

Bit Run Summary

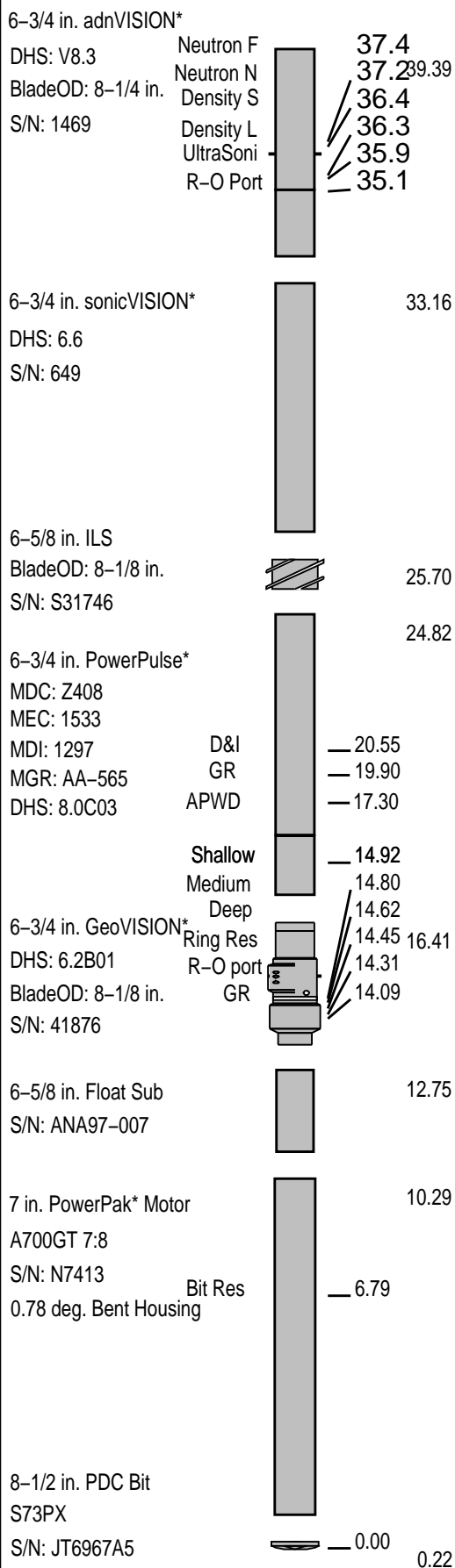
Potassium	%	4.4	4.4								
Environmental data											
GR											
Mud weight	ppg	10.0	10.0								
Bit size	in	8.5	8.5								
Resistivity											
Neutron porosity											
Hole Size	in	8.5	8.5								
Mud weight	ppg	10.0	10.0								
Temperature	°C	84.0	99.0								
Mud salinity	ppk	75.87	74.30								
Formation salinity											
Recording rate 1	SEC	5	5								
Recording rate 2	SEC	10	10								
Filtering GR		3pt	3pt								
Filtering density		3pt	3pt								
Filtering Neutron		3pt	3pt								
Company representative		B. Davis	C. Stead	B. Steel							
Schlumberger D&M Personnel		R. Borjas	C. Skiba	M. Amarasena	M. Blacker	C. Cocks					

<p style="text-align: center;">DISCLAIMER</p> <p>THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.</p>											
OTHER SERVICES FOR RUN2 Directional Drilling Directional Surveys Annulus Pressure & Temperature Ultrasonic Caliper				OTHER SERVICES FOR RUN3 Directional Drilling Directional Surveys Annulus Pressure & Temperature Ultrasonic Caliper				OTHER SERVICES FOR RUN			
REMARKS: RUN NUMBER 2 Depth is referenced to Driller's Depth . Gamma Ray is corrected for mud weight, tool size, bit size and potassium content. Resistivity is borehole compensated and environmentally corrected. Thermal Neutron Porosity is corrected for the effects of borehole size, temperature, mud salinity, and mud hydrogen index (a factor of mud weight, mud temperature and pressure. Neutron porosity is calculated using a limestone matrix density of 2.71 g/cm3. Delta-T is borehole compensated. Downlink to sonicVISION for tripping out data was unsuccessful. Sliding was done from 3169m to 3177m. These zones were reamed for density, neutron from 3132m to 3140m POOH to change bit.				REMARKS: RUN NUMBER 3 Depth is referenced to Driller's Depth . Gamma Ray is corrected for mud weight, tool size, bit size and potassium content. Resistivity is borehole compensated and environmentally corrected. Thermal Neutron Porosity is corrected for the effects of borehole size, temperature, mud salinity, and mud hydrogen index (a factor of mud weight, mud temperature and pressure. Neutron porosity is calculated using a limestone matrix density of 2.71 g/cm3. Delta-T is borehole compensated. APWD sensor malfunction @ 3305m MD. POOH due to TD of HLA A2B.				REMARKS: RUN NUMBER			

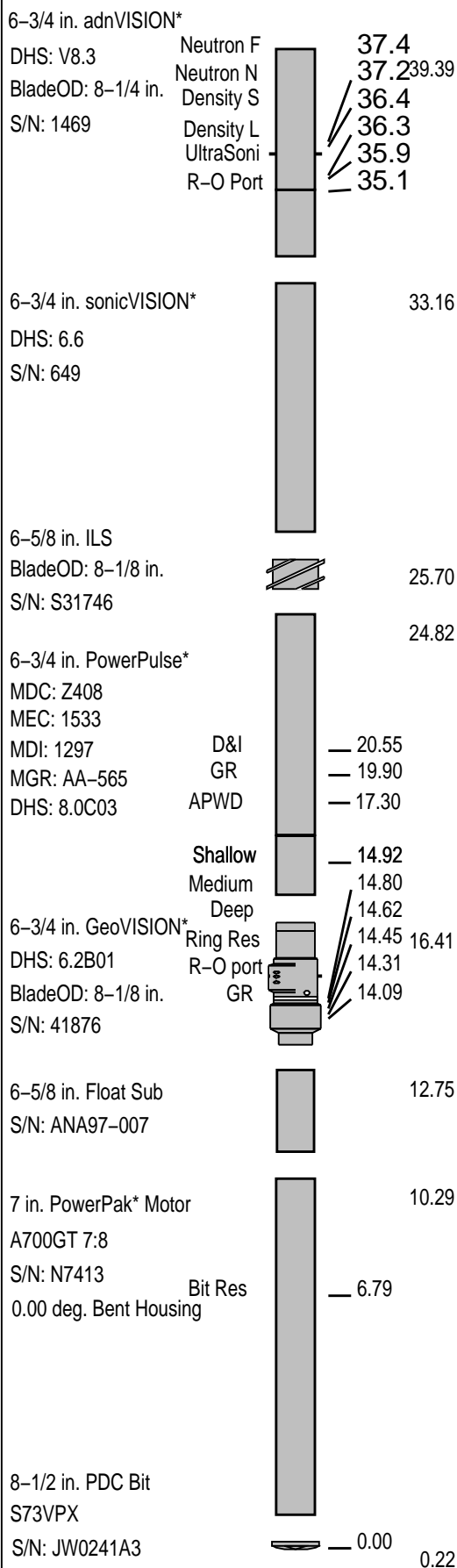
EQUIPMENT DESCRIPTION											
RUN2				RUN3				RUN			
DOWNHOLE EQUIPMENT				DOWNHOLE EQUIPMENT							

