

WELL COMPLETION REPORT
WEST KINGFISH W21A
GIPPSLAND BASIN, VICTORIA

Author: Mike Hordern
Compiler: Sheryl Sazenis
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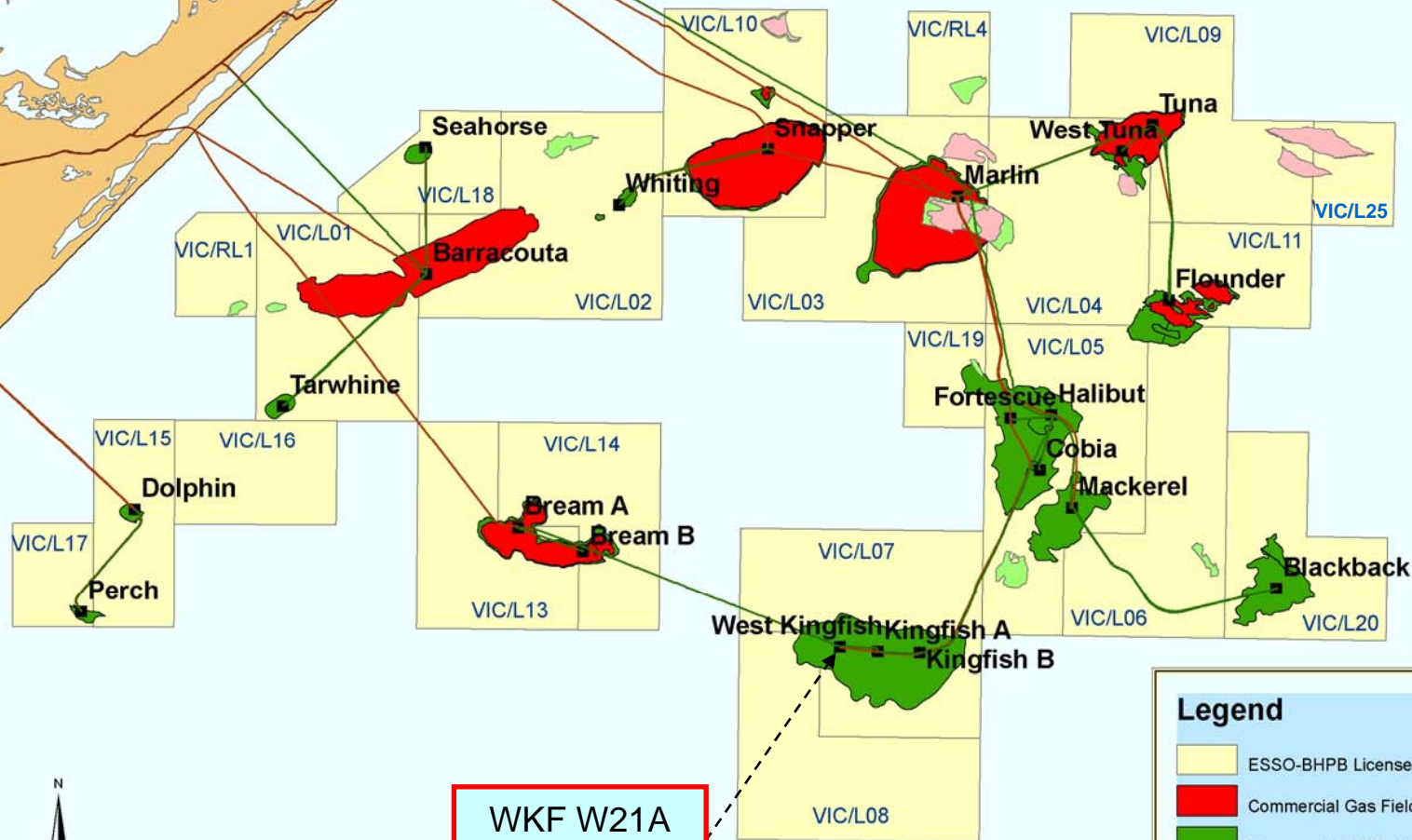
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I. WELL COMPLETION REPORT (W21A).
Fig.1: WEST KINGFISH FIELD LOCATION MAP



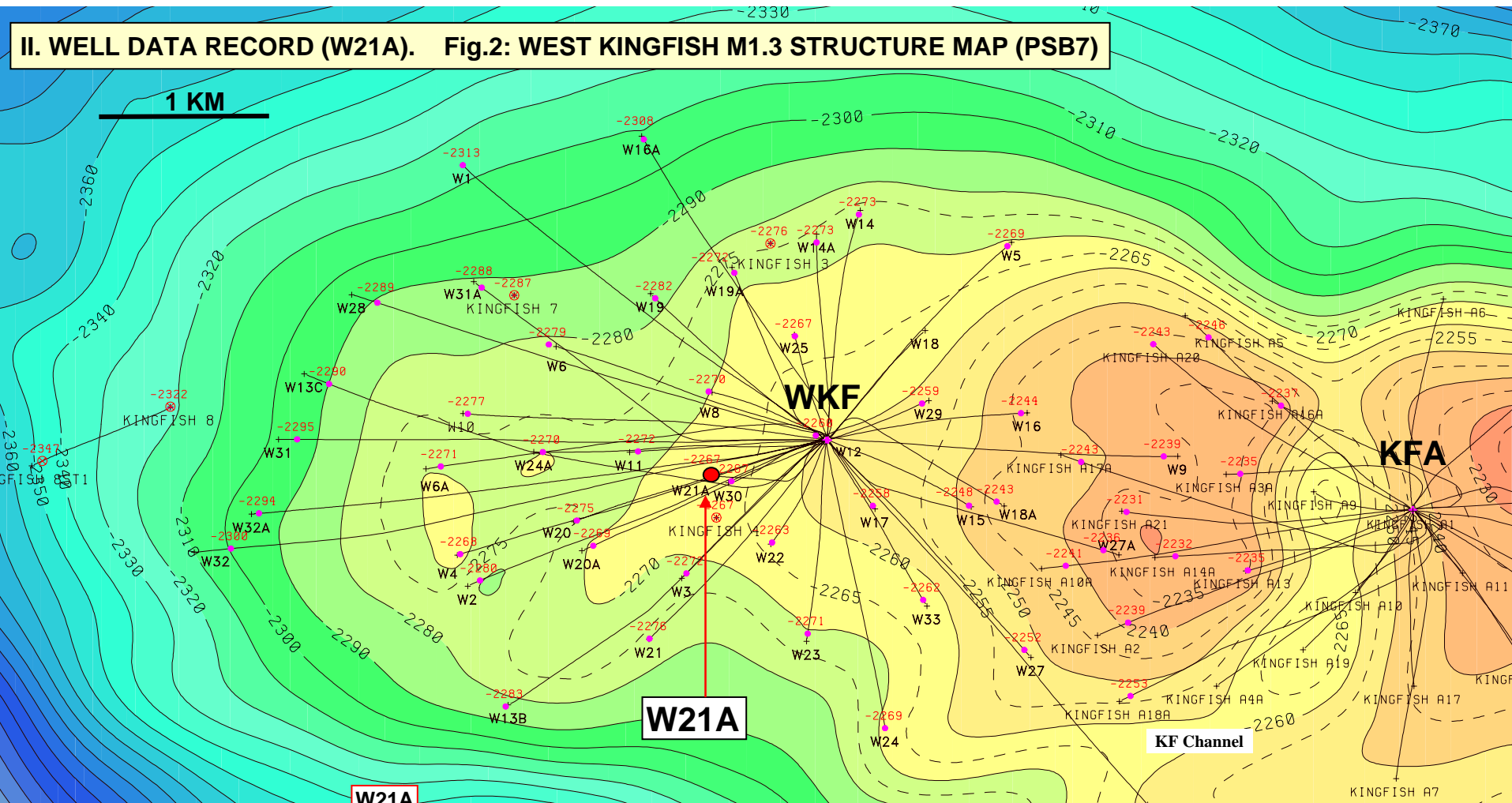
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- ESSO-BHPB License Blocks & Retention Release Areas
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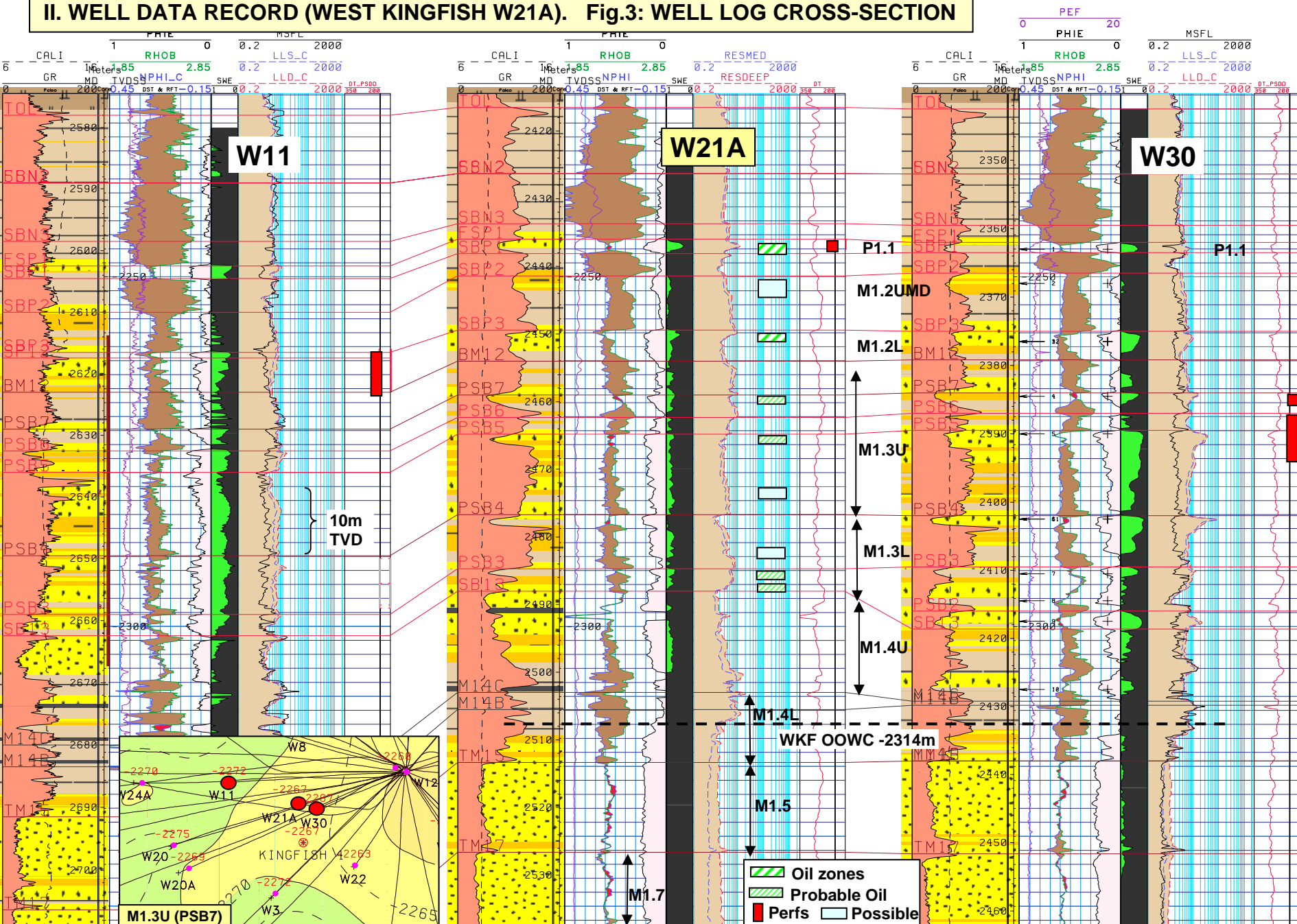
Gippsland Basin, Australia

0 2.5 5 10 15 20 25 Kilometers

II. WELL DATA RECORD (W21A). Fig.2: WEST KINGFISH M1.3 STRUCTURE MAP (PSB7)



II. WELL DATA RECORD (WEST KINGFISH W21A). Fig.3: WELL LOG CROSS-SECTION



II. WELL DATA RECORD – W21A (cont'd)

LOCATION

Field	West Kingfish	Conductor #21 Surface Coordinates	
Well Name	W21A (Loc H)	(MGA94) X	596267.10m E
Conductor Number	Slot 21	(MGA94) Y	5727806.60m N
State	Victoria	Latitude	38° 35' 34.837" S
Permit/Licence	Vic/L7	Longitude	148° 06' 19.494" E
Geological Basin	Gippsland		
Top of Latrobe	2416.5m MDRT	Perforations (driller)	2436.0 – 2437.5m MDRT
	2259.2m TVDRT		2278.1 – 2279.5m TVDRT
	-2225.8m TVDSS		(-2244.7 – 2246.1m TVDSS)
(MGA94) X	595617.4m E		
(MGA94) Y	5727596.8m N		
Latitude	38° 35' 41.89" S	Datum	GDA94 (Geocentric Datum of Australia)
Longitude	148° 05' 52.75" E	Spheroid	GRS80 (Geodetic Ref. System 1980)
		Projection	UTM (Universal Transverse Mercator)
		Map Grid / Zone	MGA Zone 55
		Central Meridian	147 deg E

DATES

Water Depth	76.13 m	Skid Rig	08/08/2006 (P&A W21)
Main Deck Rel to MSL	25.12m	Drillwell Opns W21A	15/08/2006
RT Relative to MSL	33.43m	Kicked Off	15/08/2006
Average Well Angle	14.6 deg in Latrobe	Development Rig Days	14.7
Max Well Angle	42.6 deg @ 649m	NPT Days	0.28
Total Depth	2575.0m MDRT	Rig Released	29/08/2006
	2412.6m TVDRT	I.P. Established	09/09/2006
	(-2379.2m TVDSS)		
Plug Back Depth	2544m MDRT (scraper)		
	2534m (wireline HUD)		

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	Selective single ("tandem")
Overriding Royalty	2.5% (Weeks)	Completion Size	3 ½"
Drilling AFE No.	L0501G658		

WELL CLASSIFICATION

Before Drilling	Oil Development	After Drilling	Cased & Completed - Oil well
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II. WELL DATA RECORD – W21A (cont.)

CASING RECORD

Type	Size (Inches)	Weight (lb/ft)	Grade	Thread	Depth (mMDRT)
Conductor *	20				167.0
Surface *	10¾	40.5	K-55	Buttress (BTC)	667.0
Production	7	26.0	L-80	Vam Top HC	2571.0
(Tubing)	3½	9.2	13Cr-80	Vam Top	2447.0

* Pre-existing W21 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 Pressur e Test (psi)
7" 26 lb/ft	AB CLASS G	380	Gascon 469 30 gal /10 bbl HALAD-413L 30 gal /10 bbl NF-6 0.25gal /10bbl CFR-3L 5.0 gal /10 bbl SCR-100L 5.0 gal /10 bbl	47	78	15.8	TD 2575 to 1930.0	3000

II. WELL DATA RECORD (cont.)

DRILLING PERFORMANCE West Kingfish W21A - Final Well Report

GENERAL

Platform:	West Kingfish	Rig:	453	Reservoir:	P1.1, M1.2, M1.3 Sands
Well:	W21A	Well Slot:	#21	RT-MSL (Rig453)	33.43
Drilling Complexity Index	2.4	Wellwork Complexity Index	2		

DEPTH		PERFORMANCE		MUD	
m MDRT	2575.0	20" Cond. Hole	N/A	Max Wt (ppg)	9.60
m TVDRT	2412.6	12-1/4" Surf. Hole	N/A	Type (Surf. Hole)	N/A
Vert. Section (m)	720.75	8-1/2" Prod. Hole	374 m/day **	Type (Inter. Hole)	N/A
INCLINATION		6" Liner Hole	N/A	Type (Prod. Hole)	KCI/PHPA/Poly/Glycol
Max (deg) / Ave (deg)	42.6 (Tangent) / 14.6 in Latrobe Grp		** time to drill new hole interval from spud to TD, incl connections & NPT.	Type (Liner Hole)	N/A

Comments: ** New hole drilled: 667m to 2575mMDRT (1908m MDRT drilled, 8.5" hole) in 5.1 days.

TIME ANALYSIS

Start Drillwell Opns Date:	15/08/2006, 0500hrs	Finish Date (Rig Release):	29/08/2006, 2100hrs	Kick Off (spud) Reach TD	15/08/06, 2230 21/08/06, 0100
Target Days (P10):	15.0	Total Days:	14.7	% Under Target:	2.0% (under)
AFE Days (P50):	17.5	NPT Days:	0.28	% of Total Days:	1.9%
Supplementary AFE Days (P50):	N/A				

COSTS *(based on projected)*

AFE No.:	L0501G658	Revisions:	--	\$ per m:	A \$2.04 k / metre (new hole)
\$ per day:	A\$ 265 k/day				A\$ 1.51 k / metre* * based on TD not new hole

	Equipment	Materials	Contracts	Allocations	Contingency	Total
AFE (Original)	910,300	589,800	2,505,200	938,700	176,000	A\$5,120,000
AFE (Supplement)	-	-	-	-	-	-
Projected (estim.)	745,000	357,000	2,063,000	551,000	180,000	A\$3,896,000

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 *	20"	167	167	N/A
Surface Casing *	10.75", 40.5 ppf, K-55, Buttress BTC	667	610	11.4 (PIT)
Prod Casing	7", 26.0 ppf, L-80, Vam Top HC	2571	2409	N/A

Comments: * Pre-existing W21 casing strings.

COMPLETION

	Size / Weight / Grade / Thread	EOT mMDRT	mTVDRT	Type
Completion	3-1/2", 9.2ppf, 13Cr80, Vam Top	2447	2288.7	Selective Single ("tandem")

	Upper Interval [m MDRT]	Upper Interval [m TVDRT]	Lower Interval [mMDRT]	Lower Interval [mTVDRT]	Gun Type
Perforation Interval:	2436.0 – 2437.5	2278.1 – 2279.5	NA	NA	HSD

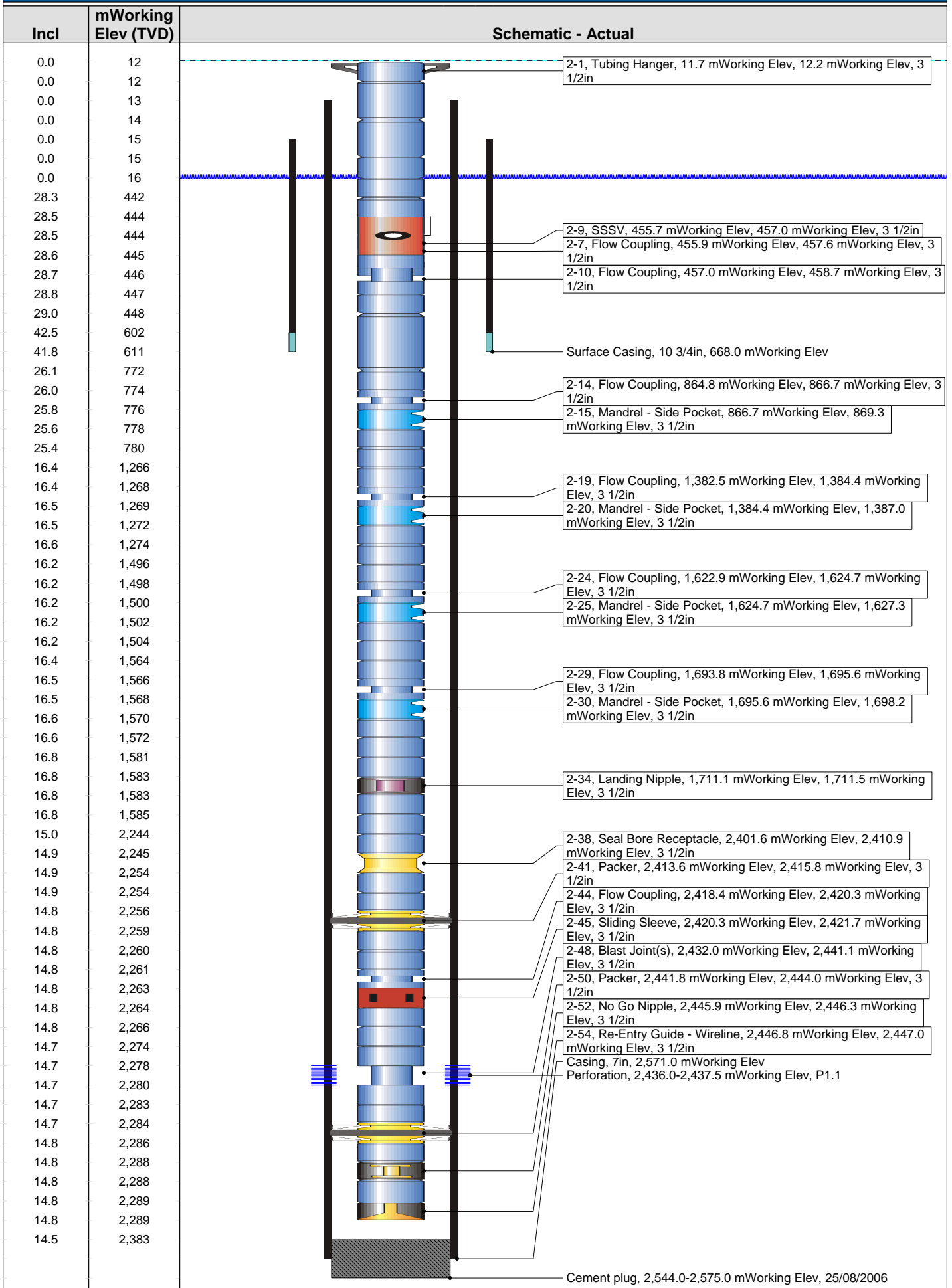
Comments: Completion was 3-1/2" 13Cr80 with TR-SSSV and 3 SPMs for gas lift, and two packers, one SSD (sliding sleeve).

ADDITIONAL

		Top of Interval [m MDRT]	Base of Interval [m MDRT]
Logs Run	GR-Resistivity-Density-Neutron-Sonic-Caliper	667	TD 2575

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

West Kingfish W21A: Existing Schematic



III. SAMPLES – W21A

The cuttings sampling programme for WEST KINGFISH W21A are detailed in the following table:

CUTTINGS SAMPLES

Interval	Formation	Sampling Details
KOP to ~150 m above predicted Top of Latrobe (TOL prognosed at 2413.9m MDRT) 667.0 – 2250.0m MDRT	Gippsland Limestone & Lakes Entrance Fm	Cuttings samples for description only at 30 m intervals.
~150 m above predicted Top of Latrobe to ~Top of Latrobe (TOL prognosed at 2413.9m MDRT) 2250.0 – 2410.0 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 2413.9m MDRT) 2410.0 – 2575.0 mMDRT	Latrobe Group	Three sets of washed and oven dried cuttings at 5 m intervals.

Detailed cuttings descriptions for the interval 667.0 to 2575.0m MDRT (TD) are contained in Appendix 3a.

CONVENTIONAL CORING

No conventional cores were cut in WEST KINGFISH W21A.

SIDEWALL CORING

No sidewall core samples were shot in WEST KINGFISH W21A.

IV. LOGS AND SURVEYS – W21A

Survey/Log	Company	Top (m MDRT)	Bottom (m MDRT)
MWD Run 1, Powerpulse (Directional & GR)	Schlumberger/Anadrill	667.0	2575 TD (GR to 2556m)
Run 1: Drillpipe conveyed Logging: MCG-MDN-MPD- MSS-MDL-MAI	Precision Energy Services compact logging (wireline tools run on drillpipe (Shuttle System, memory mode)	667.0 (2274m top of main logging interval)	2575 TD (2566 bottom of log interval -sonic)

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

V. RESERVOIR & FORMATION TOPS - W21A

Horizon	m TVDSS			m MDRT	mTVT net oil	mTVT net oil
	Predicted Tops	ACTUAL	Diff. (m)	ACTUAL	Pred.	ACTUAL
Base of Miocene High Velocity Channel	-1360	-1378.3	18.3 low	1533.0		
Lakes Entrance Formation	-2000	-2002.2	2.2 low	2184.0		
Top of Latrobe Group (TOL)	-2226	-2225.8	0.2 high	2416.5		
SBN3 (N.asperus Sequence Boundary)	-	-2242.4	-	2433.7		
Top of P1.1 (FSP1)	-2246	-2244.7	1.3 high	2436.0	0.5	1.6
Base of P1.1 (SBP1)	-2248	-2246.7	1.3 high	2438.1		
Top of M1.2UMD (SBP2)	-	-2249.9	-	2441.4		2.2 Poss in shaly rock
Top of M1.2L ("SBP3")	-2259	-2257.6	1.4 high	2449.4	~2.0	1.3
COWC M1.2L		-2259.0		2450.8		
Base of M1.2L (BM12)	-2263	-2262.1	0.9 high	2454.0	-	swept
M1.3U PS7 "shaley" unit					-	0.5 Poss in shaly rock
Top of M1.3Upper reservoir: PS6 sand (PSB7)	-2268	-2266.9	1.1 high	2459.0	~1.0	1.5 Prob*
PS5 sand (PSB6)	-2271	-2270.1	0.9 high	2462.3		0.9 Poss in shaly rock
PS4 sand (PSB5)	-2273	-2272.5	0.5 high	2464.8	(swept?)	0.8 Prob* + 2.4 poss in shaly rock
COWC PS4		-2273.3		2465.6		
Top of M1.3Lower: PS3 sand (PSB4)	-2285	-2284.0	1.0 high	2476.7	(swept)	3.5 Poss in shaly rock
PS2 sand (PSB3)	-2293	-2291.7	1.3 high	2484.7	0.5	1.4 Prob*
COWC PS2		-2294.3		2487.3		
Base of M1.3L (SB13) / Top of M1.4U	-2305	-2294.9	10.1 high	2488.0		swept
M1.4C coal / Top M1.4L	-2312	-2309.5	2.5 high	2503.0	0.5	swept
WKF OOWC	-2314	-2314.0	-	2507.7		
Top of M1.5	-2323	-2319.4	3.6 high	2513.3		
Top of M1.7	-2336	-2332.3	3.7 high	2526.6		
Base of M1.7 (SB17)	-	-2367.1	-	2562.5		
TOTAL DEPTH (TD)	-2370	-2379.2	9.2 low	2575.0		

* Probable oil.

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

COWC = Current Oil-Water Contact

UMD = Upper M.diversus

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 W21A

Objectives

West Kingfish W21A (predrill Location H) was designed to capture remaining oil reserves in the P1.1, M1.2Upper (UMD), M1.2Lower (M1.2L), M1.3 and possibly M1.4 sands in a good drainage position between producing wells W30 and W11 on the main west-plunging ridge of the field (Fig. 2). W30 is a long life producer in the M1.3Upper (M1.3U) reservoirs and therefore unlikely to access the shallower P1.1, M1.2UMD and M1.2L zones until late life, so an additional well was considered necessary to assist recovery of reserves from these shallower reservoirs.

In particular, the P1.1 sand was a key objective of the proposed well, and reservoir simulation had indicated substantial reserves could be recovered from a well located in the vicinity of W30. This area was ideal for ultimate drainage, being at the eastern edge of the reservoir in an updip position and distant from the strong water influx from the southwest. W30 is the most easterly occurrence of the P1.1 channel sand, so the well was located just west of it to improve the chance of encountering some sand.

Cased hole Gamma ray logs run in 2005 suggested P1.1 oil still remained at W30 based on lack of GR activation across the sand, although there was still a risk of the sand being swept because the P1.1 had been swept at the recently drilled W20A (Location D) well. Sand presence was also identified as a distinct risk, because the channel sand is only 1.5m thick at W30 and W11 (Fig.3).

W11 is producing from the M1.2L with a moderately longterm trend, so it was interpreted that the additional well could recover capture reserves from this reservoir, as suggested by reservoir simulation studies. However again sweep was identified as a risk for the M1.2L reservoir, based on increasing water cut at W11 and the well results at W20A where part of the sand was swept.

Some benefit was also likely from additional capture in the M1.3U and M1.3L, based on the good well performance of W30 and updip wells W17, W15 and KFA10A that produce from the M1.3U or L.

The presence of multiple reservoir targets, and their relative independence of each other, increased the attractiveness of the proposed well and reduced its overall risk.

Results

West Kingfish oil development well W21A kicked off below the W21 existing surface casing on 15 August 2006 and drilled a low angle 8 ½" production hole to a Total Depth of 2575m MDRT (-2379.2mTVDSS). The well was logged at TD with Precision Energy Services' compact wireline tools on drillpipe (Shuttle system) and cased and completed with 7" casing and 3 ½" tubing. The well was handed over to production operations on 29 August 2006 to produce from the P1.1 reservoir through a sliding sleeve.

The Top of Latrobe was intersected at 2416.5m MDRT (-2225.8m TVDSS), very close to prediction. The primary objective P1.1 reservoir was encountered at 2436.0m MDRT (-2244.7m TVDSS) about 1.3mTVD high to prediction (Section V- Tops) and 0.4mTVD updip of W30 (Fig.3).

As expected, the P1.1 sand is thin and oil-bearing. The 2m sand contains 1.6m TVD net oil pay of average porosity 18% and water saturation 54%. An OWC was initially interpreted within the sand based on the shape of the resistivity curve but it is now known that this is not a contact based on the water-free oil production performance of the well since completion.

The underlying M1.2UMD sand is shaly, similar to the reservoir quality at the nearby wells W11 and W30. The zone is interpreted to be oil-bearing with 2.2m TVD possible net oil sand, but reservoir quality is poor and the productivity of the zone is in question as the sand has not yet been perforated in these three wells. Further to the east at W22 the sand is much cleaner and quite productive.

The M1.2L sand, which was also a key objective, is oil-bearing only at the top ("ceiling oil"), with 1.3m TVD net oil sand pay of (19%) porosity and (58%) water saturation. The lower part of the sand is swept, similar to the situation at W20A. It is believed that water is encroaching along the eastern edge of the sand from water influx entering from the far northeast. W11 has experienced increasing water cut from this reservoir.

The M1.3 section is interpreted to have a total of 11mTVD of possibly oil-bearing sands. This is comprised of 2.3m "probable" oil and 3.6m "possible" oil in M1.3U sands (PS4-PS7 sands) and 1.4m "probable" oil and 3.5m "possible" oil in M1.3L sands (PS2-PS3 sands). All of these zones have high water saturation, either because they are very shaly or are thin zones close to oil-water contacts, while there is also a distinct possibility that they are swept. Consequently there is uncertainty about their oil potential and productivity.

(Continued next page)

VI. GEOLOGICAL ANALYSIS – WEST KINGFISH W21A (continued)

Results (continued)

However the presence of oil is supported by the production performance of nearby wells such as W30, W17 and W15 which continue to produce oil at high water cut from various M1.3 sands. The distinction between “probable” and “possible” net pay is not a strong one, rather it is more an indication of which sands have a better chance of containing some remaining oil and able to produce oil. This interpretation is based on the resistivity levels, water saturation levels and the information about oil production from the nearby wells.

The M1.4 sands were swept and the M1.5 sands are in the original water zone.

W21A was completed as a 3 ½” selective single (tandem) completion with the P1.1 sand isolated by packers and producing through a sliding sleeve. The reservoir flowed at an initial oil rate of 219 klo/day water-free on 9 September 2006. The rate has gradually declined but after two months of production the zone was still water-free at 113 klo/d during the welltest on 5 November 2006. It is anticipated that the well will remain in the P1.1 zone for an extended period. Based on later well performance, the sleeve may be closed and the W21A recompleted downwards to the M1.3 and M1.2 oil zones.

