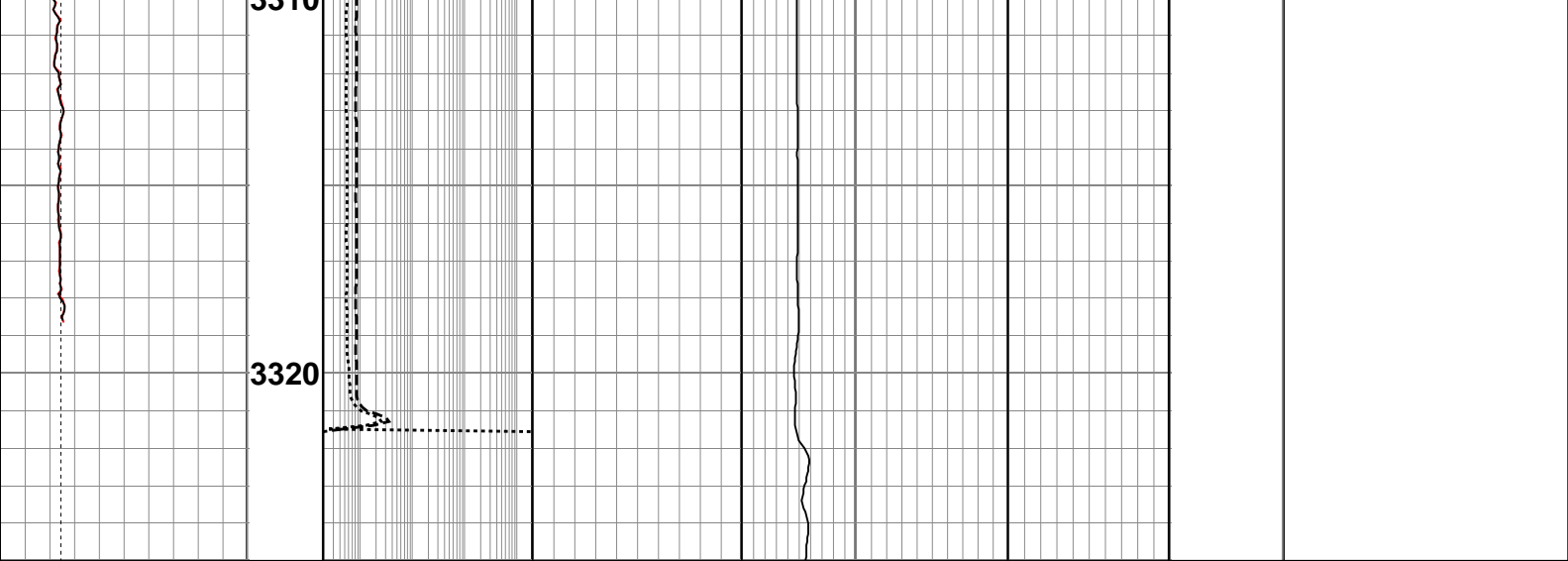
Date Logged:	26-Jul-06	Date of Analysis:	Jan 2007
Well Location:	ML/30MIN		
Elevations:	K.B. 33.43 m	D.F. <>	
Latitude:	<LATI>	G.L. <GL>	
Longitude:	<LONG>		

Water
Oil
Orthoclase
Quartz
Coal









APPENDIX 3a

WEST KINGFISH W23A

Lithology/Show Descriptions

West Kingfish W23A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
Geologist on rig at 1530 hrs, 13 October 2006 at 1241.0 mMDRT / 1109.0 mTVDRT.			
30 metre spot samples from 660.0 to 3000.0 mMDRT.			
660	662	0	100% Cement.
662	664	0	100% Cement.
664	666	2	CALCILUTITE: very light grey, rare light brown, silty in part, minor fossil fragments, trace lithics, trace carbonaceous specks, dispersive, amorphous to sub-blocky. 98% Cement.
666	668	60	CALCILUTITE: as above. Cement.
668	670	90	CALCILUTITE: as above. 10% Cement.
670	672	100	CALCILUTITE: as above. Trace Cement.
672	690	100	CALCILUTITE: very light grey, rare light brown, silty, minor fossil fragments, light carbonaceous material, dispersive, amorphous to sub-blocky. Trace Cement.
690	720	100	CALCILUTITE: as above.
720	750	100	CALCILUTITE: very light grey, rare light brown, silty in part, minor fossil fragments, trace lithics, trace carbonaceous specks, dispersive, amorphous to sub-blocky.
750	780	100	CALCILUTITE: very light grey to light grey, silty in part, trace to minor fossil fragments, trace carbonaceous specks, dispersive, soft, amorphous to sub-blocky.
780	810	100	CALCILUTITE: as above.
810	840	100	CALCILUTITE: as above.
840	870	100	CALCILUTITE: very light grey to light grey, silty in part, trace to minor fossil fragments, trace carbonaceous specks, dispersive, soft, amorphous to sub-blocky.
870	900	100	CALCILUTITE: as above.
900	930	100	CALCILUTITE: as above.
930	960	90	CALCILUTITE: very light to light grey, silty in part, trace to minor fossil fragments, trace carbonaceous specks, dispersive, soft, amorphous to sub-blocky.
		10	CALCISILTITE: light grey to light brown grey, light olive grey, argillaceous, minor fossil fragments, trace carbonaceous specks, trace disseminated pyrite, trace glauconite, dispersive, soft, amorphous to sub-blocky.
Shallow gas detected from 984mMDRT to 994mMDRT. 10m samples bagged from 990mMDRT to 1000mMDRT.			
960	990	50	CALCILUTITE: as above.
		20	CALCISILTITE: light grey, light brown grey, light olive grey, argillaceous, minor fossil fragments, trace carbonaceous specks, trace disseminated pyrite, trace glauconite, dispersive, soft, amorphous to sub-blocky.
		30	CALCARENITE: light brown, very light grey, translucent, very fine to fine, moderately well sorted, argillaceous matrix, sub-angular to sub-rounded, silty, minor fossil fragments, trace glauconite, trace carbonaceous, friable to moderately hard, very poor inferred and visual porosity. No Fluorescence.
990	1000	80	CALCILUTITE: as above.
		20	CALCISILTITE: as above.
		Trace	CALCARENITE: as above.
1000	1020	60	CALCILUTITE: as above.

West Kingfish W23A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1020	1050	40	CALCISILTITE: as above.
		30	CALCILUTITE: very light to light grey, silty in part, trace to minor fossil fragments, trace carbonaceous specks, dispersive, soft, amorphous to sub-blocky.
		70	CALCISILTITE: light grey, light brown grey, light olive grey, argillaceous, minor fossil fragments, trace carbonaceous specks, trace disseminated pyrite, trace glauconite, dispersive, soft, amorphous to sub-blocky.
1050	1080	40	CALCILUTITE: light grey, light brown grey, silty, minor fossil fragments, trace carbonaceous specks, trace glauconite, dispersive, soft, amorphous to rare sub-blocky.
		60	CALCISILTITE: as above.
1080	1110	60	CALCILUTITE: as above.
		40	CALCISILTITE: as above.
1110	1140	60	CALCILUTITE: as above.
		40	CALCISILTITE: light brown grey, light olive grey, light grey, trace to minor fossil fragments, trace disseminated pyrite, trace glauconite, trace lithics, soft, amorphous to sub-blocky.
1170	1200	60	CALCILUTITE: light grey, light brown grey, silty, minor fossil fragments, trace carbonaceous specks, trace glauconite, dispersive, soft, amorphous to rare sub-blocky.
		40	CALCISILTITE: as above.
1200	1230	40	CALCILUTITE: as above
		60	CALCISILTITE: as above.
1230	1260	40	CALCILUTITE: light grey, light brown grey, silty, minor fossil fragments, trace carbonaceous specks, trace glauconite, dispersive.
		60	CALCISILTITE: light brown grey, light olive grey, light grey in part, trace to minor fossil fragments, trace disseminated pyrite, trace glauconite, trace lithics, soft, amorphous to occasionally sub-blocky.
1260	1290	30	CALCILUTITE: light grey, light brown grey, silty, trace fossil fragments, trace carbonaceous specks, trace glauconite, soft, amorphous to dispersive.
		70	CALCISILTITE: light brown grey, light olive grey, light grey in part, trace to minor fossil fragments, trace disseminated pyrite, trace glauconite, trace lithics, soft to firm, amorphous to occasionally sub-blocky.
1290	1320	30	CALCILUTITE: as above.
		70	CALCISILTITE: as above.
1320	1350	40	CALCILUTITE: as above
		60	CALCISILTITE: as above.
1350	1380	40	CALCILUTITE: as above
		60	CALCISILTITE: as above.
1380	1410	30	CALCILUTITE: light grey, light brown grey, silty in part, trace carbonaceous specks, dispersive to soft.
		60	CALCISILTITE: light brown grey, light grey, trace fossil fragments, trace disseminated pyrite, trace glauconite, trace lithics, soft to dispersive, amorphous to sub-blocky.
			CALCARENITE: light grey, light to medium brown, olive grey, very fine grading to Calcisiltite in part, well sorted, sub-angular to sub-rounded, firm to moderately hard, trace lithics, trace carbonaceous specks, poor visual and inferred porosity.
		10	No Fluorescence.
1410	1440	30	CALCILUTITE: as above
		70	CALCISILTITE: as above.
1440	1470	Trace	CALCARENITE: as above.
		40	CALCILUTITE: as above
		60	CALCISILTITE: as above.

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Interval (m) From To		%	Lithology / Show Description
1470	1500	50	CALCILUTITE: light grey to light brown grey, trace fossil fragments, trace carbonaceous specks, soft to firm.
		50	CALCISILTITE: light brown grey to brown grey, light grey in part, trace fossil fragments, trace disseminated pyrite, trace lithics, soft to firm, sub-blocky to rare sub-fissile.
1500	1530	40	CALCILUTITE: as above
		60	CALCISILTITE: as above.
1530	1560	20	CALCILUTITE: light grey to light brown grey, trace lithics, trace carbonaceous specks, soft to firm.
		80	CALCISILTITE: light brown grey to brown grey, light grey, light brown in part, trace fossil fragments, trace lithics, soft to firm, sub-blocky.
1560	1590	10	CALCILUTITE: as above
		90	CALCISILTITE: light brown to brown grey, light grey, trace carbonaceous specks, trace lithics, trace glauconite, soft to firm, sub-blocky.
1590	1620	10	CALCILUTITE: as above.
		90	CALCISILTITE: as above.
1620	1650	40	CALCILUTITE: as above
		60	CALCISILTITE: as above.
1650	1680	30	CALCILUTITE: light grey, light brown grey, silty in part, trace carbonaceous material, trace lithics, dispersive, soft, amorphous to sub-blocky.
		70	CALCISILTITE: light brown grey to brown grey, light brown in part, arenaceous in part, trace fossil fragments, trace carbonaceous material, trace lithics, trace glauconite, soft to firm, sub-blocky.
1680	1710	60	CALCILUTITE: as above.
		40	CALCISILTITE: as above.
1710	1740	30	CALCILUTITE: as above.
		70	CALCISILTITE: as above.
1740	1770	60	CALCILUTITE: as above.
		40	CALCISILTITE: as above.
1770	1800	70	CALCILUTITE: light grey, light brown grey, silty in part, trace carbonaceous material, trace lithics, dispersive, soft, amorphous to sub-blocky.
		30	CALCISILTITE: light brown grey to brown grey, olive grey, light brown in part, arenaceous in part, trace fossil fragments, trace carbonaceous material, trace lithics, trace glauconite, soft to firm, sub-blocky.
1800	1830	60	CALCILUTITE: as above.
		40	CALCISILTITE: as above.
1830	1860	70	CALCILUTITE: as above.
		30	CALCISILTITE: as above.
1860	1890	70	CALCILUTITE: as above.
		30	CALCISILTITE: as above.
1890	1920	40	CALCILUTITE: light grey, light brown grey, silty in part, trace carbonaceous material, trace lithics, soft, sub-blocky.
		60	CALCISILTITE: light brown grey to brown grey, olive grey in part, arenaceous in part, trace fossil fragments, trace carbonaceous material, trace lithics, trace glauconite, soft to firm, sub-blocky.
1920	1950	70	CALCILUTITE: light grey, light brown grey, silty in part, trace carbonaceous material, trace glauconite, trace lithics, soft, sub-blocky.
		30	CALCISILTITE: as above.
1950	1964	80	CALCILUTITE: as above.

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Interval (m) From To		%	Lithology / Show Description
1964	1980	20	CALCISILTITE: as above. POOH at 1964mMDRT / 1476.9mTVDRT / 1443.5mTVDSS to change to a tapered drillstring.
		70	CALCILUTITE: light grey, light brown grey, silty in part, trace carbonaceous material, trace glauconite, trace lithics, soft, sub-blocky.
		30	CALCISILTITE: light brown grey to brown grey, olive grey in part, arenaceous in part, trace fossil fragments, trace carbonaceous material, trace lithics, trace glauconite, soft to firm, sub-blocky. Base of Miocene High Velocity Channel = 2000.5 mMDRT/ 1497.4 mTVDRT / -1464.0 mTVDSS.
1980	2010	70	CALCILUTITE: very light to light grey, silty, trace carbonaceous mat, trace to minor disseminated pyrite, trace lithics, soft to firm, sub-blocky.
		20	CALCISILTITE: brown grey, light brown grey in part, arenaceous in part, trace carbonaceous specks, trace lithics, soft to firm, sub-blocky.
		10	CALCARENITE: clear to translucent, pale brown, very fine, well sorted, sub-angular to sub-rounded, trace lithics, trace pyrite nodules, firm to moderately hard, sub-blocky, poor visual and inferred porosity. No Fluorescence.
2010	2040	90	CALCILUTITE: light to medium grey, olive grey, light to medium grey, arenaceous in part, trace to minor disseminated pyrite, trace pyrite nodules, trace lithics, soft to firm, sub-blocky.
		10	CALCISILTITE: as above.
2040	2070	100	CALCILUTITE: very light to light grey, medium grey in part, grey brown in part, trace disseminated pyrite, trace lithics, common rock flour, dispersive, soft, amorphous to sub-blocky.
2070	2092	100	CALCILUTITE: light to medium grey, olive grey, minor disseminated and nodular pyrite, trace lithics, trace glauconite, minor rock flour, soft to firm, sub-blocky.
2092	2100	70	CALCILUTITE: light to medium grey, olive grey, grey brown in part, trace disseminated pyrite, trace lithics, trace rock flour, soft to firm, sub-blocky.
		30	CALCISILTITE: light brown grey to brown grey, olive grey, arenaceous in part, trace carbonaceous material, trace lithics, trace disseminated pyrite, firm, sub-blocky.
2100	2130	50	CALCILUTITE: as above.
		50	CALCISILTITE: as above.
2130	2160	60	CALCILUTITE: as above.
		40	CALCISILTITE: as above.
2160	2190	70	CALCILUTITE: pale to light grey, medium grey in part, silty in part, trace disseminated pyrite, trace carbonaceous material, firm, sub-blocky.
		30	CALCISILTITE: pale to medium grey, olive grey, arenaceous in part, trace disseminated pyrite, firm, sub-blocky.
2190	2220	90	CALCILUTITE: pale medium grey, trace disseminated pyrite, trace fossil fragments, soft to firm, sub-blocky.
		10	CALCISILTITE: light brown grey to brown grey, arenaceous in part, trace carbonaceous material, trace lithics, trace disseminated pyrite, trace fossil fragments, minor rock flour, firm, sub-blocky.
2220	2250	80	CALCILUTITE: as above.
		20	CALCISILTITE: as above.
2250	2280	90	CALCILUTITE: pale to medium grey, grey brown, silty in part, trace disseminated pyrite, trace fossil fragments, trace lithics, minor rock flour, soft to firm, sub-blocky.