DOWNHOLE EQUIPMENT

DOWNHOLE EQUIPMENT



Maximum string diameter 8.50 in.
All lengths in Meters



Maximum string diameter 8.50 in.
All lengths in Meters

Variable Name	Variable Description	Run Name & Value	
Run Number		2	3
General Information			
BHT_RM	Bottom Hole Temperature (RM)	84.000000	99.000000
BSAL_RM	Mud Salinity (RM)	75.876999	74.301003
BS_RM	Bit Size (RM)	8.500000	8.500000
COEF_M	User Defined FEXP in Clean Sand	1.650000	1.650000
C_WS	Overpressure correction to Sw and M	1.000000	1.000000
FEXP	Formation Factor Exponent(RM)	2.000000	2.000000
FNUM	Formation Factor Enumerator(RM)	1.000000	1.000000
FPHI_RM	Formation Factor Porosity Source (RM)	XPLOT	XPLOT
MST_RM	Mud Sample temperature (RM)	22.300000	21.300000
MW_RM	Mud Weight (RM)	10.000000	10.000000
OBMF_RM	Oil Based Mud (RM)	NO	NO
RHOF_RM	Mud Filtrate Density (RM)	1.000000	1.000000
RHOM_RM	Matrix density (RM)	2.710000	2.710000
RMS_RM	Resistivity of Mud Sample (RM)	0.099000	0.102500
RWA_COMP_M	Rwa computation model	BASIC	BASIC
RWA_DEN_AD	Rwa Density Input ADN	ROBB	ROBB
RWA_DEN_CD	Rwa Density Input CDN	RHOB	RHOB
RWA_DEN_IN	Rwa Density Input	ROBB	ROBB
RWA_FORM_M	Rwa computation formation model	CLASTIC	CLASTIC
RWA_RES_IN	Rwa computation resistivity input	RAB_RING	RAB_RING
RWS_RM	Resistivity of Connate Water (RM)	1.000000	1.000000
SHT_RM	Surface Hole Temperature (RM)	22.000000	22.000000
TD_RM	Total Measured Depth (RM)	3271.000000	3347.000000
TWS_RM	Temperature of Connate Water (RM)	24.000000	24.000000
VF_ILLI	Fraction of illite in shales	0.500000	0.500000
VF_KAOL	Fraction of kaolinite in shales	0.500000	0.500000
VF_MONT	Fraction of montmorillonite in shales	0.000000	0.000000
XPDM_RM	Cross plot density porosity multiplier	0.675000	0.675000
XPNM_RM	Cross plot neutron porosity multiplier	0.325000	0.325000
ISONIC			
FP_SD	First Sample delay	400.00	400.00
STC_CF	Center frequency of Filter	13.00	13.00
STC_BW	Bandwidth (kHz)	5.00 kHz	5.00 kHz
STC_RWI	Receiver waveform ignored	None	None
PM_TOFF	Tool Time offset from surface system	0.00	0.00
DT_COH	Delta-T Coherence Cutoff Value	0.70	0.70
PPC_PF	Porosity Formula	Raymer-Hunt	Raymer-Hunt
PPC_PS	Sonic Porosity Source	DTRA	DTRA
PPC_MDT	Matrix Delta-T	55.50	55.50
PPC_FDT	Fluid Delta-T	189.00	189.00
RAB			
LWD_RM/STATION_FILE/PARAMETER	Station Time-frame file name	Station	Station
RAB/BTN_SLV_SIZE/PARAMETER	Button Sleeve Diameter	RAB6:	RAB6:
RAB/STAB_SIZE/PARAMETER	Stabilizer Diameter	RAB6:	RAB6:
BDBHCA	RAB: Button Deep Borehole A Factor	0.004683	0.004683
BDBHCB	RAB: Button Deep Borehole B Factor	0.000000	0.000000
BHA_COEF_V	RAB: BHA Coef Generator Version	2.000000	2.000000
BITBHCA	RAB: Bit A Borehole Factor	0.057741	0.057741
BITBHCB	RAB: Bit B Borehole Factor	0.000000	0.000000
BIT_K_FACT	RAB: Bit K Factor	16.859148	16.859148
BMBHCA	RAB: Button Medium Borehole A Factor	0.023592	0.023592
BMBHCB	RAB: Button Medium Borehole B Factor	0.000000	0.000000
BSBHCA	RAB: Button Shallow Borehole A Factor	0.023828	0.023828
BSBHCB	RAB: Button Shallow Borehole B Factor	0.000000	0.000000
BUT_KIMP_A	RAB: Button Impedance Coeff A	0.000000	0.000000
BUT_KIMP_B	RAB: Button Impedance Coeff B	0.000000	0.000000
DBUTTON_K_	RAB: Button Deep K factor	0.004574	0.004574
GR_BHC_TOO	RAB: Gamma-Ray Borehole Coeff 1	6.750000	6.750000
HI_CSDEPTH	RAB: Allow Hi-Resolution CS_DEPTH Image Data Output	YES	YES
HI_DLIS_OU	RAB: Allow Hi-Resolution DLIS Image Data Output	YES	YES
HI_RIVER_O	RAB: Allow Hi-Resolution River for Image Data Output	YES	YES
IMAGE_MAX_	RAB: GR Image Maximum Scale Value	120.000000	120.000000
IMAGE_MAX_	RAB: Image Maximum Resistivity Value	100.000000	100.000000
IMAGE_MIN_	RAB: GR Image Minimum Scale Value	20.000000	20.000000
IMAGE_MIN_	RAB: Image Minimum Resistivity Value	1.000000	1.000000
JSD_RAB	RAB Acquisition start date	1.000000	1.000000
MAG_DECL_R	RAB: Magnetic Declination	13.229996	13.229996
MAG_INCL_R	RAB: Magnetic Dip	-68.860016	-68.860016
MBUTTON_K_	RAB: Button Medium K Factor	0.005242	0.005242
OBM	RAB: Oil base Mud	NO	NO
ORIENTATIO	Rab Image Orientation	TOH	TOH
RABBDA0	RAB: Button Deep A0 Coeff	-0.058032	-0.058032
RABBDA1	RAB: Button Deep A1 Coeff	0.024776	0.024776
RABBDA2	RAB: Button Deep A2 Coeff	-0.005587	-0.005587
RABBDA3	RAB: Button Deep A3 Coeff	0.000573	0.000573
RABBDA4	RAB: Button Deep A4 Coeff	-0.000021	-0.000021
RABBDA5	RAB: Button Deep A5 Coeff	0.000000	0.000000
RABBDMIN	RAB: Button Deep Minimum Value	0.051093	0.051093
RABBITA0	RAB: Bit A0 Coeff	4.758299	4.758299
RABBITA1	RAB: Bit A1 Coeff	-1.701798	-1.701798
RABBITA2	RAB: Bit A2 Coeff	15.009309	15.009309
RABBITA3	RAB: Bit A3 Coeff	-24.529432	-24.529432
RABBITA4	RAB: Bit A4 Coeff	12.279756	12.279756
RABBITA5	RAB: Bit A5 Coeff	0.000000	0.000000
RABBITMIN	RAB: Bit Minimum Value	21.127123	21.127123