APPENDIX 1a

WEST KINGFISH W21A

Survey Data



WKF W-21A Final Geodetic Survey

Report Date: August 21, 2006	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: Esso Australia Pty Ltd	Vertical Section Azimuth: 253.150°
Field: Kingfish GDA 94	Vertical Section Origin: S 4.450 m, E 4.060 m
Structure / Slot: West Kingfish / 21	TVD Reference Datum: RKB
Well: 21	TVD Reference Elevation: 33.4 m relative to MSL
Borehole: WKF W-21A	Sea Bed / Ground Level Elevation: -76.130 m relative to MSL
UWI/API#:	Magnetic Declination: 13.250°
Survey Name / Date: WKF W-21A Final / August 17, 2006	Total Field Strength: 60117.449 nT
Tort / AHD / DDI / ERD ratio: 107.174° / 796.58 m / 5.476 / 0.330	Magnetic Dip: -69.060°
Grid Coordinate System: GDA94/MGA94 Zone 55	Declination Date: August 17, 2006
Location Lat/Long: S 38 35 34.837, E 148 6 19.494	Magnetic Declination Model: BGGM 2005
Location Grid N/E Y/X: N 5727806.601 m, E 596267.099 m	North Reference: Grid North
Grid Convergence Angle: -0.68959340°	Total Corr Mag North -> Grid North: +13.940°
Grid Scale Factor: 0.99971412	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	-4.45	4.06	0.00	5727806.60	596267.10	S 38 35 34.837	E 148 6 19.494
	24.53	0.00	0.00	24.53	0.00	-4.45	4.06	0.00	5727806.60	596267.10	S 38 35 34.837	E 148 6 19.494
	108.33	0.50	193.20	108.33	0.18	-4.81	3.98	0.18	5727806.25	596267.02	S 38 35 34.849	E 148 6 19.491
	118.33	0.20	184.90	118.33	0.21	-4.87	3.97	0.91	5727806.19	596267.00	S 38 35 34.851	E 148 6 19.490
	128.33	0.20	60.80	128.33	0.20	-4.87	3.98	1.06	5727806.18	596267.02	S 38 35 34.851	E 148 6 19.491
	138.33	0.20	73.60	138.33	0.17	-4.86	4.01	0.13	5727806.19	596267.05	S 38 35 34.851	E 148 6 19.492
	148.33	0.30	91.90	148.33	0.12	-4.86	4.05	0.38	5727806.19	596267.09	S 38 35 34.850	E 148 6 19.494
	149.33	0.18	79.76	149.33	0.12	-4.86	4.06	3.89	5727806.19	596267.10	S 38 35 34.850	E 148 6 19.494
	179.33	0.36	87.39	179.33	-0.02	-4.84	4.20	0.18	5727806.21	596267.24	S 38 35 34.850	E 148 6 19.500
	209.33	2.95	248.68	209.32	0.66	-5.12	3.57	3.29	5727805.93	596266.61	S 38 35 34.859	E 148 6 19.474
	239.33	6.56	216.13	239.22	2.80	-6.79	1.84	4.37	5727804.27	596264.88	S 38 35 34.914	E 148 6 19.404
	269.33	10.96	220.62	268.86	6.57	-10.34	-1.03	4.45	5727800.72	596262.01	S 38 35 35.030	E 148 6 19.287
	299.33	13.14	224.36	298.20	11.97	-14.94	-5.27	2.31	5727796.11	596257.77	S 38 35 35.181	E 148 6 19.114
	329.33	16.20	224.97	327.22	18.65	-20.34	-10.61	3.06	5727790.72	596252.43	S 38 35 35.358	E 148 6 18.896
	359.33	19.33	221.71	355.78	26.57	-27.01	-16.87	3.28	5727784.05	596246.17	S 38 35 35.577	E 148 6 18.640
	389.33	21.56	222.24	383.89	35.54	-34.80	-23.88	2.24	5727776.26	596239.16	S 38 35 35.832	E 148 6 18.355
	419.33	24.46	221.54	411.50	45.56	-43.53	-31.71	2.91	5727767.53	596231.34	S 38 35 36.119	E 148 6 18.036
	449.33	27.81	220.35	438.43	56.74	-53.51	-40.36	3.39	5727757.55	596222.69	S 38 35 36.446	E 148 6 17.683
	479.33	31.04	219.79	464.56	69.08	-64.79	-49.84	3.24	5727746.27	596213.21	S 38 35 36.815	E 148 6 17.297
	499.33	33.26	219.08	481.49	77.93	-73.01	-56.60	3.38	5727738.06	596206.45	S 38 35 37.084	E 148 6 17.022
	529.33	36.79	218.95	506.05	92.18	-86.39	-67.44	3.53	5727724.68	596195.62	S 38 35 37.522	E 148 6 16.581
	559.33	39.84	218.42	529.59	107.51	-100.91	-79.06	3.07	5727710.17	596184.00	S 38 35 37.998	E 148 6 16.108
	589.33	41.65	217.39	552.32	123.50	-116.36	-91.09	1.93	5727694.72	596171.98	S 38 35 38.503	E 148 6 15.618
	619.33	42.25	217.97	574.63	139.83	-132.23	-103.35	0.71	5727678.86	596159.72	S 38 35 39.023	E 148 6 15.120
	649.33	42.50	217.36	596.79	156.30	-148.24	-115.70	0.48	5727662.86	596147.37	S 38 35 39.547	E 148 6 14.617
Tie-In	665.00	42.42	218.05	608.35	164.91	-156.60	-122.17	0.90	5727654.49	596140.91	S 38 35 39.821	E 148 6 14.354
	677.19	39.93	219.70	617.52	171.54	-162.85	-127.20	6.69	5727648.24	596135.87	S 38 35 40.025	E 148 6 14.149
	706.08	36.86	221.18	640.16	186.63	-176.51	-138.83	3.33	5727634.59	596124.25	S 38 35 40.473	E 148 6 13.675
	735.21	36.63	221.08	663.51	201.41	-189.64	-150.30	0.24	5727621.47	596112.79	S 38 35 40.903	E 148 6 13.208
	764.36	34.35	223.19	687.24	215.91	-202.19	-161.64	2.66	5727608.92	596101.45	S 38 35 41.314	E 148 6 12.746
	792.24	32.26	227.97	710.54	229.46	-212.91	-172.55	3.61	5727598.20	596090.54	S 38 35 41.666	E 148 6 12.300
	821.35	29.58	232.96	735.52	243.24	-222.44	-184.06	3.82	5727588.67	596079.03	S 38 35 41.980	E 148 6 11.829
	850.13	27.09	238.04	760.85	256.23	-230.19	-195.30	3.61	5727580.92	596067.80	S 38 35 42.235	E 148 6 11.369
	878.78	24.88	244.45	786.61	268.49	-236.25	-206.27	3.74	5727574.87	596056.83	S 38 35 42.436	E 148 6 10.918
	907.51	22.32	254.04	812.94	279.93	-240.36	-216.98	4.81	5727570.76	596046.13	S 38 35 42.573	E 148 6 10.478
	935.87	19.63	265.30	839.43	289.98	-242.23	-226.91	5.11	5727568.89	596036.20	S 38 35 42.638	E 148 6 10.069
	964.62	16.91	273.62	866.74	298.62	-242.36	-235.90	3.93	5727568.76	596027.21	S 38 35 42.646	E 148 6 9.697
	992.36	16.14	275.97	893.33	305.95	-241.71	-243.76	1.10	5727569.41	596019.35	S 38 35 42.628	E 148 6 9.372
	1021.45	16.13	274.21	921.27	313.45	-240.99	-251.81	0.50	5727570.13	596011.30	S 38 35 42.607	E 148 6 9.039
	1051.33	16.84	274.60	949.93	321.35	-240.34	-260.26	0.72	5727570.78	596002.85	S 38 35 42.590	E 148 6 8.690
	1079.94	16.74	274.58	977.32	329.04	-239.68	-268.50	0.11	5727571.44	595994.62	S 38 35 42.571	E 148 6 8.349
	1108.73	16.51	274.72	1004.90	336.71	-239.01	-276.71	0.24	5727572.11	595986.41	S 38 35 42.553	E 148 6 8.009
	1137.67	15.96	275.22	1032.69	344.22	-238.31	-284.77	0.59	5727572.81	595978.35	S 38 35 42.533	E 148 6 7.676
	1166.53	15.65	275.85	1060.46	351.49	-237.55	-292.60	0.37	5727573.57	595970.53	S 38 35 42.512	E 148 6 7.352
	1195.36	16.52	273.33	1088.16	358.92	-236.91	-300.56	1.16	5727574.20	595962.57	S 38 35 42.494	E 148 6 7.023
	1223.97	16.14	272.77	1115.61	366.49	-236.49	-308.59	0.43	5727574.63	595954.54	S 38 35 42.484	E 148 6 6.691
	1252.04	17.13	275.01	1142.51	374.00	-235.94	-316.60	1.26	5727575.18	595946.53	S 38 35 42.469	E 148 6 6.359
	1281.39	16.92	276.19	1170.57	381.94	-235.10	-325.16	0.41	5727576.02	595937.98	S 38 35 42.445	E 148 6 6.006

1308.83	16.36	276.08	1196.86	389.17	-234.26	-332.97	0.61	5727576.86	595930.17	S 38 35 42.421	E 148 6 5.682
1337.04	16.59	276.52	1223.92	396.53	-233.38	-340.92	0.28	5727577.74	595922.22	S 38 35 42.395	E 148 6 5.353
1365.45	15.91	276.82	1251.19	403.82	-232.46	-348.82	0.72	5727578.66	595914.32	S 38 35 42.369	E 148 6 5.027
1394.31	16.76	275.59	1278.89	411.29	-231.58	-356.89	0.95	5727579.53	595906.26	S 38 35 42.343	E 148 6 4.693
1423.25	16.56	275.34	1306.61	418.96	-230.79	-365.14	0.22	5727580.32	595898.00	S 38 35 42.321	E 148 6 4.351
1452.77	17.06	274.34	1334.87	426.90	-230.07	-373.65	0.59	5727581.04	595889.50	S 38 35 42.301	E 148 6 3.999
1481.30	16.85	274.00	1362.16	434.66	-229.47	-381.95	0.24	5727581.65	595881.20	S 38 35 42.285	E 148 6 3.656
1509.94	16.42	273.69	1389.60	442.33	-228.92	-390.13	0.46	5727582.20	595873.02	S 38 35 42.270	E 148 6 3.318
1538.72	16.19	274.01	1417.22	449.89	-228.38	-398.19	0.26	5727582.74	595864.96	S 38 35 42.255	E 148 6 2.984
1567.21	16.91	274.05	1444.53	457.47	-227.81	-406.29	0.76	5727583.31	595856.87	S 38 35 42.240	E 148 6 2.650
1595.93	16.56	273.86	1472.04	465.20	-227.23	-414.54	0.37	5727583.88	595848.62	S 38 35 42.225	E 148 6 2.308
1624.82	16.20	272.72	1499.75	472.85	-226.77	-422.67	0.50	5727584.35	595840.49	S 38 35 42.213	E 148 6 1.972
1653.78	15.89	272.66	1527.59	480.39	-226.39	-430.67	0.32	5727584.72	595832.50	S 38 35 42.204	E 148 6 1.642
1682.25	16.20	273.02	1554.95	487.80	-226.00	-438.52	0.34	5727585.11	595824.64	S 38 35 42.194	E 148 6 1.317
1710.96	16.84	273.08	1582.47	495.48	-225.57	-446.68	0.67	5727585.55	595816.49	S 38 35 42.183	E 148 6 0.980
1739.64	16.45	272.51	1609.95	503.22	-225.17	-454.88	0.44	5727585.95	595808.29	S 38 35 42.173	E 148 6 0.640
1768.51	16.06	272.44	1637.67	510.84	-224.82	-462.96	0.41	5727586.30	595800.22	S 38 35 42.165	E 148 6 0.307
1797.10	16.64	274.78	1665.10	518.38	-224.31	-470.99	0.92	5727586.81	595792.19	S 38 35 42.152	E 148 5 59.974
1825.91	16.40	275.93	1692.72	525.96	-223.54	-479.14	0.42	5727587.57	595784.04	S 38 35 42.130	E 148 5 59.637
1854.53	16.95	275.61	1720.14	533.54	-222.72	-487.31	0.58	5727588.40	595775.87	S 38 35 42.107	E 148 5 59.299
1883.70	16.73	275.54	1748.06	541.36	-221.90	-495.72	0.23	5727589.22	595767.46	S 38 35 42.083	E 148 5 58.951
1912.38	17.22	272.17	1775.49	549.19	-221.34	-504.07	1.15	5727589.78	595759.11	S 38 35 42.068	E 148 5 58.606
1941.17	16.97	271.62	1803.00	557.20	-221.06	-512.53	0.31	5727590.06	595750.65	S 38 35 42.062	E 148 5 58.256
1969.45	16.64	271.54	1830.08	564.96	-220.83	-520.71	0.35	5727590.28	595742.48	S 38 35 42.058	E 148 5 57.918
1993.96	16.61	272.08	1853.56	571.60	-220.61	-527.71	0.19	5727590.50	595735.48	S 38 35 42.054	E 148 5 57.629
2027.05	17.01	271.73	1885.24	580.66	-220.29	-537.28	0.37	5727590.82	595725.91	S 38 35 42.047	E 148 5 57.233
2055.82	16.58	271.46	1912.78	588.55	-220.06	-545.59	0.46	5727591.05	595717.61	S 38 35 42.043	E 148 5 56.890
2084.23	16.87	274.01	1939.99	596.25	-219.67	-553.75	0.83	5727591.44	595709.45	S 38 35 42.033	E 148 5 56.552
2113.10	16.55	274.80	1967.64	603.99	-219.03	-562.03	0.41	5727592.08	595701.17	S 38 35 42.016	E 148 5 56.210
2141.97	16.38	274.37	1995.33	611.60	-218.38	-570.19	0.22	5727592.73	595693.02	S 38 35 41.998	E 148 5 55.873
2171.00	16.50	274.35	2023.17	619.26	-217.75	-578.38	0.12	5727593.36	595684.83	S 38 35 41.981	E 148 5 55.534
2199.51	16.28	273.91	2050.52	626.77	-217.17	-586.40	0.27	5727593.94	595676.81	S 38 35 41.965	E 148 5 55.202
2228.27	16.61	273.78	2078.10	634.39	-216.63	-594.52	0.35	5727594.48	595668.69	S 38 35 41.951	E 148 5 54.866
2257.06	16.34	273.68	2105.71	642.03	-216.10	-602.67	0.28	5727595.02	595660.54	S 38 35 41.937	E 148 5 54.529
2286.05	16.20	272.86	2133.54	649.66	-215.63	-610.78	0.28	5727595.48	595652.43	S 38 35 41.925	E 148 5 54.194
2314.82	16.02	272.40	2161.18	657.18	-215.27	-618.76	0.23	5727595.84	595644.46	S 38 35 41.916	E 148 5 53.864
2343.64	15.52	272.50	2188.92	664.58	-214.93	-626.58	0.52	5727596.18	595636.64	S 38 35 41.908	E 148 5 53.541
2372.62	15.37	272.17	2216.85	671.87	-214.62	-634.29	0.18	5727596.49	595628.93	S 38 35 41.901	E 148 5 53.222
2401.46	14.94	271.76	2244.69	679.00	-214.36	-641.83	0.46	5727596.75	595621.40	S 38 35 41.895	E 148 5 52.910
2429.92	14.70	271.80	2272.20	685.90	-214.13	-649.10	0.25	5727596.98	595614.12	S 38 35 41.891	E 148 5 52.610
2458.94	14.82	271.25	2300.26	692.92	-213.94	-656.49	0.19	5727597.18	595606.73	S 38 35 41.887	E 148 5 52.304
2487.18	14.73	270.75	2327.57	699.77	-213.81	-663.69	0.17	5727597.30	595599.53	S 38 35 41.886	E 148 5 52.006
2515.87	14.40	270.31	2355.34	706.66	-213.74	-670.91	0.36	5727597.37	595592.32	S 38 35 41.887	E 148 5 51.708
2544.77	14.48	269.61	2383.32	713.56	-213.75	-678.12	0.20	5727597.36	595585.12	S 38 35 41.890	E 148 5 51.411
2553.75	14.42	269.71	2392.02	715.71	-213.76	-680.36	0.22	5727597.35	595582.88	S 38 35 41.891	E 148 5 51.318
2575.00	14.28	269.95	2412.61	720.75	-213.78	-685.62	0.21	5727597.33	595577.61	S 38 35 41.894	E 148 5 51.100

Projected to TD

Survey Type: Definitive Survey

Survey Error Model: SLB ISCWSA version 24 *** 3-D 73.85% Confidence 2.0000 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-21 -> WKF-21 Final
109.56	148.33	Act-Stns	SLB_MWD-STD	WKF-21 -> WKF-21 Final
148.33	665.00	Act-Stns	SLB_CNSG+CASING	WKF-21 -> WKF-21 Final
665.00	2575.00	Act-Stns	SLB_MWD-STD	WKF W-21A -> WKF W-21A Final

APPENDIX 1b

WEST KINGFISH W21A

Survey Data Listing

Report Date:	24 November 2006
Well:	West Kingfish W21A
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 34.837, E 148 6 19.494
Location Grid N/E:	N 5727806.601 m, E 596267.099 m
Survey Azimuth Reference:	Grid North

*Dnorth and Deast are with respect to top of conductor W21, 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	-0.03	33.43	0	0	5727806.60	596267.10
5	0	0	4.97	28.43	0	0	5727806.60	596267.10
10	0	0	9.97	23.43	0	0	5727806.60	596267.10
15	0	0	14.97	18.43	0	0	5727806.60	596267.10
20	0	0	19.97	13.43	0	0	5727806.60	596267.10
25	0	359.07	24.97	8.43	0	0	5727806.60	596267.10
30	0.03	349.12	29.97	3.43	0	0	5727806.60	596267.10
35	0.06	339.17	34.97	-1.57	-0.01	0	5727806.59	596267.10
40	0.09	329.21	39.97	-6.57	-0.01	0	5727806.59	596267.10
45	0.12	319.26	44.97	-11.57	-0.02	-0.01	5727806.58	596267.10
50	0.15	309.31	49.97	-16.57	-0.03	-0.01	5727806.57	596267.09
55	0.18	299.36	54.97	-21.57	-0.05	-0.01	5727806.55	596267.09
60	0.21	289.40	59.97	-26.57	-0.06	-0.01	5727806.54	596267.09
65	0.24	279.45	64.97	-31.57	-0.08	-0.02	5727806.52	596267.08
70	0.27	269.50	69.97	-36.57	-0.11	-0.02	5727806.49	596267.08
75	0.30	259.55	74.97	-41.57	-0.13	-0.03	5727806.47	596267.07
80	0.33	249.60	79.97	-46.57	-0.16	-0.04	5727806.44	596267.07
85	0.36	239.64	84.97	-51.57	-0.19	-0.04	5727806.41	596267.06
90	0.39	229.69	89.97	-56.57	-0.22	-0.05	5727806.38	596267.05
95	0.42	219.74	94.97	-61.57	-0.25	-0.06	5727806.35	596267.04
100	0.45	209.79	99.97	-66.57	-0.29	-0.07	5727806.31	596267.04
105	0.48	199.83	104.97	-71.57	-0.33	-0.08	5727806.27	596267.03
110	0.45	191.82	109.97	-76.57	-0.37	-0.09	5727806.23	596267.02
115	0.30	187.67	114.97	-81.57	-0.40	-0.09	5727806.20	596267.01
120	0.20	164.21	119.97	-86.57	-0.42	-0.09	5727806.18	596267.01
125	0.20	102.16	124.97	-91.57	-0.43	-0.09	5727806.17	596267.01
130	0.20	62.93	129.97	-96.57	-0.42	-0.08	5727806.18	596267.03
135	0.20	69.33	134.97	-101.57	-0.42	-0.06	5727806.18	596267.04
140	0.22	76.65	139.97	-106.57	-0.41	-0.04	5727806.19	596267.06
145	0.27	85.80	144.97	-111.57	-0.41	-0.02	5727806.19	596267.08
150	0.18	79.93	149.97	-116.57	-0.41	0.00	5727806.19	596267.10
155	0.21	81.20	154.97	-121.57	-0.40	0.02	5727806.20	596267.12
160	0.24	82.47	159.97	-126.57	-0.40	0.04	5727806.20	596267.14
165	0.27	83.74	164.97	-131.57	-0.40	0.06	5727806.20	596267.16
170	0.30	85.02	169.97	-136.57	-0.40	0.08	5727806.20	596267.19
175	0.33	86.29	174.97	-141.57	-0.40	0.11	5727806.20	596267.21
180	0.42	90.98	179.97	-146.57	-0.39	0.14	5727806.21	596267.24
185	0.85	117.86	184.97	-151.57	-0.40	0.15	5727806.20	596267.25
190	1.28	144.74	189.97	-156.57	-0.43	0.10	5727806.17	596267.20
195	1.71	171.62	194.97	-161.57	-0.47	0.02	5727806.13	596267.12
200	2.14	198.50	199.97	-166.57	-0.52	-0.12	5727806.08	596266.99
205	2.58	225.38	204.96	-171.56	-0.60	-0.30	5727806.00	596266.81
210	3.03	247.96	209.96	-176.56	-0.68	-0.52	5727805.92	596266.59
215	3.63	242.53	214.95	-181.55	-0.81	-0.77	5727805.79	596266.33

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
220	4.23	237.11	219.94	-186.54	-1.01	-1.03	5727805.59	596266.07
225	4.84	231.68	224.92	-191.52	-1.26	-1.32	5727805.34	596265.79
230	5.44	226.26	229.90	-196.50	-1.58	-1.61	5727805.02	596265.49
235	6.04	220.83	234.88	-201.48	-1.96	-1.93	5727804.64	596265.17
240	6.66	216.23	239.85	-206.45	-2.40	-2.26	5727804.20	596264.84
245	7.39	216.98	244.81	-211.41	-2.88	-2.63	5727803.72	596264.48
250	8.12	217.73	249.76	-216.37	-3.42	-3.04	5727803.18	596264.06
255	8.86	218.47	254.71	-221.31	-3.99	-3.50	5727802.61	596263.60
260	9.59	219.22	259.65	-226.25	-4.61	-4.01	5727801.99	596263.09
265	10.32	219.97	264.57	-231.17	-5.27	-4.56	5727801.33	596262.54
270	11.01	220.70	269.48	-236.08	-5.98	-5.16	5727800.62	596261.94
275	11.37	221.33	274.39	-240.99	-6.71	-5.80	5727799.89	596261.30
280	11.74	221.95	279.29	-245.89	-7.45	-6.47	5727799.15	596260.63
285	12.10	222.57	284.18	-250.78	-8.22	-7.16	5727798.38	596259.94
290	12.46	223.20	289.07	-255.67	-8.99	-7.89	5727797.61	596259.21
295	12.83	223.82	293.94	-260.55	-9.78	-8.64	5727796.82	596258.46
300	13.21	224.37	298.82	-265.42	-10.59	-9.43	5727796.01	596257.68
305	13.72	224.48	303.68	-270.28	-11.42	-10.24	5727795.18	596256.86
310	14.23	224.58	308.53	-275.13	-12.28	-11.09	5727794.32	596256.01
315	14.74	224.68	313.37	-279.97	-13.17	-11.97	5727793.43	596255.14
320	15.25	224.78	318.20	-284.80	-14.09	-12.88	5727792.51	596254.23
325	15.76	224.88	323.02	-289.62	-15.04	-13.82	5727791.56	596253.28
330	16.27	224.90	327.83	-294.43	-16.01	-14.79	5727790.59	596252.31
335	16.79	224.35	332.62	-299.22	-17.02	-15.79	5727789.58	596251.31
340	17.31	223.81	337.40	-304.00	-18.08	-16.81	5727788.52	596250.29
345	17.83	223.27	342.17	-308.77	-19.18	-17.84	5727787.42	596249.26
350	18.36	222.72	346.92	-313.52	-20.31	-18.90	5727786.29	596248.20
355	18.88	222.18	351.66	-318.26	-21.49	-19.97	5727785.11	596247.13
360	19.38	221.72	356.38	-322.98	-22.71	-21.07	5727783.89	596246.03
365	19.75	221.81	361.09	-327.69	-23.96	-22.18	5727782.64	596244.92
370	20.12	221.90	365.79	-332.39	-25.23	-23.32	5727781.37	596243.78
375	20.49	221.99	370.48	-337.08	-26.52	-24.48	5727780.08	596242.62
380	20.87	222.08	375.16	-341.76	-27.83	-25.66	5727778.77	596241.44
385	21.24	222.16	379.83	-346.43	-29.16	-26.87	5727777.44	596240.23
390	21.62	222.22	384.48	-351.08	-30.51	-28.09	5727776.09	596239.01
395	22.11	222.11	389.12	-355.72	-31.89	-29.34	5727774.71	596237.76
400	22.59	221.99	393.75	-360.35	-33.31	-30.62	5727773.29	596236.49
405	23.07	221.87	398.36	-364.96	-34.75	-31.91	5727771.85	596235.19
410	23.56	221.76	402.95	-369.55	-36.22	-33.23	5727770.38	596233.87
415	24.04	221.64	407.52	-374.12	-37.73	-34.57	5727768.87	596232.53
420	24.53	221.51	412.08	-378.68	-39.27	-35.94	5727767.33	596231.17
425	25.09	221.32	416.62	-383.22	-40.84	-37.32	5727765.76	596229.78
430	25.65	221.12	421.14	-387.74	-42.45	-38.73	5727764.15	596228.37
435	26.21	220.92	425.63	-392.23	-44.10	-40.17	5727762.50	596226.94
440	26.77	220.72	430.11	-396.71	-45.79	-41.62	5727760.81	596225.48
445	27.33	220.52	434.56	-401.16	-47.52	-43.10	5727759.08	596224.00
450	27.88	220.34	438.99	-405.59	-49.28	-44.60	5727757.32	596222.50
455	28.42	220.24	443.40	-410.00	-51.08	-46.13	5727755.52	596220.97
460	28.96	220.15	447.79	-414.39	-52.91	-47.68	5727753.69	596219.43
465	29.50	220.06	452.15	-418.75	-54.78	-49.25	5727751.82	596217.85
470	30.04	219.96	456.49	-423.09	-56.68	-50.84	5727749.92	596216.26
475	30.57	219.87	460.81	-427.41	-58.61	-52.46	5727747.99	596214.64
480	31.11	219.77	465.10	-431.70	-60.58	-54.10	5727746.02	596213.00
485	31.67	219.59	469.37	-435.97	-62.59	-55.76	5727744.01	596211.34
490	32.22	219.41	473.61	-440.21	-64.63	-57.45	5727741.97	596209.66
495	32.78	219.23	477.83	-444.43	-66.71	-59.15	5727739.89	596207.95
500	33.34	219.08	482.02	-448.62	-68.82	-60.87	5727737.78	596206.23
505	33.93	219.06	486.18	-452.78	-70.97	-62.61	5727735.63	596204.49
510	34.52	219.03	490.32	-456.92	-73.15	-64.38	5727733.45	596202.72

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
515	35.10	219.01	494.42	-461.02	-75.37	-66.18	5727731.23	596200.92
520	35.69	218.99	498.50	-465.10	-77.62	-68.00	5727728.98	596199.10
525	36.28	218.97	502.55	-469.15	-79.90	-69.85	5727726.70	596197.25
530	36.86	218.94	506.56	-473.16	-82.22	-71.72	5727724.38	596195.38
535	37.37	218.85	510.55	-477.15	-84.57	-73.62	5727722.03	596193.49
540	37.87	218.76	514.51	-481.11	-86.95	-75.53	5727719.65	596191.57
545	38.38	218.67	518.44	-485.04	-89.35	-77.46	5727717.25	596189.64
550	38.89	218.58	522.35	-488.95	-91.79	-79.41	5727714.81	596187.70
555	39.40	218.50	526.23	-492.83	-94.26	-81.37	5727712.34	596185.73
560	39.88	218.40	530.08	-496.68	-96.76	-83.36	5727709.84	596183.75
565	40.18	218.23	533.90	-500.51	-99.28	-85.35	5727707.32	596181.75
570	40.48	218.05	537.72	-504.32	-101.83	-87.35	5727704.77	596179.76
575	40.79	217.88	541.51	-508.11	-104.39	-89.35	5727702.21	596177.75
580	41.09	217.71	545.29	-511.89	-106.98	-91.36	5727699.62	596175.75
585	41.39	217.54	549.05	-515.65	-109.59	-93.37	5727697.01	596173.74
590	41.66	217.40	552.79	-519.39	-112.22	-95.38	5727694.38	596171.72
595	41.76	217.50	556.52	-523.12	-114.86	-97.41	5727691.74	596169.70
600	41.86	217.60	560.25	-526.85	-117.51	-99.44	5727689.09	596167.67
605	41.96	217.69	563.97	-530.57	-120.15	-101.48	5727686.45	596165.63
610	42.06	217.79	567.69	-534.29	-122.80	-103.52	5727683.80	596163.58
615	42.16	217.89	571.39	-538.00	-125.44	-105.58	5727681.16	596161.52
620	42.26	217.96	575.10	-541.70	-128.09	-107.64	5727678.51	596159.46
625	42.30	217.85	578.80	-545.40	-130.74	-109.71	5727675.86	596157.39
630	42.34	217.75	582.50	-549.10	-133.40	-111.77	5727673.20	596155.33
635	42.38	217.65	586.19	-552.79	-136.07	-113.83	5727670.53	596153.27
640	42.42	217.55	589.88	-556.48	-138.74	-115.89	5727667.86	596151.21
645	42.46	217.45	593.57	-560.17	-141.42	-117.94	5727665.18	596149.16
650	42.50	217.39	597.26	-563.86	-144.10	-119.99	5727662.50	596147.11
655	42.47	217.61	600.95	-567.55	-146.78	-122.05	5727659.82	596145.05
660	42.45	217.83	604.63	-571.24	-149.45	-124.11	5727657.15	596142.99
665	42.42	218.05	608.33	-574.93	-152.11	-126.19	5727654.49	596140.91
670	41.40	218.73	612.05	-578.65	-154.72	-128.26	5727651.87	596138.84
675	40.38	219.40	615.83	-582.43	-157.27	-130.32	5727649.33	596136.78
680	39.63	219.84	619.66	-586.26	-159.74	-132.37	5727646.86	596134.73
685	39.10	220.10	623.52	-590.13	-162.17	-134.41	5727644.43	596132.70
690	38.57	220.36	627.42	-594.02	-164.56	-136.43	5727642.04	596130.67
695	38.04	220.61	631.34	-597.94	-166.92	-138.44	5727639.68	596128.66
700	37.51	220.87	635.29	-601.89	-169.24	-140.44	5727637.36	596126.66
705	36.97	221.12	639.28	-605.88	-171.53	-142.42	5727635.07	596124.68
710	36.83	221.17	643.28	-609.88	-173.78	-144.40	5727632.82	596122.70
715	36.79	221.15	647.28	-613.88	-176.04	-146.37	5727630.56	596120.73
720	36.75	221.13	651.28	-617.88	-178.29	-148.34	5727628.31	596118.77
725	36.71	221.12	655.29	-621.89	-180.54	-150.30	5727626.06	596116.80
730	36.67	221.10	659.30	-625.90	-182.79	-152.27	5727623.81	596114.84
735	36.63	221.08	663.31	-629.91	-185.04	-154.23	5727621.56	596112.87
740	36.26	221.43	667.33	-633.93	-187.28	-156.19	5727619.32	596110.92
745	35.86	221.79	671.38	-637.98	-189.48	-158.14	5727617.12	596108.96
750	35.47	222.15	675.44	-642.04	-191.65	-160.09	5727614.95	596107.02
755	35.08	222.51	679.52	-646.12	-193.78	-162.03	5727612.82	596105.07
760	34.69	222.87	683.62	-650.22	-195.88	-163.97	5727610.72	596103.13
765	34.30	223.30	687.74	-654.34	-197.95	-165.90	5727608.65	596101.20
770	33.93	224.16	691.88	-658.48	-199.98	-167.84	5727606.62	596099.26
775	33.55	225.01	696.04	-662.64	-201.96	-169.78	5727604.64	596097.32
780	33.18	225.87	700.22	-666.82	-203.89	-171.74	5727602.71	596095.36
785	32.80	226.73	704.41	-671.01	-205.77	-173.70	5727600.83	596093.40
790	32.43	227.59	708.63	-675.23	-207.60	-175.68	5727599.00	596091.42
795	32.01	228.44	712.86	-679.46	-209.39	-177.66	5727597.21	596089.44
800	31.55	229.30	717.11	-683.71	-211.12	-179.64	5727595.48	596087.46
805	31.09	230.16	721.38	-687.98	-212.80	-181.62	5727593.80	596085.48