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Interval (m) From To		%	Lithology / Show Description
		10	CALCISILTITE: light brown grey to brown grey, light to medium grey, trace carbonaceous material, trace disseminated pyrite, trace fossil fragments, firm, sub-blocky/
2280	2310	100	CALCILUTITE: as above.
2310	2340	100	CALCILUTITE: as above. POOH at 2242mMDRT / 1718.3mTVDRT / 1684.9mTVDSS due to a 300psi SPP drop. Checked all 4" drillpipe for washouts, laid out 2 damaged joints.
2340	2370	80	CALCILUTITE: pale grey to light brown grey, silty grading to Calcisiltite in part, trace disseminated pyrite, rare fossil fragments, occasionally rock flour, soft to firm, sub-blocky to amorphous in part.
		20	CALCISILTITE: light to medium grey, grey brown, occasionally arenaceous, trace lithics, trace disseminated pyrite, sub-fissile to sub-blocky.
2370	2400	80	CALCILUTITE: as above.
		20	CALCISILTITE: as above.
2400	2430	90	CALCILUTITE: as above.
		10	CALCISILTITE: as above.
2430	2460	90	CALCILUTITE: pale grey to light brown grey, silty grading to Calcisiltite in part, trace disseminated pyrite, rare fossil fragments, occasionally rock flour, soft to firm, sub-blocky to amorphous in part.
		10	CALCISILTITE: light to medium grey, grey brown, occasionally arenaceous, trace lithics, trace disseminated pyrite, sub-fissile to sub-blocky.
2460	2490	100	CALCILUTITE: light to medium grey, grey brown, light brown, silty grading to Calcisiltite in part, trace fossil fragments, trace lithics, trace carbonaceous specks, soft to dominantly firm, sub-blocky.
2490	2520	100	CALCILUTITE: light to medium grey, medium dark grey in part, light olive grey in part, rare disseminated pyrite, trace glauconite, trace fossil fragments, trace lithics, soft to firm, locally moderately hard, sub-blocky.
2520	2550	100	CALCILUTITE: as above.
2520	2550	100	CALCILUTITE: as above.
2550	2580	90	CALCILUTITE: light to medium grey, medium dark grey in part, light olive grey, trace disseminated pyrite, trace glauconite, trace fossil fragments, trace lithics, soft to firm, locally moderately hard, sub-blocky.
		10	CALCISILTITE: light to medium brown, brown grey, arenaceous grading to Calcarenite in part, trace disseminated pyrite, trace glauconite, trace lithics, firm, sub-blocky.
2580	2610	90	CALCILUTITE: as above.
		10	CALCISILTITE: as above.
2610	2640	80	CALCILUTITE: as above.
		20	CALCISILTITE: as above. Radiagreen EME Salt added to the Mud system at 2653.0 mMDRT (1924.0 mTVDRT / -1890.6 mTVDSS). A 2.0% concentration of Radiagreen in the Mud system was achieved at 2748.0 mMDRT (1986.7 mTVDRT / -1953.3 mTVDSS).
2640	2670	90	CALCILUTITE: light to medium grey, medium dark grey in part, light olive grey, trace disseminated pyrite, trace glauconite, trace fossil fragments, trace lithics, soft to firm, locally moderately hard, sub-blocky.
		10	CALCAREOUS CLAYSTONE: medium light grey to medium olive grey, medium dark green grey, occasionally light brown grey, silty, moderately calcareous, trace disseminated pyrite, soft to moderately hard, sub-blocky. POOH from 2681.0 mMDRT to 2450.0 mMDRT due to a 300psi SPP drop. Checked drill pipe for washouts, laid out 1 damaged joint.

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Interval (m) From To		%	Lithology / Show Description
2670	2700	80	CALCILUTITE: as above.
		20	CALCAREOUS CLAYSTONE: as above.
			Top of Lakes Entrance = 2709.0 mMDRT/ 1960.0 mTVDRT/ -1927.6 mTVDSS.
2700	2730	40	CALCILUTITE: light to medium grey, medium dark grey, trace disseminated pyrite, trace lithics, trace glauconite, soft to firm, sub-blocky.
		60	CALCAREOUS CLAYSTONE: light to medium grey, medium olive grey, medium dark grey in part, light brown grey in part, silty, moderately calcareous, soft to moderately hard, sub-blocky.
2730	2760	10	CALCILUTITE: as above.
		90	CALCAREOUS CLAYSTONE: light to medium grey, medium olive grey, medium dark green grey, light brown grey in part, silty, trace disseminated pyrite, trace lithics, trace fossil fragments, moderately calcareous, firm to moderately hard, soft in part, sub-blocky.
			POOH from 2761.0 mMDRT to 1440.0 mMDRT due to a 250psi SPP drop. Checked drill pipe for washouts, laid out 1 damaged joint.
2760	2790	100	CALCAREOUS CLAYSTONE: as above.
2790	2820	100	CALCAREOUS CLAYSTONE: light olive grey to olive grey, light grey, light brown grey, silty, trace lithics, trace fossil fragments, moderately calcareous, firm to moderately hard, sub-blocky to sub-fissile.
2820	2850	100	CALCAREOUS CLAYSTONE: light olive grey to olive grey, light brown grey, silty, trace disseminated pyrite, trace lithics, trace fossil fragments, moderately calcareous, soft to firm, moderately hard, sub-blocky.
2850	2880	100	CALCAREOUS CLAYSTONE: as above.
2880	2910	100	CALCAREOUS CLAYSTONE: light brown to light olive grey, light grey, silty, trace disseminated pyrite, trace carbonaceous material, trace lithics, moderately calcareous, soft to firm, sub-blocky.
2910	2940	100	CALCAREOUS CLAYSTONE: as above.
2940	2970	100	CALCAREOUS CLAYSTONE: as above.
2970	3000	100	CALCAREOUS CLAYSTONE: light brown to light olive grey, light grey, silty, trace disseminated pyrite, trace carbonaceous material, trace lithics, moderately calcareous, soft to firm, sub-blocky.
			10 metre bagged samples from 3120 to 3260.0 mMDRT.
3000	3010	100	CALCAREOUS CLAYSTONE: light brown to light grey brown, light olive grey, silty, moderately calcareous, trace disseminated pyrite, trace carbonaceous material, trace lithics, soft to firm, sub-blocky.
3010	3020	100	CALCAREOUS CLAYSTONE: as above.
3020	3030	100	CALCAREOUS CLAYSTONE: light grey to light brown grey, occasionally dark brown grey, olive grey, silty, moderately calcareous, trace disseminated pyrite, trace carbonaceous material, trace lithics, firm, sub-blocky.
3030	3040	100	CALCAREOUS CLAYSTONE: as above.
3040	3050	100	CALCAREOUS CLAYSTONE: as above.
3050	3060	100	CALCAREOUS CLAYSTONE: light grey to light brown grey, occasionally dark brown grey, olive grey, silty, moderately calcareous, rare fossil fragments, trace disseminated pyrite, trace carbonaceous material, trace lithics, firm, sub-blocky.
3060	3070	100	CALCAREOUS CLAYSTONE: as above.
3070	3080	100	CALCAREOUS CLAYSTONE: light grey to light grey brown, silty in part, moderately calcareous, trace disseminated pyrite, trace fossil fragments, trace lithics, soft to firm, sub-blocky.
3080	3090	100	CALCAREOUS CLAYSTONE: as above.
3090	3100	100	CALCAREOUS CLAYSTONE: as above.

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Interval (m) From To		%	Lithology / Show Description
3100	3110	100	<p>CALCAREOUS CLAYSTONE: as above.</p> <p>Baracarb at a concentration of 5 ppb added to the Mud system at 3113.0 mMDRT (2229.6 mTVDRT / -2196.2 mTVDSS).</p> <p>Baracarb seen in samples from 3120.0 mMDRT to 3338.0 mMDRT (TD).</p> <p>Carbide Lag check at 3113.0 mMDRT:</p> <p>Theoretical in/out strokes: 7366</p> <p>Actual in/out strokes: 9060</p> <p>Difference = 1694 strokes.</p> <p>Hole overgauge by 23%.</p> <p>Lag adjusted.</p>
3110	3120	100	CALCAREOUS CLAYSTONE: light grey to light grey brown, silty in part, moderately calcareous, trace disseminated pyrite, trace fossil fragments, trace lithics, soft to firm, sub-blocky.
3120	3130	100	CALCAREOUS CLAYSTONE: as above.
3130	3140	100	<p>CALCAREOUS CLAYSTONE: light grey to light grey brown, light brown, olive grey, rare medium to dark grey, silty, moderately calcareous, trace lithics, trace carbonaceous material, trace fossil fragments, soft to firm, sub-blocky.</p> <p>5 metre bagged samples from 3140.0 mMDRT to 3338.0 mMDRT (TD).</p>
3140	3145	100	<p>CALCAREOUS CLAYSTONE: as above.</p> <p>Top of Latrobe Group = 3150.0 mMDRT / 2254.4 mTVDRT / -2221.0 mTVDSS.</p>
3145	3150	100	<p>CALCAREOUS CLAYSTONE: 90%, light grey to light grey brown, light brown, olive grey, silty, moderately calcareous, trace lithics, trace carbonaceous material, trace fossil fragments, soft to firm, sub-blocky.</p> <p>CLAYSTONE: 10%, white, very light grey to very light green, trace glauconite pellets, soft to rare firm, dispersive, amorphous, common rock flour.</p>
3150	3155	60	<p>CALCAREOUS CLAYSTONE: 40%, as above.</p> <p>CLAYSTONE: 20%, as above.</p>
		40	SILTSTONE: pale brown to dark yellow brown, very arenaceous grading to very fine Sandstone, in part, trace micro-micaceous, trace glauconite, firm to occasionally moderately hard, sub-fissile to sub-blocky.
3155	3160	60	<p>CALCAREOUS CLAYSTONE: 40%, as above.</p> <p>CLAYSTONE: 20%, as above.</p>
		30	SILTSTONE: as above.
		10	<p>SANDSTONE: white to pale brown, opaque in part, very fine to fine, well sorted, sub-angular to sub-rounded, trace glauconite matrix, firm to moderately hard, tight inferred and visual porosity.</p> <p>No Fluorescence.</p> <p>Top of M1.2 (SBN3) = 3162.5 mMDRT / 2262.9 mTVDRT / -2229.5 mTVDSS.</p>
3160	3165	40	<p>CALCAREOUS CLAYSTONE: 30%, light grey to light grey brown, light brown, olive grey, silty, moderately calcareous, trace lithics, trace carbonaceous material, trace fossil fragments, soft to firm, sub-blocky.</p> <p>CLAYSTONE: 10%, white, very light grey to very light green, trace glauconite pellets, soft to rare firm, dispersive, amorphous, common rock flour.</p>

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Interval (m) From To		%	Lithology / Show Description
3165	3170	60	SILTSTONE: pale brown to dark yellow brown, very arenaceous grading to very fine Sandstone, in part, trace micro-micaceous, trace glauconite, firm to occasionally moderately hard, sub-fissile to sub-blocky.
		Trace	SANDSTONE: white to pale brown, opaque in part, very fine to fine, well sorted, sub-angular to sub-rounded, trace glauconite matrix, firm to moderately hard, tight inferred and visual porosity. No Fluorescence.
		70	CLAYSTONE (1): 30%, white to very light grey, very light green in part, trace glauconite, dispersive, amorphous, common rock flour.
			CLAYSTONE (2): 40%, light olive brown to olive brown, soft, dispersive, amorphous, common rock flour.
3170	3175	30	SILTSTONE: pale brown to dark yellow brown, arenaceous grading to very fine Sandstone in part, trace micro-micaceous, trace glauconite, firm, sub-blocky.
		Trace	SANDSTONE: : white to pale brown, opaque in part, very fine to fine, well sorted, sub-angular to sub-rounded, trace glauconite matrix, firm to moderately hard, tight inferred and visual porosity. No Fluorescence.
		60	CLAYSTONE (1): 20%, white to very light grey, very light green in part, trace glauconite, dispersive, amorphous, common rock flour.
			CLAYSTONE (2): 40%, light olive brown to olive brown, soft, dispersive, amorphous, common rock flour.
3175	3180	20	SILTSTONE: as above.
		20	SANDSTONE: white to pale green, clear to translucent, very fine, well sorted, sub-angular to sub-rounded, trace glauconite matrix, soft, occasionally moderately hard in aggregates, tight visual and inferred porosity. FLUORESCENCE: Trace: no oil staining, dull to moderately bright patchy green yellow Fluorescence, very slow crush cut, thin pale green ring residue.
		50	CLAYSTONE (1): 10%, as above.
			CLAYSTONE (2): 40%, as above.
3180	3185	30	SILTSTONE (1): 20%, pale brown to dark yellow brown, very arenaceous grading to very fine Sandstone, in part, trace micro-micaceous, trace glauconite, firm to occasionally moderately hard, sub-fissile to sub-blocky.
			SILTSTONE (2): 10%, medium to medium dark grey, arenaceous, common micro-pyrite, dispersive, soft, amorphous to sub-blocky.
		20	SANDSTONE: white to pale green, clear to translucent, very fine, well sorted, sub-angular to sub-rounded, trace glauconite matrix, soft, occasionally moderately hard in aggregates, tight visual and inferred porosity. FLUORESCENCE: 2%: no oil staining, dull to moderately bright patchy green yellow Fluorescence, very slow crush cut, very thin very pale green yellow ring residue.
			Top of M1.3U PS6 sand (PSB7) = 3180.0 mMDRT / 2274.8 mTVDRT / -2241.4 mTVDSS.
		50	CLAYSTONE (1): 10%, as above.
			CLAYSTONE (2): 40%, as above.