RABBM A0	RAB: Button Medium A0 Coeff	-0.067135	-0.067135
RABBM A1	RAB: Button Medium A1 Coeff	0.029755	0.029755
RABBM A2	RAB: Button Medium A2 Coeff	-0.006825	-0.006825
RABBM A3	RAB: Button Medium A3 Coeff	0.000703	0.000703
RABBM A4	RAB: Button Medium A4 Coeff	-0.000026	-0.000026
RABBM A5	RAB: Button Medium A5 Coeff	0.000000	0.000000
RABBM MIN	RAB: Button Medium Minimum Value	0.059514	0.059514
RABBS A0	RAB: Button Shallow A0 Coeff	-0.078609	-0.078609
RABBS A1	RAB: Button Shallow A1 Coeff	0.034429	0.034429
RABBS A2	RAB: Button Shallow A2 Coeff	-0.007738	-0.007738
RABBS A3	RAB: Button Shallow A3 Coeff	0.000778	0.000778
RABBS A4	RAB: Button Shallow A4 Coeff	-0.000028	-0.000028
RABBS A5	RAB: Button Shallow A5 Coeff	0.000000	0.000000
RABBS MIN	RAB: Button Shallow Minimum Value	0.086498	0.086498
RABDHS	RAB: Down Hole Software	6.200000	6.200000
RABEC	RAB: Resistivity Env-Cor	YES	YES
RABRNG A0	RAB: RING A0 Coeff	-0.054264	-0.054264
RABRNG A1	RAB: RING A1 Coeff	0.023173	0.023173
RABRNG A2	RAB: RING A2 Coeff	-0.005278	-0.005278
RABRNG A3	RAB: RING A3 Coeff	0.000547	0.000547
RABRNG A4	RAB: RING A4 Coeff	-0.000020	-0.000020
RABRNG A5	RAB: RING A5 Coeff	0.000000	0.000000
RABRNG MIN	RAB: Ring Minimum Value	1.697283	1.697283
RAB_BIT_EC	Bit Resistivity for ECAL_RAB?	YES	YES
RAB_BIT_IN	Input Bit Resistivity for Inversion? (Recommended at the bit)	YES	YES
RAB_CALIPE	Compute ECAL_RAB?	YES	YES
RAB_DEEPBT	Deep Button Resistivity for ECAL_RAB?	YES	YES
RAB_DEEPBT	Input Deep Button Resistivity for Inversion?	YES	YES
RAB_INVERS	Perform Rt Inversion?	YES	YES
RAB_INVERS	RAB Bit Sensor Weight for Inversion[0,1]	0.000000	1.000000
RAB_INVERS	Ending Depth for GR Cutoff in Zone1	100000.000000	100000.000000
RAB_INVERS	Continuity Multiplier[0,1]	0.500000	0.500000
RAB_INVERS	RAB Deep Button Sensor Weight for Inversion[0,1]	1.000000	1.000000
RAB_INVERS	RAB inversion for Dh?	NO	YES
RAB_INVERS	RAB inversion for Di?	YES	YES
RAB_INVERS	GR Cutoff for Shale Formation	75.000000	75.000000
RAB_INVERS	GR Cutoff for Shale Formation in Zone1	75.000000	75.000000
RAB_INVERS	GR Cutoff in Zone10	75.000000	75.000000
RAB_INVERS	GR Cutoff in Zone2	75.000000	75.000000
RAB_INVERS	GR Cutoff in Zone3	75.000000	75.000000
RAB_INVERS	GR Cutoff in Zone4	75.000000	75.000000
RAB_INVERS	GR Cutoff in Zone5	75.000000	75.000000
RAB_INVERS	GR Cutoff in Zone6	75.000000	75.000000
RAB_INVERS	GR Cutoff in Zone7	75.000000	75.000000
RAB_INVERS	GR Cutoff in Zone8	75.000000	75.000000
RAB_INVERS	GR Cutoff in Zone9	75.000000	75.000000
RAB_INVERS	RAB Medium Button Sensor Weight for Inversion[0,1]	1.000000	1.000000
RAB_INVERS	Resistivity Cutoff for Shale Formation	2.000000	2.000000
RAB_INVERS	Resistive Invasion Allowed	NO	NO
RAB_INVERS	RAB Ring Sensor Weight for Inversion[0,1]	0.000000	1.000000
RAB_INVERS	RAB inversion for Rmud?	NO	NO
RAB_INVERS	RAB inversion for Rt?	YES	YES
RAB_INVERS	Rt to R-deepest separation penalty multiplier[0,1]	0.500000	0.500000
RAB_INVERS	RAB inversion for Rxo?	YES	YES
RAB_INVERS	RAB Shallow Button Sensor Weight for Inversion[0,1]	1.000000	1.000000
RAB_INVERS	Inversion Threshold[0, 0.3]	0.010000	0.010000
RAB_INVERS	Formation Water Resistivity	0.100000	0.100000
RAB_INVERS	Formation Water Temperature	65.500000	65.500000
RAB_MEDIUM	Medium Button Resistivity for ECAL_RAB?	YES	YES
RAB_MEDIUM	Input Medium Button Resistivity for Inversion?	YES	YES
RAB_QUAD	RAB: Process Quadrant data ?	YES	YES
RAB_RIGMOD	Bit on Bottom?	YES	YES
RAB_RING_E	Ring Resistivity for ECAL_RAB?	YES	YES
RAB_RING_I	Input RING Resistivity for Inversion?	YES	YES
RAB_SHALLO	Shallow Button Resistivity for ECAL_RAB?	YES	YES
RAB_SHALLO	Input Shallow Button Resistivity for Inversion?	YES	YES
RAB_TAB	RAB: Compute TAB ?	YES	YES
RAB_TECHLO	RAB: Generate Techlog ?	YES	YES
RAB_TEMP_S	RAB Temperature Selection	MEASURED	MEASURED
RAB_TICKS	RAB: Generate Ticks ?	YES	YES
READOUT_PO	RAB: ROP to Bit Face Distance	14.310000	14.310000
RINGBHCA	RAB: Ring Borehole A Factor	0.160589	0.160589
RINGBHCB	RAB: Ring Borehole B Factor	0.000000	0.000000
RING_KIMP_	RAB: Ring Impedance Coeff A	0.000000	0.000000
RING_KIMP_	RAB: Ring Impedance Coeff B	0.000000	0.000000
RING_K_FAC	RAB: Ring K Factor	0.152853	0.152853
SBUTTON_K_	RAB: Button Shallow K Factor	0.007109	0.007109
SCALE_IMAG	RAB: Process Image Data	YES	YES
SHT_RM	Ground Level Temperature (Mud-Line When Offshore) (RM)	22.000000	22.000000
STAB	RAB: Run with Stabilizer	YES	YES
TFF_OFFSET	RAB Time-Frame File Time Offset	0.000000	0.000000
TIMEFRAME_	RAB: Time Frame File Name	0.000000	0.000000
TOOLTYPE	RAB: Azimuthal Tool	YES	YES
VRAB6	Rab Tool type (ENP/PILOT)	RAB6_C_SERIES	RAB6_C_SERIES
WIN_SIZE_D	RAB: Window Size for Scaling Dynamic Image	3.000000	3.000000

ADN

ADN_CHASSI	ADN Chassis Type String	ADN	ADN
ADN_COLLAR	ADN Collar Type String	ADN	ADN
ADN_STAB_S	ADN Stabilizer Type String	ADN	ADN
ALPHA_COMP	Perform Density Enhanced Vertical Resolution process ?	YES	YES
ALPHA_COMP	Perform Neutron Enhanced Vertical Resolution process ?	YES	NO
AVE_ADN	ADN/Array Channels: perform averaging(RM) :	YES	YES
A_DHS	ADN Down Hole Software Version String	YES	YES
CHI_RM	Caliper High limit from BS (RM)	3.000000	3.000000
CLO_RM	Caliper Low limit from BS (RM)	0.000000	0.000000