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
810	30.62	231.01	725.67	-692.27	-214.43	-183.59	5727592.17	596083.51
815	30.16	231.87	729.99	-696.59	-216.01	-185.57	5727590.59	596081.53
820	29.70	232.73	734.32	-700.92	-217.54	-187.54	5727589.06	596079.56
825	29.26	233.60	738.67	-705.27	-219.01	-189.51	5727587.59	596077.59
830	28.83	234.49	743.04	-709.64	-220.44	-191.47	5727586.16	596075.63
835	28.40	235.37	747.43	-714.03	-221.82	-193.43	5727584.78	596073.68
840	27.97	236.25	751.84	-718.44	-223.15	-195.38	5727583.45	596071.73
845	27.53	237.13	756.27	-722.87	-224.43	-197.32	5727582.17	596069.79
850	27.10	238.02	760.71	-727.31	-225.66	-199.25	5727580.94	596067.85
855	26.71	239.13	765.17	-731.77	-226.84	-201.18	5727579.76	596065.92
860	26.33	240.25	769.64	-736.24	-227.97	-203.10	5727578.63	596064.00
865	25.94	241.37	774.13	-740.73	-229.05	-205.02	5727577.55	596062.08
870	25.56	242.49	778.64	-745.24	-230.07	-206.93	5727576.53	596060.17
875	25.17	243.60	783.16	-749.76	-231.05	-208.84	5727575.55	596058.26
880	24.77	244.86	787.69	-754.29	-231.97	-210.74	5727574.63	596056.36
885	24.33	246.53	792.24	-758.84	-232.83	-212.63	5727573.77	596054.47
890	23.88	248.20	796.80	-763.40	-233.62	-214.51	5727572.98	596052.60
895	23.43	249.86	801.39	-767.99	-234.34	-216.37	5727572.26	596050.73
900	22.99	251.53	805.98	-772.58	-235.00	-218.22	5727571.60	596048.88
905	22.54	253.20	810.60	-777.20	-235.59	-220.06	5727571.01	596047.04
910	22.08	255.03	815.22	-781.82	-236.11	-221.89	5727570.49	596045.22
915	21.61	257.01	819.86	-786.46	-236.57	-223.68	5727570.03	596043.42
920	21.14	259.00	824.52	-791.12	-236.95	-225.46	5727569.65	596041.64
925	20.66	260.98	829.20	-795.80	-237.27	-227.21	5727569.33	596039.90
930	20.19	262.97	833.88	-800.48	-237.52	-228.93	5727569.08	596038.18
935	19.71	264.95	838.59	-805.18	-237.71	-230.62	5727568.89	596036.49
940	19.24	266.50	843.30	-809.90	-237.83	-232.28	5727568.77	596034.82
945	18.77	267.94	848.03	-814.63	-237.92	-233.90	5727568.68	596033.20
950	18.29	269.39	852.77	-819.37	-237.96	-235.49	5727568.64	596031.61
955	17.82	270.84	857.52	-824.12	-237.97	-237.03	5727568.63	596030.07
960	17.35	272.28	862.29	-828.89	-237.93	-238.54	5727568.67	596028.56
965	16.90	273.65	867.07	-833.67	-237.86	-240.01	5727568.74	596027.09
970	16.76	274.08	871.86	-838.46	-237.76	-241.45	5727568.84	596025.65
975	16.62	274.50	876.64	-843.25	-237.66	-242.88	5727568.94	596024.22
980	16.48	274.92	881.44	-848.04	-237.54	-244.30	5727569.06	596022.80
985	16.34	275.35	886.23	-852.83	-237.41	-245.71	5727569.19	596021.39
990	16.21	275.77	891.03	-857.63	-237.28	-247.10	5727569.32	596020.00
995	16.14	275.81	895.84	-862.44	-237.14	-248.49	5727569.46	596018.61
1000	16.14	275.51	900.64	-867.24	-237.00	-249.87	5727569.60	596017.23
1005	16.14	275.21	905.44	-872.04	-236.87	-251.25	5727569.73	596015.85
1010	16.13	274.90	910.25	-876.85	-236.75	-252.64	5727569.85	596014.46
1015	16.13	274.60	915.05	-881.65	-236.63	-254.02	5727569.97	596013.08
1020	16.13	274.30	919.85	-886.45	-236.52	-255.41	5727570.08	596011.70
1025	16.21	274.26	924.65	-891.25	-236.42	-256.79	5727570.18	596010.31
1030	16.33	274.32	929.45	-896.05	-236.32	-258.19	5727570.28	596008.91
1035	16.45	274.39	934.25	-900.85	-236.21	-259.60	5727570.39	596007.50
1040	16.57	274.45	939.04	-905.64	-236.10	-261.02	5727570.50	596006.09
1045	16.69	274.52	943.84	-910.44	-235.99	-262.44	5727570.61	596004.66
1050	16.81	274.58	948.62	-915.22	-235.87	-263.88	5727570.73	596003.22
1055	16.83	274.60	953.41	-920.01	-235.76	-265.32	5727570.84	596001.78
1060	16.81	274.59	958.20	-924.79	-235.64	-266.76	5727570.96	596000.34
1065	16.79	274.59	962.98	-929.58	-235.53	-268.20	5727571.07	595998.90
1070	16.77	274.59	967.77	-934.37	-235.41	-269.64	5727571.19	595997.46
1075	16.76	274.58	972.56	-939.16	-235.30	-271.08	5727571.30	595996.02
1080	16.74	274.58	977.34	-943.94	-235.18	-272.52	5727571.42	595994.59
1085	16.70	274.60	982.13	-948.73	-235.07	-273.95	5727571.53	595993.15
1090	16.66	274.63	986.92	-953.52	-234.95	-275.38	5727571.65	595991.72
1095	16.62	274.65	991.71	-958.31	-234.83	-276.81	5727571.77	595990.30
1100	16.58	274.68	996.51	-963.11	-234.72	-278.23	5727571.88	595988.87

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1105	16.54	274.70	1001.30	-967.90	-234.60	-279.65	5727572.00	595987.45
1110	16.49	274.74	1006.09	-972.69	-234.48	-281.07	5727572.11	595986.04
1115	16.39	274.83	1010.89	-977.49	-234.37	-282.48	5727572.23	595984.63
1120	16.30	274.91	1015.68	-982.28	-234.25	-283.88	5727572.35	595983.22
1125	16.20	275.00	1020.49	-987.09	-234.13	-285.27	5727572.47	595981.83
1130	16.11	275.09	1025.29	-991.89	-234.00	-286.66	5727572.59	595980.45
1135	16.01	275.17	1030.09	-996.69	-233.88	-288.03	5727572.72	595979.07
1140	15.93	275.27	1034.90	-1001.50	-233.76	-289.41	5727572.84	595977.70
1145	15.88	275.38	1039.71	-1006.31	-233.63	-290.77	5727572.97	595976.33
1150	15.83	275.49	1044.52	-1011.12	-233.50	-292.13	5727573.10	595974.97
1155	15.77	275.60	1049.33	-1015.93	-233.37	-293.48	5727573.23	595973.62
1160	15.72	275.71	1054.14	-1020.74	-233.24	-294.83	5727573.36	595972.27
1165	15.67	275.82	1058.95	-1025.56	-233.10	-296.18	5727573.50	595970.92
1170	15.75	275.55	1063.77	-1030.37	-232.96	-297.52	5727573.64	595969.58
1175	15.91	275.11	1068.58	-1035.18	-232.84	-298.88	5727573.76	595968.22
1180	16.06	274.67	1073.39	-1039.99	-232.72	-300.25	5727573.88	595966.85
1185	16.21	274.24	1078.19	-1044.79	-232.61	-301.64	5727573.99	595965.46
1190	16.36	273.80	1082.99	-1049.59	-232.52	-303.04	5727574.08	595964.07
1195	16.51	273.36	1087.78	-1054.38	-232.43	-304.45	5727574.17	595962.66
1200	16.46	273.24	1092.58	-1059.18	-232.35	-305.86	5727574.25	595961.24
1205	16.39	273.14	1097.38	-1063.97	-232.27	-307.27	5727574.33	595959.83
1210	16.33	273.04	1102.17	-1068.77	-232.19	-308.68	5727574.41	595958.42
1215	16.26	272.95	1106.97	-1073.57	-232.12	-310.08	5727574.48	595957.02
1220	16.19	272.85	1111.77	-1078.37	-232.05	-311.48	5727574.55	595955.62
1225	16.18	272.85	1116.58	-1083.18	-231.98	-312.87	5727574.62	595954.23
1230	16.35	273.25	1121.38	-1087.97	-231.91	-314.27	5727574.69	595952.84
1235	16.53	273.65	1126.17	-1092.77	-231.82	-315.68	5727574.78	595951.43
1240	16.71	274.05	1130.96	-1097.56	-231.72	-317.10	5727574.88	595950.00
1245	16.88	274.45	1135.75	-1102.35	-231.62	-318.54	5727574.98	595948.56
1250	17.06	274.85	1140.53	-1107.13	-231.50	-320.00	5727575.10	595947.11
1255	17.11	275.13	1145.31	-1111.91	-231.37	-321.46	5727575.23	595945.64
1260	17.07	275.33	1150.09	-1116.69	-231.24	-322.93	5727575.36	595944.18
1265	17.04	275.53	1154.87	-1121.47	-231.10	-324.39	5727575.50	595942.72
1270	17.00	275.73	1159.65	-1126.25	-230.95	-325.84	5727575.65	595941.26
1275	16.97	275.93	1164.43	-1131.03	-230.80	-327.29	5727575.79	595939.81
1280	16.93	276.13	1169.21	-1135.82	-230.65	-328.74	5727575.95	595938.36
1285	16.85	276.18	1174.00	-1140.60	-230.49	-330.19	5727576.10	595936.91
1290	16.74	276.16	1178.79	-1145.39	-230.34	-331.62	5727576.26	595935.48
1295	16.64	276.14	1183.58	-1150.18	-230.19	-333.05	5727576.41	595934.05
1300	16.54	276.12	1188.37	-1154.97	-230.04	-334.47	5727576.56	595932.63
1305	16.44	276.10	1193.16	-1159.76	-229.88	-335.88	5727576.72	595931.22
1310	16.37	276.10	1197.96	-1164.56	-229.73	-337.29	5727576.87	595929.82
1315	16.41	276.18	1202.76	-1169.36	-229.58	-338.69	5727577.02	595928.41
1320	16.45	276.25	1207.55	-1174.15	-229.43	-340.09	5727577.17	595927.01
1325	16.49	276.33	1212.35	-1178.94	-229.27	-341.50	5727577.32	595925.60
1330	16.53	276.41	1217.14	-1183.74	-229.12	-342.92	5727577.48	595924.19
1335	16.57	276.49	1221.93	-1188.53	-228.96	-344.33	5727577.64	595922.77
1340	16.52	276.55	1226.72	-1193.32	-228.80	-345.75	5727577.80	595921.36
1345	16.40	276.60	1231.52	-1198.12	-228.63	-347.15	5727577.97	595919.95
1350	16.28	276.66	1236.32	-1202.92	-228.47	-348.55	5727578.13	595918.55
1355	16.16	276.71	1241.12	-1207.72	-228.31	-349.94	5727578.29	595917.16
1360	16.04	276.76	1245.92	-1212.52	-228.15	-351.31	5727578.45	595915.79
1365	15.92	276.82	1250.73	-1217.33	-227.98	-352.68	5727578.62	595914.42
1370	16.04	276.63	1255.54	-1222.14	-227.82	-354.05	5727578.78	595913.05
1375	16.19	276.41	1260.34	-1226.94	-227.67	-355.43	5727578.93	595911.67
1380	16.34	276.20	1265.14	-1231.74	-227.51	-356.82	5727579.09	595910.28
1385	16.49	275.99	1269.94	-1236.54	-227.36	-358.22	5727579.24	595908.88
1390	16.63	275.77	1274.73	-1241.33	-227.22	-359.64	5727579.38	595907.46
1395	16.76	275.58	1279.52	-1246.12	-227.07	-361.07	5727579.53	595906.03

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1400	16.72	275.54	1284.31	-1250.91	-226.93	-362.50	5727579.67	595904.60
1405	16.69	275.50	1289.10	-1255.69	-226.80	-363.93	5727579.80	595903.17
1410	16.65	275.45	1293.89	-1260.48	-226.66	-365.36	5727579.94	595901.74
1415	16.62	275.41	1298.68	-1265.28	-226.52	-366.79	5727580.08	595900.32
1420	16.58	275.37	1303.47	-1270.07	-226.39	-368.21	5727580.21	595898.89
1425	16.59	275.28	1308.26	-1274.86	-226.26	-369.63	5727580.34	595897.47
1430	16.67	275.11	1313.05	-1279.65	-226.13	-371.05	5727580.47	595896.05
1435	16.76	274.94	1317.84	-1284.44	-226.00	-372.49	5727580.60	595894.62
1440	16.84	274.77	1322.63	-1289.22	-225.88	-373.93	5727580.72	595893.18
1445	16.93	274.60	1327.41	-1294.01	-225.76	-375.37	5727580.84	595891.73
1450	17.01	274.43	1332.19	-1298.79	-225.65	-376.83	5727580.95	595890.27
1455	17.04	274.31	1336.97	-1303.57	-225.54	-378.29	5727581.06	595888.81
1460	17.01	274.25	1341.75	-1308.35	-225.43	-379.75	5727581.17	595887.35
1465	16.97	274.19	1346.54	-1313.14	-225.32	-381.21	5727581.28	595885.90
1470	16.93	274.13	1351.32	-1317.92	-225.21	-382.66	5727581.39	595884.44
1475	16.90	274.08	1356.10	-1322.70	-225.11	-384.11	5727581.49	595882.99
1480	16.86	274.02	1360.89	-1327.49	-225.01	-385.56	5727581.59	595881.54
1485	16.79	273.96	1365.67	-1332.27	-224.91	-387.00	5727581.69	595880.10
1490	16.72	273.91	1370.46	-1337.06	-224.81	-388.44	5727581.79	595878.66
1495	16.64	273.85	1375.25	-1341.85	-224.71	-389.87	5727581.89	595877.23
1500	16.57	273.80	1380.04	-1346.64	-224.61	-391.30	5727581.99	595875.80
1505	16.49	273.74	1384.83	-1351.43	-224.52	-392.72	5727582.08	595874.38
1510	16.42	273.69	1389.63	-1356.23	-224.43	-394.13	5727582.17	595872.97
1515	16.38	273.75	1394.43	-1361.03	-224.34	-395.54	5727582.26	595871.56
1520	16.34	273.80	1399.22	-1365.82	-224.25	-396.94	5727582.35	595870.16
1525	16.30	273.86	1404.02	-1370.62	-224.15	-398.35	5727582.45	595868.76
1530	16.26	273.91	1408.82	-1375.42	-224.06	-399.75	5727582.54	595867.36
1535	16.22	273.97	1413.62	-1380.22	-223.96	-401.14	5727582.64	595865.96
1540	16.22	274.01	1418.42	-1385.02	-223.86	-402.53	5727582.74	595864.57
1545	16.35	274.02	1423.22	-1389.82	-223.77	-403.93	5727582.83	595863.17
1550	16.48	274.03	1428.02	-1394.62	-223.67	-405.34	5727582.93	595861.76
1555	16.60	274.03	1432.81	-1399.41	-223.57	-406.76	5727583.03	595860.34
1560	16.73	274.04	1437.60	-1404.20	-223.47	-408.19	5727583.13	595858.91
1565	16.85	274.05	1442.39	-1408.99	-223.36	-409.63	5727583.24	595857.47
1570	16.88	274.03	1447.17	-1413.77	-223.26	-411.08	5727583.34	595856.02
1575	16.82	274.00	1451.96	-1418.56	-223.16	-412.52	5727583.44	595854.58
1580	16.75	273.97	1456.75	-1423.35	-223.06	-413.96	5727583.54	595853.14
1585	16.69	273.93	1461.53	-1428.13	-222.96	-415.40	5727583.64	595851.70
1590	16.63	273.90	1466.32	-1432.92	-222.86	-416.83	5727583.74	595850.27
1595	16.57	273.87	1471.12	-1437.72	-222.77	-418.26	5727583.83	595848.85
1600	16.51	273.70	1475.91	-1442.51	-222.67	-419.68	5727583.93	595847.43
1605	16.45	273.50	1480.70	-1447.30	-222.58	-421.09	5727584.02	595846.01
1610	16.38	273.30	1485.50	-1452.10	-222.50	-422.50	5727584.10	595844.60
1615	16.32	273.11	1490.30	-1456.90	-222.42	-423.91	5727584.18	595843.19
1620	16.26	272.91	1495.10	-1461.70	-222.35	-425.31	5727584.25	595841.80
1625	16.20	272.72	1499.90	-1466.50	-222.28	-426.70	5727584.32	595840.40
1630	16.14	272.71	1504.70	-1471.30	-222.21	-428.09	5727584.39	595839.01
1635	16.09	272.70	1509.50	-1476.10	-222.15	-429.48	5727584.45	595837.62
1640	16.04	272.69	1514.31	-1480.91	-222.08	-430.86	5727584.52	595836.24
1645	15.98	272.68	1519.11	-1485.71	-222.02	-432.24	5727584.58	595834.86
1650	15.93	272.67	1523.92	-1490.52	-221.95	-433.61	5727584.65	595833.49
1655	15.90	272.68	1528.73	-1495.33	-221.89	-434.98	5727584.71	595832.12
1660	15.96	272.74	1533.54	-1500.14	-221.83	-436.35	5727584.77	595830.75
1665	16.01	272.80	1538.34	-1504.94	-221.76	-437.73	5727584.84	595829.38
1670	16.07	272.87	1543.15	-1509.75	-221.69	-439.11	5727584.91	595827.99
1675	16.12	272.93	1547.95	-1514.55	-221.62	-440.49	5727584.98	595826.61
1680	16.18	272.99	1552.76	-1519.36	-221.55	-441.88	5727585.05	595825.22
1685	16.26	273.03	1557.56	-1524.16	-221.48	-443.27	5727585.12	595823.83
1690	16.37	273.04	1562.36	-1528.96	-221.40	-444.68	5727585.20	595822.42

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1695	16.48	273.05	1567.15	-1533.75	-221.33	-446.09	5727585.27	595821.01
1700	16.60	273.06	1571.94	-1538.55	-221.25	-447.51	5727585.35	595819.59
1705	16.71	273.07	1576.74	-1543.34	-221.17	-448.94	5727585.43	595818.16
1710	16.82	273.08	1581.52	-1548.12	-221.10	-450.38	5727585.50	595816.72
1715	16.79	273.00	1586.31	-1552.91	-221.02	-451.82	5727585.58	595815.28
1720	16.72	272.90	1591.10	-1557.70	-220.95	-453.26	5727585.65	595813.84
1725	16.65	272.80	1595.89	-1562.49	-220.87	-454.70	5727585.73	595812.40
1730	16.58	272.70	1600.68	-1567.28	-220.81	-456.13	5727585.79	595810.98
1735	16.51	272.60	1605.47	-1572.07	-220.74	-457.55	5727585.86	595809.55
1740	16.45	272.51	1610.27	-1576.87	-220.68	-458.97	5727585.92	595808.14
1745	16.38	272.50	1615.06	-1581.66	-220.61	-460.38	5727585.98	595806.73
1750	16.31	272.48	1619.86	-1586.46	-220.55	-461.78	5727586.05	595805.32
1755	16.24	272.47	1624.66	-1591.26	-220.49	-463.18	5727586.11	595803.92
1760	16.17	272.46	1629.46	-1596.06	-220.43	-464.58	5727586.17	595802.53
1765	16.11	272.45	1634.26	-1600.86	-220.37	-465.96	5727586.23	595801.14
1770	16.09	272.56	1639.07	-1605.67	-220.31	-467.35	5727586.29	595799.75
1775	16.19	272.97	1643.87	-1610.47	-220.25	-468.74	5727586.35	595798.36
1780	16.29	273.38	1648.67	-1615.27	-220.17	-470.13	5727586.43	595796.97
1785	16.39	273.79	1653.47	-1620.07	-220.08	-471.54	5727586.52	595795.57
1790	16.50	274.20	1658.27	-1624.87	-219.98	-472.95	5727586.62	595794.15
1795	16.60	274.61	1663.06	-1629.66	-219.87	-474.37	5727586.73	595792.73
1800	16.62	274.90	1667.85	-1634.45	-219.75	-475.79	5727586.85	595791.31
1805	16.57	275.10	1672.64	-1639.24	-219.63	-477.22	5727586.97	595789.89
1810	16.53	275.29	1677.43	-1644.03	-219.50	-478.63	5727587.10	595788.47
1815	16.49	275.49	1682.23	-1648.83	-219.37	-480.05	5727587.23	595787.05
1820	16.45	275.69	1687.02	-1653.62	-219.23	-481.46	5727587.37	595785.64
1825	16.41	275.89	1691.82	-1658.42	-219.09	-482.87	5727587.51	595784.23
1830	16.48	275.88	1696.61	-1663.21	-218.94	-484.27	5727587.66	595782.83
1835	16.57	275.83	1701.41	-1668.01	-218.80	-485.69	5727587.80	595781.41
1840	16.67	275.77	1706.20	-1672.80	-218.65	-487.11	5727587.95	595779.99
1845	16.77	275.72	1710.99	-1677.59	-218.51	-488.54	5727588.09	595778.56
1850	16.86	275.66	1715.77	-1682.37	-218.36	-489.98	5727588.24	595777.12
1855	16.95	275.61	1720.56	-1687.16	-218.22	-491.43	5727588.38	595775.67
1860	16.91	275.60	1725.34	-1691.94	-218.08	-492.88	5727588.52	595774.22
1865	16.87	275.58	1730.13	-1696.72	-217.94	-494.32	5727588.66	595772.78
1870	16.83	275.57	1734.91	-1701.51	-217.80	-495.77	5727588.80	595771.34
1875	16.80	275.56	1739.70	-1706.30	-217.66	-497.21	5727588.94	595769.90
1880	16.76	275.55	1744.48	-1711.08	-217.52	-498.64	5727589.08	595768.46
1885	16.75	275.39	1749.27	-1715.87	-217.38	-500.08	5727589.22	595767.03
1890	16.84	274.80	1754.06	-1720.66	-217.25	-501.52	5727589.35	595765.59
1895	16.92	274.21	1758.84	-1725.44	-217.14	-502.96	5727589.46	595764.14
1900	17.01	273.62	1763.63	-1730.23	-217.04	-504.42	5727589.56	595762.69
1905	17.09	273.04	1768.41	-1735.01	-216.95	-505.88	5727589.65	595761.22
1910	17.18	272.45	1773.18	-1739.78	-216.88	-507.35	5727589.72	595759.75
1915	17.20	272.12	1777.96	-1744.56	-216.83	-508.83	5727589.77	595758.27
1920	17.15	272.02	1782.74	-1749.34	-216.77	-510.30	5727589.83	595756.80
1925	17.11	271.93	1787.52	-1754.12	-216.72	-511.78	5727589.88	595755.33
1930	17.07	271.83	1792.30	-1758.90	-216.67	-513.24	5727589.93	595753.86
1935	17.02	271.74	1797.08	-1763.68	-216.63	-514.71	5727589.97	595752.39
1940	16.98	271.64	1801.86	-1768.46	-216.59	-516.17	5727590.01	595750.93
1945	16.93	271.61	1806.64	-1773.24	-216.55	-517.63	5727590.05	595749.47
1950	16.87	271.60	1811.42	-1778.02	-216.50	-519.08	5727590.10	595748.02
1955	16.81	271.58	1816.21	-1782.81	-216.46	-520.53	5727590.14	595746.57
1960	16.75	271.57	1821.00	-1787.60	-216.42	-521.97	5727590.18	595745.13
1965	16.69	271.55	1825.79	-1792.39	-216.39	-523.41	5727590.21	595743.69
1970	16.64	271.55	1830.58	-1797.18	-216.35	-524.84	5727590.25	595742.26
1975	16.63	271.66	1835.37	-1801.97	-216.31	-526.27	5727590.29	595740.83
1980	16.63	271.77	1840.16	-1806.76	-216.26	-527.70	5727590.34	595739.40
1985	16.62	271.88	1844.95	-1811.55	-216.22	-529.13	5727590.38	595737.97

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
1990	16.61	271.99	1849.74	-1816.34	-216.17	-530.56	5727590.43	595736.54
1995	16.62	272.07	1854.53	-1821.13	-216.12	-531.99	5727590.48	595735.11
2000	16.68	272.02	1859.32	-1825.92	-216.07	-533.42	5727590.53	595733.68
2005	16.74	271.96	1864.11	-1830.71	-216.02	-534.86	5727590.58	595732.24
2010	16.80	271.91	1868.90	-1835.50	-215.97	-536.30	5727590.63	595730.80
2015	16.86	271.86	1873.68	-1840.28	-215.92	-537.75	5727590.68	595729.35
2020	16.92	271.80	1878.47	-1845.07	-215.88	-539.20	5727590.72	595727.90
2025	16.99	271.75	1883.25	-1849.85	-215.83	-540.66	5727590.77	595726.44
2030	16.97	271.70	1888.03	-1854.63	-215.79	-542.12	5727590.81	595724.98
2035	16.89	271.66	1892.81	-1859.41	-215.75	-543.58	5727590.85	595723.53
2040	16.82	271.61	1897.60	-1864.20	-215.70	-545.02	5727590.90	595722.08
2045	16.74	271.56	1902.39	-1868.99	-215.66	-546.47	5727590.94	595720.63
2050	16.67	271.51	1907.18	-1873.78	-215.63	-547.90	5727590.97	595719.20
2055	16.59	271.47	1911.97	-1878.57	-215.59	-549.33	5727591.01	595717.77
2060	16.62	271.84	1916.76	-1883.36	-215.55	-550.76	5727591.05	595716.34
2065	16.67	272.28	1921.55	-1888.15	-215.50	-552.19	5727591.10	595714.91
2070	16.72	272.73	1926.34	-1892.94	-215.43	-553.63	5727591.17	595713.47
2075	16.78	273.18	1931.13	-1897.73	-215.36	-555.07	5727591.24	595712.03
2080	16.83	273.63	1935.91	-1902.51	-215.27	-556.51	5727591.33	595710.59
2085	16.86	274.03	1940.70	-1907.30	-215.18	-557.96	5727591.42	595709.15
2090	16.81	274.17	1945.48	-1912.08	-215.07	-559.40	5727591.53	595707.70
2095	16.75	274.30	1950.27	-1916.87	-214.97	-560.84	5727591.63	595706.26
2100	16.70	274.44	1955.06	-1921.66	-214.86	-562.27	5727591.74	595704.83
2105	16.64	274.58	1959.85	-1926.45	-214.74	-563.70	5727591.86	595703.40
2110	16.58	274.72	1964.64	-1931.24	-214.63	-565.13	5727591.97	595701.97
2115	16.54	274.77	1969.43	-1936.03	-214.51	-566.55	5727592.09	595700.55
2120	16.51	274.70	1974.23	-1940.83	-214.39	-567.97	5727592.21	595699.14
2125	16.48	274.62	1979.02	-1945.62	-214.28	-569.38	5727592.32	595697.72
2130	16.45	274.55	1983.82	-1950.42	-214.16	-570.79	5727592.44	595696.31
2135	16.42	274.47	1988.61	-1955.21	-214.05	-572.20	5727592.55	595694.90
2140	16.39	274.40	1993.41	-1960.01	-213.94	-573.61	5727592.66	595693.49
2145	16.39	274.37	1998.20	-1964.80	-213.84	-575.02	5727592.76	595692.08
2150	16.41	274.36	2003.00	-1969.60	-213.73	-576.43	5727592.87	595690.68
2155	16.43	274.36	2007.80	-1974.40	-213.62	-577.84	5727592.98	595689.27
2160	16.45	274.36	2012.59	-1979.19	-213.51	-579.25	5727593.09	595687.85
2165	16.48	274.35	2017.39	-1983.99	-213.41	-580.66	5727593.19	595686.44
2170	16.50	274.35	2022.18	-1988.78	-213.30	-582.08	5727593.30	595685.03
2175	16.47	274.29	2026.98	-1993.58	-213.19	-583.49	5727593.41	595683.61
2180	16.43	274.21	2031.77	-1998.37	-213.09	-584.90	5727593.51	595682.20
2185	16.39	274.13	2036.57	-2003.17	-212.98	-586.31	5727593.62	595680.79
2190	16.35	274.06	2041.37	-2007.96	-212.88	-587.72	5727593.72	595679.38
2195	16.31	273.98	2046.16	-2012.76	-212.79	-589.12	5727593.81	595677.98
2200	16.29	273.91	2050.96	-2017.56	-212.69	-590.52	5727593.91	595676.58
2205	16.34	273.89	2055.76	-2022.36	-212.59	-591.92	5727594.01	595675.18
2210	16.40	273.86	2060.56	-2027.16	-212.50	-593.33	5727594.10	595673.78
2215	16.46	273.84	2065.35	-2031.95	-212.40	-594.74	5727594.20	595672.36
2220	16.52	273.82	2070.15	-2036.75	-212.31	-596.15	5727594.29	595670.95
2225	16.57	273.79	2074.94	-2041.54	-212.21	-597.57	5727594.39	595669.53
2230	16.59	273.77	2079.73	-2046.33	-212.12	-599.00	5727594.48	595668.10
2235	16.55	273.76	2084.53	-2051.13	-212.03	-600.42	5727594.57	595666.68
2240	16.50	273.74	2089.32	-2055.92	-211.93	-601.84	5727594.67	595665.26
2245	16.45	273.72	2094.11	-2060.71	-211.84	-603.26	5727594.76	595663.85
2250	16.41	273.70	2098.91	-2065.51	-211.75	-604.67	5727594.85	595662.43
2255	16.36	273.69	2103.71	-2070.31	-211.66	-606.08	5727594.94	595661.03
2260	16.33	273.60	2108.51	-2075.11	-211.57	-607.48	5727595.03	595659.62
2265	16.30	273.46	2113.30	-2079.90	-211.48	-608.88	5727595.12	595658.22
2270	16.28	273.31	2118.10	-2084.70	-211.40	-610.28	5727595.20	595656.82
2275	16.25	273.17	2122.90	-2089.50	-211.32	-611.68	5727595.28	595655.42
2280	16.23	273.03	2127.70	-2094.30	-211.25	-613.08	5727595.35	595654.03