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Interval (m) From To		%	Lithology / Show Description		
3185	3190	30	SILTSTONE (1): 20%, as above.		
			SILTSTONE (2): 10%, as above.		
		20	SANDSTONE: white to pale green, clear to translucent, very fine, well sorted, sub-angular to sub-rounded, trace glauconite matrix, soft, occasionally moderately hard in aggregates, tight visual and inferred porosity. FLUORESCENCE: 5%: no oil staining, dull to moderately bright patchy green yellow Fluorescence, very slow direct cut, slight increase with crushing, thin moderately bright yellow green ring residue.		
		30	CLAYSTONE (1): 10%, as above.		
			CLAYSTONE (2): 20%, as above.		
		30	SILTSTONE (1): 20%, as above.		
			SILTSTONE (2): 10%, as above.		
		40	SANDSTONE: white to pale green, clear to translucent, very fine, well sorted, sub-angular to sub-rounded, trace glauconite, soft, occasionally moderately hard in aggregates, tight visual and inferred porosity. FLUORESCENCE: 5%: no oil staining, dull to moderately bright patchy green yellow Fluorescence, very slow direct cut, slight increase with crushing, thin moderately bright yellow green film residue. Top of M1.3U PS4 sand (PSB5) = 3192.5 mMDRT / 2283.3 mTVDRT / -2249.9 mTVDSS.		
		3190	3195	60	CLAYSTONE (1): 20%, white to very light grey, very light green in part, trace glauconite, dispersive, amorphous, common rock flour.
					CLAYSTONE (2): 40%, light olive brown to olive brown, soft, dispersive, amorphous, common rock flour.
3195	3200	20	SILTSTONE (1): 10%, pale brown to dark yellow brown, very arenaceous grading to very fine Sandstone, in part, trace micro-micaceous, trace glauconite, firm to occasionally moderately hard, sub-fissile to sub-blocky.		
			SILTSTONE (2): 10%, medium to medium dark grey, arenaceous, common micro-pyrite, dispersive, soft, amorphous to sub-blocky.		
		20	SANDSTONE: white to pale green, clear to translucent, very fine, well sorted, sub-angular to sub-rounded, trace glauconite, soft, occasionally moderately hard in aggregates, tight visual and inferred porosity. FLUORESCENCE: 7%: no oil staining, dull to dominantly moderately bright patchy green yellow Fluorescence, very slow direct cut, slight increase with crushing, thin moderately bright yellow green film residue.		
		60	CLAYSTONE (1): 20%, as above.		
			CLAYSTONE (2):4%, as above.		
		20	SILTSTONE (1): 10%, as above.		
			SILTSTONE (2): 10%, as above.		

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Interval (m) From To		%	Lithology / Show Description
3200	3205	20	SANDSTONE: white to pale green, clear to translucent, very fine, well sorted, sub-angular to sub-rounded, trace glauconite, soft, occasionally moderately hard in aggregates, tight visual and inferred porosity. FLUORESCENCE: 10%: no oil staining, dull to dominantly moderately bright patchy green yellow Fluorescence, very slow crush cut, thin moderately bright yellow green film residue.
		70	CLAYSTONE: light olive brown to olive brown, brown grey, soft, dispersive, amorphous, common rock flour.
		20	SILTSTONE (1): 10%, pale brown to dark yellow brown, arenaceous in part, trace micro-micaceous, dispersive, soft, to firm in part, sub-blocky.
3205	3210		SILTSTONE (2): 10%, medium to medium dark grey, arenaceous, common micro-pyrite, dispersive, soft, rare moderately hard, amorphous to sub-blocky.
		10	SANDSTONE: clear to translucent, pale brown grey, fine, trace coarse loose quartz grains, well sorted, sub-angular to sub-rounded, trace glauconite, firm, tight visual and inferred porosity. FLUORESCENCE: 10%: no oil staining, dull to dominantly moderately bright patchy green yellow Fluorescence, very slow crush cut, thin moderately bright yellow green film residue. Top of M1.3L PS3 sand (PSB4) = 3208.0 mMDRT / 2293.9 mTVDRT / -2260.5 mTVDSS.
		70	CLAYSTONE: as above.
3210	3215	20	SILTSTONE (1): 10%, as above.
			SILTSTONE (2): 10%, as above.
		10	SANDSTONE: clear to translucent, pale brown grey, fine, trace coarse loose quartz grains, well sorted, sub-angular to sub-rounded, trace glauconite, firm, tight visual and inferred porosity. FLUORESCENCE: 10%: no oil staining, dull to dominantly moderately bright patchy green yellow Fluorescence, very slow crush cut, thick moderately bright yellow green film residue.
3215	3220	60	CLAYSTONE: as above.
		20	SILTSTONE (1): 10%, as above.
			SILTSTONE (2): 10%, as above.
3215	3220	20	SANDSTONE: clear to translucent, pale brown grey, dominantly fine, occasionally coarse to very coarse loose quartz grains, well sorted, sub-angular to sub-rounded, trace glauconite, firm, loose in part, tight visual and inferred porosity. FLUORESCENCE: 10%: no oil staining, dull to dominantly moderately bright patchy green yellow Fluorescence, very slow crush cut, thick moderately bright yellow green film residue. Base of M1.3L / Top of M1.4U (SB13) = 3219.0 mMDRT / 2301.4 mTVDRT / -2268.0 mTVDSS.
		60	CLAYSTONE: as above.
		20	SILTSTONE (1): 10%, as above.
3215	3220		SILTSTONE (2): 10%, as above.

West Kingfish W23A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3220	3225	20	SANDSTONE: clear to translucent, pale brown grey, dominantly fine, occasionally coarse to very coarse loose quartz grains, well sorted, sub-angular to sub-rounded, trace glauconite, firm, loose in part, tight visual and inferred porosity. FLUORESCENCE: 10%: no oil staining, dull to dominantly moderately bright patchy green yellow Fluorescence, very slow crush cut, thick moderately bright yellow green film residue.
		20	CLAYSTONE: light brown, light olive brown to olive brown, brown grey, soft to firm, sub-blocky.
		40	SILTSTONE (1): 10%, pale brown to dark yellow brown, arenaceous in part, trace micro-micaceous, dispersive, soft to firm in part, sub-blocky.
3225	3230		SILTSTONE (2): 30%, medium to medium dark grey, arenaceous, common micro-pyrite, dispersive, soft, rare moderately hard, amorphous to sub-blocky.
		40	SANDSTONE: clear to translucent, pale brown grey, fine to very coarse, moderately poorly sorted, sub-angular to sub-rounded, trace glauconite, weak siliceous cement, dominantly loose, firm in aggregates, poor to fair visual and inferred porosity. FLUORESCENCE: 10%: no oil staining, dull to dominantly moderately bright patchy green yellow Fluorescence, very slow crush cut, medium thick moderately bright yellow green film residue.
		10	CLAYSTONE: as above.
3230	3235	20	SILTSTONE (1): 10%, as above.
			SILTSTONE (2): 10%, as above.
		70	SANDSTONE: clear, translucent, light brown grey in aggregates, medium to very coarse, fine to medium in aggregates, moderately poor sorted, sub-angular to sub-rounded, trace glauconite, trace light brown argillaceous matrix, weak siliceous cement, dominantly loose, generally clean, firm to moderately hard aggregates, poor to fair inferred and visual porosity. FLUORESCENCE: 5%: no oil staining, dull to occasionally moderately bright patchy green yellow Fluorescence, very slow crush cut, thin very pale yellow green film residue. Top of M1.4 L (M1.4C) = 3232.0 mMDRT / 2310.2 mTVDRT / -2276.8 mTVDSS.
		5	COAL: dusky brown, earthy, firm to moderately hard, uneven, sub-blocky to sub-fissile, woody texture.
3230	3235	15	CLAYSTONE: very light grey to light brown, pale orange brown, firm to occasionally moderately hard, soft in part, sub-blocky.
		50	SILTSTONE (1): 30%, pale brown to dark yellow brown, arenaceous in part, trace micro-micaceous, dispersive, soft to firm in part, sub-blocky.
			SILTSTONE (2): 20%, medium to medium dark grey, arenaceous, common micro-pyrite, dispersive, soft, rare moderately hard, amorphous to sub-blocky.
		30	SANDSTONE: clear, translucent, light brown grey in aggregates, medium to very coarse, fine to medium in aggregates, moderately poor sorted, sub-angular to sub-rounded, trace glauconite, trace light brown argillaceous matrix, weak siliceous cement, dominantly loose, generally clean, firm to moderately hard aggregates, poor to fair inferred and visual porosity. FLUORESCENCE: Trace: no oil staining, dull patchy green yellow Fluorescence, very slow crush cut, thin pale yellow green film residue.

West Kingfish W23A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3235	3240	Trace	COAL: as above.
		30	CLAYSTONE: as above.
		50	SILTSTONE (1): 40%, as above.
			SILTSTONE (2): 10%, as above.
		20	SANDSTONE: clear to translucent, pale brown grey aggregates, fine to very coarse, medium in aggregates, moderately poor sorted, sub-angular to sub-rounded, trace glauconite, trace light brown argillaceous matrix, weak siliceous cement, dominantly loose, generally clean, firm to moderately hard aggregates, poor to fair inferred and visual porosity. FLUORESCENCE: Trace: no oil staining, dull to occasionally moderately bright patchy green yellow Fluorescence, very slow crush cut, thin pale yellow green ring residue.
3240	3245	50	CLAYSTONE: as above.
		40	SILTSTONE (1): 30%, as above.
			SILTSTONE (2): 10%, as above.
		10	SANDSTONE: clear to translucent, pale brown grey aggregates, medium to very coarse, common coarse to very coarse, medium aggregates, moderately sorted, sub-angular to sub-rounded, trace glauconite, trace light brown argillaceous matrix, trace siliceous cement, trace pyrite cement, dominantly loose, generally clean, firm to moderately hard aggregates, poor to fair inferred porosity. FLUORESCENCE: Trace: no oil staining, dull to occasionally moderately bright patchy green yellow Fluorescence, very slow crush cut, thick pale yellow green ring residue.
3245	3250	20	CLAYSTONE: very light grey to light brown, olive brown, firm to occasionally moderately hard, soft in part, sub-blocky.
		40	SILTSTONE (1): 30%, pale brown to dark yellow brown, arenaceous in part, trace micro-micaceous, dispersive, soft to firm in part, sub-blocky.
			SILTSTONE (2): 20%, medium to medium dark grey, arenaceous, common micro-pyrite, dispersive, soft, rare moderately hard, amorphous to sub-blocky.
		40	SANDSTONE: clear to translucent, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace light brown argillaceous matrix, trace siliceous cement, trace pyrite cement, dominantly loose, generally clean, firm aggregates in part, poor to fair inferred porosity. FLUORESCENCE: 2%: no oil staining, dull to occasionally moderately bright patchy green yellow Fluorescence, very slow crush cut, thick pale yellow green ring residue. Top of M1.5 = 3251.5 mMDRT / 2323.4 mTVDRT / -2290.0 mTVDSS.
3250	3255	10	CLAYSTONE: as above.
		30	SILTSTONE (1): 10%, as above.
			SILTSTONE (2): 20%, as above.

West Kingfish W23A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3255	3260	60	SANDSTONE: clear to translucent, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace to minor light grey argillaceous matrix, trace siliceous cement, trace pyrite cement, dominantly loose, generally clean, firm aggregates, minor rock flour, poor to fair inferred porosity. FLUORESCENCE: 2%: no oil staining, dull to occasionally moderately bright patchy green yellow Fluorescence, very slow crush cut, thick pale yellow green ring residue. Bit trip at 3257.0 mMDRT / 2327.2 mTVDRT / -2293.8 mTVDSS.
		50	SILTSTONE (1): 10%, pale brown to occasionally dark yellow brown, arenaceous in part, dispersive, soft to firm in part, sbbly.
3260	3265		SILTSTONE (2): 40%, medium to medium dark grey, arenaceous, trace micro-pyrite, firm to moderately hard, sub-blocky to sub-fissile.
		50	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, minor pale grey argillaceous matrix, trace siliceous cement, dominantly loose, minor firm aggregates, minor rock flour, poor to fair inferred and visual porosity. FLUORESCENCE: 5%: no oil staining, dull to moderately bright patchy green yellow Fluorescence, very slow crush cut, thick pale yellow green ring residue.
		5	CLAYSTONE: very light grey to light brown, olive brown, firm to moderately hard, sub-blocky to sub-fissile.
		45	SILTSTONE (1): 10%, as above.
3265	3270		SILTSTONE (2): 35%, as above.
		50	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, minor pale grey argillaceous matrix, trace siliceous cement, trace glauconite, dominantly loose, minor firm aggregates, minor rock flour, poor to fair inferred and visual porosity. FLUORESCENCE: 5%: no oil staining, dull to moderately bright patchy green yellow Fluorescence, very slow crush cut, thick pale yellow green ring residue. Top of M1.7 = 3269.5 mMDRT / 2335.6 mTVDRT / -2302.2 mTVDSS.
		5	CLAYSTONE: as above.
		65	SILTSTONE (1): 20%, as above.
3270	3275		SILTSTONE (2): 45%, as above.
		30	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, minor pale grey argillaceous matrix, trace siliceous cement, trace glauconite, dominantly loose, minor firm aggregates, minor rock flour, poor to fair inferred and visual porosity. FLUORESCENCE: 5%: no oil staining, dull to moderately bright patchy green yellow Fluorescence, very slow crush cut, thick pale yellow green ring residue.
3270	3275	40	SILTSTONE (1): 20%, pale brown to occasionally dark yellow brown, arenaceous in part, dispersive, soft to firm in part, sbbly.
			SILTSTONE (2): 20%, medium to medium dark grey, arenaceous, trace micro-pyrite, firm to moderately hard, sub-blocky to sub-fissile.