CLO_RM	Caliper Low Limit from BS (RM)	0.000000	0.000000
DEVI	Well Section Deviation	42.590000	42.939999
DTIK_SEL	ADN: Density Tick Channel Name	LSAZ	LSAZ
DTMUD	Delta-T for Mud	191.020004	189.440002
DYN_IMG_CO	Generate Dynamic Normalized Image?	YES	YES
ECC_CORR_A	Perform Eccentering Correction for TNPH?	YES	YES
ENVCOR	Neutron Quadrant Processing: Environmental Correction?	YES	YES
EVRL	EVR Process averaging number of samples (RM)	49	49
FCD	Future Casing (Outer) Diameter	7.000000	7.000000
GCSE	Generalized Caliper Selection	UCAL	UCAL
HPS	ADSE-EB (High Pressure Inconel Chassis)?	NO	NO
IBS	Intergal Blade Stabilizer Collar?	YES	YES
IDQT	Image Derived Quality Threshold	1.000000	1.000000
IHVS	Integrated Hole Volume Start Value(RM)	0.000000	0.000000
IMAGE_MAX_	Image SOA (Quadrant) Right Scale	2.500000	2.500000
IMAGE_MAX_	Image PEF(Segment) Right Scale	6.000000	6.000000
IMAGE_MAX_	Image RHOB(Segment) Right Scale	2.650000	2.650000
IMAGE_MIN_	Image SOA (Quadrant) Left Scale	0.000000	0.000000
IMAGE_MIN_	Image PEF(Segment) Left Scale	2.000000	2.000000
IMAGE_MIN_	Image RHOB(Segment) Left Scale	2.050000	2.050000
LITHO_TYPE	Lithology (RM)	LIME	LIME
N1FTU_6_RM	ADN: Neutron Bank 1 Far Tubes used :	1-2-3	1-2-3
N2FTU_6_RM	ADN: Neutron Bank 2 Far Tubes used :	1-2-3	1-2-3
NNTU_RM	ADN Neutron Near Banks Used	1-2	1-2
NTIK_SEL	ADN: Neutron Tick Channel Name	FR11	FR11
SOCNL	Standoff Distance of the CNL Tool	1.000000	1.000000
SSIZ_ADN	ADN Stabilizer Size	8.250000	8.250000
STOH	ADN Density Top of Hole Sector (Left Boundary):	SECTOR_0	SECTOR_0
TRPM_RM	Average Tool Rotational Speed	100.000000	100.000000
USMIN_RM	ADN:Minimum Ultrasonic standoff (RM)	0.180000	0.180000
USWF_RM	ADN:Process Ultrasonic Waveform?	YES	YES
VERS_ADN	ADN Downhole Software Version	8.300000	8.300000
WSDI	Window Size of Dynamic Normalization Image	15.000000	15.000000