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2285	16.21	272.89	2132.50	-2099.10	-211.17	-614.47	5727595.43	595652.63
2290	16.18	272.80	2137.31	-2103.91	-211.10	-615.86	5727595.50	595651.24
2295	16.14	272.72	2142.11	-2108.71	-211.04	-617.25	5727595.56	595649.85
2300	16.11	272.64	2146.91	-2113.51	-210.97	-618.64	5727595.63	595648.46
2305	16.08	272.56	2151.72	-2118.32	-210.91	-620.03	5727595.69	595647.08
2310	16.05	272.48	2156.52	-2123.12	-210.85	-621.41	5727595.75	595645.69
2315	16.02	272.40	2161.33	-2127.93	-210.79	-622.79	5727595.81	595644.31
2320	15.93	272.42	2166.13	-2132.73	-210.73	-624.16	5727595.87	595642.94
2325	15.84	272.44	2170.94	-2137.54	-210.68	-625.53	5727595.92	595641.57
2330	15.76	272.45	2175.75	-2142.35	-210.62	-626.89	5727595.98	595640.21
2335	15.67	272.47	2180.57	-2147.17	-210.56	-628.24	5727596.04	595638.86
2340	15.58	272.49	2185.38	-2151.98	-210.50	-629.59	5727596.10	595637.51
2345	15.51	272.48	2190.20	-2156.80	-210.44	-630.93	5727596.16	595636.17
2350	15.49	272.43	2195.02	-2161.62	-210.39	-632.26	5727596.21	595634.84
2355	15.46	272.37	2199.84	-2166.43	-210.33	-633.60	5727596.27	595633.51
2360	15.44	272.31	2204.66	-2171.26	-210.28	-634.93	5727596.32	595632.18
2365	15.41	272.26	2209.47	-2176.07	-210.22	-636.26	5727596.38	595630.85
2370	15.38	272.20	2214.30	-2180.90	-210.17	-637.58	5727596.43	595629.52
2375	15.33	272.14	2219.12	-2185.72	-210.12	-638.91	5727596.48	595628.20
2380	15.26	272.07	2223.94	-2190.54	-210.07	-640.22	5727596.53	595626.88
2385	15.19	271.99	2228.76	-2195.36	-210.03	-641.54	5727596.57	595625.57
2390	15.11	271.92	2233.59	-2200.19	-209.98	-642.84	5727596.62	595624.26
2395	15.04	271.85	2238.42	-2205.02	-209.94	-644.14	5727596.66	595622.96
2400	14.96	271.78	2243.25	-2209.85	-209.90	-645.44	5727596.70	595621.67
2405	14.91	271.76	2248.08	-2214.68	-209.86	-646.72	5727596.74	595620.38
2410	14.87	271.77	2252.91	-2219.51	-209.82	-648.01	5727596.78	595619.09
2415	14.83	271.78	2257.74	-2224.34	-209.78	-649.29	5727596.82	595617.81
2416	14.82	271.78	2258.71	-2225.31	-209.77	-649.54	5727596.83	595617.56
2416.5	14.81	271.78	2259.19	-2225.79	-209.77	-649.67	5727596.83	595617.43
2417	14.81	271.78	2259.68	-2226.28	-209.76	-649.80	5727596.84	595617.30
2418	14.80	271.78	2260.64	-2227.24	-209.76	-650.06	5727596.84	595617.05
2419	14.79	271.78	2261.61	-2228.21	-209.75	-650.31	5727596.85	595616.79
2420	14.78	271.79	2262.58	-2229.18	-209.74	-650.57	5727596.86	595616.54
2421	14.78	271.79	2263.55	-2230.15	-209.73	-650.82	5727596.87	595616.28
2422	14.77	271.79	2264.51	-2231.11	-209.72	-651.07	5727596.88	595616.03
2423	14.76	271.79	2265.48	-2232.08	-209.72	-651.33	5727596.88	595615.77
2424	14.75	271.79	2266.45	-2233.05	-209.71	-651.58	5727596.89	595615.52
2425	14.74	271.79	2267.41	-2234.01	-209.70	-651.84	5727596.90	595615.26
2426	14.73	271.79	2268.38	-2234.98	-209.69	-652.09	5727596.91	595615.01
2427	14.72	271.80	2269.35	-2235.95	-209.68	-652.35	5727596.92	595614.75
2428	14.72	271.80	2270.31	-2236.91	-209.68	-652.60	5727596.92	595614.50
2429	14.71	271.80	2271.28	-2237.88	-209.67	-652.86	5727596.93	595614.25
2430	14.70	271.80	2272.25	-2238.85	-209.66	-653.11	5727596.94	595613.99
2431	14.70	271.78	2273.22	-2239.82	-209.65	-653.36	5727596.95	595613.74
2432	14.71	271.76	2274.18	-2240.78	-209.64	-653.62	5727596.96	595613.49
2433	14.71	271.74	2275.15	-2241.75	-209.64	-653.87	5727596.96	595613.23
2434	14.72	271.72	2276.12	-2242.72	-209.63	-654.12	5727596.97	595612.98
2435	14.72	271.70	2277.09	-2243.68	-209.62	-654.38	5727596.98	595612.72
2436	14.73	271.68	2278.05	-2244.65	-209.61	-654.63	5727596.99	595612.47
2437	14.73	271.67	2279.02	-2245.62	-209.61	-654.89	5727596.99	595612.22
2438	14.73	271.65	2279.99	-2246.59	-209.60	-655.14	5727597.00	595611.96
2439	14.74	271.63	2280.95	-2247.55	-209.59	-655.39	5727597.01	595611.71
2440	14.74	271.61	2281.92	-2248.52	-209.58	-655.65	5727597.02	595611.45
2441	14.75	271.59	2282.89	-2249.49	-209.58	-655.90	5727597.02	595611.20
2442	14.75	271.57	2283.86	-2250.45	-209.57	-656.16	5727597.03	595610.94
2443	14.75	271.55	2284.82	-2251.42	-209.56	-656.41	5727597.04	595610.69
2444	14.76	271.53	2285.79	-2252.39	-209.56	-656.67	5727597.04	595610.43
2445	14.76	271.51	2286.76	-2253.36	-209.55	-656.92	5727597.05	595610.18
2446	14.77	271.50	2287.72	-2254.32	-209.54	-657.18	5727597.06	595609.93

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2447	14.77	271.48	2288.69	-2255.29	-209.54	-657.43	5727597.06	595609.67
2448	14.77	271.46	2289.66	-2256.26	-209.53	-657.69	5727597.07	595609.42
2449	14.78	271.44	2290.62	-2257.22	-209.53	-657.94	5727597.07	595609.16
2450	14.78	271.42	2291.59	-2258.19	-209.52	-658.20	5727597.08	595608.91
2451	14.79	271.40	2292.56	-2259.16	-209.51	-658.45	5727597.09	595608.65
2452	14.79	271.38	2293.52	-2260.12	-209.51	-658.71	5727597.09	595608.40
2453	14.80	271.36	2294.49	-2261.09	-209.50	-658.96	5727597.10	595608.14
2454	14.80	271.34	2295.46	-2262.06	-209.49	-659.22	5727597.11	595607.88
2455	14.80	271.32	2296.43	-2263.03	-209.49	-659.47	5727597.11	595607.63
2456	14.81	271.31	2297.39	-2263.99	-209.48	-659.73	5727597.12	595607.37
2457	14.81	271.29	2298.36	-2264.96	-209.48	-659.98	5727597.12	595607.12
2458	14.82	271.27	2299.32	-2265.93	-209.47	-660.24	5727597.13	595606.86
2459	14.82	271.25	2300.29	-2266.89	-209.46	-660.50	5727597.14	595606.61
2460	14.82	271.23	2301.26	-2267.86	-209.46	-660.75	5727597.14	595606.35
2461	14.81	271.21	2302.22	-2268.82	-209.45	-661.01	5727597.15	595606.10
2462	14.81	271.20	2303.19	-2269.79	-209.45	-661.26	5727597.15	595605.84
2463	14.81	271.18	2304.16	-2270.76	-209.44	-661.52	5727597.16	595605.58
2464	14.80	271.16	2305.13	-2271.73	-209.44	-661.77	5727597.16	595605.33
2465	14.80	271.14	2306.09	-2272.69	-209.43	-662.03	5727597.17	595605.07
2466	14.80	271.13	2307.06	-2273.66	-209.43	-662.28	5727597.17	595604.82
2467	14.79	271.11	2308.03	-2274.63	-209.42	-662.54	5727597.18	595604.56
2468	14.79	271.09	2308.99	-2275.59	-209.42	-662.80	5727597.18	595604.31
2469	14.79	271.07	2309.96	-2276.56	-209.41	-663.05	5727597.19	595604.05
2470	14.78	271.05	2310.93	-2277.53	-209.41	-663.30	5727597.19	595603.80
2471	14.78	271.04	2311.89	-2278.49	-209.40	-663.56	5727597.20	595603.54
2472	14.78	271.02	2312.86	-2279.46	-209.40	-663.82	5727597.20	595603.29
2473	14.78	271.00	2313.83	-2280.43	-209.39	-664.07	5727597.21	595603.03
2474	14.77	270.98	2314.79	-2281.39	-209.39	-664.33	5727597.21	595602.78
2475	14.77	270.97	2315.76	-2282.36	-209.39	-664.58	5727597.21	595602.52
2476	14.77	270.95	2316.73	-2283.33	-209.38	-664.84	5727597.22	595602.27
2477	14.76	270.93	2317.70	-2284.30	-209.38	-665.09	5727597.22	595602.01
2478	14.76	270.91	2318.66	-2285.26	-209.37	-665.35	5727597.23	595601.76
2479	14.76	270.89	2319.63	-2286.23	-209.37	-665.60	5727597.23	595601.50
2480	14.75	270.88	2320.60	-2287.20	-209.37	-665.85	5727597.23	595601.25
2481	14.75	270.86	2321.56	-2288.16	-209.36	-666.11	5727597.24	595600.99
2482	14.75	270.84	2322.53	-2289.13	-209.36	-666.36	5727597.24	595600.74
2483	14.74	270.82	2323.50	-2290.10	-209.35	-666.62	5727597.25	595600.48
2484	14.74	270.81	2324.47	-2291.07	-209.35	-666.87	5727597.25	595600.23
2485	14.74	270.79	2325.43	-2292.03	-209.35	-667.13	5727597.25	595599.98
2486	14.73	270.77	2326.40	-2293.00	-209.34	-667.38	5727597.26	595599.72
2487	14.73	270.75	2327.37	-2293.97	-209.34	-667.64	5727597.26	595599.47
2488	14.72	270.74	2328.33	-2294.93	-209.34	-667.89	5727597.26	595599.21
2489	14.71	270.72	2329.30	-2295.90	-209.33	-668.14	5727597.27	595598.96
2490	14.70	270.71	2330.27	-2296.87	-209.33	-668.40	5727597.27	595598.70
2491	14.69	270.69	2331.24	-2297.84	-209.33	-668.65	5727597.27	595598.45
2492	14.67	270.68	2332.20	-2298.80	-209.32	-668.91	5727597.28	595598.20
2493	14.66	270.66	2333.17	-2299.77	-209.32	-669.16	5727597.28	595597.94
2494	14.65	270.65	2334.14	-2300.74	-209.32	-669.41	5727597.28	595597.69
2495	14.64	270.63	2335.11	-2301.70	-209.32	-669.66	5727597.28	595597.44
2496	14.63	270.61	2336.07	-2302.67	-209.31	-669.92	5727597.29	595597.19
2497	14.62	270.60	2337.04	-2303.64	-209.31	-670.17	5727597.29	595596.93
2498	14.61	270.58	2338.01	-2304.61	-209.31	-670.42	5727597.29	595596.68
2499	14.59	270.57	2338.97	-2305.57	-209.31	-670.67	5727597.29	595596.43
2500	14.58	270.55	2339.94	-2306.54	-209.30	-670.92	5727597.30	595596.18
2501	14.57	270.54	2340.91	-2307.51	-209.30	-671.18	5727597.30	595595.93
2502	14.56	270.52	2341.88	-2308.48	-209.30	-671.43	5727597.30	595595.67
2503	14.55	270.51	2342.85	-2309.45	-209.30	-671.68	5727597.30	595595.42
2504	14.54	270.49	2343.81	-2310.41	-209.29	-671.93	5727597.31	595595.17
2505	14.53	270.48	2344.78	-2311.38	-209.29	-672.18	5727597.31	595594.92

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2506	14.51	270.46	2345.75	-2312.35	-209.29	-672.43	5727597.31	595594.67
2507	14.50	270.45	2346.72	-2313.32	-209.29	-672.68	5727597.31	595594.42
2508	14.49	270.43	2347.69	-2314.29	-209.29	-672.93	5727597.31	595594.17
2509	14.48	270.42	2348.66	-2315.26	-209.28	-673.18	5727597.32	595593.92
2510	14.47	270.40	2349.62	-2316.22	-209.28	-673.43	5727597.32	595593.67
2511	14.46	270.38	2350.59	-2317.19	-209.28	-673.68	5727597.32	595593.42
2512	14.44	270.37	2351.56	-2318.16	-209.28	-673.93	5727597.32	595593.17
2513	14.43	270.35	2352.53	-2319.13	-209.28	-674.18	5727597.32	595592.92
2514	14.42	270.34	2353.50	-2320.10	-209.28	-674.43	5727597.32	595592.67
2515	14.41	270.32	2354.47	-2321.07	-209.28	-674.68	5727597.32	595592.42
2516	14.40	270.31	2355.43	-2322.03	-209.27	-674.93	5727597.33	595592.17
2517	14.40	270.28	2356.40	-2323.00	-209.27	-675.18	5727597.33	595591.92
2518	14.41	270.26	2357.37	-2323.97	-209.27	-675.43	5727597.33	595591.68
2519	14.41	270.23	2358.34	-2324.94	-209.27	-675.67	5727597.33	595591.43
2520	14.41	270.21	2359.31	-2325.91	-209.27	-675.92	5727597.33	595591.18
2521	14.41	270.19	2360.28	-2326.88	-209.27	-676.17	5727597.33	595590.93
2522	14.42	270.16	2361.24	-2327.84	-209.27	-676.42	5727597.33	595590.68
2523	14.42	270.14	2362.21	-2328.81	-209.27	-676.67	5727597.33	595590.43
2524	14.42	270.11	2363.18	-2329.78	-209.27	-676.92	5727597.33	595590.18
2525	14.43	270.09	2364.15	-2330.75	-209.27	-677.17	5727597.33	595589.93
2526	14.43	270.06	2365.12	-2331.72	-209.26	-677.42	5727597.34	595589.68
2527	14.43	270.04	2366.09	-2332.69	-209.26	-677.67	5727597.33	595589.43
2528	14.43	270.02	2367.06	-2333.66	-209.27	-677.92	5727597.33	595589.19
2529	14.44	269.99	2368.02	-2334.62	-209.26	-678.17	5727597.34	595588.94
2530	14.44	269.97	2368.99	-2335.59	-209.26	-678.42	5727597.34	595588.69
2531	14.44	269.94	2369.96	-2336.56	-209.27	-678.66	5727597.33	595588.44
2532	14.44	269.92	2370.93	-2337.53	-209.27	-678.91	5727597.33	595588.19
2533	14.45	269.90	2371.90	-2338.50	-209.27	-679.16	5727597.33	595587.94
2534	14.45	269.87	2372.87	-2339.47	-209.27	-679.41	5727597.33	595587.69
2535	14.45	269.85	2373.84	-2340.43	-209.27	-679.66	5727597.33	595587.44
2536	14.46	269.82	2374.80	-2341.40	-209.27	-679.91	5727597.33	595587.19
2537	14.46	269.80	2375.77	-2342.37	-209.27	-680.16	5727597.33	595586.94
2538	14.46	269.77	2376.74	-2343.34	-209.27	-680.41	5727597.33	595586.69
2539	14.46	269.75	2377.71	-2344.31	-209.27	-680.66	5727597.33	595586.44
2540	14.47	269.73	2378.68	-2345.28	-209.27	-680.91	5727597.33	595586.19
2541	14.47	269.70	2379.65	-2346.24	-209.27	-681.16	5727597.33	595585.94
2542	14.47	269.68	2380.61	-2347.21	-209.27	-681.41	5727597.33	595585.69
2543	14.48	269.65	2381.58	-2348.18	-209.28	-681.66	5727597.32	595585.44
2544	14.48	269.63	2382.55	-2349.15	-209.28	-681.91	5727597.32	595585.19
2545	14.48	269.61	2383.52	-2350.12	-209.28	-682.16	5727597.32	595584.94
2546	14.47	269.62	2384.49	-2351.09	-209.28	-682.41	5727597.32	595584.69
2547	14.47	269.63	2385.45	-2352.05	-209.28	-682.66	5727597.32	595584.44
2548	14.46	269.65	2386.42	-2353.02	-209.28	-682.91	5727597.32	595584.19
2549	14.45	269.66	2387.39	-2353.99	-209.29	-683.16	5727597.31	595583.94
2550	14.45	269.67	2388.36	-2354.96	-209.29	-683.41	5727597.31	595583.69
2551	14.44	269.68	2389.33	-2355.93	-209.29	-683.66	5727597.31	595583.44
2552	14.43	269.69	2390.30	-2356.90	-209.29	-683.91	5727597.31	595583.19
2553	14.43	269.70	2391.26	-2357.86	-209.29	-684.16	5727597.31	595582.94
2554	14.51	269.71	2392.23	-2358.83	-209.29	-684.41	5727597.31	595582.70
2555	14.51	269.71	2393.20	-2359.80	-209.29	-684.66	5727597.31	595582.45
2556	14.51	269.71	2394.17	-2360.77	-209.29	-684.91	5727597.30	595582.20
2557	14.51	269.71	2395.14	-2361.74	-209.30	-685.16	5727597.30	595581.95
2558	14.52	269.71	2396.11	-2362.71	-209.30	-685.41	5727597.30	595581.70
2559	14.52	269.71	2397.07	-2363.68	-209.30	-685.66	5727597.30	595581.45
2560	14.52	269.71	2398.04	-2364.64	-209.30	-685.90	5727597.30	595581.20
2561	14.52	269.71	2399.01	-2365.61	-209.30	-686.15	5727597.30	595580.95
2562	14.53	269.71	2399.98	-2366.58	-209.30	-686.40	5727597.30	595580.70
2563	14.53	269.71	2400.95	-2367.55	-209.31	-686.65	5727597.29	595580.45
2564	14.53	269.71	2401.92	-2368.52	-209.31	-686.90	5727597.29	595580.20

MD	Angle	Direction	TVDRT	TVDSS	Dnorth	Deast	Northing	Easting
2565	14.54	269.71	2402.89	-2369.49	-209.31	-687.15	5727597.29	595579.95
2566	14.54	269.71	2403.85	-2370.45	-209.31	-687.40	5727597.29	595579.70
2567	14.54	269.71	2404.82	-2371.42	-209.31	-687.65	5727597.29	595579.45
2568	14.54	269.71	2405.79	-2372.39	-209.31	-687.90	5727597.29	595579.20
2569	14.55	269.71	2406.76	-2373.36	-209.32	-688.15	5727597.28	595578.95
2570	14.55	269.71	2407.73	-2374.33	-209.32	-688.40	5727597.28	595578.70
2571	14.55	269.71	2408.70	-2375.30	-209.32	-688.65	5727597.28	595578.45
2572	14.56	269.71	2409.66	-2376.26	-209.32	-688.90	5727597.28	595578.20
2573	14.56	269.71	2410.63	-2377.23	-209.32	-689.15	5727597.28	595577.95
2574	14.56	269.71	2411.60	-2378.20	-209.32	-689.40	5727597.28	595577.70
2575	14.56	269.71	2412.57	-2379.17	-209.32	-689.65	5727597.28	595577.45

APPENDIX 2a

WEST KINGFISH W21A

Petrophysics Evaluation Summary

Esso Australia Pty Ltd.
Exploration Department

West Kingfish W21A
Petrophysics Report

Petrophysicist: K.Kuttan
January 2007

West Kingfish W21A Petrophysical Analysis

West Kingfish W21A was designed to capture remaining oil reserves in the P1.1, M1.2L (and possibly M1.3, M1.4) sands in the area near WKF-W30 and WKF-W11.

West Kingfish W21A was kicked off at 667mMD out of the 10.75inch casing of the abandoned West Kingfish W21 well. An 8.5 inch directional hole was drilled from 667 mMD to a total depth of 2575.0 mMD. The well was logged with Precision Energy Services compact shuttle system from 2566mMD (first reading) to 667m 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 2436.0- 2545mMD.

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

DATA

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

Survey/Log	Suite	Company	Top (m MDRT)	Bottom (m MDRT)
Compact Gamma Ray - Compact Dual Neutron - Compact Photodensity - Compact Sonic - Compact Dual Laterolog- Compact Induction	1	Precision Energy Services	667	2566

Deviation

The well angle over the West Kingfish reservoirs was about 14.5 degrees.

Mud Data

Mud Type : KCl/Glycol/PHPA
Mud Weight: 9.5 ppg
Rm: 0.089 @ 25 °C
Rmf: 0.075 @ 25 °C
Rmc: 0.122 @ 25 °C
BHT: 85 °C

Hole Size

667- 2575 mMD 8.5 inches

Data Acquisition & Log Quality

All log data were of acceptable quality.

Data Processing

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. However, the unfiltered density log (DEN) provided by Precision was considered to be too “noisy” to be used in the interpretation. Hence a 3 point-equal-weighting filter was used to filter this log. The deep and shallow resistivity (DDL and DSSL), the filtered DEN and associated curves, photoelectric – (PDPE), density correction (DCOR) and caliper (CLDC), were depth-matched to the gamma ray (GRGC) which had been depth-matched and merged with LWD gamma ray (GRM1). The neutron porosity log

(NPRL) was depth matched to the filtered and GR-depth-matched DEN. Similarly, the compressional sonic log (DT35) was depth matched to the DEN.

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

Logs	Status
GRGC	filtered
DDLL	Unfiltered
DSLl	Unfiltered
DEN	3 point, equal weighting
NPRL	Unfiltered
PDPE	Filtered
DT35	Filtered

INTERPRETATION

Logs Used

The primary logs used in the interpretation were DDLL (deep laterolog resistivity), DEN (bulk density), NPRL (thermal neutron porosity in LPU), DT35 (compressional sonic) and U (volumetric photoelectric effect). U was generated from the photoelectric curve PDPE using the following relationship:

$$U = (PDPE - 0.07) * ((DEN + 0.1883) / 1.0704).$$

The reason for the adjusting the formation photoelectric curve is the fact that measured values appear to be higher than the theoretical values in clean quartz sands (of the order of 1.88+ vs the theoretical value of 1.81)

Coal intervals were identified using a coal flag (Flag_coal). A temperature log was created using the following data:

<u>Depth (mMD)</u>	<u>Temperature (deg. C)</u>
109.5	10
2566	95

The temperature at depth 109.5 mMD represents the temperature of the sea-bed and the temperature at 2566m mD (first reading of the Precision logs) is the estimated formation temperature –log measured BHT +10 deg.

Formation Water Salinity

R_{wa} analysis using a = 1, m = 2 and n = 2 indicates clean water sands have an apparent formation water salinity of 30000ppm NaCl equivalent. This salinity was used as the formation water salinity for all the sands.

Hydrocarbon Type Identification

In West Kingfish the only hydrocarbons 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.

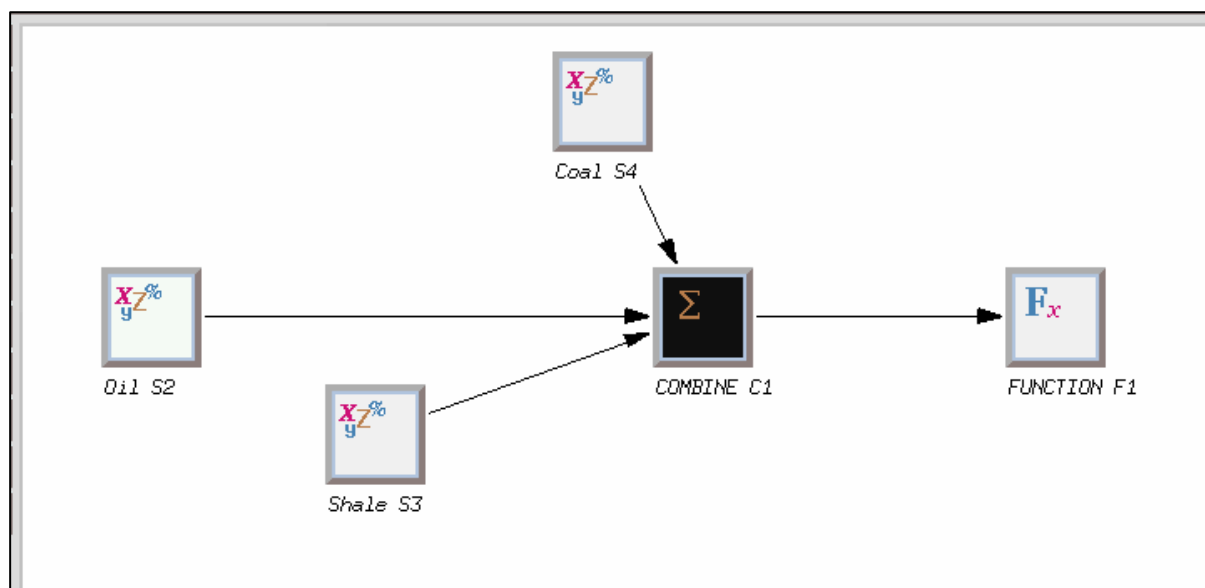


Figure 1: Elan + Model and Module Configuration

ELAN Input Channels

Log Curve Selector		Selector Options	
Compound Name Spec		West Kingfish W21A	
TEMP_CH	TEMP;*	TEMP TEMP TEMP@ElanInput;3 [A1929742]	
RHOB_IFAC_CH	IFRH;*		
NPHI_IFAC_CH	INPH;*		
RHOB_CH	DEN:BPB;*	DEN DEN DEN@ElanInput;14 [A1929729]	
NPHI_CH	NPRL:BPB;*	NPRL NPRL NPRL@ElanInput;13 [A1929721]	
DT_CH	DT35:BPB;*	DT35 DT35 DT35@ElanInput;11 [A1929733]	
U_CH	U;*	U U U@ElanInput;3 [A1929731]	
CUDC_CH/RT_CH	DDLL:BPB;*	DDLL DDLL DDLL@ElanInput;12 [A1929737]	
PRB2_CH	DEPT:BPB;*		
PRB3_CH	PRB3;*		
PRB4_CH	FLAG_COAL;*	FLAG_COAL FLAG_COAL FLAG_COAL@ElanInp	
M_CH	MXP;*		
N_CH	SXP;*		

ELAN Global Parameters

Reference Index	MD
Processing Interval	2420.0000(m) To 2545.0000(m)
Sampling Rate	0.1(m)
Uncertainty Channel	FALSE
Clay Input	DRY
Special Fluids	IMMOVABLE_HYDROCARBON Reference Index MD

ELAN Zone Definition

Name	Bottom To Top
Pyr_Shale	2550.0078(m) To 2420.0000(m)

ELAN Process Definition

Process SOLVE2 "Oil"

Equations		RHOB	NPHI	DT	U	CUDC_DWA	CT2	
Volumes	QUAR	ORTH	PYRI	ILLI	XWAT	UWAT	XOIL	UOIL

Constraints Applied

UNDEFINED - IrreducibleXWater
UNDEFINED - IrreducibleUWater
UNDEFINED - WaterBaseMud_SXO_gt_SW

Process SOLVE3 "Shale"

Equations	RHOB	NPHI	U	CUDC_DWA	CT1
Volumes	QUAR	PYRI	ILLI	XWAT	UWAT

Process SOLVE4 "Coal"

Equations	RHOB
Volumes	COAL

Process COMBINE 1 "COMBINE"

Order SOL.2 SOL.3 SOL.4 SOL.5

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 Figs. 2 & 3.

Intervals 2436.0-2438.0mMD (P1.1Oil)

This sand is clearly oil bearing as indicated by the resistivity profile and the calculated effective water saturation. The sand was perforated over the interval 2436 – 2437.5mMD on the 27th August 2006 and on a well test (9th Sep 2006) it produced 219 kld with 0% water cut.

Intervals 2441.4 – 2443.8mMD (M1.2PossOil)

This zone is interpreted to be a possible oil zone. The very high effective water saturation suggests otherwise. The reservoir quality is poor as indicated by the calculated low effective porosity. Given the observation that, in West Kingfish, oil tends to hang up in poor quality reservoirs and combined with the fact this zone was part of the original oil column, it is reasonable to interpret the zone to be a possible oil zone. The observed high water saturation may be due to the thinly bedded nature of the sand and the presence of disseminated pyrite which has the effect of suppressing the resistivity.

Intervals: 2449.4 – 2450.8mMD (M1.2LOil), 2450.8 – 2454.0 (M1.2LResOil)

The upper 1.4mMD of this sand is clearly oil bearing with an interpreted OWC at 2450.8mMD. The rest of the sand is interpreted to have residual oil (water bearing).

Interval 2455.63 – 2458.5mMD (M1.3U-PS7PossOil)

This zone is interpreted to be a possible oil zone although the calculated effective water saturation is high. The effective porosity indicates that the reservoir quality is poor. The reasons for interpreting the zone to be a possible oil zone are the same as that for the M1.2PossOil zone. Given the marginal quality (average effective porosity is only slightly better than the 10% effective porosity cut-off) this zone may not be productive.

Interval 2459.0 – 2461.0mMD (M1.3U-PS6ProbOil)

This zone is interpreted to be a probable oil zone although the calculated effective water saturation is high. Evidence for interpreting this zone to be a probable oil zone is the apparent “butterfly” character of the resistivity-porosity curves (Fig.2). A general rule in petrophysical interpretation is that in reservoirs where resistivity tends to track porosity, the mobile phase is water. In hydrocarbon zones the curves separate and show a “butterfly” effect. Additional evidence for the interpretation of probable oil is that in the nearby well West Kingfish W30 the same sand at the same structural level is still producing oil (through commingled perforations – upper sand).

Interval 2462.3 – 2464.2(M1.3U-PS5PossOil)

Using the same evidence that was used to justify the interpretation of possible oil zones, this zone is also interpreted as a possible oil zone. However, the reservoir quality is poor and therefore it is highly unlikely that it will be productive.

Interval 2464.8 – 2465.6mMD (M1.3U-PS4-1ProbOil), 2465.6 – 2466.85mMD (M1.3U-PS4-1ResOil)

The top 0.8m of this sand is interpreted to be oil bearing although the water saturation is high. The resistivity-porosity profile (“butterfly effect”) suggests that the 0.8m could be a probable oil zone (Fig.2). Another reason for suggesting that this interval is likely to be oil bearing is the fact that the same sand at the same structural level produces through the commingled perforations in nearby West Kingfish W30 which produce oil with high water cut, and so this sand could also be contributing some of the oil. The rest of the sand is interpreted to have residual oil (water bearing). An OWC is interpreted at 2465.6mMD.

Interval 2467.75 – 2472.65mMD (M1.3U-PS4-2ResOil), 2473.30 – 2475.75mMD (M1.3UPS4-3PossOil)

Although the interval 2467.75 – 2472.65mMD has water saturations that are similar to zones that have been interpreted to be possible oil zones, it is interpreted to be a residual oil zone. The reason for this interpretation is that the resistivity profile (Fig.3) follows the porosity profile suggesting that the mobile phase is likely to be water.

The interval 2473.30 – 2475.75mMD is interpreted to be a possible oil zone. Evidence that this zone may have producible oil comes from a DEFT-PLT survey run in West Kingfish W15. In West Kingfish W15, data from the DEFT-PLT indicate that oil is being produced from the top part of perforations, opposite this poor quality sand. The resistivity-porosity profile provides some evidence that producible oil may be present but it is not strong.