West Kingfish W23A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3275	3280	60	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, occasionally rounded in very coarse grains, minor pale grey argillaceous matrix, trace siliceous cement, dominantly loose, minor firm aggregates, minor to common rock flour, poor to fair inferred and visual porosity. FLUORESCENCE: 2%: no oil staining, dull to moderately bright patchy green yellow Fluorescence, very slow crush cut, thin pale yellow green ring residue.
		5	CLAYSTONE: light blue grey, light to medium grey, silty grading to Siltstone in part, moderately hard to locally hard, sub-blocky.
		25	SILTSTONE (1): 10%, as above.
3280	3285		SILTSTONE (2): 15%, as above.
		70	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace pale grey argillaceous matrix, trace siliceous cement, dominantly loose, firm in aggregates, minor rock flour, fair inferred and visual porosity. FLUORESCENCE: 2%: no oil staining, dull patchy green yellow Fluorescence, very slow crush cut, thin pale yellow green ring residue.
		10	CLAYSTONE: as above.
3285	3290	20	SILTSTONE: medium to medium dark grey, brown grey, arenaceous grading to very fine Sandstone in part, trace micro-micaceous, firm to moderately hard, sub-fissile to sub-blocky.
		70	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace pale grey argillaceous matrix, trace siliceous cement, dominantly loose, firm in aggregates, minor rock flour, fair inferred and visual porosity. FLUORESCENCE: Trace: no oil staining, dull patchy green yellow Fluorescence, very slow crush cut, thin pale yellow green ring residue.
		10	CLAYSTONE: as above.
3290	3295	20	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace pale grey argillaceous matrix, trace siliceous cement, dominantly loose, minor firm medium grained aggregates, minor rock flour, fair inferred and poor visual porosity. FLUORESCENCE: Trace: no oil staining, dull patchy green yellow Fluorescence, very slow crush cut, thin pale yellow green ring residue.
		10	CLAYSTONE: light blue grey, light to medium grey, silty grading to Siltstone in part, moderately hard to locally hard, sub-blocky.
3295	3300	10	SILTSTONE: as above.
		70	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace pale grey argillaceous matrix, trace siliceous cement, trace pyrite cement, dominantly loose, minor firm medium grained aggregates, minor rock flour, fair inferred and poor visual porosity. No Fluorescence.
		10	CLAYSTONE: as above.
3295	3300	10	SILTSTONE: medium to medium dark grey, brown grey, arenaceous grading to very fine Sandstone in part, trace micro-micaceous, firm to moderately hard, sub-fissile to sub-blocky.
		10	

West Kingfish W23A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3300	3305	80	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace pale grey argillaceous matrix, trace siliceous cement, trace pyrite cement, dominantly loose, minor firm medium grained aggregates, minor rock flour, fair inferred and poor visual porosity. No Fluorescence.
		10	CLAYSTONE: light blue grey, light to medium grey, silty grading to Siltstone in part, moderately hard to locally hard, sub-blocky.
		Trace	SILTSTONE: as above.
3305	3310	90	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, rounded in part, trace siliceous cement, trace pyrite cement, trace nodular pyrite, dominantly loose, minor rock flour, fair inferred porosity. No Fluorescence.
		10	CLAYSTONE: as above.
		Trace	SILTSTONE: as above.
3310	3315	90	SANDSTONE: clear to translucent, very pale grey, medium to very coarse, moderately sorted, sub-angular to sub-rounded, rounded in part, trace siliceous cement, trace pyrite cement, trace nodular pyrite, dominantly loose, minor rock flour, fair inferred porosity. No Fluorescence.
		30	CLAYSTONE: as above.
		10	SILTSTONE: medium to medium dark grey, grey brown, light brown in part, arenaceous grading to very fine Sandstone in part, trace micro-micaceous, firm to moderately hard, sub-fissile to sub-blocky.
3315	3320	60	SANDSTONE: clear to translucent, very pale grey, medium to occasionally very coarse, moderately sorted, sub-angular to sub-rounded, trace siliceous and pyritic cement, trace nodular pyrite, dominantly loose, minor rock flour, fair inferred porosity. No Fluorescence.
		10	CLAYSTONE: light blue grey, light to medium grey, silty grading to Siltstone in part, moderately hard to locally hard, sub-blocky.
		20	SILTSTONE: as above.
3320	3325	70	SANDSTONE: clear to translucent, very pale grey, medium to occasionally very coarse, moderately sorted, sub-angular to sub-rounded, trace siliceous and pyritic cement, trace nodular pyrite, dominantly loose, minor rock flour, fair inferred porosity. No Fluorescence.
		5	COAL: grey brown to brown black, dull, moderately hard , sub-blocky, uneven, silty grading to Carbonaceous Siltstone in part.
		5	CLAYSTONE: as above.
3325	3330	60	SILTSTONE: medium brown to medium brown grey, light to medium grey, arenaceous grading to very fine Sandstone in part, trace micro-micaceous, soft to firm, sub-blocky.
		30	SANDSTONE: clear to translucent, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace siliceous and pyritic cement, dominantly loose, trace rock flour, fair inferred porosity. No Fluorescence.
		10	CLAYSTONE: as above.
3330	3335	40	SILTSTONE: as above.
		50	SANDSTONE: as above.
		10	CLAYSTONE: as above.
		80	SILTSTONE: as above.

West Kingfish W23A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
3335	3338	10	SANDSTONE: clear to translucent, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace siliceous and pyritic cement, dominantly loose, trace rock flour, fair inferred porosity. No Fluorescence.
		10	CLAYSTONE: light blue grey, light to medium grey, silty grading to Siltstone in part, moderately hard to locally hard, sub-blocky.
		80	SILTSTONE: medium brown to medium brown grey, light to medium grey, arenaceous grading to very fine Sandstone in part, trace micro-micaceous, soft to firm, sub-blocky.
		10	SANDSTONE: clear to translucent, medium to very coarse, moderately sorted, sub-angular to sub-rounded, trace siliceous and pyritic cement, dominantly loose, trace rock flour, fair inferred porosity. No Fluorescence.
			WKF W232A reached a TD of 3338.0 mMDRT / 2382.0 mTVDRT /-2348.6 mTVDSS at 1550 hrs on 22 October 2006.
			Carbide Lag check at 3338.0 mMDRT TD:
			Theoretical in/out strokes: 7755
			Actual in/out strokes: 10018
			Difference = 2263 strokes.
			Hole overgauge by 29%.