Schlumberger Drilling & Measurements

Parameter Insert Header Software version 2.0c

True Vertical Depth Log

IDEAL Version: ID12_0C_01

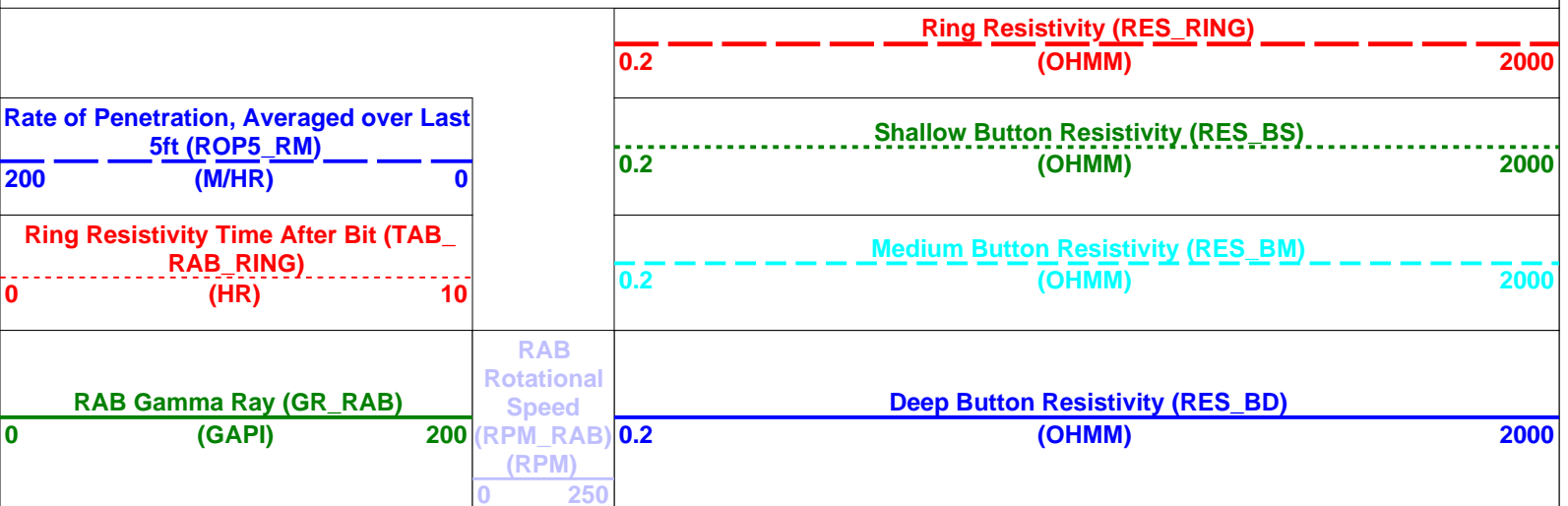
IDF

RAB id11_0c_01 MWD_10 id11_0c_01

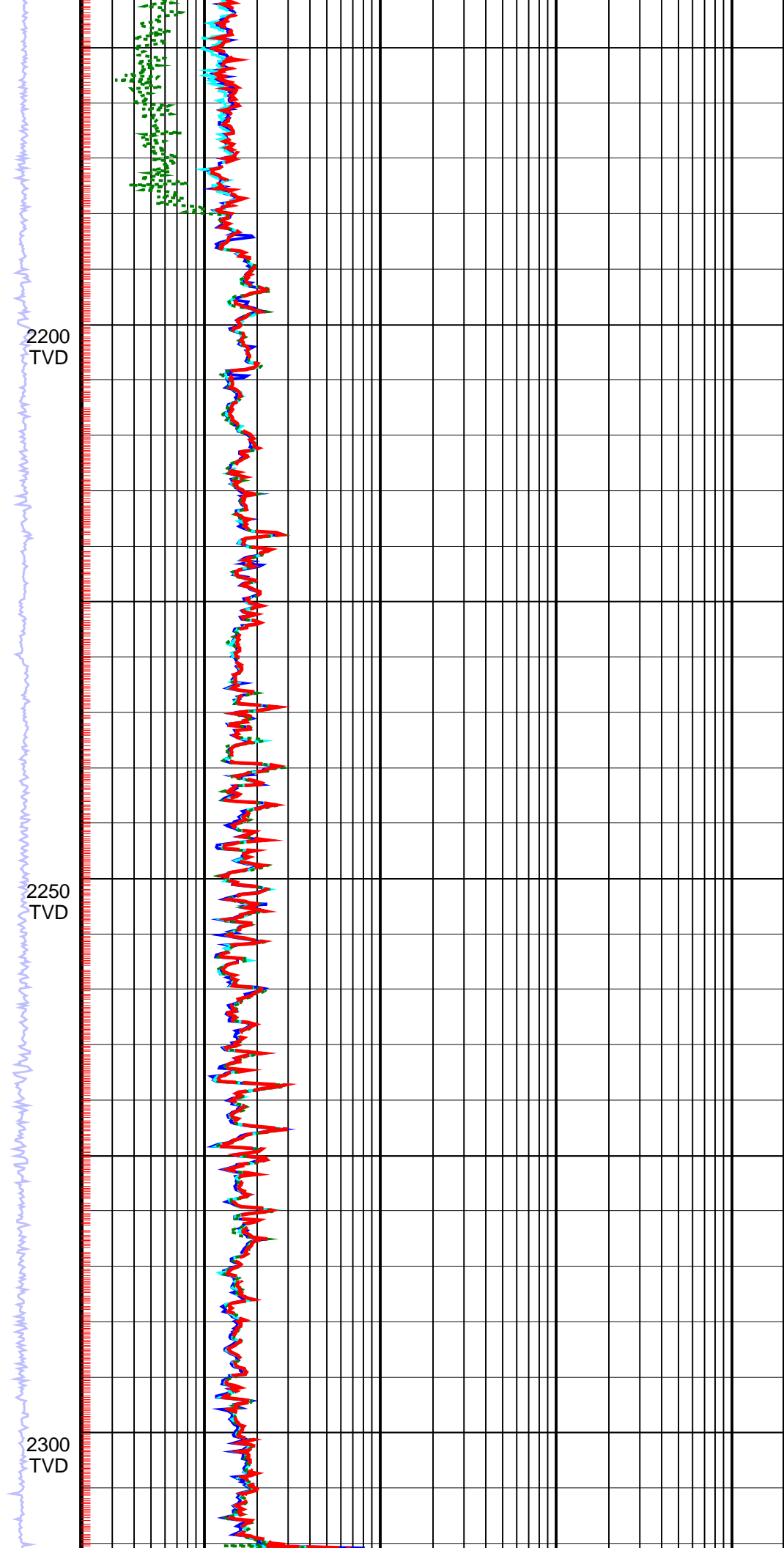
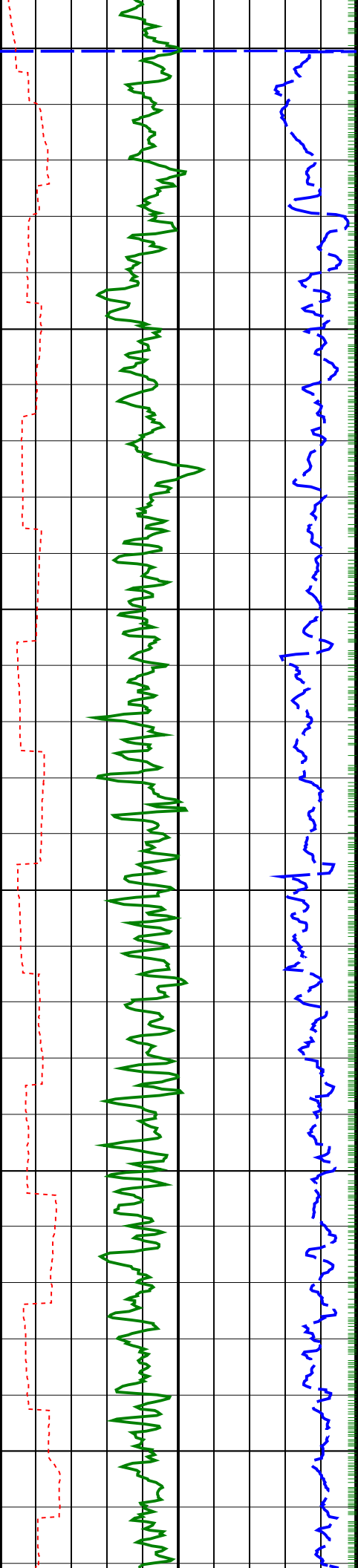
Format: GeoVISION Resistivity Log_1 Vertical Scale: 1:500 Graphics File Created: 17-Jan-2007 15:43

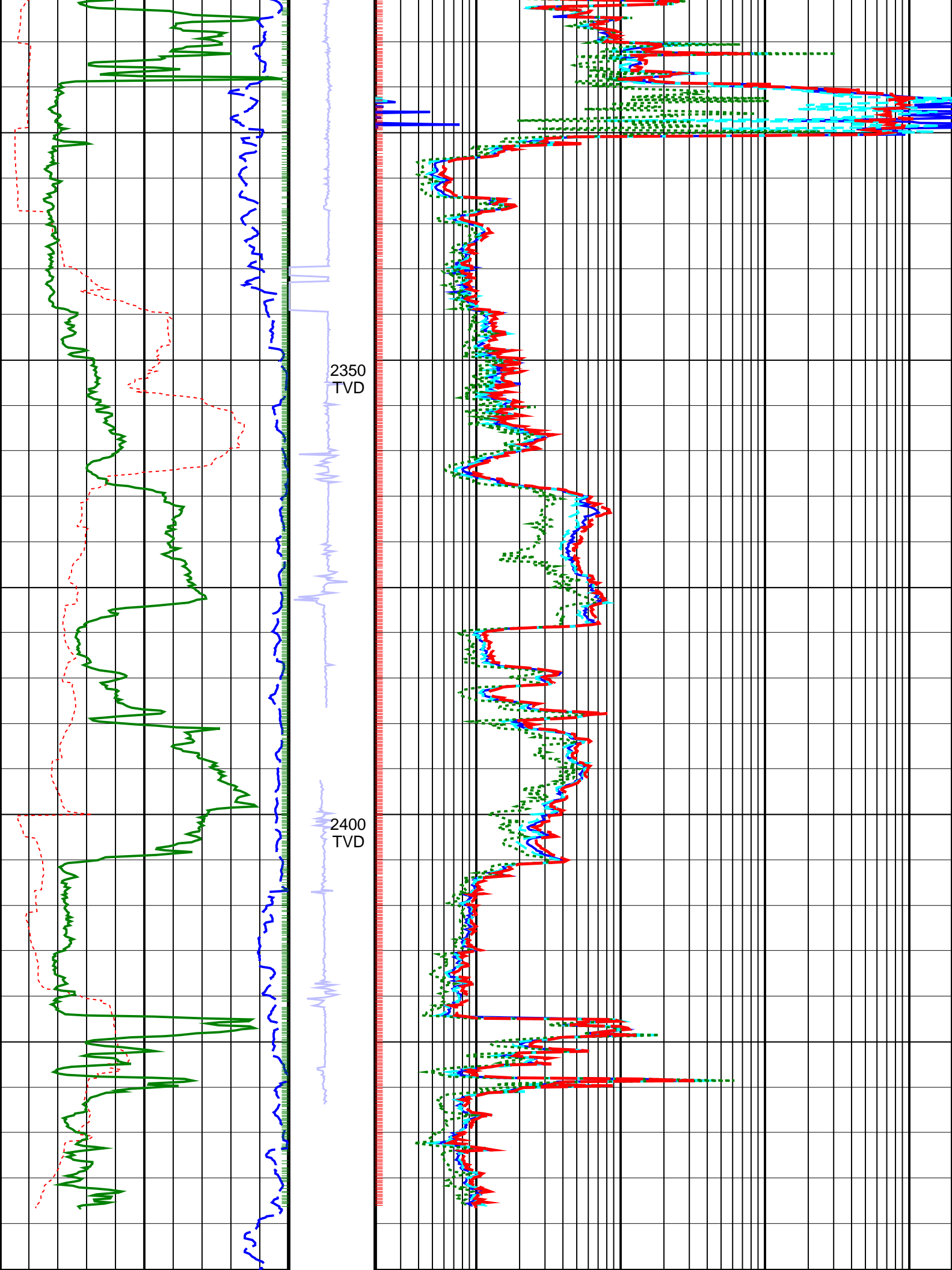
PIP SUMMARY

+ Gamma Ray Samples
 + Ring Samples



2150
TVD





[illegible]

PIP SUMMARY




+ **Gamma Ray Samples**
+ **Ring Samples**




IDEAL Version: ID12_0C_01
IDF




RAB	id11 0c 01	MWD 10	id11 0c 01
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True Vertical Depth Log

























6.75-in. Azimuthal Density Neutron / Equipment Identification			
Primary Equipment:			
Tool Name and Serial Number	ADN6 - CA	12	
Collar Type and Serial Number	ADDC - AA		
Chassis Type and Serial Number	ADSE - EA		
Stabilizer Type and Serial Number	-	1	
Neutron Logging Source	NSR - M	202	
Density Logging Source	GSR - JZ	1994	
Stabilizer Size	8.25 - in.		
Calibration Status	AUTO -		