Interval 2476.70 – 2478.35mMD (M1.3L-PS3-1ResOil), 2479.30 – 2483.00mMD (M1.3L-PS3-2PossOil)

The interval 2476.70 – 2478.35mMD is clearly water bearing as indicated by the water saturation values and the resistivity-porosity profile.

The interval 2479.30 – 2483.00mMD is interpreted to be a possible oil zone. This interpretation is primarily based on the resistivity-porosity profile (Fig.3).

Interval 2484.70 – 2487.30mMD (M1.3L-PS2ProbOil), 2487.30 – 2488.00mMD (M1.3L-PS2ResOil)

The interval 2484.70 – 2487.30mMD is interpreted to be a probable oil zone based primarily on the resistivity-porosity profile (“butterfly effect”) with an OWC at 2487.3m (Fig.3).

All the intervals below 2487.3mMD are either residual oil zones or originally water bearing (below the original OWC of the field).

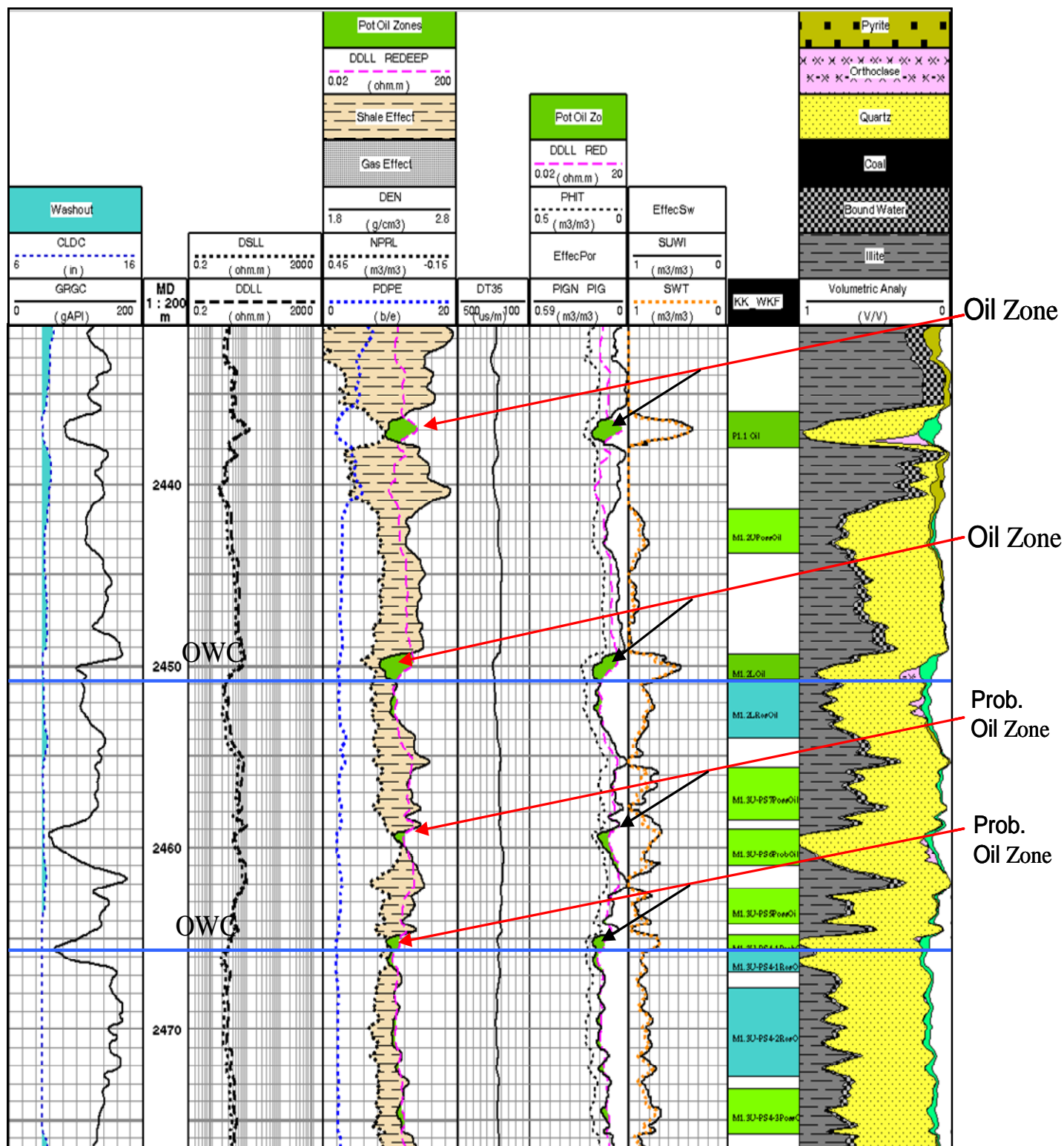


Fig. 2 West Kingfish W21A Interval 2436.0 – 2476 mMD

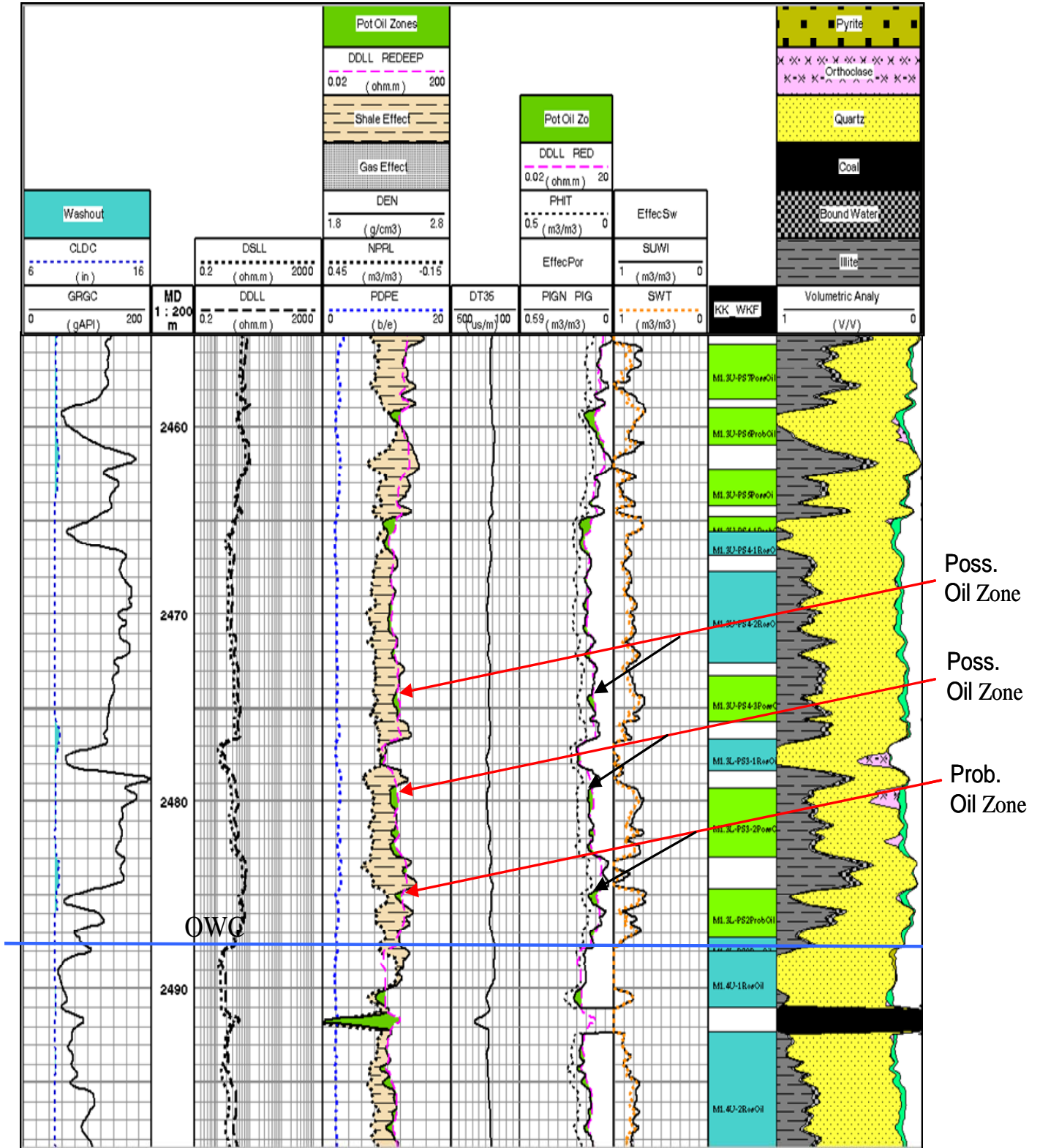


Fig. 3 West Kingfish W21A Interval 2476.0 – 2498.0 mMD

West Kingfish W21A

Petrophysical Summary 2436.0 - 2545.0m 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
P1.1Oil	2436.00	2244.68	2438.00	2246.61	2.0	1.9	0.85	0.18	0.179	0.54	Oil bearing	1.7	1.6
M1.2UPossOil	2441.40	2249.90	2443.80	2252.22	2.4	2.3	0.94	0.30	0.130	0.85	Possibly oil bearing	2.3	2.2
M1.2LOil	2449.40	2257.64	2450.80	2258.99	1.4	1.4	0.96	0.23	0.192	0.58	Oil bearing, OWC @ 2450.8mMD	1.4	1.3
M1.2LResOil	2450.80	2258.99	2454.00	2262.09	3.2	3.1	1.00	0.25	0.172	0.80	Water bearing		
M1.3U-PS7PossOil	2455.63	2263.66	2458.50	2266.44	2.9	2.8	0.19	0.32	0.110	0.77	Possibly oil bearing	0.6	0.5
M1.3U-PS6ProbOil	2459.00	2266.92	2461.00	2268.85	2.0	1.9	0.80	0.06	0.147	0.76	Probably oil bearing	1.6	1.5
M1.3U-PS5PossOi	2462.30	2270.11	2464.20	2271.95	1.9	1.8	0.50	0.25	0.124	0.83	Possibly oil bearing	0.9	0.9
M1.3U-PS4-1ProbOil	2464.80	2272.53	2465.60	2273.30	0.8	0.8	1.00	0.05	0.199	0.71	Probably oil bearing, OWC @2465.6mMD	0.8	0.8
M1.3U-PS4-1ResOil	2465.60	2273.30	2466.85	2274.51	1.3	1.2	1.00	0.06	0.200	0.85	Water bearing		
M1.3U-PS4-2ResOil	2467.75	2275.38	2472.65	2280.12	4.9	4.7	1.00	0.25	0.166	0.80	Water bearing		
M1.3U-PS4-3PossOil	2473.30	2280.75	2475.75	2283.12	2.4	2.4	1.00	0.29	0.137	0.75	Possibly oil bearing	2.4	2.4
M1.3L-PS3-1ResOil	2476.70	2284.04	2478.35	2285.63	1.7	1.6	1.00	0.05	0.213	0.97	Water bearing		
M1.3L-PS3-2PossOil	2479.30	2286.55	2483.00	2290.13	3.7	3.6	0.99	0.29	0.149	0.75	Possibly oil bearing	3.6	3.5
M1.3L-PS2ProbOil	2484.70	2291.77	2487.30	2294.29	2.6	2.5	0.56	0.17	0.139	0.71	Probably oil bearing, OWC @2487.3mMD	1.5	1.4
M1.3L-PS2ResOil	2487.30	2294.29	2488.00	2294.96	0.7	0.7	1.00	0.21	0.140	0.95	Water bearing		
M1.4U-1ResOil	2488.00	2294.96	2491.00	2297.87	3.0	2.9	1.00	0.02	0.200	0.94	Water bearing		
M1.4U-2ResOil	2492.30	2299.12	2499.90	2306.48	7.6	7.4	0.97	0.22	0.169	0.81	Water bearing		
M1.4LWater	2509.20	2315.48	2512.60	2318.77	3.4	3.3	1.00	0.16	0.212	1.00	Water bearing		
M1.5Water	2513.30	2319.45	2526.60	2332.33	13.3	12.9	1.00	0.04	0.217	1.00	Water bearing		
M1.7water	2526.60	2332.33	2544.70	2349.86	18.1	17.5	1.00	0.06	0.216	1.00	Water bearing		

Table 1



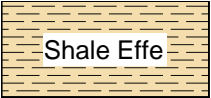
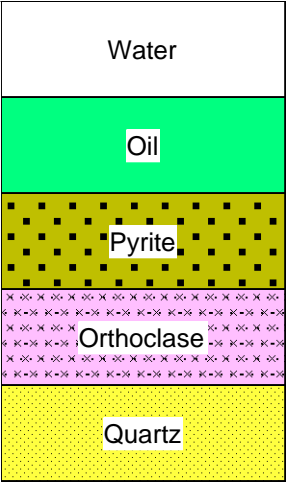
ExxonMobil

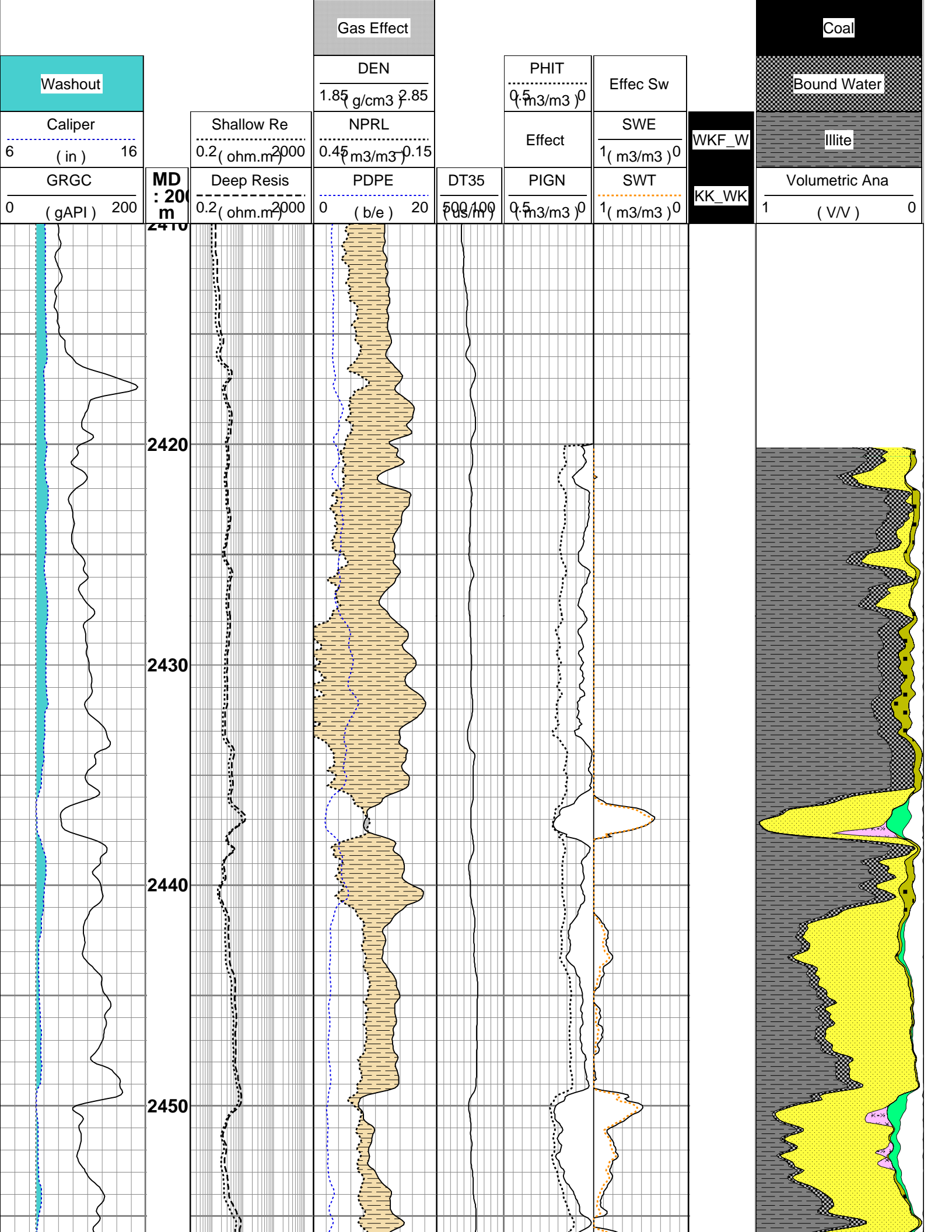
WEST KINGFISH W21A

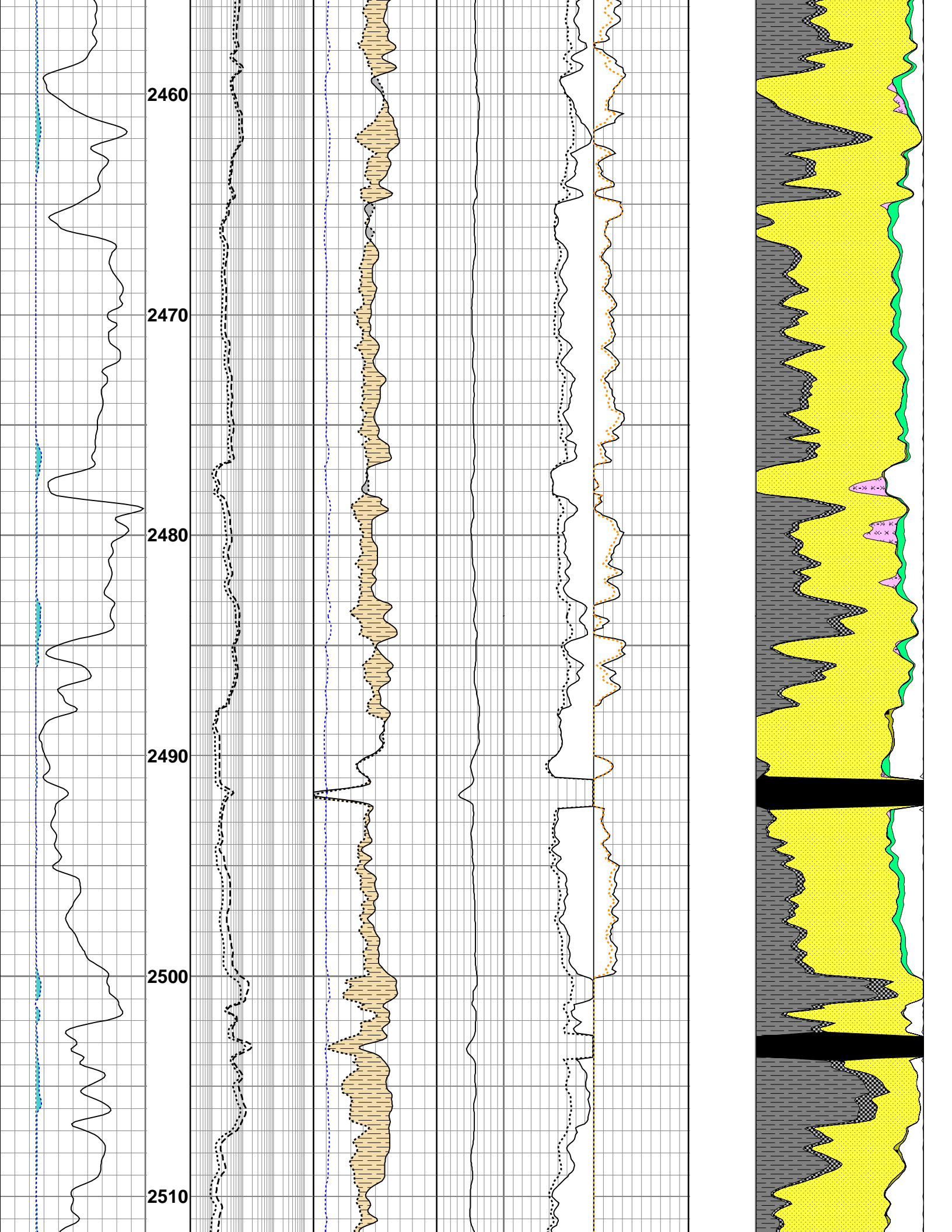
Petrophysical Analysis

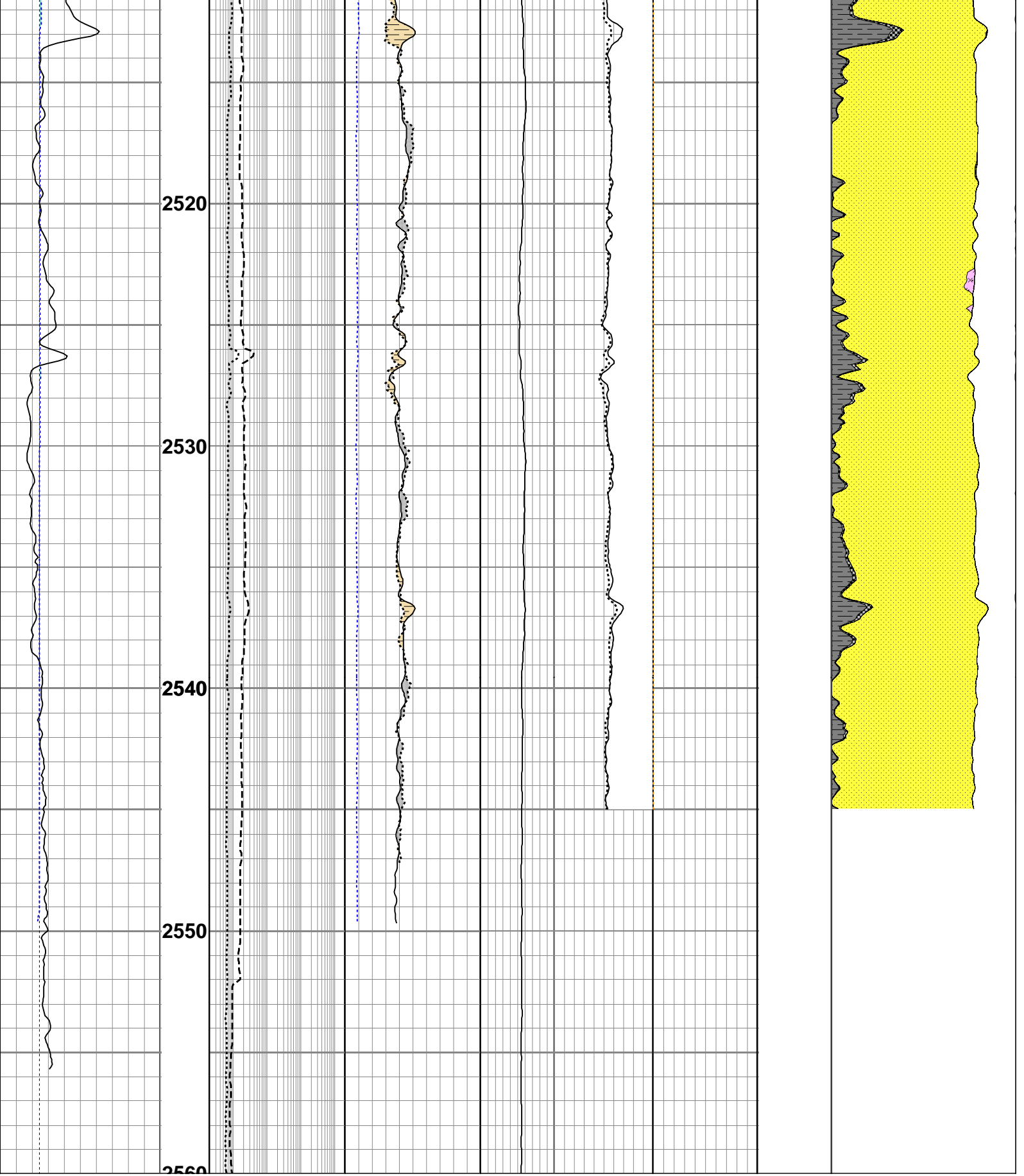
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WELL:	WEST KINGFISH W21A
BOREHOLE:	
FIELD:	WEST KINGFISH
STATE:	Victoria
COUNTRY:	AUSTRALIA
PETROPHYSICIST:	KUMAR KUTTAN

Date Logged:	26-Jul-06	Date of Analysis:	Jan 2007
Well Location:	<FL>		
Elevations:	K.B. 33.4 m	D.F. <>	
Latitude:	<LATI>	G.L. <GL>	
Longitude:	<LONG>		









APPENDIX 3a

WEST KINGFISH W21A

Lithology/Show Descriptions

West Kingfish W21A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
Geologist on rig at 1600 hrs, 15 August 2006 at 667.0 mMDRT / 609.9 mTVDRT.			
30 metre spot samples from 720.0 to 2250.0 mMDRT.			
670	675	0	100% Cement
675	677	25	25% CALCILUTITE: very light grey to light grey, trace fossil fragments, trace carbonaceous material, soft, amorphous.
		75	75% Cement.
677	680	40	40% CALCILUTITE: as above.
		60	60% Cement.
680	685	70	70% CALCILUTITE: as above.
		30	30% Cement.
685	700	80	80% CALCILUTITE: as above.
		20	20% Cement.
700	705	90	90% CALCILUTITE: as above.
		10	10% Cement.
705	720	95	95% CALCILUTITE: as above.
		10	10% Cement.
720	750	100	CALCILUTITE: very light grey to light grey, trace fossil fragments, trace carbonaceous material, soft, amorphous.
750	780	100	CALCILUTITE: as above.
780	810	100	CALCILUTITE: very light grey to light grey, trace fossil fragments, trace carbonaceous material, tr glauconite, soft, amorphous.
810	840	100	CALCILUTITE: as above.
840	870	100	CALCILUTITE: as above.
870	900	100	CALCILUTITE: as above.
900	930	100	CALCILUTITE: as above.
930	960	100	CALCILUTITE: very light grey to light grey, light brown, trace fossil fragments, trace carbonaceous material, tr glauconite, trace gastropods, trace fossils, soft, amorphous.
960	990	95	CALCILUTITE: as above.
		5	CALCARENITE: light grey, translucent, very fine grading to Calcisiltite in part, well sorted, sub-angular to sub-rounded, trace glauconite, trace fossils, argillaceous matrix, friable, poor inferred and visual porosity.
			No Fluorescence.
990	1020	95	CALCILUTITE: as above.
		5	CALCARENITE: as above.
1020	1050	90	CALCILUTITE: very light grey to light grey, light brown, grading to very fine Calcisiltite in part, trace fossil fragments, trace carbonaceous material, trace glauconite, trace gastropods, trace fossils, soft, amorphous.
		10	CALCARENITE: light grey, translucent, light brown in part, very fine grading to Calcisiltite in part, well sorted, sub-angular to sub-rounded, trace glauconite, trace disseminated pyrite, trace fossil fragments, argillaceous matrix, friable to moderately hard in part, poor visual porosity.
			No Fluorescence.
1050	1080	60	CALCILUTITE: as above.
		25	CALCISILTITE: light brown grey, light grey, arenaceous in part, trace carbonaceous material, trace fossil fragments, trace glauconite, trace lithics, firm to moderately hard, sub-blocky.

West Kingfish W21A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
1080	1110	15	CALCARENITE: light grey, translucent, very fine grading to Calcisiltite in part, well sorted, sub-angular to sub-rounded, trace glauconite, trace fossils, argillaceous matrix, friable, poor inferred and visual porosity. No Fluorescence.
		20	CALCILUTITE: as above.
		70	CALCISILTITE: as above.
1110	1140	10	CALCARENITE: as above.
		20	CALCILUTITE: as above.
		75	CALCISILTITE: as above.
1140	1170	5	CALCARENITE: as above.
		30	CALCILUTITE: very light to ly by, light brown grey in part, trace carbonaceous specks, disp, sft, amorphous, sub-blocky in part.
		70	CALCISILTITE: light brown grey to light grey, arenaceous grading to Calcarenite in part, trace fossil fragments, trace glauconite, trace lithics, firm to moderately hard, sub-blocky to sub-fissile.
1170	1200	20	CALCILUTITE: as above.
		80	CALCISILTITE: light to medium brown grey, light brown, arenaceous grading to Calcarenite in part, trace fossil fragments, trace glauconite, trace lithics, firm to moderately hard, sub-blocky to sub-fissile.
1200	1230	20	CALCILUTITE: as above.
		80	CALCISILTITE: as above.
1230	1260	40	CALCILUTITE: as above.
		60	CALCISILTITE: as above.
1260	1290	30	CALCILUTITE: very light grey, trace fossils, trace carbonaceous specks, soft to dispersive, amorphous to sub-blocky.
		70	CALCISILTITE: very light to light brown grey, medium brown in part, arenaceous grading to Calcarenite in part, trace fossil, trace glauconite, firm to moderately hard, sub-blocky to occasionally sub-fissile.
1290	1320	50	CALCILUTITE: as above.
		50	CALCISILTITE: pale brown to light brown grey, medium brown in part, rare glauconite, trace carbonaceous, trace fossils, firm to moderately hard, sub-blocky to sub-fissile in part.
1320	1350	60	CALCILUTITE: very light to light grey, silty in part, trace fossils, trace carbonaceous specks, dispersive in part, soft, amorphous to sub-blocky.
		40	CALCISILTITE: pale brown to light brown grey, arenaceous grading to Calcarenite in part, trace fossils, trace glauconite, trace carbonaceous specks, firm to moderately hard, sub-blocky to sub-fissile.
1350	1380	50	CALCILUTITE: as above.
		50	CALCISILTITE: as above.
1380	1410	70	CALCILUTITE: as above.
		30	CALCISILTITE: as above.
1410	1440	90	CALCILUTITE: very light to light grey, silty in part, trace fossils, trace carbonaceous specks, trace lithics, dispersive in part, soft, amorphous to dominantly sub-blocky.
		10	CALCISILTITE: as above.
1440	1470	30	CALCILUTITE: as above.
		70	CALCISILTITE: pale to light brown, light brown grey, arenaceous grading to Calcarenite in part, trace fossils, trace glauconite, trace carbonaceous specks, firm to moderately hard, sub-blocky to occasionally sub-fissile.
1470	1500	20	CALCILUTITE: as above.