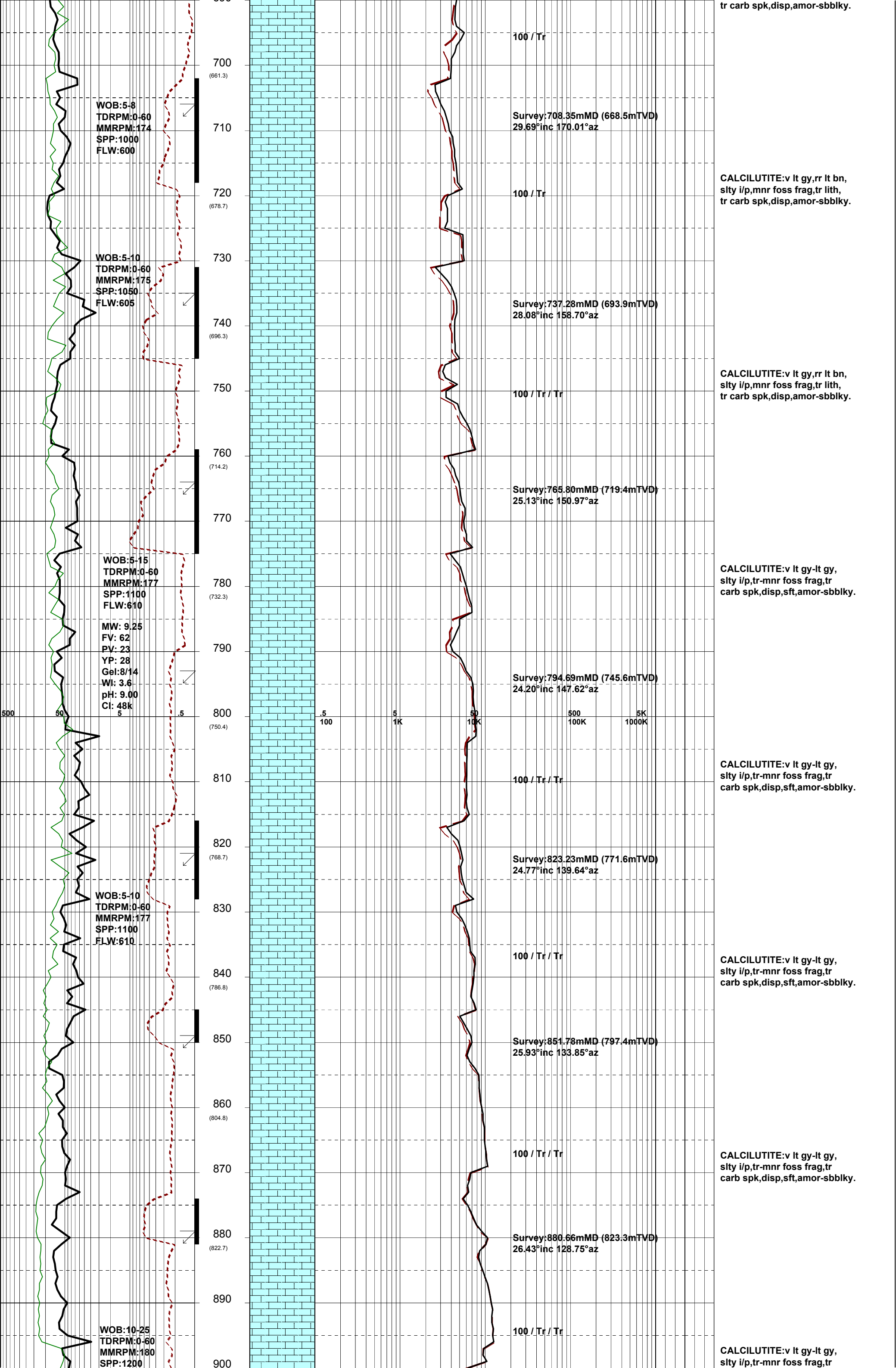
APPENDIX 4a

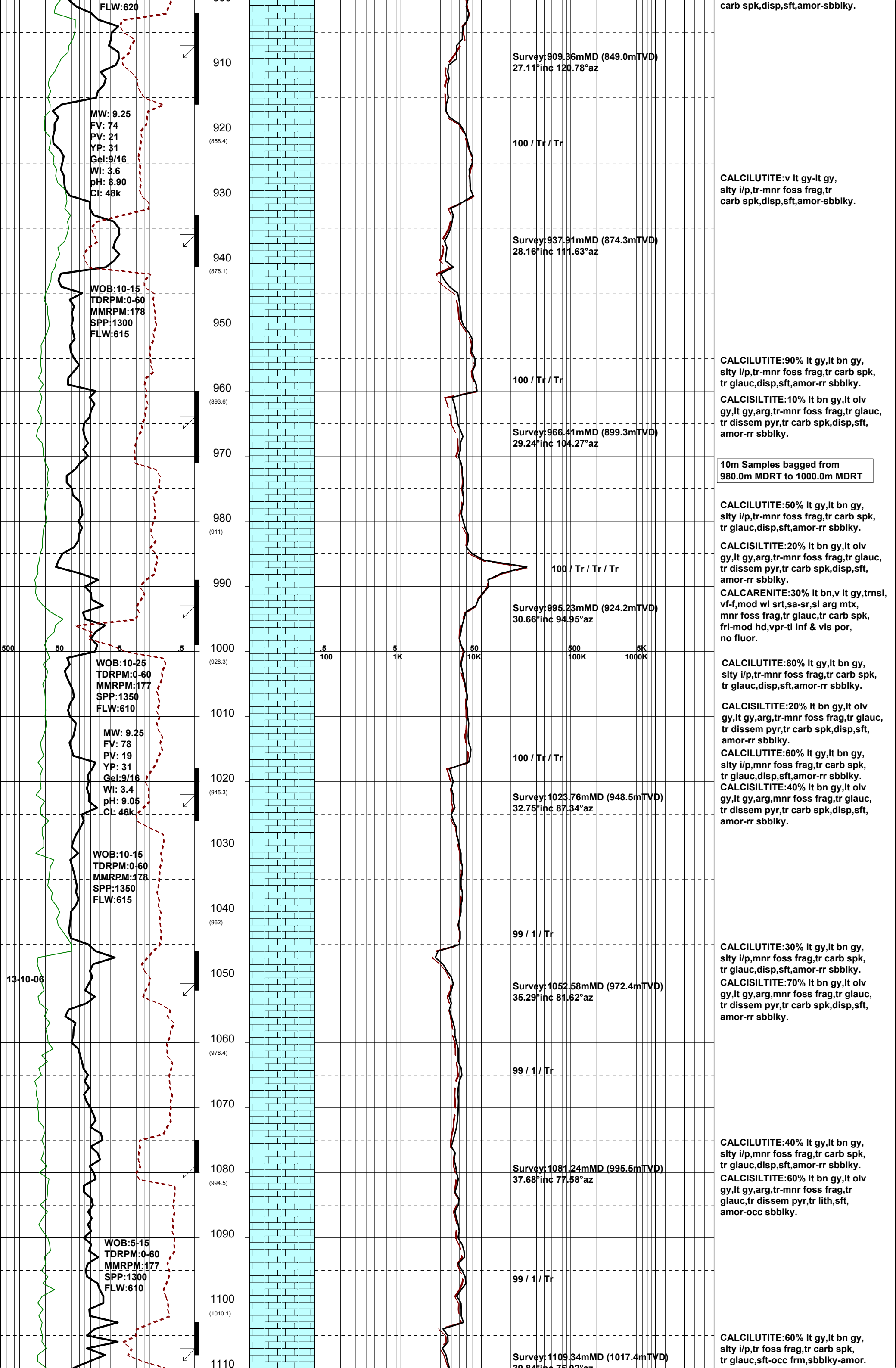
WEST KINGFISH W23A

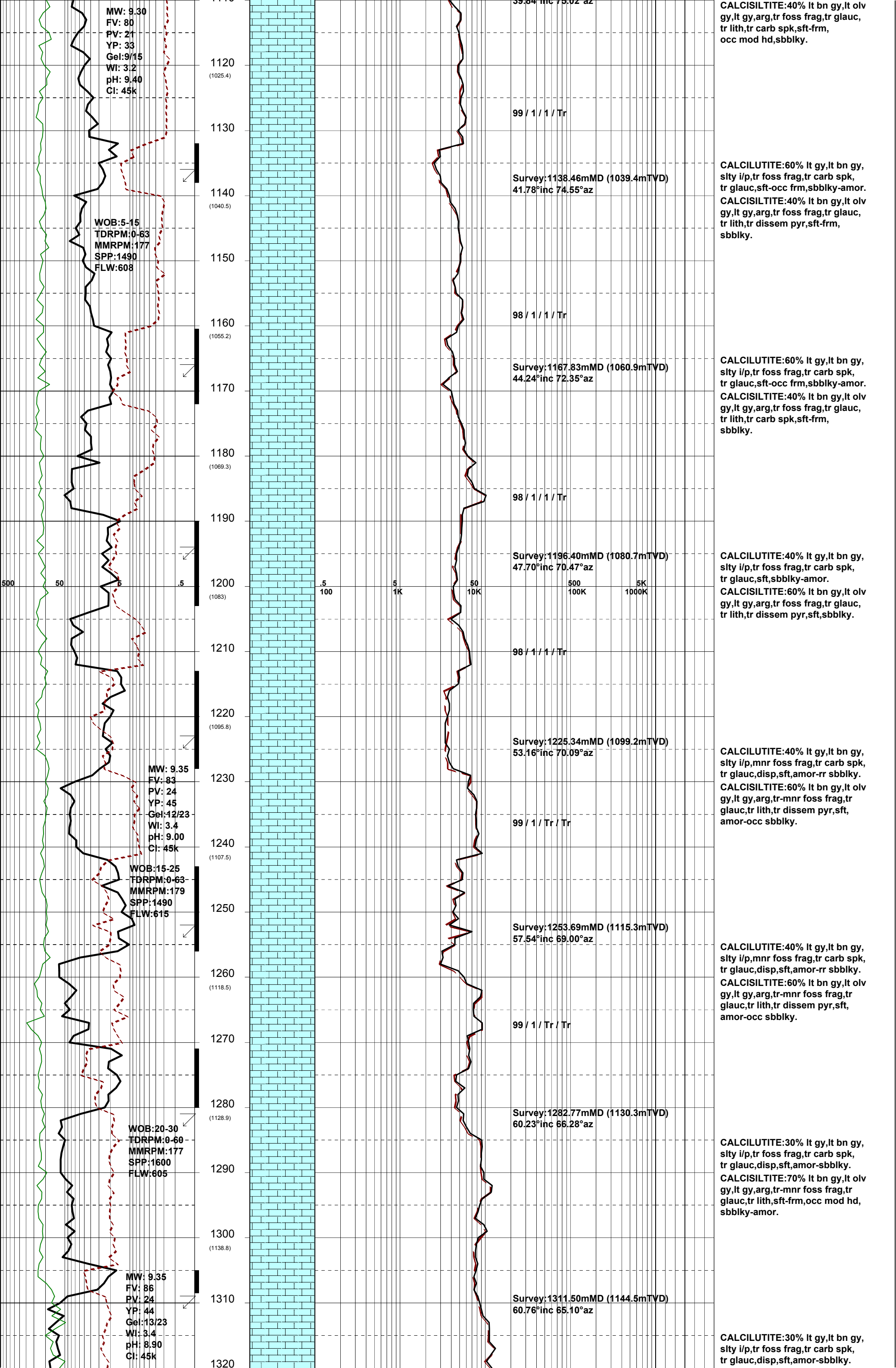
Mud Log

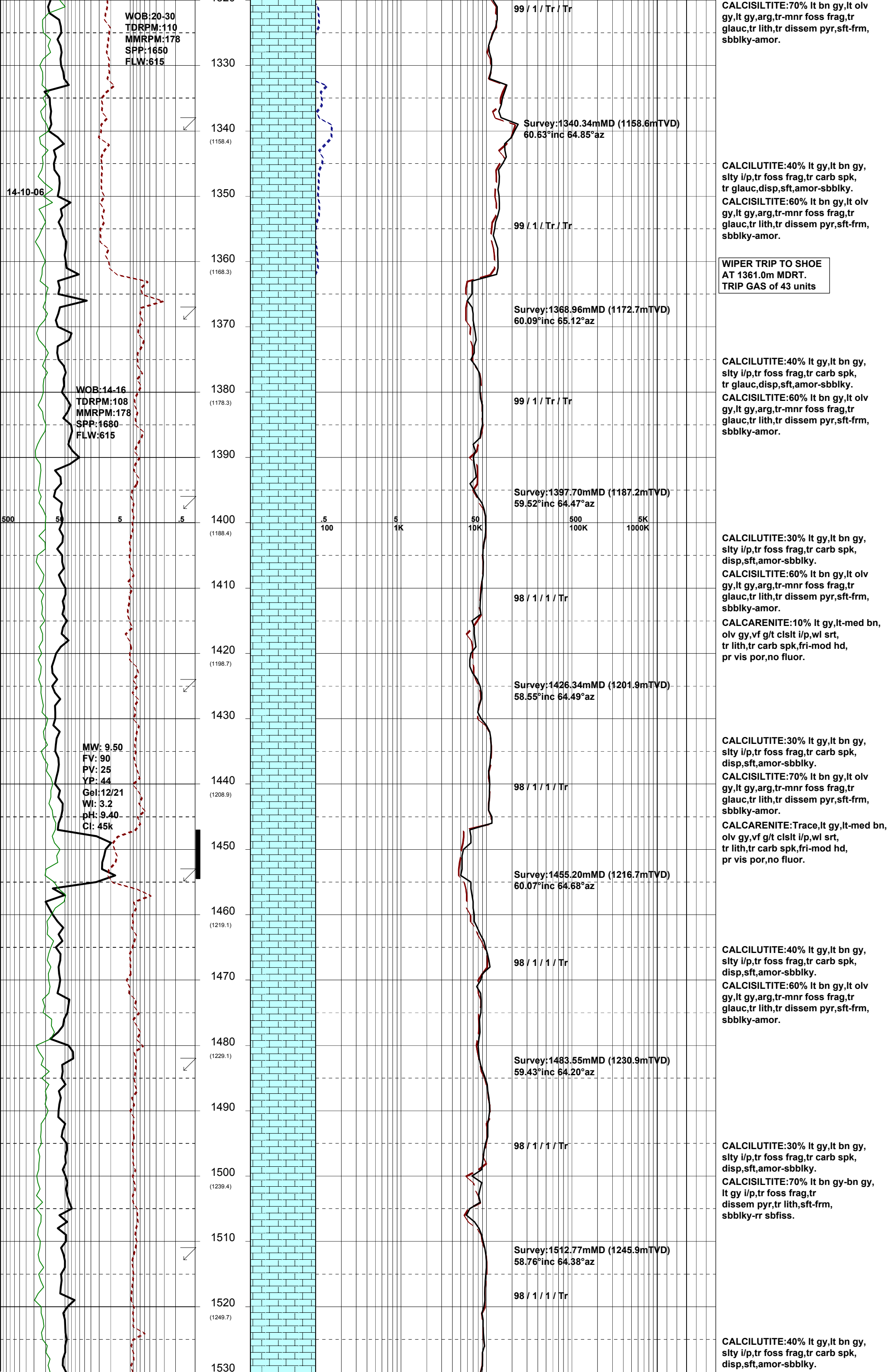


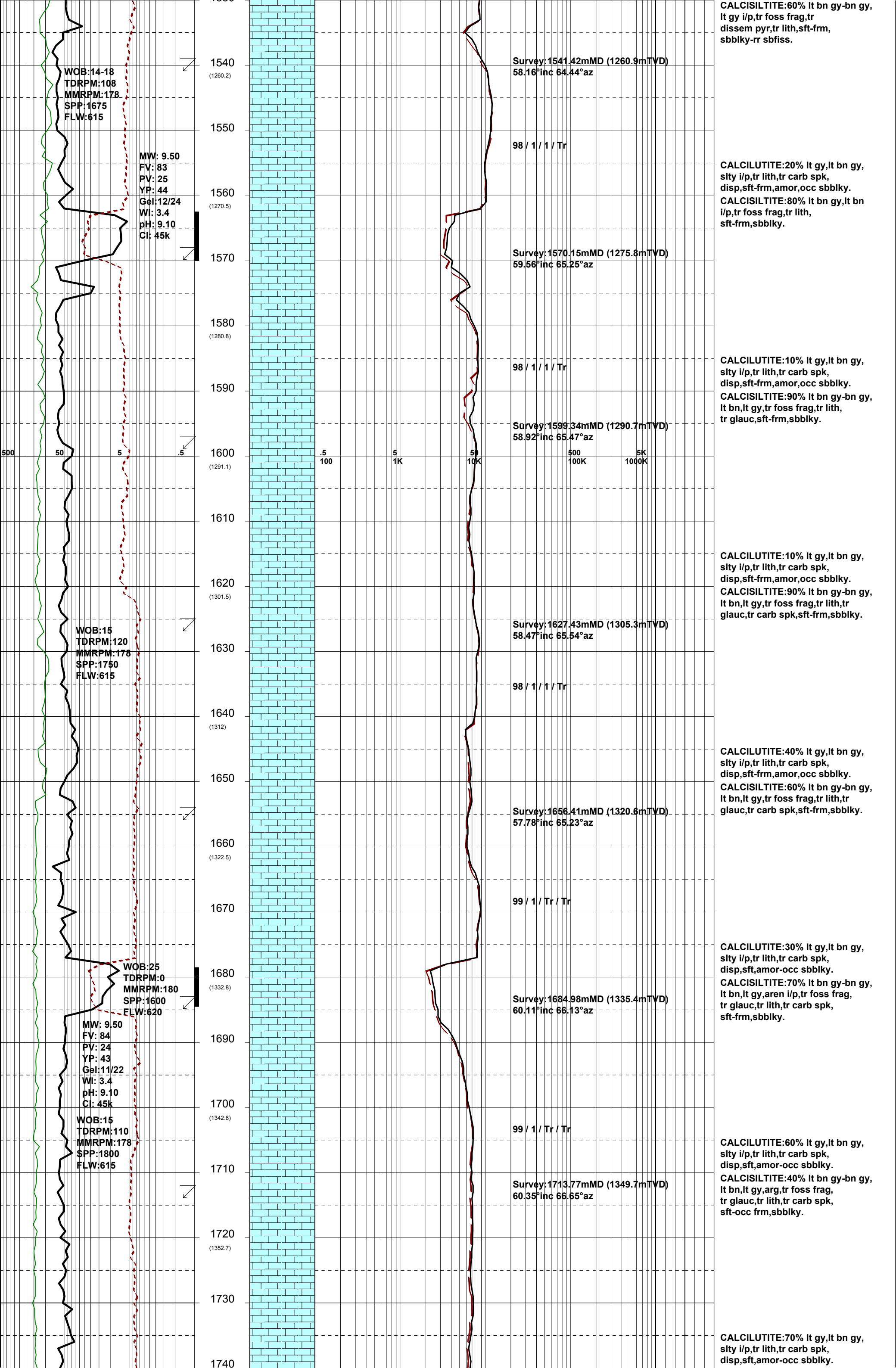
ROP (m/hr)		DEPTH (m) (TVD)	SLIDING BAR	CUTTINGS LITHOLOGY	RESERVAL GAS DATA										CUT FLUOR	DIRECT FLR	LITHOLOGY DESCRIPTIONS and REMARKS			
500	50				5	.5	C1	C2	C3	iC4	nC4	iC5	TG							
WOB (tons)				MWD Gamma Ray (api)				Total Gas in Units Chromatograph in PPM												
50	25	0		%	.5	5	50	500	5K	100	1K	10K	100K	1000K	good	fair	poor			
				0	100	100	1K	10K	100K	1000K										
MW: 9.05 FV: 85 PV: 13 YP: 19 Gel: 8/10 WI: 4.0 pH: 11.20 CI: 46k				640		BIT #1 8 1/2" Smith S73VPX Jets: 6x20 In : 651.0m mDRT Out : 3257.0m mDRT Run : 2606.0 Hrs : 102.5 Cond: 2-2-WT-A-X-2/16-PN-ROP												PREVIOUS WELL HISTORY Plugged & Abandoned in October, 2006 10-3/4" Surface Csg 651.6m MDRT 7-5/8" Production Csg cut and pulled from 726.0m MDRT Kick-off plug at 605.0m MDRT		
12-10-06				650		Tie in Survey: 660.00mMD (626.71mTVD) 31.96°inc 185.83°az												West Kingfish W23A spud at 23:45 hours on 11-10-2006 from 651.0m MDRT		
WOB: 0-4 TDRPM: 0-40 MMRPM: 177 SPP: 950 FLW: 610				660 (626.7)														Drill with 8% KCl/PHPA/Polymer Glycol-CP mud system.		
MW: 9.10 FV: 52 PV: 15 YP: 21 Gel: 9/11 WI: 4.0 pH: 9.48 CI: 47k				670														PIT at 672.2m MDRT 636.9m TVDRT 378 psi 9.1 ppg EMW: 12.5 ppg		
				680 (643.9)		Survey: 679.90mMD (643.8mTVD) 29.81°inc 177.86°az												No H2S or CO2 Detected		
				690														CALCILUTITE: v lt gy, rr lt bn, slty i/p, mnrr foss frag, tr lith,		