Master: 19-Dec-2006 8:58														
6.75-in. Azimuthal Density Neutron Calibration														
Density: Magnesium Block														
Phase	LS window 3 – Mg CPS			Value	Phase	SS window 1 – Mg CPS			Value	Phase	SS window 3 – Mg CPS			Value
Master				1100	Master				2633	Master				6484
	250.0 (Minimum)	4125 (Nominal)	8000 (Maximum)			700.0 (Minimum)	9350 (Nominal)	18000 (Maximum)			2500 (Minimum)	23750 (Nominal)	45000 (Maximum)	

Master: 19-Dec-2006 8:58														
6.75-in. Azimuthal Density Neutron Calibration														
Density: Aluminum Block														
Phase	LS window 3 – Al CPS			Value	Phase	SS window 1 – Al CPS			Value	Phase	SS window 3 – Al CPS			Value
Master				167.9	Master				1358	Master				4108
	50.00 (Minimum)	725.0 (Nominal)	1400 (Maximum)			500.0 (Minimum)	4250 (Nominal)	8000 (Maximum)			1500 (Minimum)	15750 (Nominal)	30000 (Maximum)	

Master: 19-Dec-2006 8:58														
6.75-in. Azimuthal Density Neutron Calibration														
Density: Background														
Phase	LS window 3 – Background		CPS	Value	Phase	SS window 1 – Background		CPS	Value	Phase	SS window 3 – Background		CPS	Value
Master				45.78	Master				130.8	Master				564.6
	15.00 (Minimum)	82.50 (Nominal)	150.0 (Maximum)			40.00 (Minimum)	220.0 (Nominal)	400.0 (Maximum)			150.0 (Minimum)	825.0 (Nominal)	1500 (Maximum)	

Master: 19-Dec-2006 8:58							
6.75-in. Azimuthal Density Neutron Calibration							
Density: Water Block Check							
Phase	Long spacing water density G/C3		Value	Phase	Short spacing water density G/C3		Value

Master: 19-Dec-2006 8:58														
6.75-in. Azimuthal Density Neutron Calibration														
Neutron: 3-Point Calibration														
Phase	Far 1 tube 1	Air Point Measure	CPS	Value	Phase	Far 1 tube 1	Rod Point Measure	CPS	Value	Phase	Far 1 tube 1	H2O Point Measure	CPS	Value
Master				20.87	Master				5.414	Master				2.425
	13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)			3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)			1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 1 tube 2	Air Point Measure	CPS	Value	Phase	Far 1 tube 2	Rod Point Measure	CPS	Value	Phase	Far 1 tube 2	H2O Point Measure	CPS	Value
Master				22.91	Master				5.625	Master				2.602
	13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)			3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)			1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 1 tube 3	Air Point Measure	CPS	Value	Phase	Far 1 tube 3	Rod Point Measure	CPS	Value	Phase	Far 1 tube 3	H2O Point Measure	CPS	Value
Master				21.73	Master				5.728	Master				2.568
	13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)			3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)			1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 2 tube 1	Air Point Measure	CPS	Value	Phase	Far 2 tube 1	Rod Point Measure	CPS	Value	Phase	Far 2 tube 1	H2O Point Measure	CPS	Value
Master				20.39	Master				5.351	Master				2.504
	13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)			3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)			1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 2 tube 2	Air Point Measure	CPS	Value	Phase	Far 2 tube 2	Rod Point Measure	CPS	Value	Phase	Far 2 tube 2	H2O Point Measure	CPS	Value
Master				20.76	Master				5.386	Master				2.421
	13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)			3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)			1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 2 tube 3	Air Point Measure	CPS	Value	Phase	Far 2 tube 3	Rod Point Measure	CPS	Value	Phase	Far 2 tube 3	H2O Point Measure	CPS	Value
Master				20.65	Master				5.356	Master				2.571
	13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)			3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)			1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Near 1 tube 1	Air Point Measure	CPS	Value	Phase	Near 1 tube 1	Rod Point Measure	CPS	Value	Phase	Near 1 tube 1	H2O Point Measure	CPS	Value
Master				534.6	Master				810.5	Master				365.3
	345.0 (Minimum)	487.5 (Nominal)	595.0 (Maximum)			535.0 (Minimum)	768.8 (Nominal)	925.0 (Maximum)			230.0 (Minimum)	343.7 (Nominal)	430.0 (Maximum)	
Phase	Near 2 tube 1	Air Point Measure	CPS	Value	Phase	Near 2 tube 1	Rod Point Measure	CPS	Value	Phase	Near 2 tube 1	H2O Point Measure	CPS	Value
Master				537.0	Master				823.1	Master				381.7
	345.0 (Minimum)	487.5 (Nominal)	595.0 (Maximum)			535.0 (Minimum)	768.8 (Nominal)	925.0 (Maximum)			230.0 (Minimum)	343.7 (Nominal)	430.0 (Maximum)	

6.75-in. Resistivity At-the-Bit / Equipment Identification			
Primary Equipment:			
Tool Name and Serial Number	RAB6 – CA	42	
Calibration Status	AUTO –		

Master: 5-Dec-2006 5:05									
6.75-in. Resistivity At-the-Bit Calibration									
Resistivity: Fixture									

Phase	Ring/T1 factor ----		Value	Phase	Ring/T2 factor ----		Value	Phase	M0/T1 factor ----		Value
Master			1.009	Master			1.004	Master			1.007
	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)
Phase	M0/T2 factor ----		Value	Phase	M2/T1 factor ----		Value	Phase	M2/T2 factor ----		Value
Master			1.002	Master			1.008	Master			1.002
	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)
Phase	BTN shallow/T1 factor ----		Value	Phase	BTN shallow/T2 factor ----		Value	Phase	BTN medium/T1 factor ----		Value
Master			1.007	Master			1.001	Master			1.016
	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)
Phase	BTN medium/T2 factor ----		Value	Phase	BTN deep/T1 factor ----		Value	Phase	BTN deep/T2 factor ----		Value
Master			1.010	Master			1.015	Master			1.009
	0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)		0.9750 (Minimum)	1.000 (Nominal)	1.025 (Maximum)

Master: Calibration date not found											
6.75-in. Resistivity At-the-Bit Calibration											
Gamma Ray: Blanket											
Phase	Gamma ray factor ----										Value
Master											1.026
	0.7500 (Minimum)	1.000 (Nominal)	1.250 (Maximum)								

SCHLUMBERGER

Survey report

16-Jan-2007 13:33:50

Page 1 of 5

Client.....: ESSO Australia Pty. Ltd.
Field.....: Halibut

Well.....: HLA A2B
API number.....: N/A
Engineer.....: RB, MA, CS

RIG.....: ISDL 453
STATE.....: Victoria

Spud date.....: 01-Jan-07
Last survey date.....: 16-Jan-07
Total accepted surveys...: 95
MD of first survey.....: 650.00 m
MD of last survey.....: 3347.00 m

----- Survey calculation methods-----
Method for positions.....: Minimum curvature
Method for DLS.....: Mason & Taylor

----- Depth reference -----
Permanent datum.....: Mean Sea Level
Depth reference.....: Driller's Depth
GL above permanent.....: -73.00 m
KB above permanent.....: Top Drive
DF above permanent.....: 29.45 m

----- Vertical section origin-----
Latitude (+N/S-).....: -7.44 m
Departure (+E/W-).....: 19.72 m