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Interval (m)		% From	Lithology / Show Description
To			
1500	1530	80	CALCISILTITE: as above.
		60	CALCILUTITE: as above.
		40	CALCISILTITE: as above.
Base of Miocene High Velocity Channel = 1532.0 mMDRT/ 1410.8 mTVDRT / -1377.4 mTVDSS.			
1530	1560	80	CALCILUTITE: very light grey to light grey, silty in part, trace carbonaceous material, trace disseminated pyrite, trace glauconite, dominantly soft, amorphous to sub-blocky.
		20	CALCISILTITE: pale to light brown grey, arenaceous, trace fossil fragments, trace glauconite, trace carbonaceous specks, firm, moderately hard in part, sub-blocky.
1560	1590	90	CALCILUTITE: as above.
		10	CALCISILTITE: as above.
1590	1620	90	CALCILUTITE: as above.
		10	CALCISILTITE: as above.
1620	1650	90	CALCILUTITE: as above.
		10	CALCISILTITE: as above.
1650	1680	70	CALCILUTITE: very light grey to light grey, silty in part, trace carbonaceous material, trace disseminated pyrite, dominantly soft to firm, sub-blocky, amorphous in part.
		30	CALCISILTITE: light brown to light brown grey, green grey in part, arenaceous grading to Calcarenite in part, trace glauconite, trace disseminated pyrite, firm to moderately hard,sub-blocky.
1680	1710	100	CALCILUTITE: as above.
		Trace	CALCISILTITE: as above.
1710	1740	100	CALCILUTITE: light gym very light grey to medium grey, silty in part, trace carbonaceous specks, rare disseminated pyrite, trace fossil fragments, trace forams, soft to rare firm, sub-blocky, amorphous in part.
1740	1770	100	CALCILUTITE: light grey, very light grey to medium grey, silty in part, rare disseminated pyrite, trace carbonaceous material, trace fossil fragments, trace glauconite, trace lithics, soft to firm in part, sub-blocky.
1770	1800	100	CALCILUTITE: light to medium grey, light brown grey, light green grey, silty in part, trace disseminated pyrite, trace glauconite, trace fossil fragments, trace lithics, soft to occasionally firm, sub-blocky.
1800	1830	100	CALCILUTITE: as above, trace disseminated and nodular pyrite.
1830	1860	100	CALCILUTITE: as above.
1860	1890	100	CALCILUTITE: light to medium grey, light brown grey, silty in part, trace disseminated and nodular pyrite, trace fossil fragments, trace carbonaceous specks, trace lithics, soft to occasionally firm, sub-blocky.
1890	1920	100	CALCILUTITE: very light grey to light grey, occasionally medium grey to medium grey brown, silty in part, rare disseminated and nodular pyrite, trace glauconite, trace lithics, soft to firm, sub-blocky.
1920	1950	100	CALCILUTITE: as above.
1950	1980	100	CALCILUTITE: light to medium grey, light grey brown, silty in part, trace disseminated pyrite, trace glauconite, trace carbonaceous specks, soft to firm, sub-blocky.
1980	2010	100	CALCILUTITE: as above.
2010	2040	100	CALCILUTITE: very light to medium grey, light brown grey, silty in part, rare disseminated and nodular pyrite, trace carbonaceous material, soft to firm, sub-blocky to occasionally sub-fissile.
2040	2070	100	CALCILUTITE: as above.

West Kingfish W21A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2070	2100	100	CALCILUTITE: pale to light grey, medium grey, light grey brown, silty in part, rare disseminated pyrite, trace carbonaceous specks, trace fossil fragments, soft to firm, rare moderately hard, sub-blocky.
2100	2130	100	CALCILUTITE: pale to light grey, medium grey, light grey brown, silty in part, rare disseminated and trace nodular pyrite, trace carbonaceous specks, trace fossil fragments, soft to firm, rr moderately hard, sub-blocky.
2130	2160	100	CALCILUTITE: very light to light grey, light brown grey, silty in part, trace disseminated pyrite, rare fossil fragments, trace carbonaceous specks, trace lithics, soft to firm, sub-blocky.
2160	2190		Top of Lakes Entrance = 2184.0 mMDRT/2035.6 mTVDRT/-2002.2 mTVDSS.
		15	CALCAREOUS CLAYSTONE: light to medium brown, medium to light grey, silty, moderately calcareous, trace disseminated pyrite, trace lithics, trace carbonaceous specks, firm, sub-blocky.
		85	CALCILUTITE: as above.
2190	2220	30	CALCAREOUS CLAYSTONE: light to medium grey, light to medium brown grey, silty, moderately calcareous, trace disseminated and nodular pyrite, trace lithics, trace carbonaceous specks, firm, sub-blocky.
		70	CALCILUTITE: as above.
2220	2250	60	CALCAREOUS CLAYSTONE: as above.
		40	CALCILUTITE: as above.
2250	2260		10 metre bagged samples from 2260 to 2410.0 mMDRT.
		70	CALCAREOUS CLAYSTONE: as above.
2260	2270	30	CALCILUTITE: as above.
		90	CALCAREOUS CLAYSTONE: light to medium grey, light green grey, medium brown grey, silty in part, moderately calcareous, trace disseminated pyrite, trace lithics, trace carbonaceous material, firm, sub-blocky.
		10	CALCILUTITE: as above.
2270	2280	100	CALCAREOUS CLAYSTONE: as above.
2280	2290	100	CALCAREOUS CLAYSTONE: light to medium grey, grey green, medium brown grey in part, silty, moderately calcareous, trace disseminated and nodular pyrite, trace lithics, trace carbonaceous material, soft to firm, sub-blocky.
2290	2300	100	CALCAREOUS CLAYSTONE: as above.
2310	2320	100	CALCAREOUS CLAYSTONE: light to medium grey, medium brown grey, silty, moderately calcareous, trace disseminated and rare nodular pyrite, trace carbonaceous material, firm to rare moderately hard, sub-blocky.
2320	2330	100	CALCAREOUS CLAYSTONE: as above.
2330	2340	100	CALCAREOUS CLAYSTONE: as above.
2340	2350	100	CALCAREOUS CLAYSTONE: pale to very light grey, medium grey brown, silty in part, moderately calcareous, trace disseminated pyrite, trace lithics, trace to rare carbonaceous specks, soft to firm, rare moderately hard, sub-blocky.
Baracarb at a concentration of 5 ppb, added to the Mud system at 2350.0 mMDRT (2195.1 mTVDRT / -2161.6 mTVDSS).			
Baracarb seen in samples from 2360.0 mMDRT to 2575.0 mMDRT (TD).			
2350	2360	100	CALCAREOUS CLAYSTONE: as above.

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Interval (m) From To		%	Lithology / Show Description
			Carbide Lag check at 2365.0 mMDRT: Theoretical in/out strokes: 6275 Actual in/out strokes: 7592 Difference = 1317 strokes. Hole overgauge by 21%. Lag adjusted.
2360	2370	100	CALCAREOUS CLAYSTONE: pale very grey, light grey brown, silty in part, moderately calcareous, trace disseminated pyrite, trace lithics, trace carbonaceous specks, dominantly soft to firm, sub-blocky.
2370	2380	100	CALCAREOUS CLAYSTONE: as above.
2380	2390	100	CALCAREOUS CLAYSTONE: pale to light grey, light to medium grey brown, silty in part, moderately calcareous, trace disseminated and nodular pyrite, trace carbonaceous specks, trace lithics, dominantly soft to firm, sub-blocky.
2390	2400	100	CALCAREOUS CLAYSTONE: as above.
2400	2410	100	CALCAREOUS CLAYSTONE: light to medium grey, light brown grey, light olive grey, silty in part, moderately calcareous, trace disseminated pyrite, trace fossil fragments, soft to firm, sub-blocky.
			5 metre bagged samples from 2415.0 mMDRT to 2575.0 mMDRT (TD).
2410	2415	100	CALCAREOUS CLAYSTONE: as above.
			Top of Latrobe = 2416.5 mMDRT / 2259.2 mTVDRT / -2225.8 mTVDSS.
2415	2420	85	CALCAREOUS CLAYSTONE: as above.
		5	SILTSTONE: pale brown to dark yellow brown, arenaceous grading to very fine Sandstone in part, trace micromicaeous, soft to firm, trace glauconite, sub-blocky.
		10	SANDSTONE: white to pale green, dominantly very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace glauconite matrix, friable to moderately hard, tight visual and inferred porosity.
			No Fluorescence.
2420	2425	75	CALCAREOUS CLAYSTONE: as above.
		15	SILTSTONE: as above.
		10	SANDSTONE: white to pale green, dominantly very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace glauconite matrix, friable to moderately hard, tight visual and inferred porosity.
			No Fluorescence.
2425	2430	80	CALCAREOUS CLAYSTONE: as above.
		15	SILTSTONE: as above.
		5	SANDSTONE: as above.
2430	2435	70	CALCAREOUS CLAYSTONE: as above.
		15	SILTSTONE: as above.
		15	SANDSTONE: white to pale green, clear to translucent in part, dominantly very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace glauconite matrix, moderately hard sggs, tight visual and inferred porosity.
			FLUORESCENCE: Trace: dull to moderately bright spotted green yellow Fluorescence, very slow crush cut, thin bluish white ring residue.
			P1.1 = 2436.0 mMDRT / 2278.1 mTVDRT / -2244.7 mTVDSS.
2435	2440	10	CLAYSTONE: light olive brown to medium brown, non calcareous, soft, dispersive, amorphous, common rock flour.
		10	CALCAREOUS CLAYSTONE: as above
		60	SILTSTONE: pale brown to dark yellow brown, arenaceous grading to very fine Sandstone in part, trace micromicaeous, soft to firm, trace glauconite, sub-blocky.

West Kingfish W21A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2440	2445	20	SANDSTONE: white to pale green, clear to translucent in part, dominantly very fine to fine, moderately well sorted, sub-angular to sub-rounded, trace glauconite matrix, moderately hard sggs, tight visual and inferred porosity. FLUORESCENCE: Trace: dull to moderately bright spotted green yellow Fluorescence, very slow crush cut, very thin greenish yellow ring residue.
		30	CLAYSTONE: as above.
		30	SILTSTONE (1): 20%: pale brown to dark yellow brown, very arenaceous grading to very fine Sandstone, trace micromicaeous, trace glauconite, soft to firm, sub-blocky. SILTSTONE (2): 10%: light to medium grey, common micro pyrite matrix, arenaceous, moderately hard to hard, sub-blocky.
		40	SANDSTONE: clear to translucent, fine to coarse, moderately sorted, sub-angular to sub-rounded, weak siliceous cement, rare pyrite nodules, dominantly loose, poor to fair inferred and visual porosity. FLUORESCENCE: 2%: dull to moderately bright spotted green yellow Fluorescence, very slow crush cut, thin bluish white ring residue. M1.2 L (SBP3) = 2449.5 mMDRT / 2291.1 mTVDRT / -2257.7 mTVDSS.
2445	2450	40	CLAYSTONE: as above.
		50	SILTSTONE (1): 20%: as above. SILTSTONE (2): 30%: as above.
		10	SANDSTONE: clear to translucent, rare green white, fine to coarse, moderately sorted, sub-angular to sub-rounded, weak siliceous cement, rare pyrite nodules, dominantly loose, occasionally friable to moderately hard aggregates, poor to fair inferred and visual porosity. FLUORESCENCE: 2%: dull to pale spotted green yellow Fluorescence, very slow crush cut, thin bluish white ring residue.
2450	2455	30	CLAYSTONE: light olive brown to medium brown, non calcareous, soft, dispersive, amorphous, common rock flour.
		30	SILTSTONE (1): 20%: pale brown to dark yellow brown, arenaceous grading to very fine Sandstone in part, trace micromicaeous, trace glauconite, soft to firm, sub-blocky. SILTSTONE (2): 10%: as above
		40	SANDSTONE: clear to translucent, rare pale green, fine to very coarse, dominantly fine to medium, moderately sorted, sub-angular to sub-rounded, weak pyritic cement, weak siliceous cement, trace to rare pyrite nodules, dominantly loose, friable aggregates, common rock flour, poor to fair inferred and visual porosity. FLUORESCENCE: 3%: dull to pale spotted green yellow Fluorescence, very slow crush diffusive direct cut, very slow crush cut, very thin bluish white ring residue. Top of M1.3U (PSB7) = 2459.0 mMDRT / 2300.3 mTVDRT / -2266.9 mTVDSS.
2455	2460	10	CLAYSTONE: as above.
		30	SILTSTONE (1): 20%: as above. SILTSTONE (2): 10%: as above.
		60	SANDSTONE: clear to translucent, pale brown, fine to coarse, dominantly fine to medium, moderately sorted, sub-angular to sub-rounded, weak pyrite cement, weak siliceous cement, trace pyrite nodules, loose, friable aggregates, common rock flour, poor inferred and visual porosity. FLUORESCENCE: 7%: dull to pale spotted green yellow Fluorescence, very slow crush cut, thin bluish white film residue. PS4 Sand = 2465.0 mMDRT / 2306.1 mTVDRT / -2272.7 mTVDSS.
2460	2465	10	CLAYSTONE: as above.

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Interval (m) From To		%	Lithology / Show Description
2465	2470	20	SILTSTONE (1): 20%: as above.
			SILTSTONE (2): 10%: as above.
		70	SANDSTONE: clear to translucent, pale brown, fine to coarse, dominantly fine to medium, moderately sorted, sub-angular to sub-rounded, weak pyrite cement, weak siliceous cement, trace pyrite nodules, loose, friable aggregates, common rock flour, poor inferred and visual porosity. FLUORESCENCE: 7%: dull to pale spotted green yellow Fluorescence, very slow diffusive direct cut, very slow crush cut, thick bluish white film residue.
		20	CLAYSTONE: as above.
		50	SILTSTONE (1): 30%: as above.
2470	2475		SILTSTONE (2): 20%: as above.
		30	SANDSTONE: clear to translucent, pale brown grey, medium to coarse, very coarse in part, moderately sorted, sub-angular to sub-rounded, moderately pyritic cement, weak siliceous cement, occasionally fractured quartz grains, common pale grey brown rock flour, loose, poor to fair inferred and visual porosity. FLUORESCENCE: 10%: dull to moderately bright spotted, patchy green yellow Fluorescence, very slow diffusive direct cut, very slow crush cut, thick moderately bright bluish white film residue.
		10	CLAYSTONE: as above.
		50	SILTSTONE (1): 30%: pale brown to dark yellow brown, arenaceous, trace micromicaeous, soft to firm, sub-blocky, amorphous in part.
			SILTSTONE (2): 20%: light to predominantly medium grey, common micro pyrite matrix, moderately calcareous, soft to moderately hard, rare hard, sub-blocky, rare amorphous.
2475	2480	40	SANDSTONE: clear to translucent, pale brown grey, medium to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, moderately pyritic cement, weak siliceous cement, occasionally fractured quartz grains, common pale grey brown rock flour, dominantly loose, poor to fair inferred and visual porosity. FLUORESCENCE: 10%: dull to moderately bright spotted, patchy green yellow Fluorescence, very slow crush cut, thick moderately bright bluish white film residue. Top of M1.3L (PSB4) = 2476.0 mMDRT / 2316.8 mTVDR / -2283.4 mTVDS.
		20	CLAYSTONE: as above.
		50	SILTSTONE (1): 3%: as above.
			SILTSTONE (2): 20%: as above.
		30	SANDSTONE: clear to translucent, pale brown grey, medium to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, moderately pyritic cement, weak siliceous cement, occasionally fractured quartz grains, common pale grey brown rock flour, dominantly loose, poor to fair inferred and visual porosity. FLUORESCENCE: 10%: dull to moderately bright spotted, patchy green yellow Fluorescence, very slow crush cut, thick moderately bright bluish white film residue.
2480	2485	10	CLAYSTONE: light olive brown to medium brown, non calcareous, soft, dispersive, amorphous, common rock flour.
		30	SILTSTONE (1): 20%: as above.
			SILTSTONE (2): 10%: as above.

West Kingfish W21A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2485	2490	60	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately sorted, sub-angular to sub-rounded, moderately pyrite cement, weak siliceous cement, occasionally fractured quartz grains, dominantly loose, poor to fair inferred and visual porosity. FLUORESCENCE: 10%: dull to moderately bright spotted, patchy green yellow Fluorescence, very slow crush cut, thick moderately bright bluish white film residue. Base M1.3 Lower / Top M1.4 Upper = 2488.0 mMDRT / 2328.4 mTVDRT / -2295.0 mTVDSS.
		5	COAL: dusky brown to greyish black, dull, moderately hard, sub-blocky, uneven, trace disseminated pyrite.
		15	CLAYSTONE: as above.
		20	SILTSTONE (1): 10%: as above. SILTSTONE (2): 10%: as above.
2490	2495	60	SANDSTONE: clear to translucent, medium to dominantly very coarse, moderately sorted, sub-angular to sub-rounded, moderately pyrite cement, weak siliceous cement, occasionally fractured quartz grains, trace pyrite nodules, dominantly loose, generally clean, poor to fair inferred and visual porosity. FLUORESCENCE: 5%: dull to moderately bright spotted, patchy green yellow Fluorescence, very slow diffusive direct cut, very slow crush cut, thin moderately bright bluish white film residue.
		5	COAL: as above.
		15	SILTSTONE (1): 5%: as above. SILTSTONE (2): 10%: medium light grey to medium grey, common micro pyrite matrix, calcareous in part, firm to moderately hard, sub-blocky.
		80	SANDSTONE: clear to translucent, medium to coarse, moderately well sorted, sub-angular to sub-rounded, moderately pyritic cement, weak siliceous cement, occasionally fractured quartz grains, moderately hard to hard aggregates, dominantly loose, generally clean, fair inferred and visual porosity. FLUORESCENCE: Trace: dull to pale spotted green yellow Fluorescence, very slow crush cut, thin moderately bright bluish white ring residue.
2495	2500	20	SILTSTONE (1): 5%: pale brown to dark yellow brown, arenaceous, trace micromicaeous, soft to firm, sub-blocky, amorphous in part. SILTSTONE (2): 15%: medium light grey to medium grey, common micro pyrite matrix, calcareous in part, firm to moderately hard, sub-blocky.
		80	SANDSTONE: clear to translucent, medium to coarse, moderately well sorted, sub-angular to sub-rounded, moderately pyritic cement, weak siliceous cement, occasionally fractured quartz grains, moderately hard to hard aggregates, dominantly loose, generally clean, fair inferred and visual porosity. FLUORESCENCE: Trace: dull to pale spotted green yellow Fluorescence, very slow crush cut, thin pale bluish white ring residue. M14 Coal / Top M1.4 Upper= 2503.0 mMDRT / 2342.9 mTVDRT / -2309.5 mTVDSS.
2500	2505	70	SILTSTONE (1): 40%: as above. SILTSTONE (2): 30%: as above.

West Kingfish W21A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
2505	2510	30	SANDSTONE: clear to translucent, pale brown in part, medium to coarse, moderately well sorted, sub-angular to sub-rounded, weak pyritic cement, weak siliceous cement, occasionally fractured quartz grains, friable to moderately hard aggregates, loose, minor rock flour, poor to fair in fine and visual porosity. FLUORESCENCE: Trace: dull to pale spotted green yellow Fluorescence, very slow crush cut, thin pale bluish white ring residue.
		60	SILTSTONE (1): 40%: as above. SILTSTONE: (2): 20%: as above.
		40	SANDSTONE: clear to translucent, medium to very coarse, moderately sorted, sub-angular to sub-rounded, weak siliceous cement, occasionally fractured quartz grains, friable to mid hard aggregates, loose, poor to fair inferred and visual porosity. No Fluorescence. Top of M1.5 = 2513.5 mMDRT / 2353.0 mTVDRT / -2319.6 mTVDSS.
2510	2515	50	SILTSTONE (1): 40%: as above. SILTSTONE: (2): 10%: as above.
		50	SANDSTONE: clear to translucent, medium to very coarse, moderately well sorted, sub-angular to sub-rounded, occasionally fractured quartz grains, loose, moderately hard aggregates, generally clean, fair inferred and visual porosity. No Fluorescence.
2515	2520	30	SILTSTONE (1): 20%: as above. SILTSTONE: (2): 10%: as above.
2520	2525	70	SANDSTONE: as above.
		20	SILTSTONE (1): 10%: as above. SILTSTONE: (2): 10%: as above.
		80	SANDSTONE: clear to translucent, opaque, medium to dominantly very coarse, moderately well sorted, sub-angular to sub-rounded, weak siliceous cement, occasionally fractured quartz grains, dominantly loose, generally clean, fair inferred and visual porosity. No Fluorescence. Top of M1.7 = 2527.0 mMDRT / 2366.1 mTVDRT / -2332.7 mTVDSS.
2525	2530	10	SILTSTONE: light to medium grey, common pyritic matrix, non calcareous, firm to md hard, sub-blocky.
		90	SANDSTONE: clear to translucent, opaque, predominantly coarse to very coarse, fine to medium in part, moderately sorted, sub-angular to sub-rounded, weak siliceous cement, occasionally fractured quartz grains, dominantly loose, generally clean, fair inferred and visual porosity. No Fluorescence.
2530	2535	10	SILTSTONE: as above.
2535	2540	90	SANDSTONE: as above.
		15	SILTSTONE: as above.
		85	SANDSTONE: clear to translucent, opaque, medium to coarse, minor very coarse, moderately sorted, sub-angular to sub-rounded, weak siliceous cement, occasionally fractured quartz grains, loose, generally clean, fair inferred and visual porosity. No Fluorescence.
2540	2545	10	SILTSTONE: pale brown to medium yellow brown, arenaceous, trace micromicaeous, soft to firm, sub-blocky, amorphous in part.

West Kingfish W21A Lithology / Show Descriptions

Interval (m) From To		%	Lithology / Show Description
		90	SANDSTONE: clear to translucent, opaque, coarse to very coarse, moderately well sorted, sub-angular to sub-rounded, weak siliceous cement, occasionally fractured quartz grains, loose, generally clean, fair inferred and visual porosity. No Fluorescence.
2545	2550	10	SILTSTONE: as above.
		90	SANDSTONE: as above.
2550	2555	10	SILTSTONE: as above.
		90	SANDSTONE: clear to translucent, opaque, medium to very coarse, moderately sorted, sub-angular to sub-rounded, weak siliceous cement, occasionally fractured quartz grains, trace pyrite nodules, loose, generally clean, minor rock flour, fair inferred and visual porosity. No Fluorescence.
2555	2560	10	SILTSTONE: as above.
		90	SANDSTONE: as above.
2560	2565	10	CLAYSTONE: light grey to light bluish grey, soft to moderately hard, rare hard, blocky to sub-blocky.
		40	SILTSTONE: pale brown to medium yellow brown, arenaceous, trace micromicaeous, trace disseminated pyrite, soft to firm, moderately hard in part, sub-blocky.
		50	SANDSTONE: as above.
2565	2570	10	CLAYSTONE: as above.
		40	SILTSTONE: as above.
		50	SANDSTONE: clear to translucent, opaque, medium to coarse, rare very coarse, moderately sorted, sub-angular to sub-rounded, weak siliceous cement, occasionally fractured quartz grains, trace pyrite nodules, loose, generally clean, fair inferred and visual porosity. No Fluorescence.
2570	2575	10	CLAYSTONE: as above.
	TD	50	SILTSTONE: as above.
		40	SANDSTONE: clear to translucent, opaque, medium to coarse, minor very coarse, moderately well sorted, sub-angular to sub-rounded, weak siliceous cement, occasionally fractured quartz grains, minor pale grey rock flour, loose, fair inferred and visual porosity. No Fluorescence.
WKF W21A reached a TD of 2575.0 mMDRT = 2379.2 mTVDRT (-2379.2 mTVDSS) at 0100 hrs on 21 August 2006.			