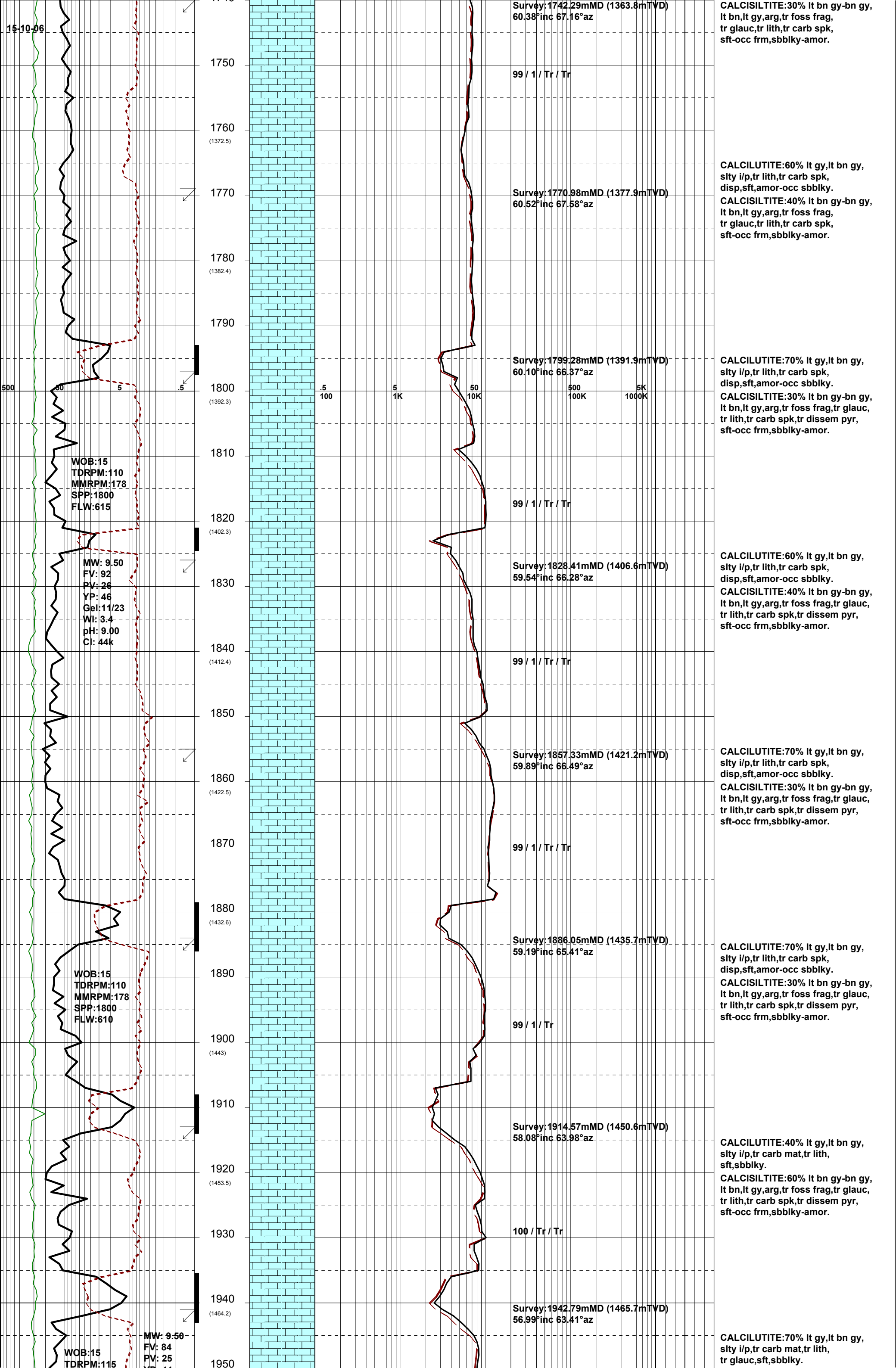


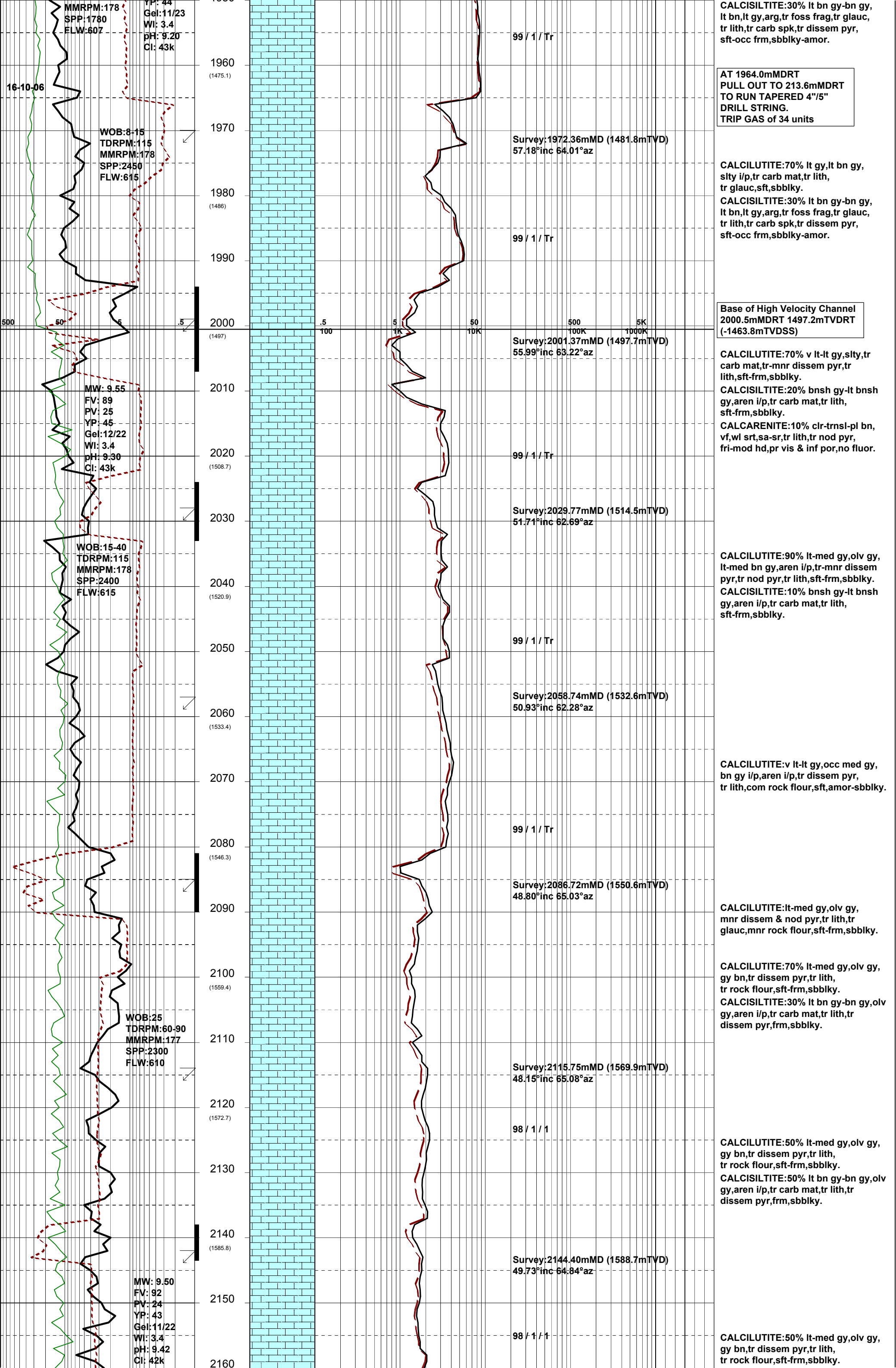


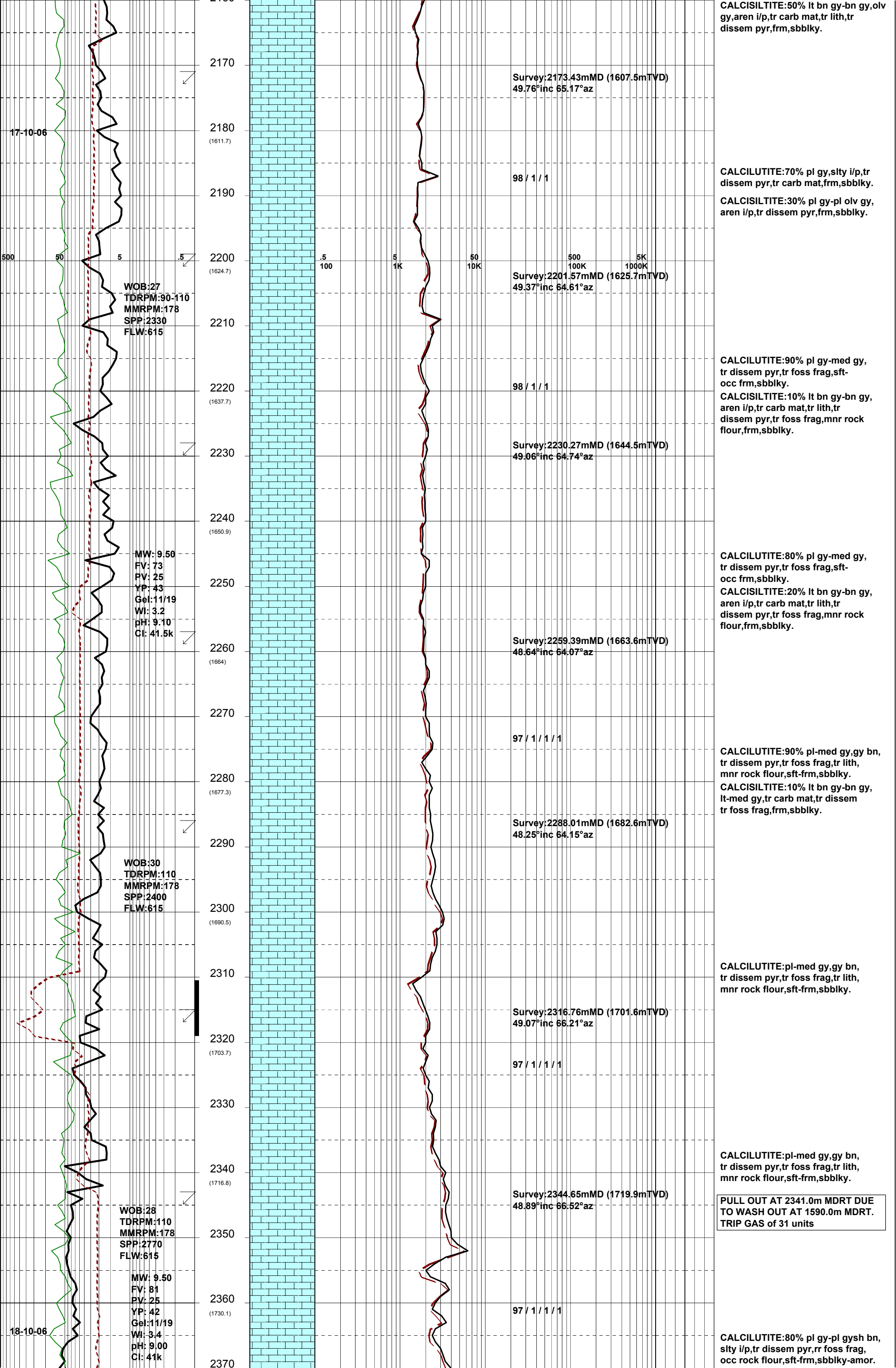


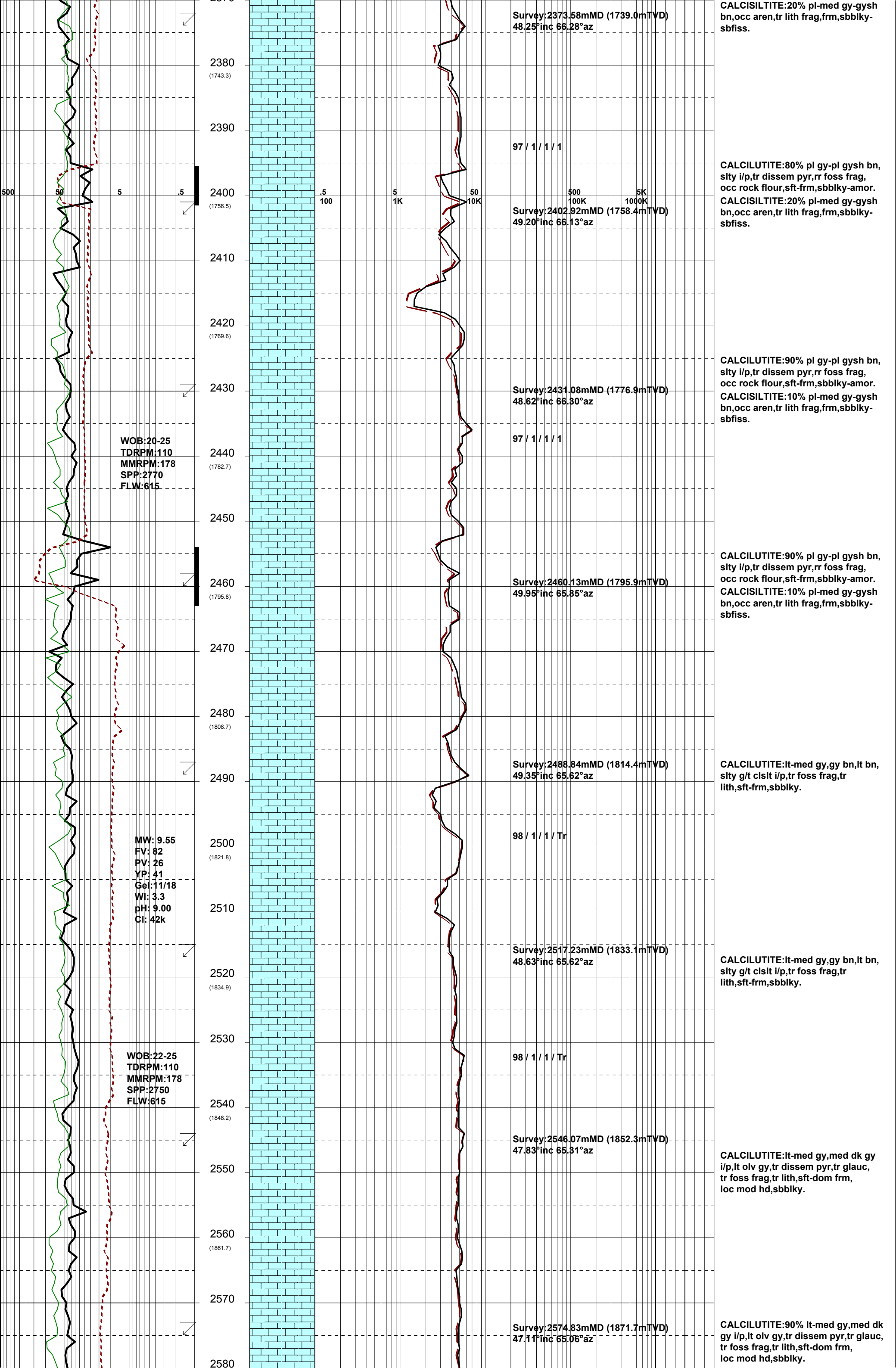


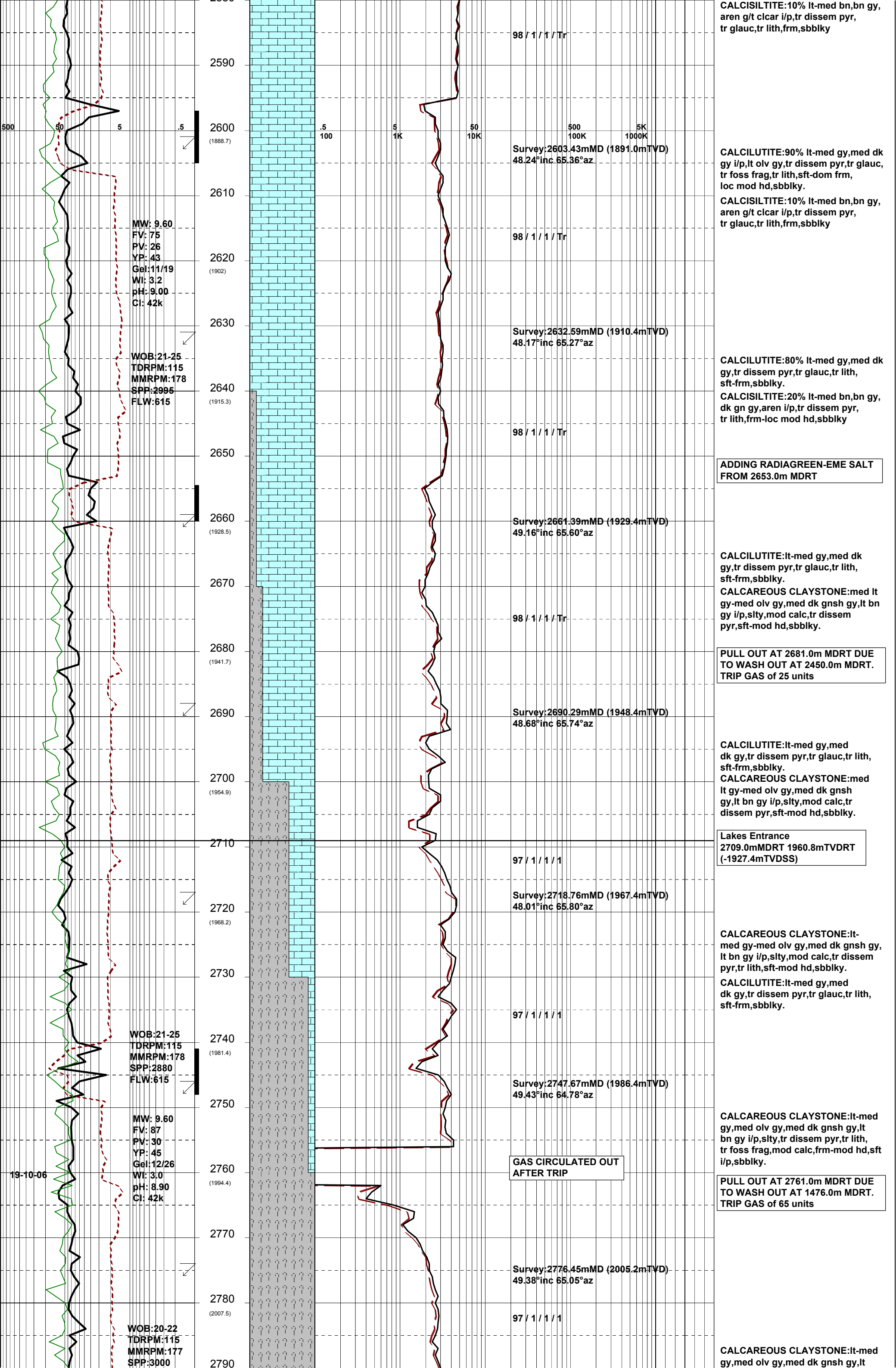


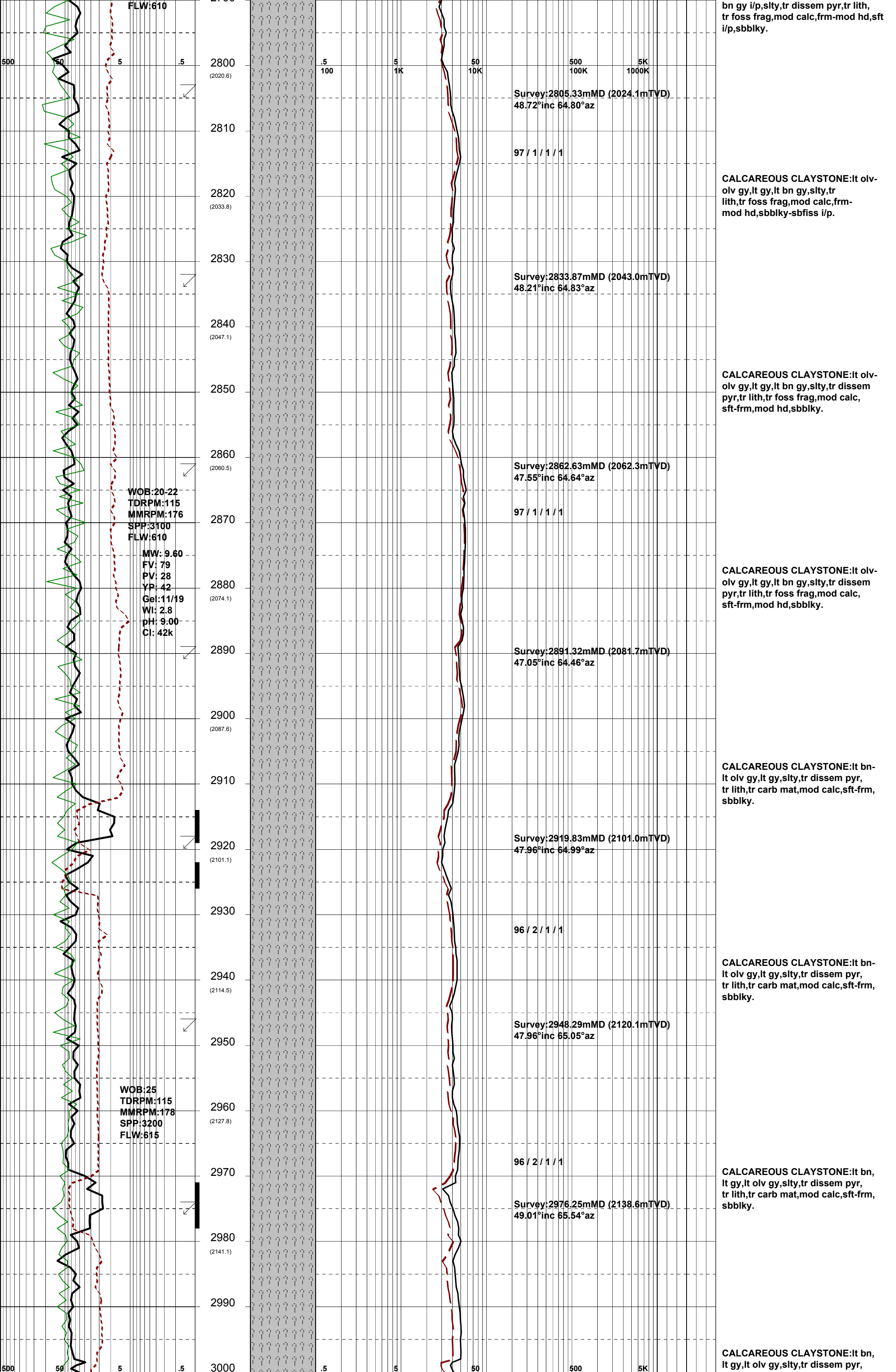


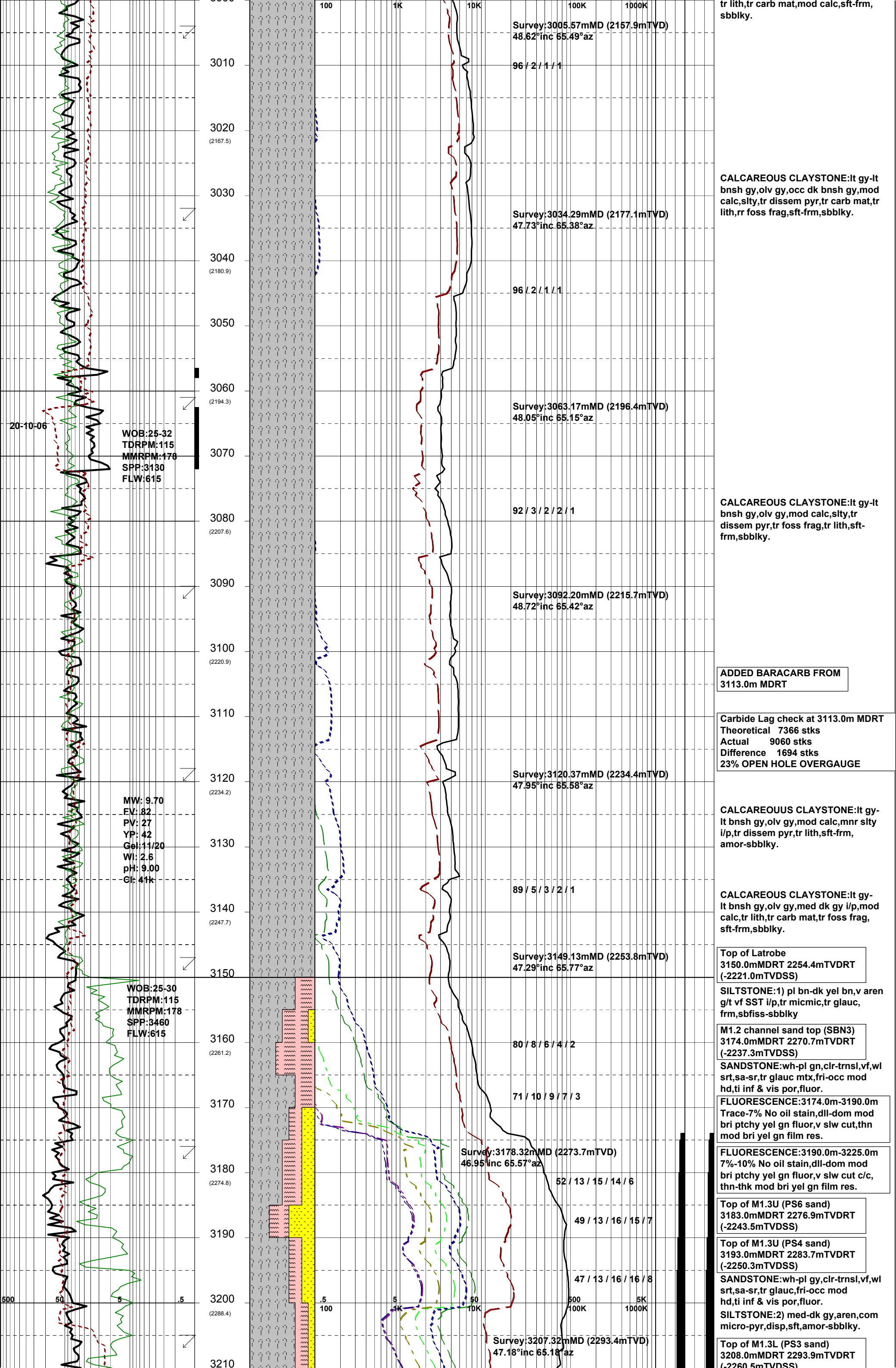


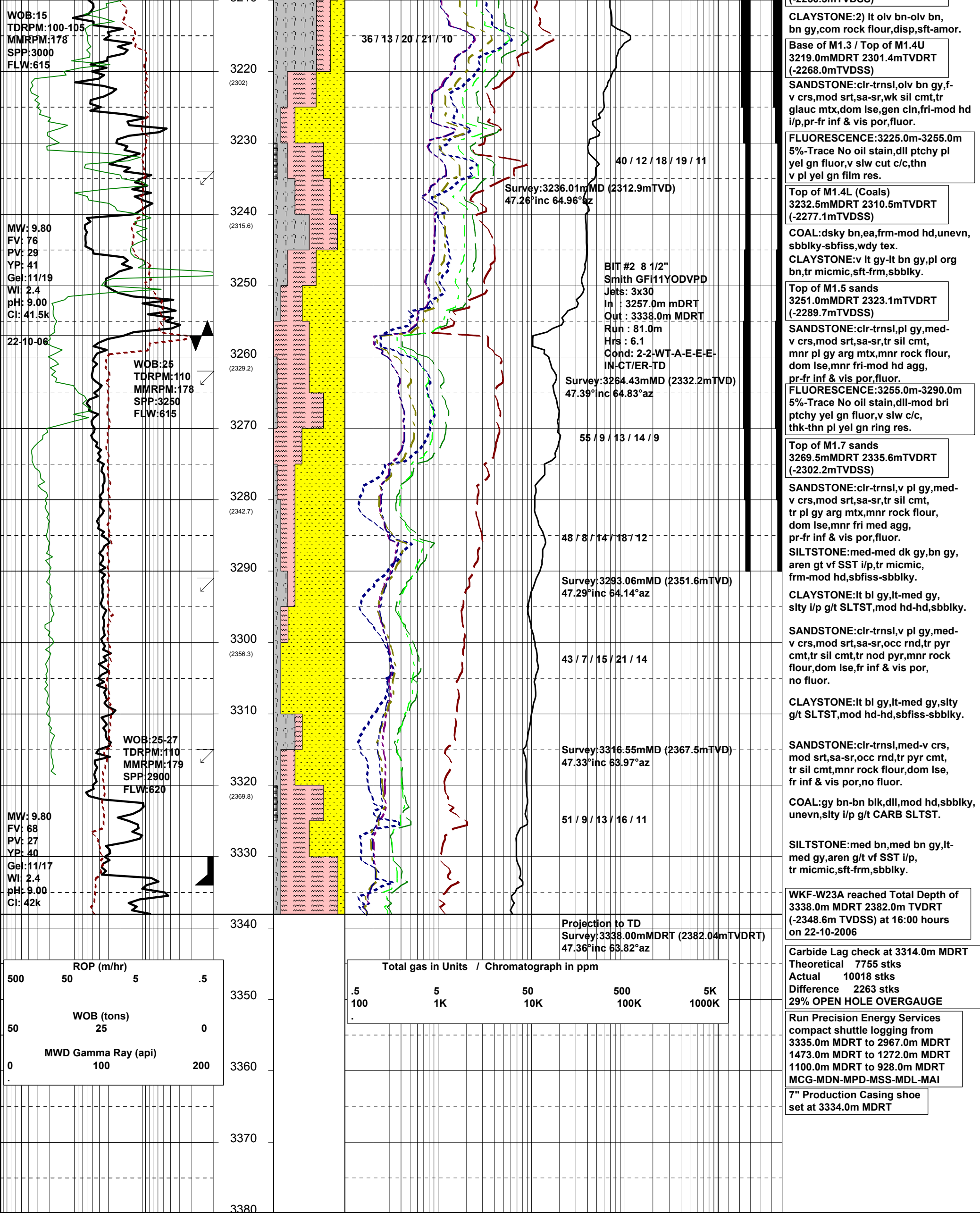












APPENDIX 4b

WEST KINGFISH W23A

Well Completion Log



WELL COMPLETION LOG

Scale – 1:200

WEST KINGFISH W23A

Gippsland Basin, Victoria

Concession: VIC/L7

POST-DRILL
LOCATION:
Top of Latrobe

Latitude: 38° 35' 20.58" S
Longitude: 148° 07' 25.77" E
MGA X: 597875m E
MGA Y: 5728226m N
Depth: 3150.0 mMDRT
2254.4 mTVDR
(-2221.0 mTVDSS)

ELEVATION:

G.L.: -76.13 m
R.T.: 33.43 m
Water Depth: 76.13 m

COMPILED BY: Sheryl Sazenis

DRAFTED BY: Arnaldo Ribeiro

DRILL RIG: Nabors Rig 453

Datum: GDA94
Spheroid: GRS80
Projection: UTM
Map Grid/Cent.Meridian: MGA Zone 55/147 deg E

TOTAL DEPTH: 3338.0 mMDRT / 2382.0 mTVDR

DATES: Spudded: 11/10/2006
Rig Released: 01/11/2006
I.P. Established: 10/11/2006
(Initial production)

PLUGGED BACK T.D.: 3288.8 mMDRT

CLASSIFICATION: Oil Development

STATUS: Cased and Completed

SERVICE COMPANIES:

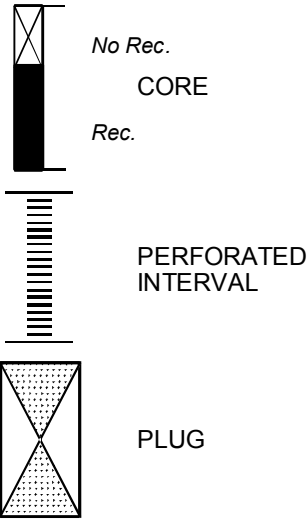