----- Geomagnetic data -----
Magnetic model.....: BGGM version 2006
Magnetic date.....: 31-Dec-2006
Magnetic field strength..: 1199.38 HCNT
Magnetic dec (+E/W-).....: 13.23 degrees
Magnetic dip.....: -68.86 degrees

----- MWD survey Reference Criteria -----
Reference G.....: 1000.04 mGal
Reference H.....: 1199.38 HCNT
Reference Dip.....: -68.86 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
Magnetic dec (+E/W-).....: 13.23 degrees
Grid convergence (+E/W-)..: -0.82 degrees
Total az corr (+E/W-).....: 14.05 degrees
(Total az corr = magnetic dec - grid conv)
Survey Correction Type ...:
I=Sag Corrected Inclination
M=Schlumberger Magnetic Correction
S=Shell Magnetic Correction
F=Failed Axis Correction
R=Magnetic Resonance Tool Correction
D=Dmag Magnetic Correction

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SCHLUMBERGER Survey Report

16-Jan-2007 13:33:50

Page 2 of 5

Seq	Measured # -	depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 100f)	Srvy tool type	Tool Corr (deg)
1	650.00	44.36	93.34	0.00	610.86	151.86	-52.68	166.06	174.22	107.60	0.00	TIP	None	
2	660.87	45.55	97.43	10.87	618.55	159.51	-53.40	173.70	181.73	107.09	8.76	MWD	None	
3	690.39	45.60	98.48	29.52	639.22	180.58	-56.32	194.58	202.57	106.14	0.78	MWD	None	
4	732.17	46.07	99.66	41.78	668.33	210.55	-61.05	224.18	232.34	105.23	0.71	MWD	None	
5	748.47	46.57	99.46	16.30	679.58	222.34	-63.00	235.80	244.07	104.96	0.97	MWD	None	
6	777.68	46.49	99.54	29.21	699.68	243.54	-66.50	256.71	265.18	104.52	0.10	MWD	None	
7	806.91	46.40	99.58	29.23	719.82	264.72	-70.02	277.60	286.29	104.16	0.10	MWD	None	
8	836.00	45.84	99.58	29.09	739.98	285.69	-73.51	298.27	307.20	103.84	0.59	MWD	None	
9	865.64	46.02	98.77	29.64	760.60	306.98	-76.91	319.30	328.43	103.54	0.63	MWD	None	

10	894.65	45.53	98.59	29.01	780.83	327.77	-80.04	339.85	349.15	103.25	0.53	MWD	None
11	923.87	46.01	97.74	29.22	801.22	348.70	-83.02	360.57	370.00	102.97	0.81	MWD	None
12	952.87	46.90	97.08	29.00	821.20	369.70	-85.73	381.42	390.93	102.67	1.06	MWD	None
13	982.43	46.53	97.04	29.56	841.46	391.20	-88.37	402.77	412.35	102.38	0.38	MWD	None
14	1011.59	47.03	96.95	29.16	861.43	412.43	-90.96	423.86	433.51	102.11	0.53	MWD	None
15	1040.54	47.09	98.00	28.95	881.15	433.60	-93.72	444.88	454.64	101.90	0.81	MWD	None
16	1069.56	46.95	99.63	29.02	900.94	454.83	-96.97	465.85	475.84	101.76	1.26	MWD	None
17	1098.60	46.55	99.63	29.04	920.84	475.98	-100.51	486.71	496.98	101.67	0.42	MWD	None
18	1127.85	46.31	99.70	29.25	941.00	497.18	-104.07	507.60	518.16	101.59	0.26	MWD	None
19	1156.97	45.95	99.54	29.12	961.18	518.17	-107.57	528.30	539.14	101.51	0.40	MWD	None
20	1186.26	45.49	99.30	29.29	981.63	539.14	-111.01	548.98	560.09	101.43	0.51	MWD	None
21	1215.54	46.11	100.03	29.28	1002.04	560.13	-114.53	569.68	581.08	101.37	0.84	MWD	None
22	1244.64	46.11	100.01	29.10	1022.21	581.10	-118.18	590.33	602.04	101.32	0.02	MWD	None
23	1273.79	46.02	99.60	29.15	1042.44	602.09	-121.75	611.01	623.03	101.27	0.32	MWD	None
24	1302.98	45.78	99.87	29.19	1062.75	623.05	-125.30	631.67	643.98	101.22	0.32	MWD	None
25	1332.25	46.49	100.02	29.27	1083.04	644.16	-128.94	652.46	665.08	101.18	0.75	MWD	None
26	1361.43	46.60	99.96	29.18	1103.11	665.34	-132.62	673.32	686.26	101.14	0.12	MWD	None
27	1390.66	46.57	99.61	29.23	1123.19	686.57	-136.23	694.24	707.48	101.10	0.27	MWD	None
28	1419.85	46.24	99.68	29.19	1143.32	707.71	-139.77	715.09	728.62	101.06	0.35	MWD	None
29	1449.14	46.83	99.06	29.29	1163.47	728.97	-143.23	736.06	749.87	101.01	0.77	MWD	None
30	1478.24	46.59	98.73	29.10	1183.43	750.15	-146.50	756.99	771.03	100.95	0.36	MWD	None

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SCHLUMBERGER Survey Report

16-Jan-2007 13:33:50

Page

3 of 5

Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 100f)	Srvy tool type	Tool Corr (deg)
31	1507.45	45.96	98.69	29.21	1203.61	771.25	-149.70	777.85	792.13	100.89	0.66	MWD	None
32	1536.68	45.31	98.22	29.23	1224.05	792.15	-152.77	798.52	813.00	100.83	0.76	MWD	None
33	1565.94	45.25	98.54	29.26	1244.64	812.93	-155.80	819.09	833.78	100.77	0.24	MWD	None
34	1595.14	45.45	98.03	29.20	1265.16	833.70	-158.80	839.65	854.53	100.71	0.43	MWD	None
35	1624.31	45.86	98.57	29.17	1285.55	854.55	-161.81	860.29	875.37	100.65	0.59	MWD	None
36	1653.37	45.43	98.47	29.06	1305.87	875.33	-164.89	880.84	896.14	100.60	0.46	MWD	None
37	1682.74	45.98	98.23	29.37	1326.38	896.34	-167.94	901.64	917.14	100.55	0.60	MWD	None
38	1711.90	46.74	99.29	29.16	1346.50	917.44	-171.15	922.49	938.24	100.51	1.13	MWD	None
39	1741.22	46.42	99.68	29.32	1366.66	938.74	-174.66	943.50	959.53	100.49	0.44	MWD	None
40	1770.47	46.21	99.68	29.25	1386.86	959.89	-178.22	964.35	980.68	100.47	0.22	MWD	None
41	1799.73	45.84	99.63	29.26	1407.17	980.95	-181.75	985.11	1001.73	100.45	0.39	MWD	None
42	1828.90	46.20	99.44	29.17	1427.43	1001.94	-185.23	1005.81	1022.72	100.43	0.40	MWD	None
43	1857.65	46.30	99.56	28.75	1447.31	1022.71	-188.66	1026.29	1043.49	100.42	0.14	MWD	None
44	1886.83	46.11	99.49	29.18	1467.51	1043.77	-192.14	1047.06	1064.55	100.40	0.21	MWD	None
45	1915.82	46.47	99.22	28.99	1487.54	1064.72	-195.55	1067.74	1085.50	100.38	0.43	MWD	None
46	1945.32	46.09	99.02	29.50	1507.93	1086.04	-198.93	1088.79	1106.81	100.35	0.42	MWD	None
47	1974.30	46.92	98.99	28.98	1527.87	1107.06	-202.22	1109.55	1127.83	100.33	0.87	MWD	None
48	2003.63	46.86	99.37	29.33	1547.92	1128.48	-205.63	1130.69	1149.24	100.31	0.29	MWD	None
49	2033.24	46.55	99.17	29.61	1568.22	1150.03	-209.11	1151.96	1170.79	100.29	0.35	MWD	None
50	2061.83	46.22	99.16	28.59	1587.94	1170.72	-212.40	1172.40	1191.48	100.27	0.35	MWD	None
51	2091.25	45.91	98.66	29.42	1608.36	1191.91	-215.68	1193.33	1212.66	100.25	0.49	MWD	None
52	2120.20	45.73	98.89	28.95	1628.53	1212.67	-218.85	1213.84	1233.42	100.22	0.26	MWD	None
53	2149.33	46.24	99.33	29.13	1648.77	1233.62	-222.17	1234.53	1254.36	100.20	0.63	MWD	None
54	2178.65	46.11	99.39	29.32	1669.08	1254.77	-225.61	1255.40	1275.51	100.19	0.14	MWD	None
55	2208.26	45.89	99.57	29.61	1689.65	1276.07	-229.12	1276.41	1296.81	100.18	0.26	MWD	None
56	2237.48	45.67	99.37	29.22	1710.02	1297.01	-232.56	1297.06	1317.75	100.17	0.27	MWD	None
57	2266.81	46.26	99.32	29.33	1730.41	1318.09	-235.99	1317.87	1338.83	100.15	0.61	MWD	None
58	2295.72	46.06	99.20	28.91	1750.44	1338.95	-239.34	1338.45	1359.68	100.14	0.23	MWD	None
59	2324.98	45.86	98.95	29.26	1770.78	1359.98	-242.66	1359.22	1380.71	100.12	0.28	MWD	None
60	2354.24	46.61	99.17	29.26	1791.02	1381.11	-245.99	1380.09	1401.84	100.11	0.80	MWD	None