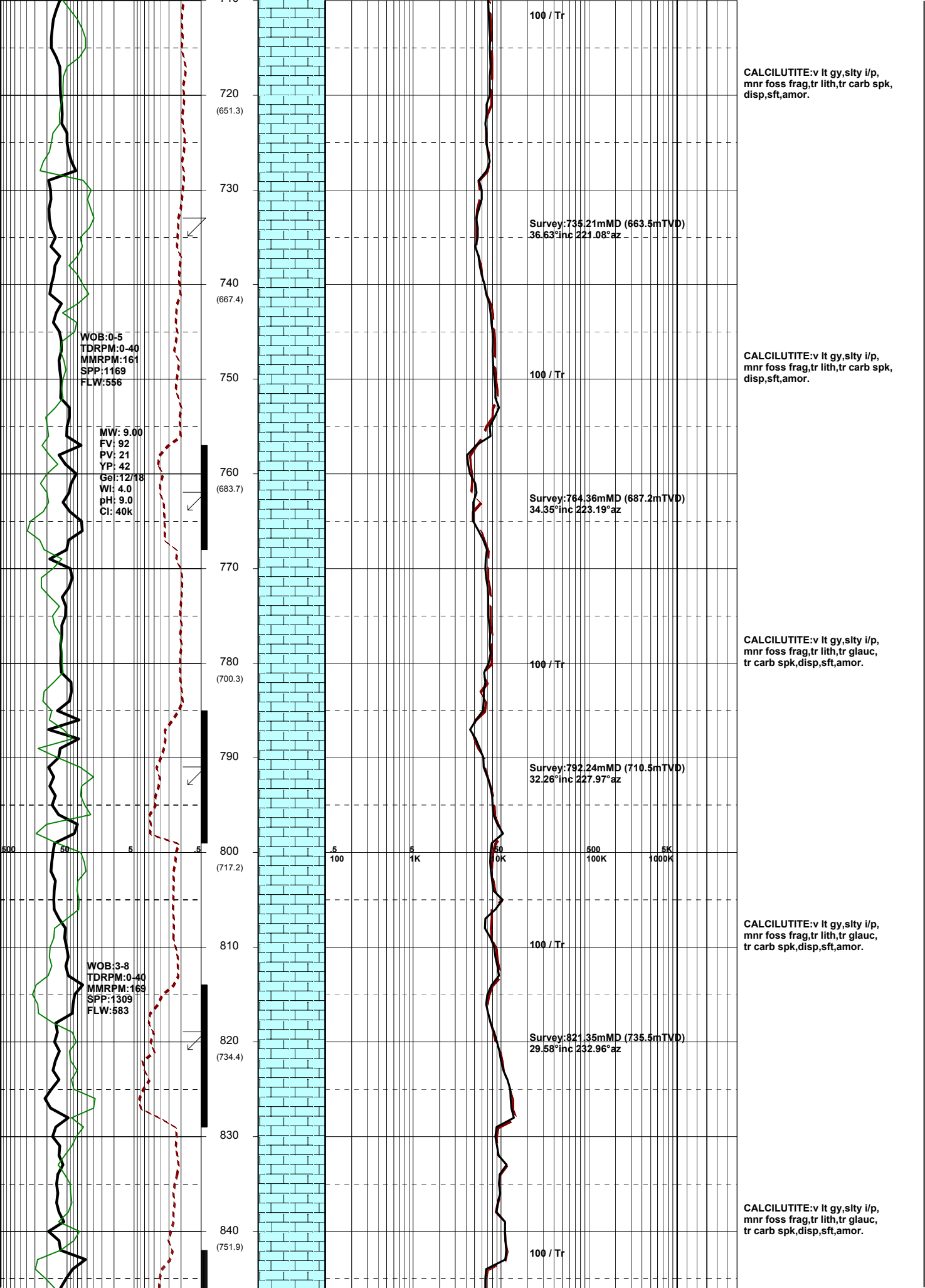
APPENDIX 4a

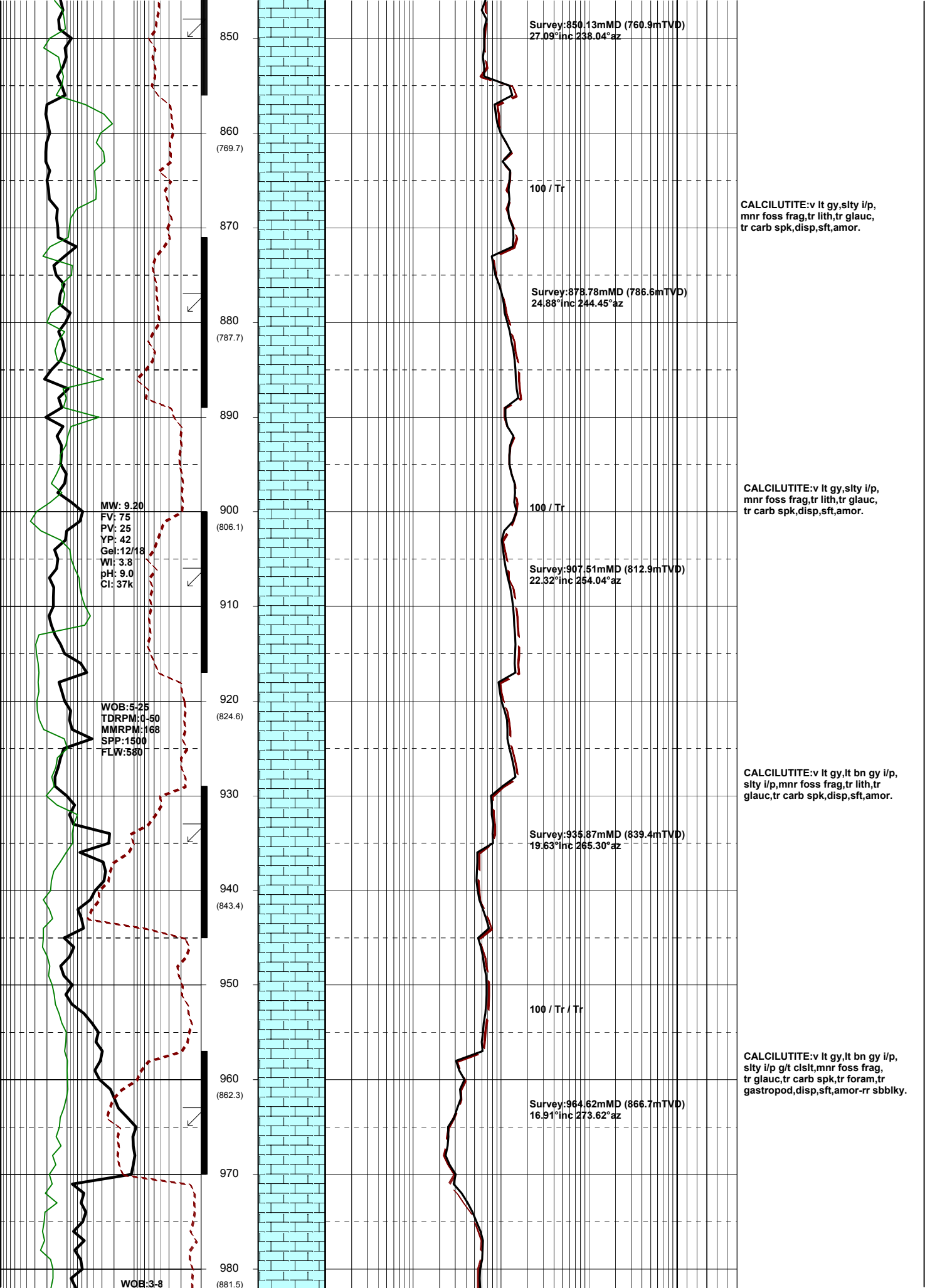
WEST KINGFISH W21A

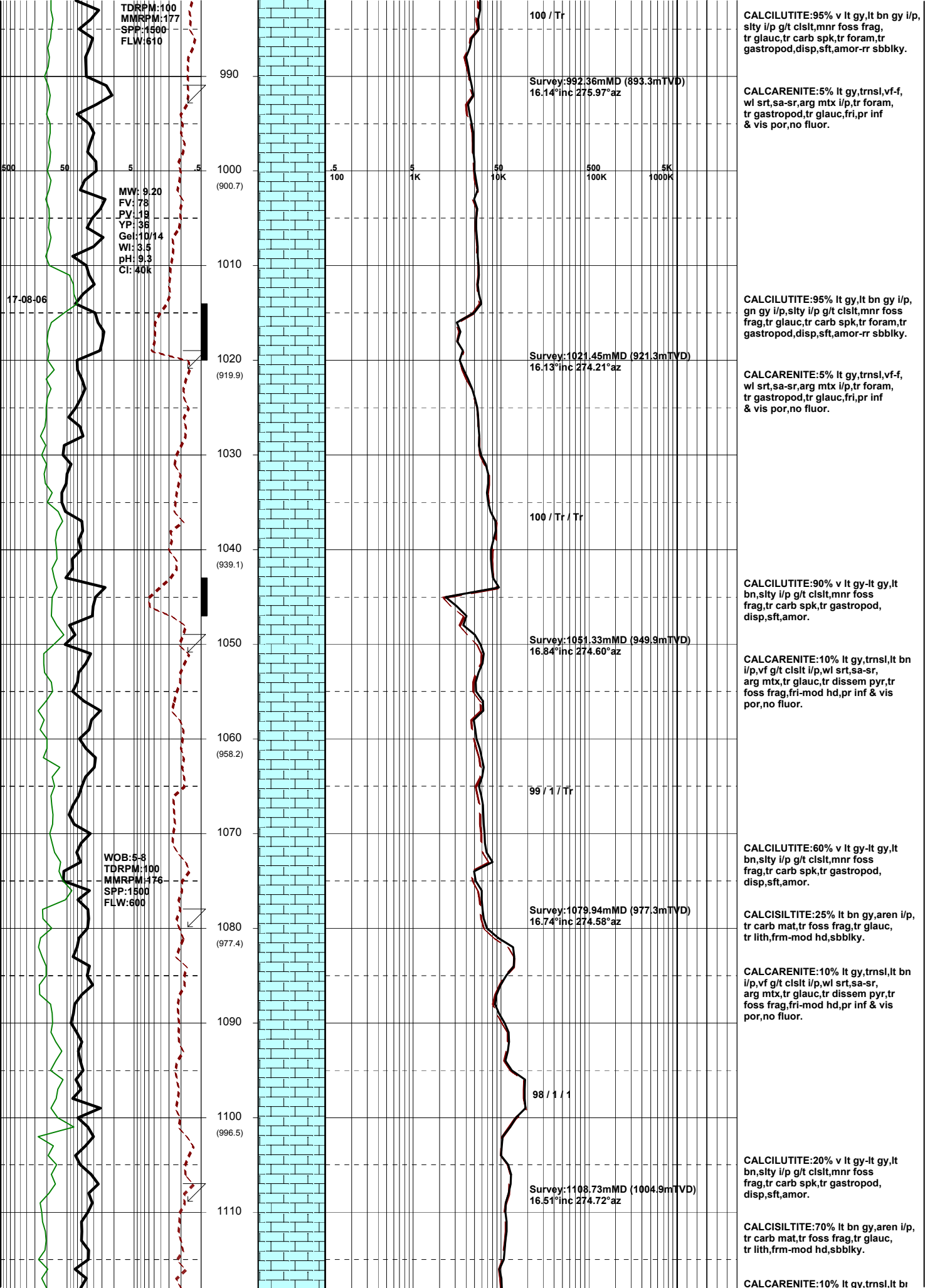
Mud Log

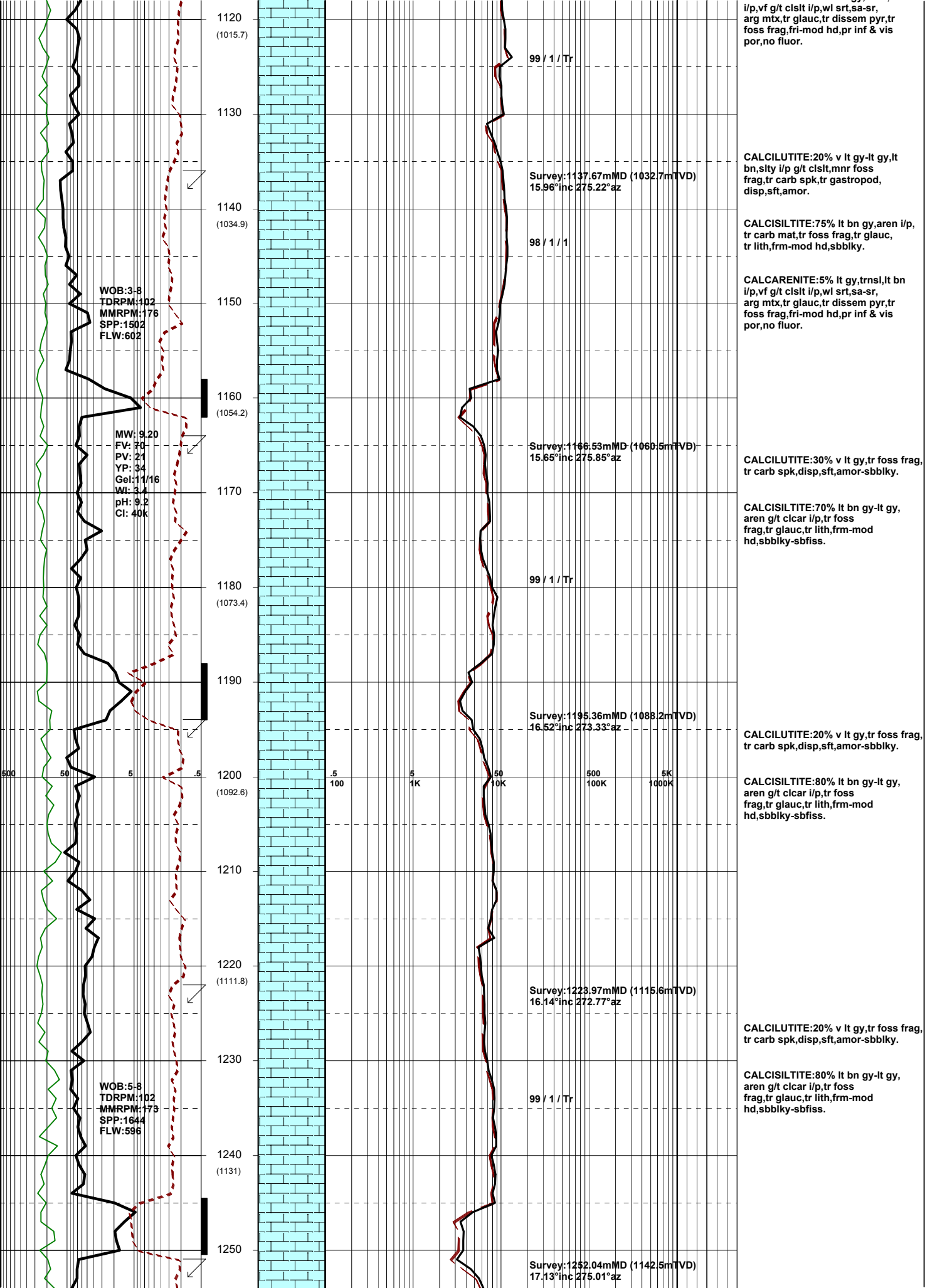


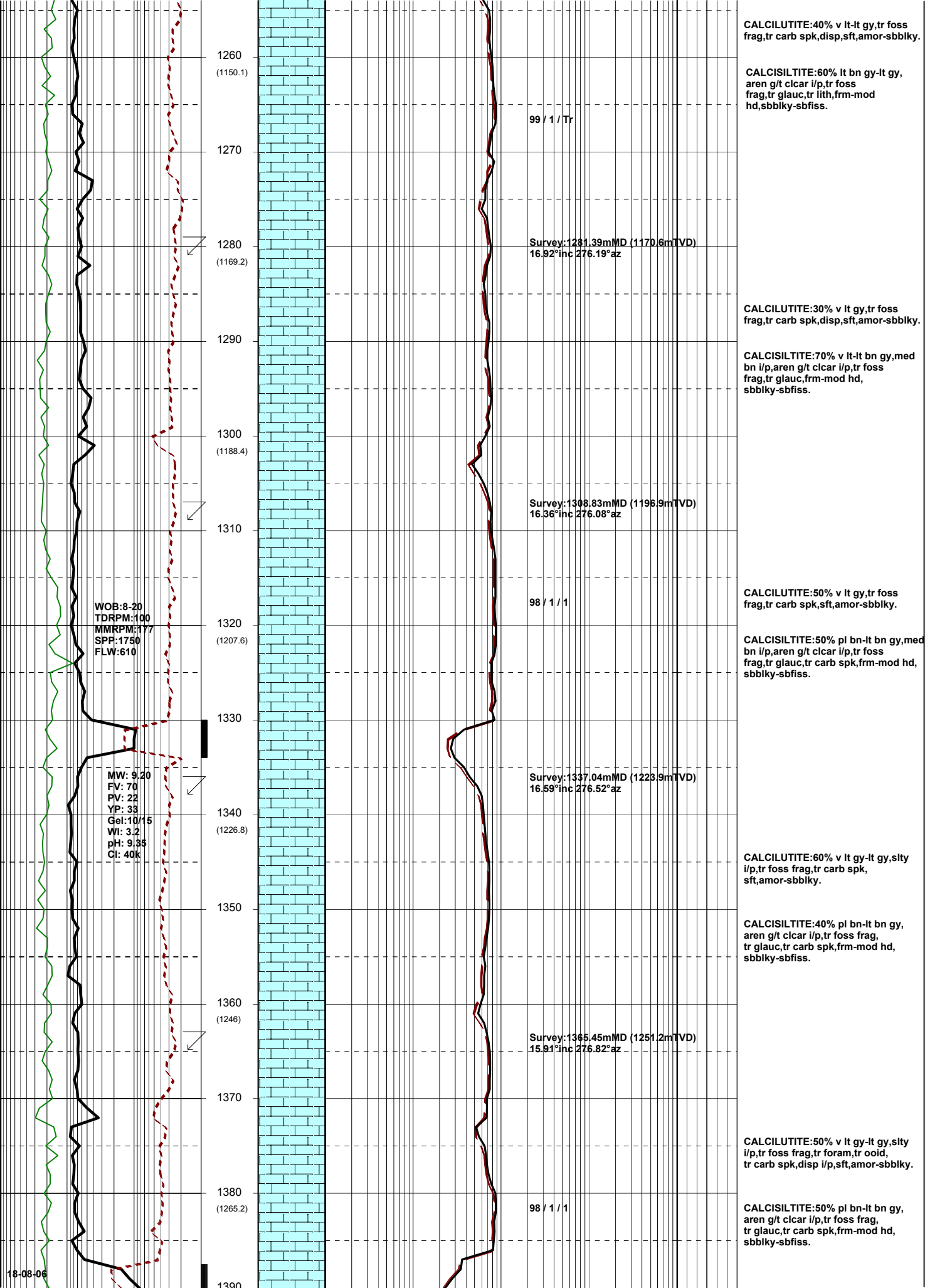
ROP (m/hr)		SLIDING BAR	DEPTH (m) (TVD)	CUTTINGS LITHOLOGY	RESERVAL GAS DATA										CUT FLUOR	DIRECT FLR	LITHOLOGY DESCRIPTIONS and REMARKS		
500	50				5	.5	C1	C2	C3	iC4	nC4	iC5	nC5	TG				good	fair
WOB (tons)					%	Total Gas in Units Chromatograph in PPM													
50			25	0		.5	5	50	500	5K									
MWD Gamma Ray (api)						100	1K	10K	100K	1000K									
0			100	200															
MW: 8.90 FV: 69 PV: 18 YE: 24 Gel: 10/12 WI: 4.2 pH: 11.2 CC: 40k				660		Tie in Survey: 665.00mMD (608.35mTVD) 42.42°inc 218.05°az										PREVIOUS WELL HISTORY Plugged & Abandoned in August, 2006 10-3/4" Surface Csg 667.0m MDRT 7-5/8" Production Csg cut and pulled from 753.5m MDRT Kick-off plug at 625.0m MDRT			
16-08-06				670		Survey: 677.19mMD (617.5mTVD) 39.93°inc 219.70°az										West Kingfish W-21A spud at 22:30 hours on 15-08-2006 from 667.0m MDRT			
WOB: 0-5 TDRPM: 0-40 MMRPM: 158 SPP: 950 FLW: 545				680 (619.7)		BIT #1RR1 8 1/2" Smith S616PX Jets: 6x20 In : 667.0m MDRT Out : 2575.0m MDRT Run : 1908.0m Hrs : 69.2 Cond:										Drill with 8% KCl/PHPA/Polymer Glycol-CP mud system. PIT at 667.0m MDRT 609.8m TVDRT 265 psi 9.0 ppg EMW: 11.4 ppg			
				690												CALCULITE: v lt gy, silty i/p, mnr foss frag, tr lith, tr carb spk, disp, sft, amor.			
				700 (635.4)		Survey: 706.08mMD (640.2mTVD) 38.86°inc 221.18°az										No H2S or CO2 Detected			
				710															

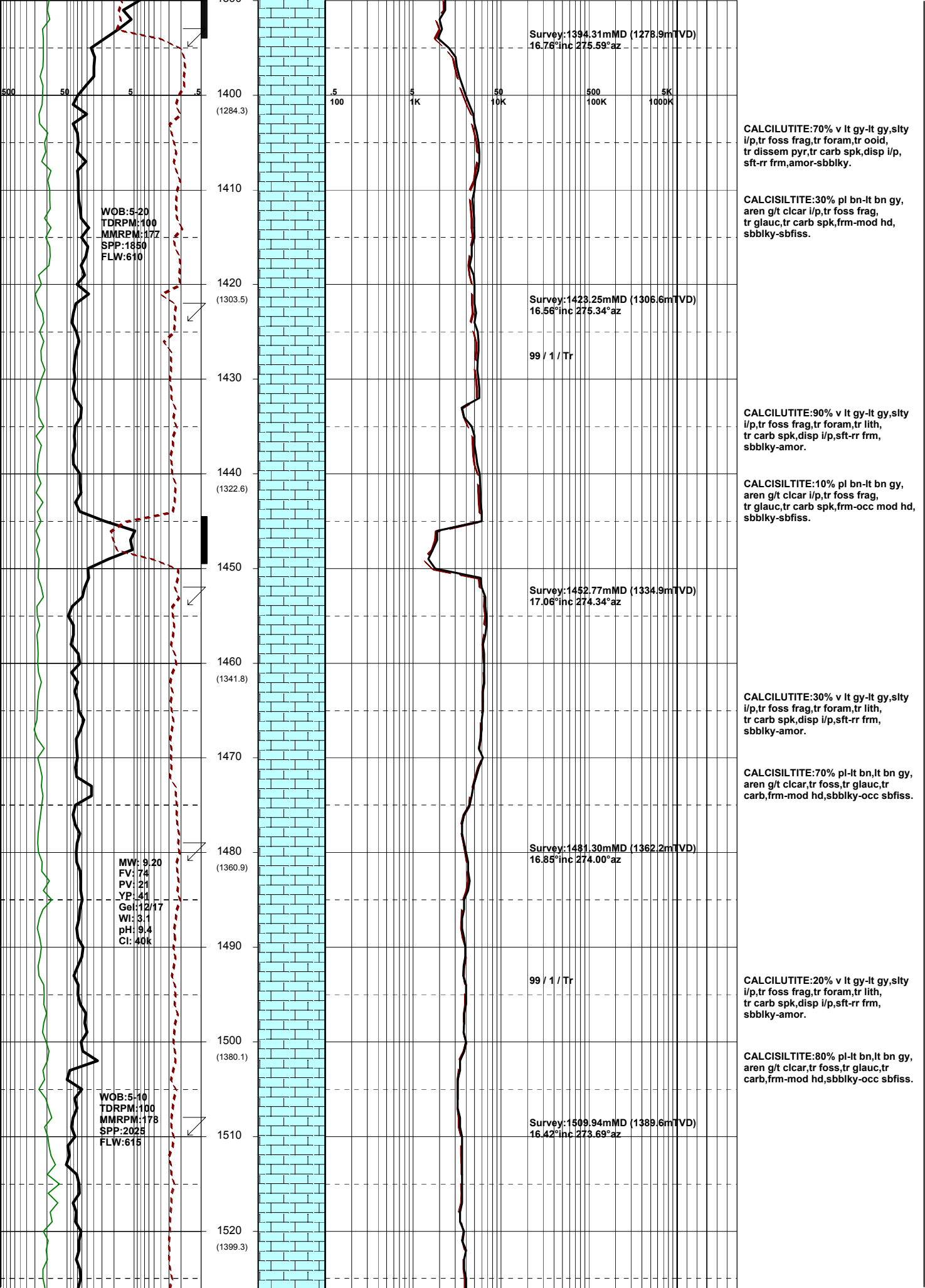


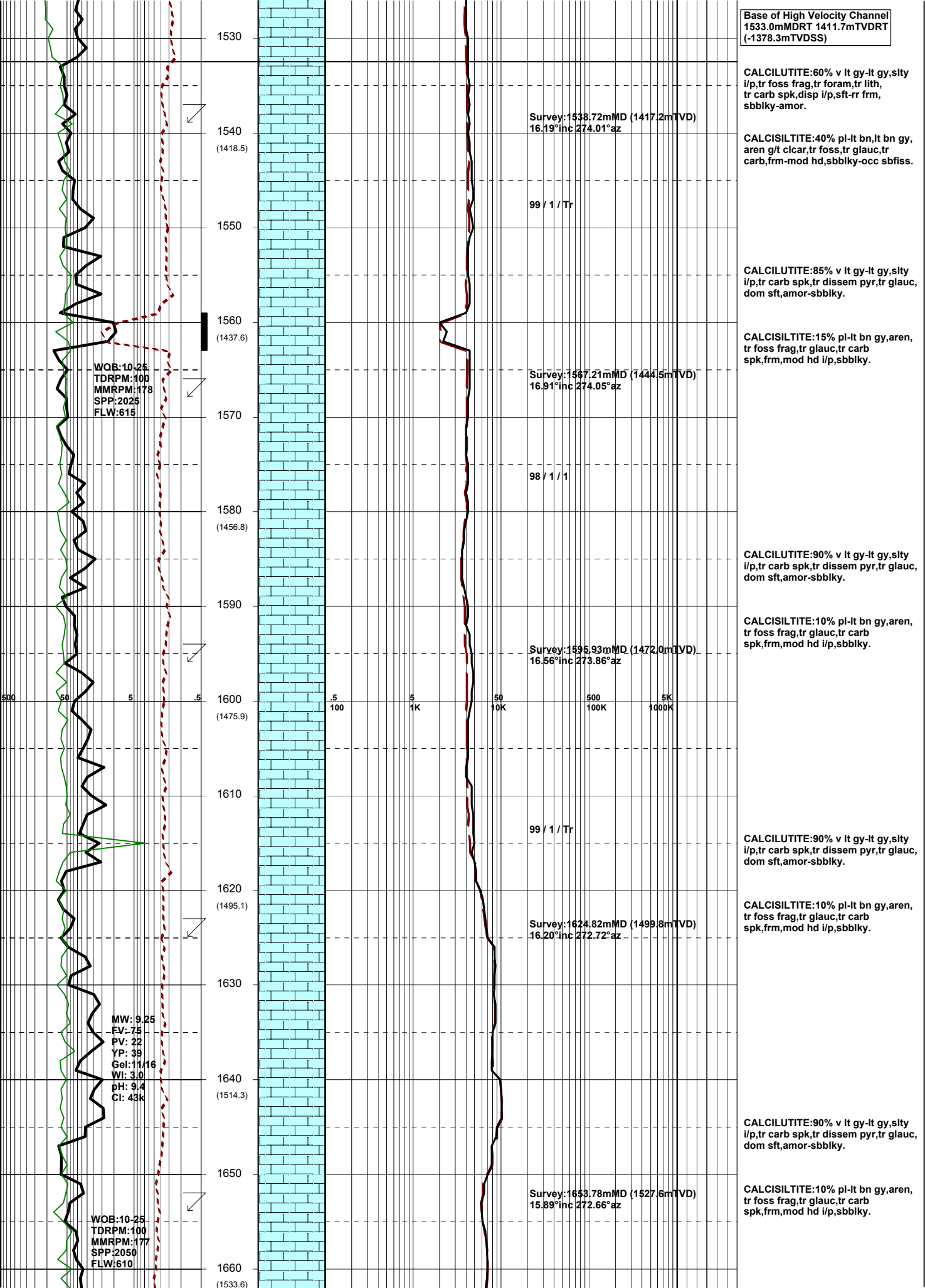


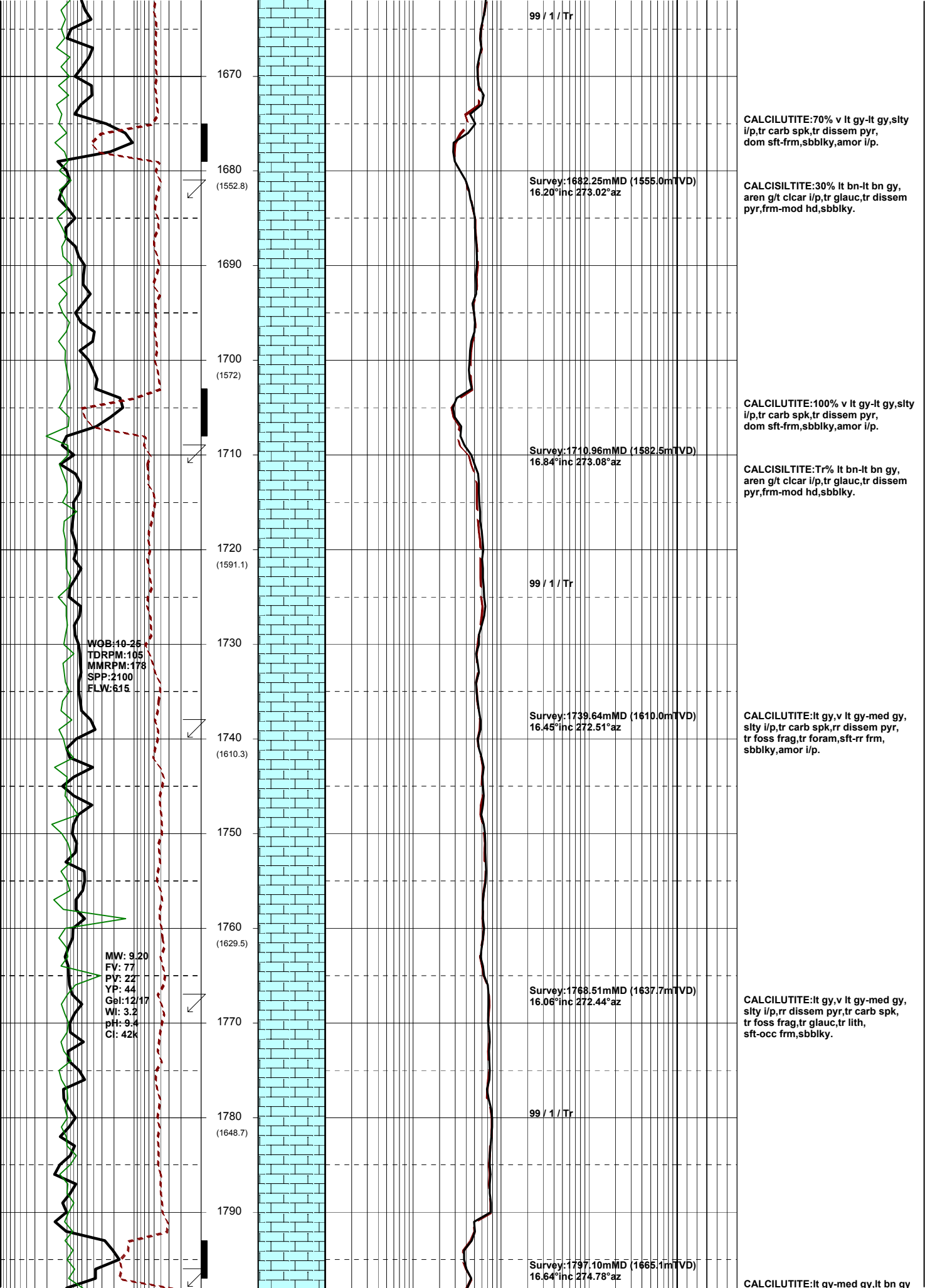


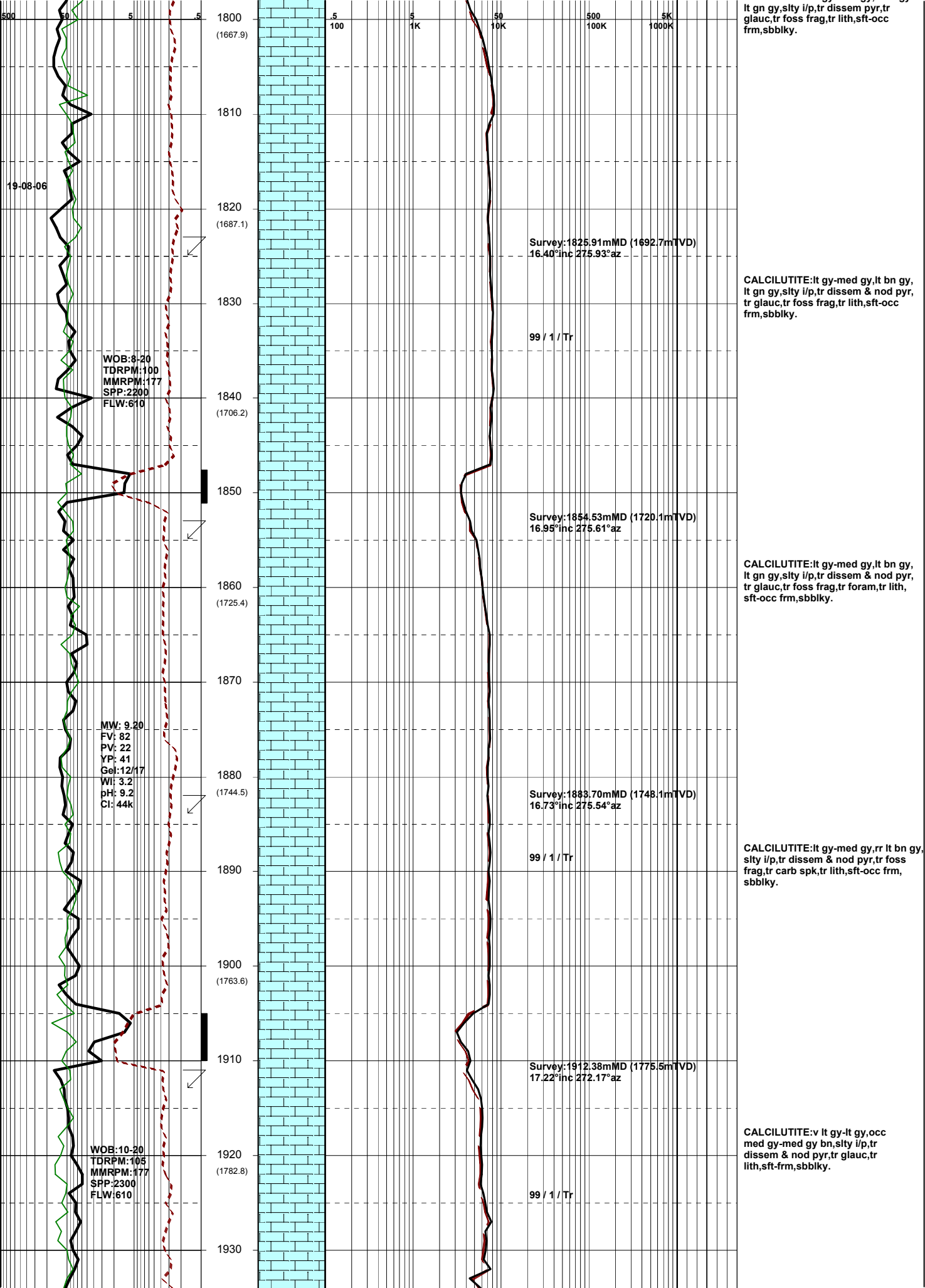


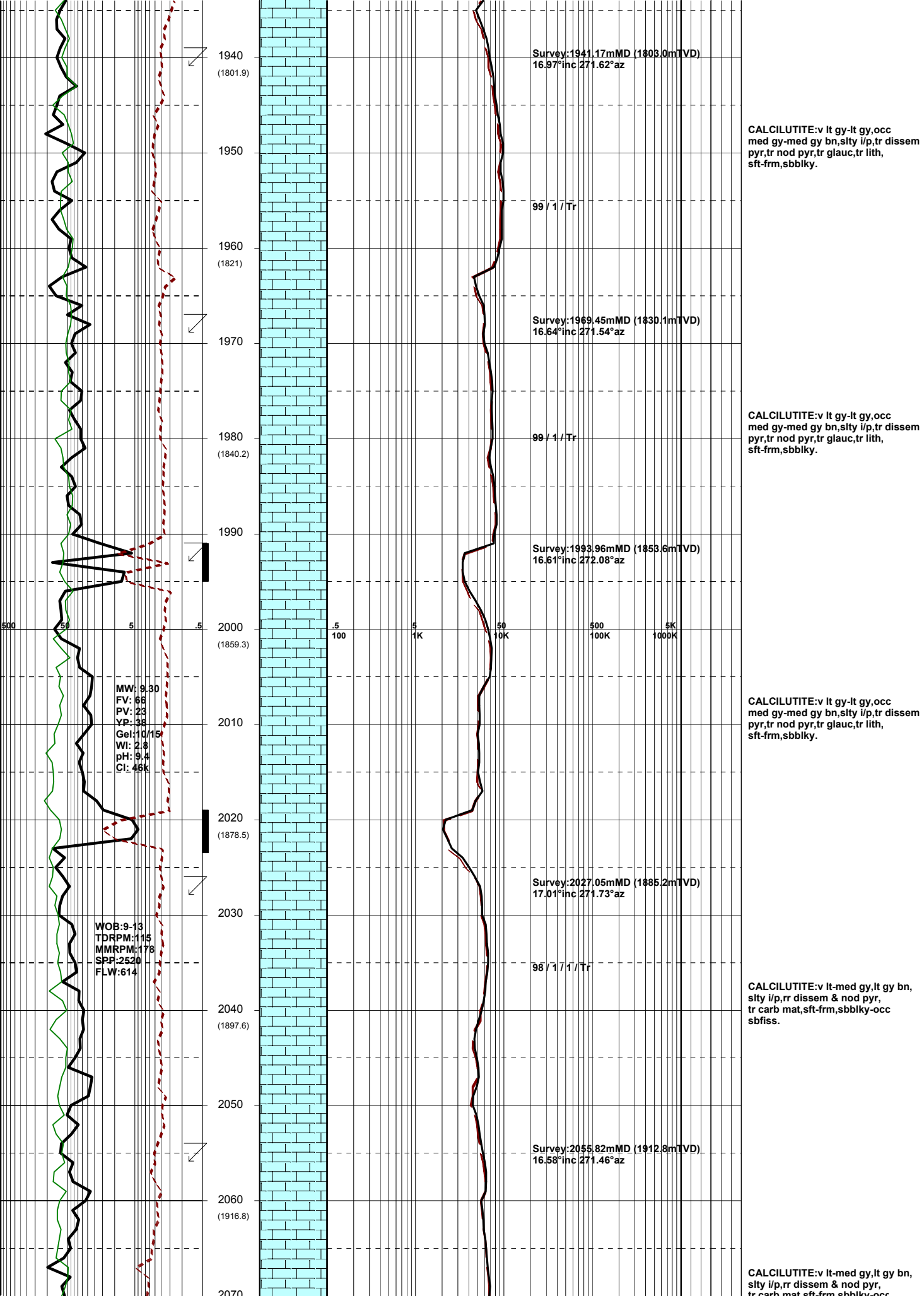


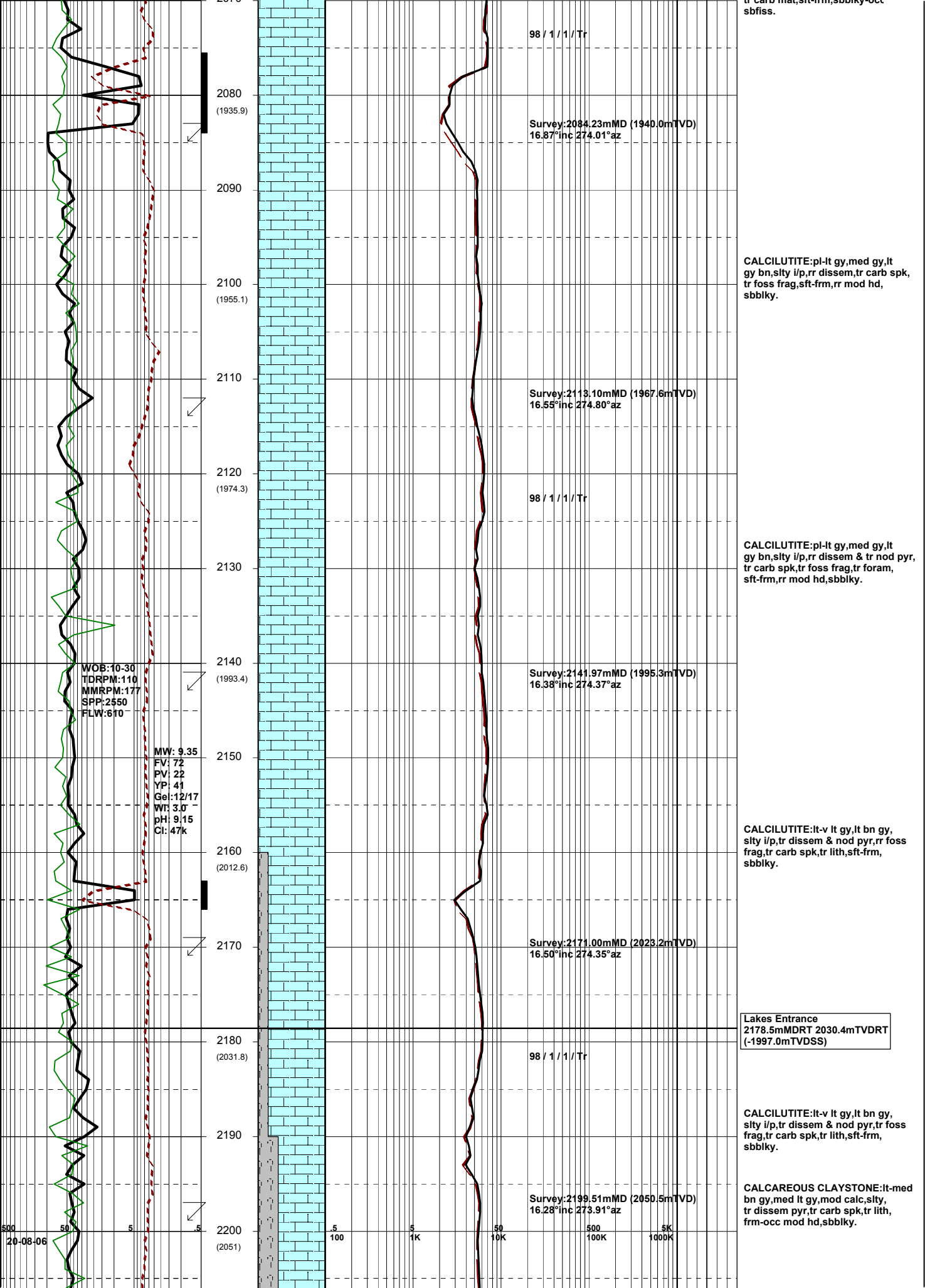












MW: 9.35
FV: 73
PV: 22
YP: 43
Gel: 12/17
WI: 3.0
pH: 8.95
CI: 48k

MW: 9.30
FV: 69
PV: 22
YP: 43
Gel: 12/17
WI: 3.0
pH: 9.40
Cl: 48k

CALCAREOUS CLAYSTONE:med lt gy,lt-med bn gy,mod calc,slty, tr dissem & nod pyr,tr carb spk,tr lith frm.sbbly.