DRILLING CONTRACTOR: International Sea Drilling Limited (Nabors Rig 453)
MWD/DIRECT. DRLG: Schlumberger Anadrill
GYRO SURVEYING: SDI (Scientific Drilling Int.)
CORING: n/a
PIPE CONVEYED: Precision Energy Services (Compact Shuttle)
LOGGING: Logging System on drillpipe)
CEMENTING: Halliburton
CASING: Weatherford

PRODUCTION TESTING: n/a
WELLSITE GEOLOGIST: AIPC (Australian International Petro-Consultants)
MUD LOGGING: Geoservices Overseas S.A.
PRESSURE RECORDING: n/a
WELL VELOCITY SURVEY: n/a

MUD ENGINEERING: Halliburton- Baroid
LINER: n/a

LEGEND

2.7m NOS
Ø = 17%
Sw = 32%



← SST RECOVERED SIDE WALL CORE LITHOLOGY
SST - Sandstone CLST - Claystone
SLST - Siltstone LMST - Limestone
MST - Mudstone ML - Marl
SH - Shale COAL - Coal

← SIDE WALL CORE - NO RECOVERY
← FIT
← P2/11 MDT/RFT PRETEST RUN/SEAT NUMBER
← S11/2 MDT/RFT SAMPLE RUN/SAMPLE NUMBER
← P2/40 MDT VERTICAL/HORIZONTAL PERMEABILITY TEST
Packer
BRIDGE PLUG

LOG ANALYSIS DATA
NS - Net Sand
NOS - Net Oil Sand
NGS - Net Gas Sand
Sw - Water Saturation

MUD DATA
Ø - Porosity
Snd - Sand
MW - Mud Weight
FV - Funnel Velocity
PV - Plastic Velocity
YP - Yield Point
Gel - Gel Strength
pH - Acidity/Alkalinity
WL - Water Loss
Cl - Chloride
Ca - Calcium
Sol - Solids
H2O - Water
Oil -Oil