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SCHLUMBERGER Survey Report

16-Jan-2007 13:33:50

Page

4 of 5

Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 100f)	Srvy tool type	Tool Corr (deg)
61	2383.14	46.76	99.04	28.90	1810.84	1402.13	-249.31	1400.85	1422.86	100.09	0.19	MWD	None
62	2412.46	46.38	98.87	29.32	1831.00	1423.43	-252.63	1421.88	1444.15	100.07	0.42	MWD	None
63	2441.90	46.19	98.96	29.44	1851.34	1444.70	-255.93	1442.91	1465.43	100.06	0.21	MWD	None
64	2471.01	46.19	99.05	29.11	1871.49	1465.71	-259.21	1463.65	1486.43	100.04	0.07	MWD	None
65	2500.16	46.00	98.99	29.15	1891.71	1486.71	-262.51	1484.40	1507.43	100.03	0.20	MWD	None
66	2529.32	45.79	98.47	29.16	1912.00	1507.64	-265.69	1505.09	1528.36	100.01	0.45	MWD	None
67	2558.52	45.49	98.45	29.20	1932.42	1528.52	-268.76	1525.74	1549.23	99.99	0.31	MWD	None
68	2586.28	46.03	98.46	27.76	1951.79	1548.40	-271.68	1545.41	1569.11	99.97	0.59	MWD	None
69	2616.58	46.66	98.87	30.30	1972.70	1570.32	-274.98	1567.09	1591.03	99.95	0.70	MWD	None
70	2645.77	46.32	98.80	29.19	1992.80	1591.49	-278.24	1588.00	1612.20	99.94	0.36	MWD	None
71	2675.07	46.18	98.36	29.30	2013.06	1612.65	-281.39	1608.93	1633.35	99.92	0.36	MWD	None
72	2704.46	46.81	98.75	29.39	2033.29	1633.96	-284.57	1630.01	1654.67	99.90	0.72	MWD	None
73	2733.62	46.61	98.49	29.16	2053.29	1655.18	-287.75	1651.00	1675.89	99.89	0.29	MWD	None
74	2762.48	46.75	99.41	28.86	2073.09	1676.18	-291.01	1671.74	1696.88	99.88	0.72	MWD	None
75	2791.83	46.58	99.52	29.35	2093.23	1697.53	-294.52	1692.80	1718.23	99.87	0.20	MWD	None
76	2820.99	46.35	99.39	29.16	2113.32	1718.67	-298.00	1713.65	1739.37	99.86	0.26	MWD	None
77	2850.67	46.03	99.24	29.68	2133.86	1740.08	-301.46	1734.78	1760.78	99.86	0.35	MWD	None
78	2879.50	46.15	99.40	28.83	2153.86	1760.85	-304.83	1755.28	1781.55	99.85	0.18	MWD	None
79	2905.21	45.91	99.45	25.71	2171.71	1779.36	-307.86	1773.53	1800.05	99.85	0.29	MWD	None
80	2935.38	45.91	98.61	30.17	2192.70	1801.02	-311.26	1794.93	1821.72	99.84	0.61	MWD	None
81	2964.47	45.88	98.78	29.09	2212.94	1821.91	-314.42	1815.58	1842.61	99.82	0.13	MWD	None
82	2993.22	46.28	98.29	28.85	2232.96	1842.69	-317.50	1836.13	1863.38	99.81	0.56	MWD	None

83	3022.29	46.99	98.42	28.97	2252.85	1863.74	-320.56	1856.97	1884.44	99.79	0.75	MWD	None
84	3051.27	47.44	97.96	28.98	2272.53	1885.00	-323.59	1878.02	1905.70	99.78	0.59	MWD	None
85	3079.59	48.42	97.93	28.32	2291.51	1906.02	-326.50	1898.84	1926.71	99.76	1.06	MWD	None
86	3108.69	49.40	97.56	29.10	2310.63	1927.94	-329.45	1920.57	1948.63	99.73	1.07	MWD	None
87	3137.70	51.16	97.25	29.01	2329.17	1950.23	-332.33	1942.70	1970.92	99.71	1.87	MWD	None
88	3166.46	53.04	97.34	28.76	2346.84	1972.90	-335.21	1965.21	1993.59	99.68	1.99	MWD	None
89	3195.74	53.89	97.23	29.28	2364.27	1996.41	-338.19	1988.55	2017.10	99.65	0.89	MWD	None
90	3224.78	53.92	97.10	29.04	2381.38	2019.85	-341.12	2011.83	2040.54	99.62	0.11	MWD	None

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 SCHLUMBERGER Survey Report

16-Jan-2007 13:33:50

Page 5 of 5

Seq	Measured	Incl	Azimuth	Course	TVD	Vertical	Displ	Displ	Total	At	DLS	Srvy	Tool
#	depth	angle	angle	length	depth	section	+N/S-	+E/W-	displ	Azim	(deg/	tool	Corr
-	(m)	(deg)	(deg)	(m)	(m)	(m)	(m)	(m)	(m)	(deg)	100f)	type	(deg)
==	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
91	3253.44	54.42	97.03	28.66	2398.15	2043.07	-343.97	2034.89	2063.76	99.59	0.54	MWD	None
92	3282.73	55.34	97.31	29.29	2415.00	2067.00	-346.97	2058.66	2087.69	99.57	0.99	MWD	None
93	3311.71	56.13	96.82	28.98	2431.32	2090.93	-349.91	2082.43	2111.62	99.54	0.93	MWD	None
94	3325.71	56.72	97.11	14.00	2439.06	2102.58	-351.33	2094.01	2123.27	99.52	1.39	MWD	None
95	3347.00	57.20	97.11	21.29	2450.67	2120.41	-353.53	2111.72	2141.10	99.50	0.68	Proj.	TD

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Company: Esso Australia Pty. Ltd.



Well: HLA A-2B

Field: Halibut

Rig: ISDL 453

State: Victoria

GeoVISION Resistivity
 1:500 True Vertical Depth
 Recorded Memory