CALCAREOUS CLAYSTONE:med lt gy-med gy,lt bn gy,mod calc,slty, tr dissem & nod pyr,tr carb spk,tr lith,frm,sbblky.

CALCILUTITE:lt-v lt gy,lt bn gy,
silty i/p,tr dissem & nod pyr,tr foss
frag,tr carb spk,tr lith,sft-frm,
sbblky.

CALCAREOUS CLAYSTONE:lt-med
gy,gy gn,med bn gy i/p,slty,mod calc,
tr dissem pyr,tr lith,tr carb mat,
frm.sbbly.

CALCAREOUS CLAYSTONE:lt-med
gy,gy gn,med bn gy i/p,slty,mod calc,
tr dissem pyr,tr lith,tr carb mat,
frm.sbbly.

CALCAREOUS CLAYSTONE:lt-med
gy,gy gn,med bn gy i/p,slty,mod calc,
tr dissem pyr,tr lith,tr carb mat,
frm.sbbly.

CALCAREOUS CLAYSTONE:lt-med
gy,gy gn,med bn gy i/p,slty,mod calc,
tr dissem pyr,tr lith,tr carb mat,
frm.sbbly.

CALCAREOUS CLAYSTONE:lt-mec

Survey: 2228.27mMD (2078.1mTVD)
16.61°inc 273.78°az

98 / 1 / 1 / Tr

Survey: 2257.06mMD (2105.7mTVD)
16.34°inc 273.68°az

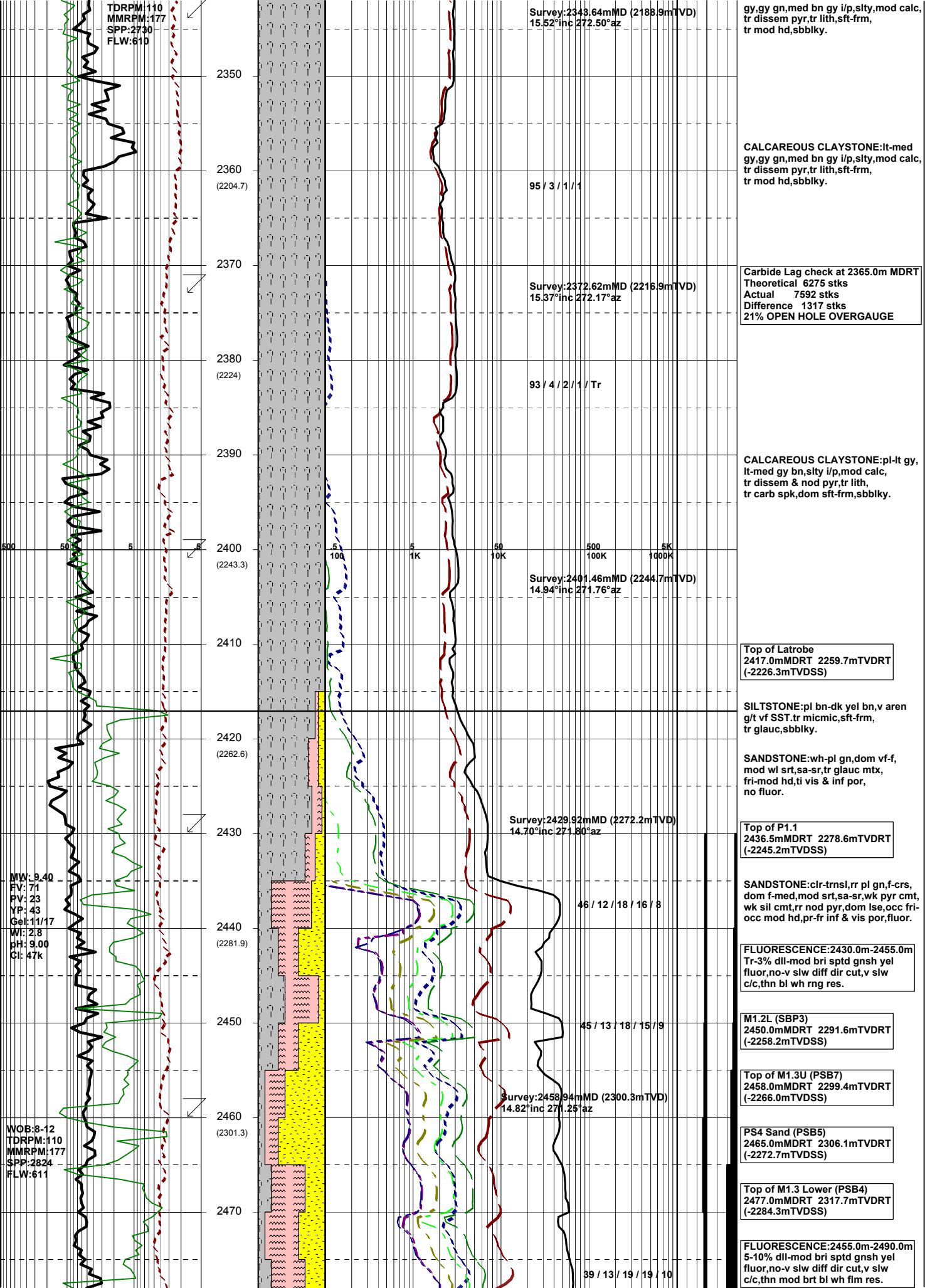
97 / 1 / 1 / 1

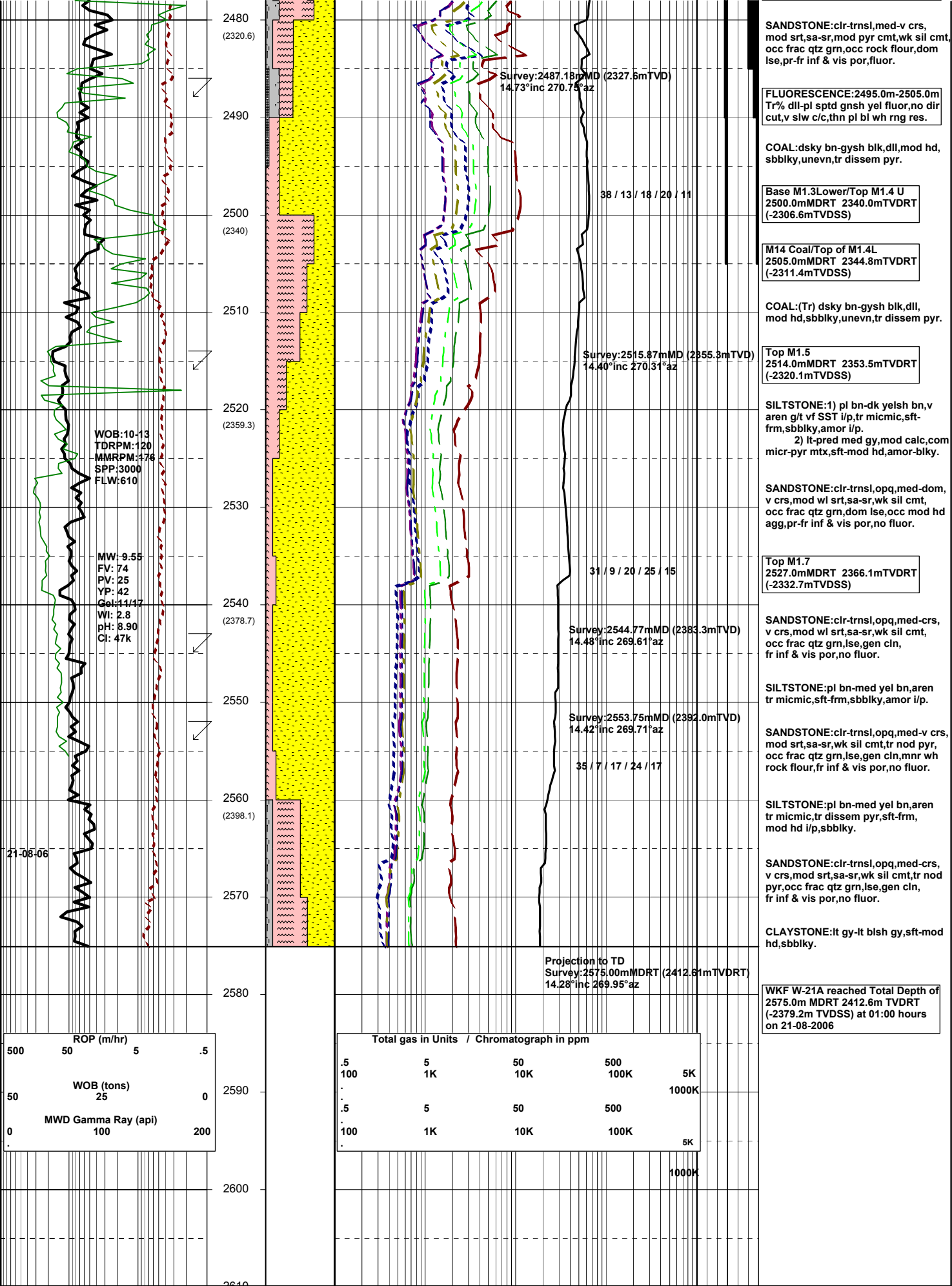
Survey: 2286.05mMD (2133.5mTVD)
16.20°inc 272.86°az

97	1	1	1
----	---	---	---

Survey: 2314.82mMD (2161.2mTVD)
16.02°inc 272.40°az

97 / 1 / 1 / 1





APPENDIX 4b

WEST KINGFISH W21A

Well Completion Log



WELL COMPLETION LOG

Scale – 1:200







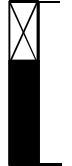












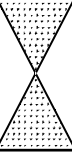







WEST KINGFISH W21A

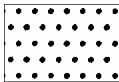


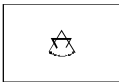
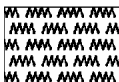
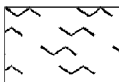



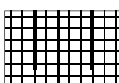

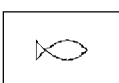
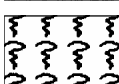

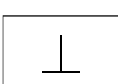
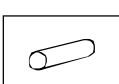
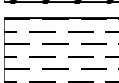

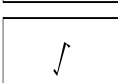
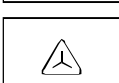


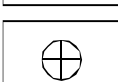

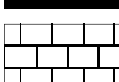
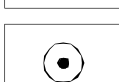
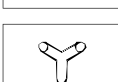
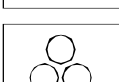
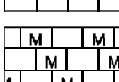
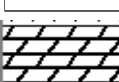
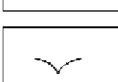

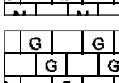


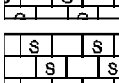
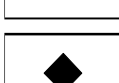
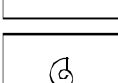
Gippsland Basin, Victoria

Concession: VIC/L7

POST-DRILL LOCATION: <i>Top of Latrobe</i>	Latitude:	38° 35' 41.894" S	COMPILED BY:	Sheryl Sazenis
	Longitude:	148° 05' 52.746" E	DRAFTED BY:	Arnaldo Ribeiro
	MGA X:	595617.43 mE	DRILL RIG:	Nabors Rig 453
	MGA Y:	5727596.83 mN	Datum:	GDA94
	Depth:	2416.5 mMDRT 2259.2 mTVDR (-2225.8 mTVDS)	Spheroid:	GRS80
ELEVATION:	G.L.:	-76.13 m	Projection:	UTM
	R.T.:	33.43 m	Map Grid/Cent.Meridian	MGA Zone 55/147 deg E
	Water Depth:	76.13 m	TOTAL DEPTH:	2575.0 mMDRT / 2412.6 mTVDR
			PLUGGED BACK T.D.:	2544 mMDRT (2534m Wireline HUD)
DATES:	Spudded:	15/08/2006	CLASSIFICATION:	Oil Development
	Rig Released:	29/08/2006	STATUS:	Cased and Completed – Oil well
	I.P. Established:	09/09/2006	PRODUCTION TESTING:	n/a
	(Initial production)		WELLSITE GEOLOGIST:	AIPC (Australian International Petro-Consultants)
SERVICE COMPANIES:	DRILLING CONTRACTOR:	International Sea Drilling Limited (Nabors Rig 453)	MUD LOGGING:	Geoservices Overseas S.A.
	MWD/DIRECT. DRLG:	Schlumberger Anadrill	PRESSURE RECORDING:	n/a
	GYRO SURVEYING:	SDI (Scientific Drilling Int.)	WELL VELOCITY SURVEY:	n/a
	CORING:	n/a	MUD ENGINEERING:	Halliburton- Baroid
	PIPE CONVEYED	Precision Energy Services (Reeves Compact	LINER:	n/a
	LOGGING:	Shuttle Logging System)		
	CEMENTING:	Halliburton		
	CASING:	Weatherford		

LEGEND

<div>2.7m NOS </div> <div>Ø = 17%</div> <div>Sw = 32%</div>		LOG ANALYSIS DATA		 SHOW OR STAIN	
		NS - Net Sand		 HYDROCARBON CUT	
		NOS - Net Oil Sand		 FLUORESCENCE	
		NGS - Net Gas Sand		 GAS SHOW	
		Sw - Water Saturation		 OIL PRODUCTIVE	
<div><div><div>No Rec.</div><div>Rec.</div></div><div></div></div>		MUD DATA		 GAS PRODUCTIVE	
		Ø - Porosity		 INTERPRETED OIL PRODUCTION	
		Snd - Sand		 INTERPRETED GAS PRODUCTION	
		MW - Mud Weight		 INTERPRETED WATER PRODUCTION	
		FV - Funnel Velocity		 WATER PRODUCTIVE	
		PV - Plastic Velocity		 CONDENSATE PRODUCTION	
		YP - Yield Point		 INTEPRETED CONDENSATE BEARING	
		Gel - Gel Strength		 DSTG	
		pH - Acidity/Alkalinity		 DSTO	
		WL - Water Loss		 SURVEY POINT	
		Cl - Chloride		 13-3/8"	
		Ca - Calcium		 MUD	
		Sol - Solids			
		H2O - Water			
		Oil -Oil			
<div></div>		RECOVERED SIDE WALL CORE LITHOLOGY			
		SST - Sandstone CLST - Claystone			
		SLST - Siltstone LMST - Limestone			
		MST - Mudstone ML - Marl			
		SH - Shale COAL - Coal			
<div></div>		SIDE WALL CORE - NO RECOVERY			
<div></div>		FIT			
<div></div>		MDT/RFT PRETEST RUN/SEAT NUMBER			
<div></div>		MDT/RFT SAMPLE RUN/SAMPLE NUMBER			
<div></div>		MDT VERTICAL/HORIZONTAL PERMEABILITY TEST			
<div></div>		PACKER			
<div></div>		BRIDGE PLUG			

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

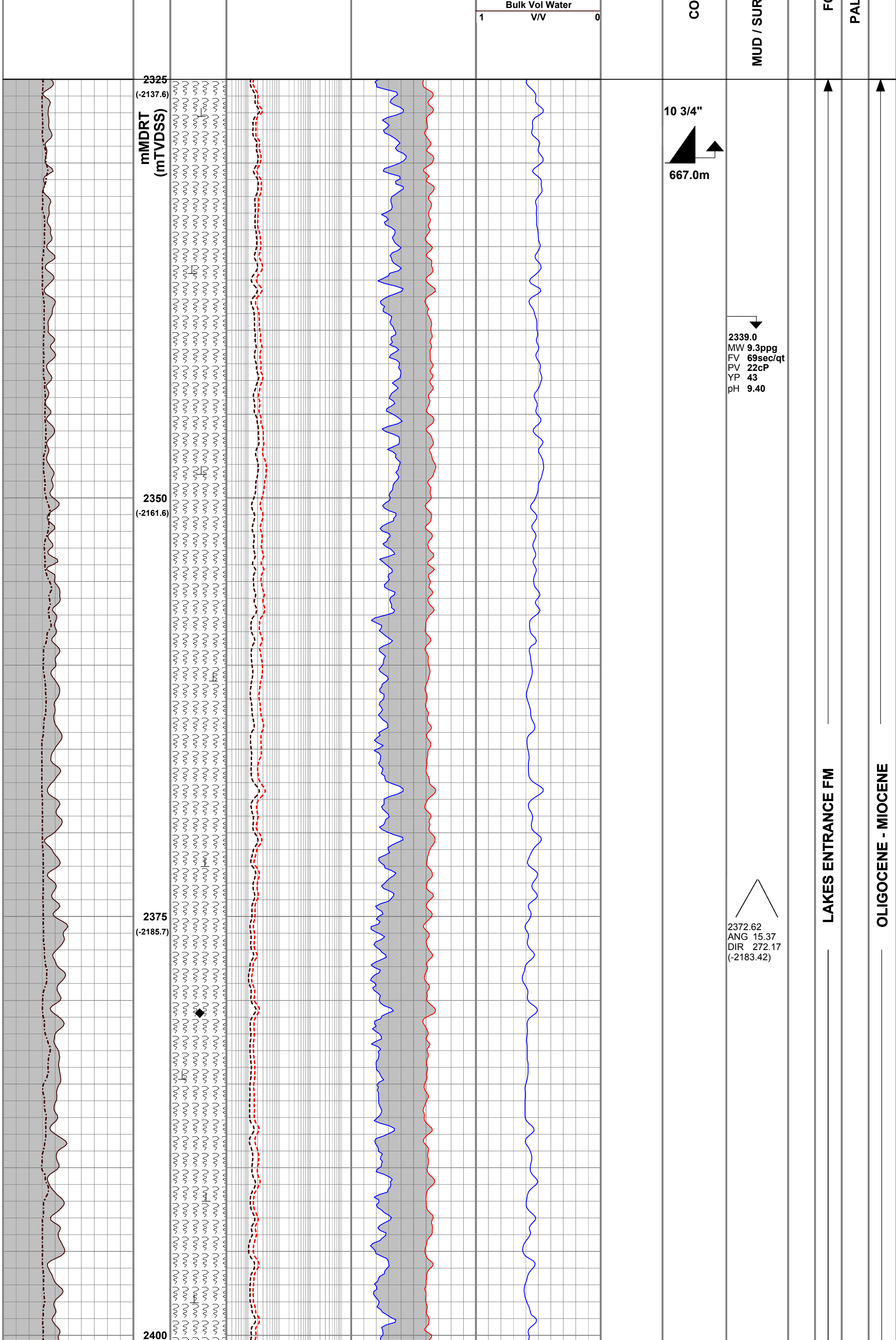
LOGGING AND SURVEYING			
Anadrill Schlumberger	Interval (mMDRT)	Precision Energy Services Logging	Interval (mMDRT)
MWD (Directional & GR) – 1 Run	665m - 2575.0m MDRT (GR 667m -2556m MDRT)	MCG-MDN-MPD-MSS-MDL-MAI – 1 Run (GR-Neutron-Density-Sonic-Dual Laterlog-Induction)	2572.0m -667.0m MDRT (Main log from 2566 – 2274MD)

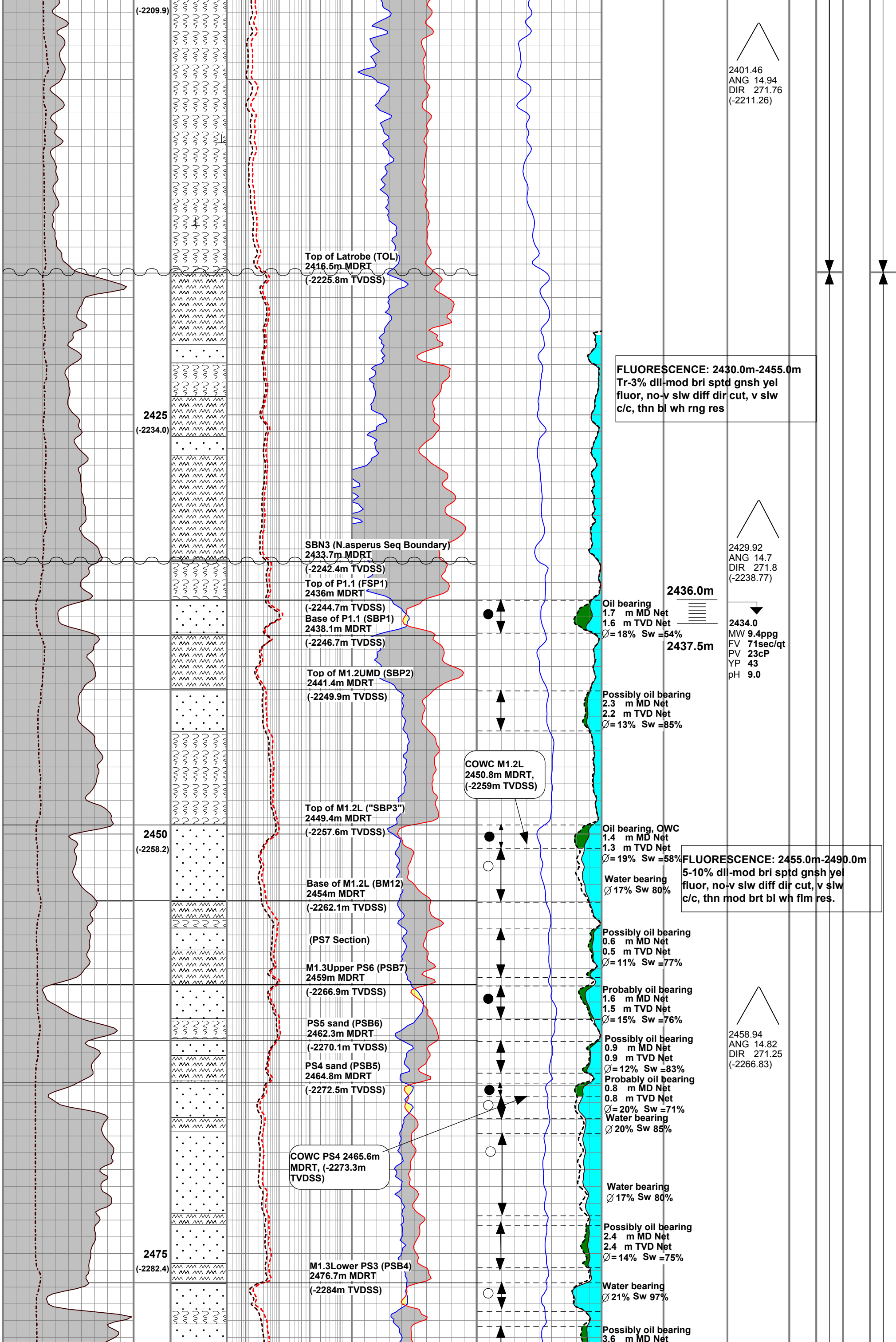
WELL DATA				
Date	15 August 2006 - 21 August 2006	21 August 2006 - 22 August 2006		
Run	MWD # 1	Wireline Run #1 on shuttle		
Log	Powerpulse Directional & GR	MCG-MDN-MPD-MSS-MDL-MAI		
Depth Driller	2575.0m MDRT	2575.0m MDRT		
Depth Logger	2575.0m MDRT	2575.0m MDRT		
Bottom Log Interval	2556m MDRT	2566.0m MDRT		
Top Log Interval	667.0m MDRT	667.0m MDRT		
Casing Driller	667.0m MDRT	667.0m MDRT		
Casing Logger	667.0m MDRT	667.0m MDRT		
Casing Size	10.75"	10.75"		
Casing Weight	40.5 ppf	40.5 ppf		
Bit Size	8.5"	8.5"		
Type of Fluid in Hole	KCI/PHPA/GLYCOL	KCI/PHPA/GLYCOL		
Density	9.55 ppg	9.55 ppg		
Rm @ Measured Temp.	N/A	0.089 @ 25 deg		
Rmf @ Measured Temp.	N/A	0.075 @ 25 deg		
Rmc @ Measured Temp.	N/A	0.122 @ 25 deg		
Max. Recorded Temp.	77.0°C	85.00°C		
Equipment / Location	Sale	Sale		
Recorded By	R. Burns /G. Hughes-Sparrow	R. Tench / J Blessing		
Witnessed By	D. van der Aa	D. van der Aa		

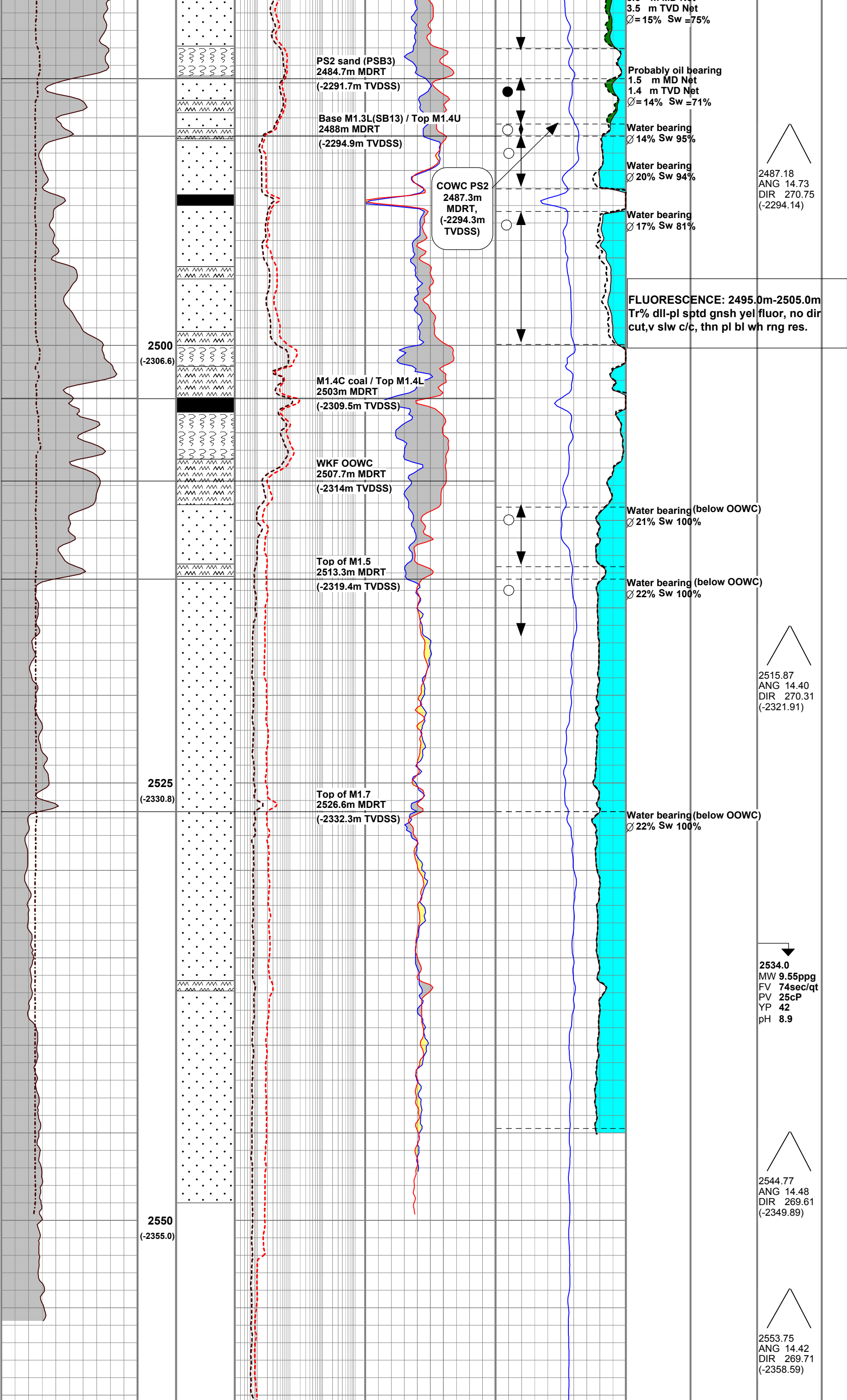
CORES			PERFORATIONS		
From (mMDRT)	To (mMDRT)	Rec %	From (mMDRT)	To (mMDRT)	Gun Type
---	---		2436.0	2437.5	HSD
---	---				

CASING				PLUGS		
Size	Set @ (mMDRT)	SX Cmt	Formation	From (mMDRT)	To (mMDRT)	SXCmt
10. 75"	667.0	---	Gippsland Limestone			
7"	2571.0	380	Latrobe Group	2575(TD)	2544.0(PBTD)	--

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







LATROBE GROUP

EARLY EOCENE