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

	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		Dolomite		Brachiopods		Fossils
	Grain Limestone		Pyrite		Gastropods		
	Skeletal Limestone		Pyrite		Cephalopods		

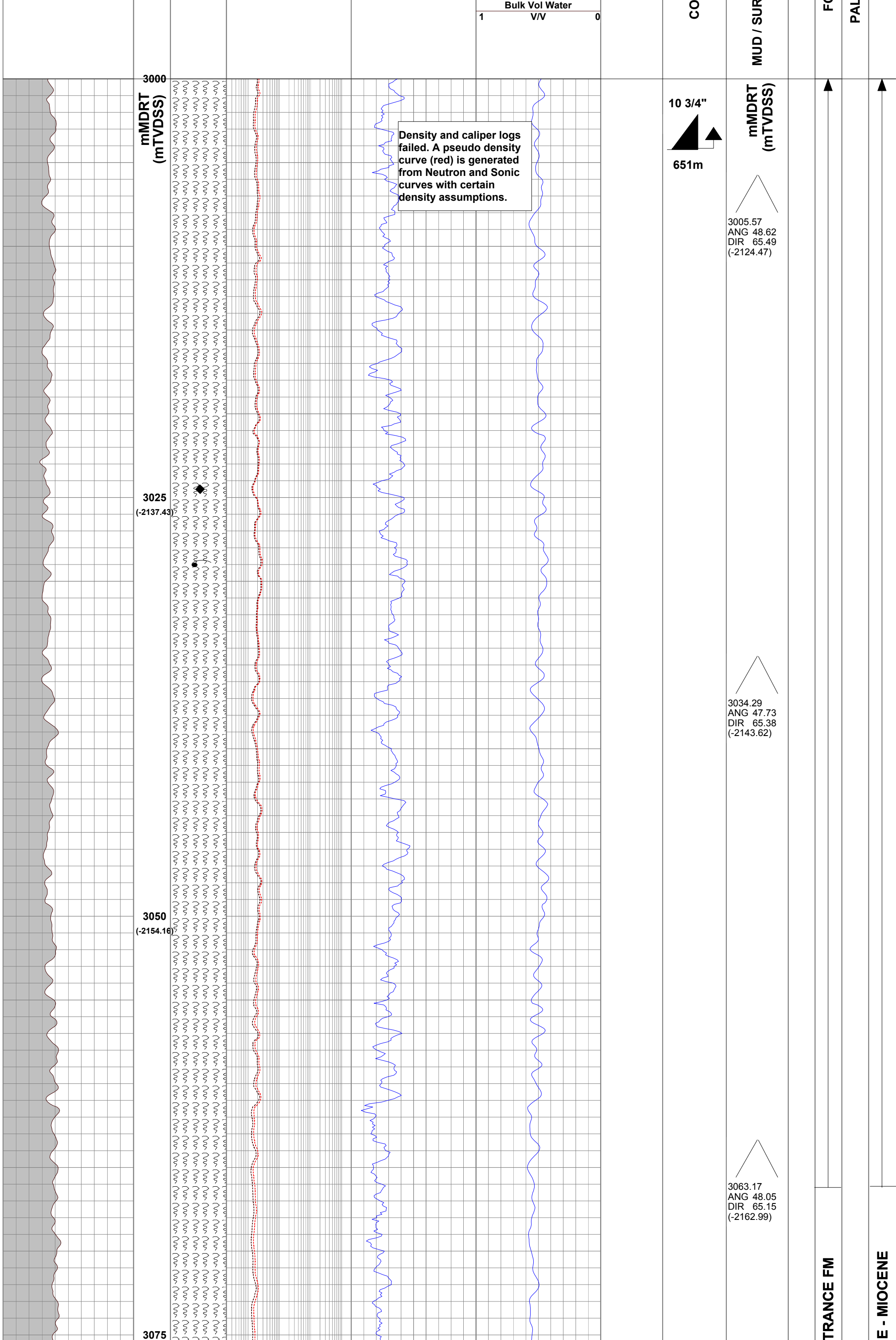
LOGGING AND SURVEYING			
Anadrill Schlumberger	Interval (mMDRT)	Precision Energy Services Logging	Interval (mMDRT)
MWD (Directional & GR) – 2 Runs	651 – 3338.0m MDRT (GR 651m -3318m MDRT)	MCG-MDN-MPD-MSS-MDL-MAI – 1 Run (GR-Neutron-Density-Sonic-Dual Laterlog-Induction). Density and calliper logs failed.	3338.0m - 651.0m MDRT (Main log 3330 – 2995m MDRT)

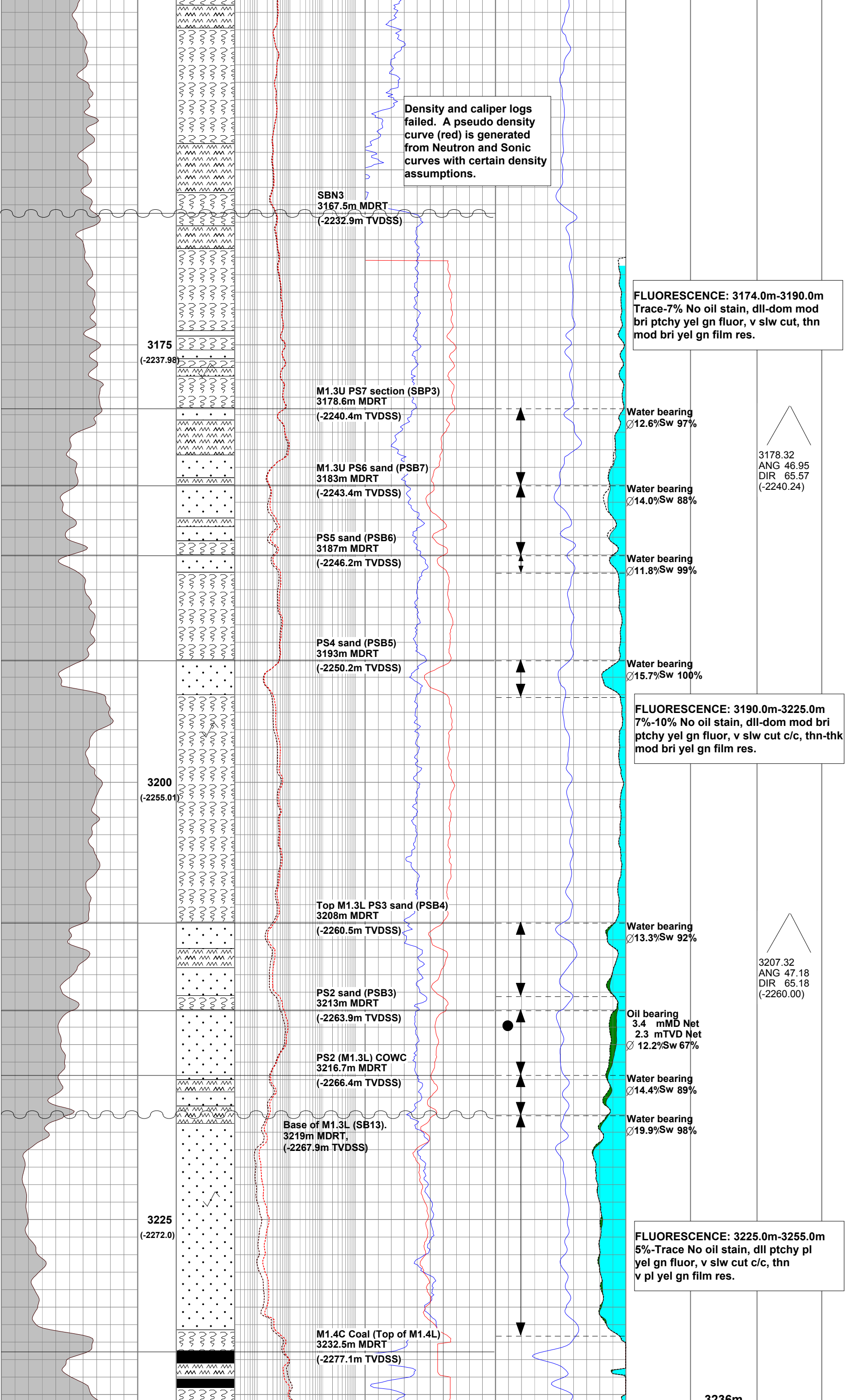
WELL DATA				
Date	12 October 2006 - 20 October 2006	22 October 2006 - 22 October 2006		23 October 2006 - 24 October 2006
Run	MWD # 1	MWD # 2		Wireline tools Run #1 on shuttle (drill pipe)
Log	Powerpulse Directional & GR	Powerpulse Directional & GR		MCG-MDN-MPD-MSS-MDL- MAI
Depth Driller	3257.0m MDRT	3338.0m MDRT		3338.0m MDRT
Depth Logger	3257.0m MDRT	3338.0m MDRT		3338.0m MDRT
Bottom Log Interval	3237.0m MDRT	3318.0m MDRT		3330.4m MDRT
Top Log Interval	651m MDRT	3237m MDRT		651.0m MDRT
Casing Driller	651m MDRT	651m MDRT		651.0m MDRT
Casing Logger	651m MDRT	651m MDRT		651.0m MDRT
Casing Size	10.75"	10.75"		10.75"
Casing Weight	40.5 ppf	40.5 ppf		40.5 ppf
Bit Size	8.5"	8.5"		8.5"
Type of Fluid in Hole	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL		KCI/PHPA/GLYCOL
Density	9.8 ppg	9.80 ppg		9.8 ppg (1.17 g/cc)
Rm @ Measured Temp.	N/A	N/A		0.145 @ 25 deg C
Rmf @ Measured Temp.	N/A	N/A		0.088 @ 25 deg C
Rmc @ Measured Temp.	N/A	N/A		0.195 @ 25 deg C
Max. Recorded Temp.	80.0°C	78.9°C		87.7°C
Equipment / Location	Sale	Sale		Sale
Recorded By	C. Skiba / S. Xu	C. Skiba / S. Xu		R. Tench / B. Moss
Witnessed By	D. van der Aa	D. van der Aa		D. van der Aa

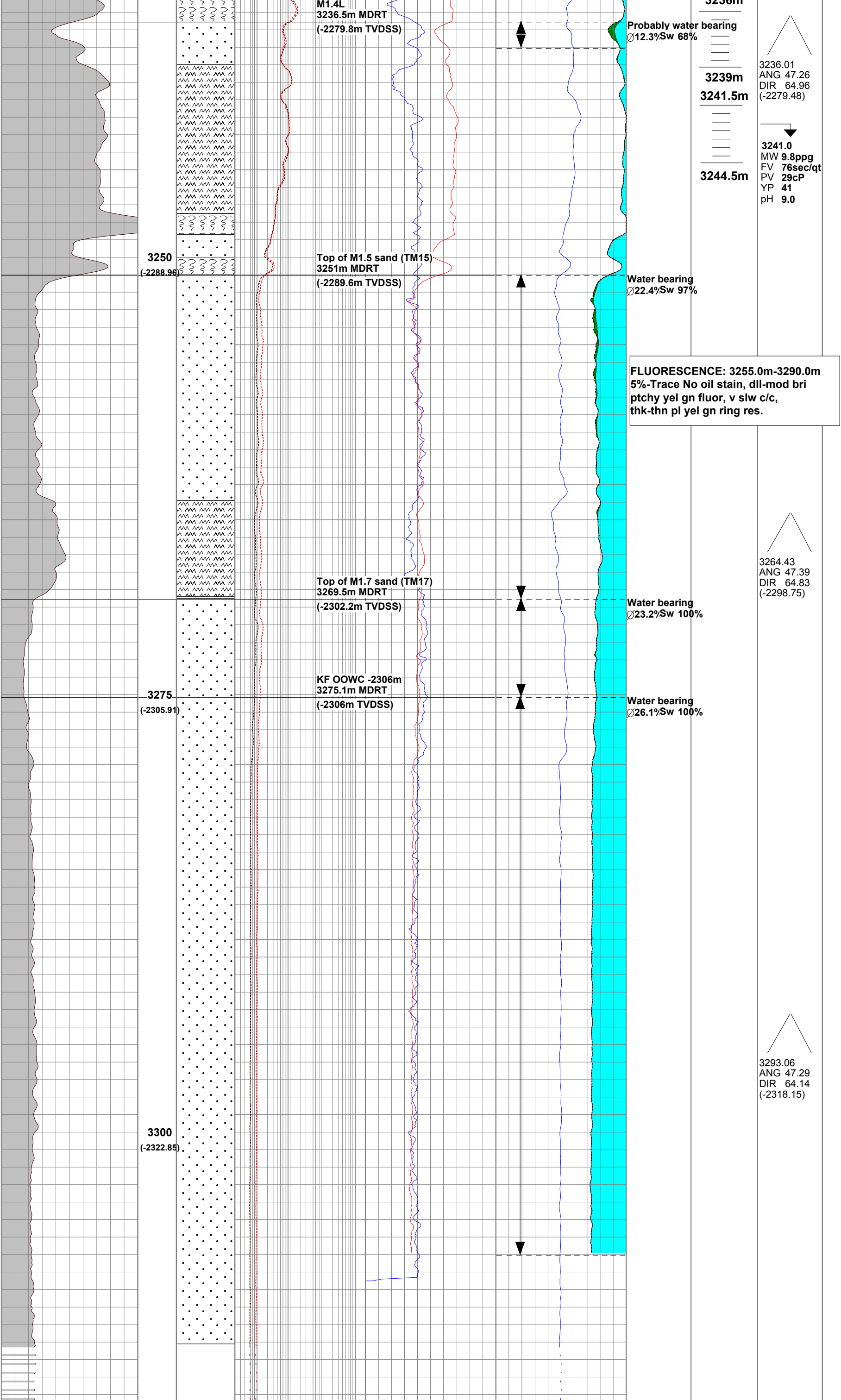
CORES			PERFORATIONS		
From (mMDRT)	To (mMDRT)	Rec %	From (mMDRT)	To (mMDRT)	Gun Type
---	---		3236.0	3239.0	MAXR
---	---		3241.5	3244.5	MAXR

CASING				PLUGS		
Size	Set @ (mMDRT)	SX Cmt	Formation	From (mMDRT)	To (mMDRT)	SXCmt
10. 75"	651	---	Gippsland Limestone			
7"	3334	1027	Latrobe Group	3338(TD)	3288.8(PBTD)	--

Gamma Ray			DEPTH	LITHOLOGY	Shallow Laterolog			Neutron Porosity			Compensated Sonic			NET SAND	IMPLETION	URVEY DATA	PLUGS	FORMATION	LYNOLOGY	AGE
0	GAPI	200			0.2	OHMM	2000	0.45	V/V	-0.15	500	US/M	100							
					Deep Laterolog			Pseudo density			Effective Porosity									
						0.2	OHMM	2000	1.85	G/C3	2.85	1	V/V	0						







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