Schlumberger

Company: PETRO-CANADA
Well: PETRO-CANADA BLACKWATER KWIJIKA M-59
Field: KWIJIKA
Province: NORTHWEST TERRITORIES
*** MD ***

PLATFORM EXPRESS
COMBINABLE MAGNETIC RESONANCE LOG

N E B COPY

Province:	NORTHWEST TERRITORIES
Field:	KWIJIKA
Location:	LSD: M-59
Well:	PETRO-CANADA BLACKWATER KWIJIKA M
Company:	PETRO-CANADA

LOCATION
LSD: M-59
UWID: 300M596440122300

Elev.: K.B. 252.1 m
G.L. 245.9 m
D.F. 251.8 m

Permanent Datum: GROUND LEVEL Elev.: 245.9 m
Log Measured From: KELLY BUSHING 6.2 m above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.
1165

Logging Date	4-Mar-2008			
Run Number	TWO			
Depth Driller	1640 m			
Schlumberger Depth	1641 m			
Bottom Log Interval	1631.7 m			
Top Log Interval	1198 m			
Casing Driller Size @ Depth	177.800 mm @ 1198 m	@	@	
Casing Schlumberger	1198 m			
Bit Size	156.000 mm			
Type Fluid In Hole	KCL POLYMER			
MUD Density / Viscosity	1315 kg/m3 / 58 s			
MUD Fluid Loss / PH	6.5 cm3 / 11.5			
Source Of Sample	FLOWLINE			
RM @ Measured Temperature	0.048 ohm.m @ 15 degC	@	@	
RMF @ Measured Temperature	0.044 ohm.m @ 15 degC	@	@	
RMC @ Measured Temperature	0.103 ohm.m @ 17 degC	@	@	
Source RMF / RMC	PRESSED / PRESSED			
RM @ MRT / RMF @ MRT	0.032 @ 34 / 0.029 @ 34	@	@	
Maximum Recorded Temperatures	34 degC			
Circulation Stopped / Time	4-Mar-2008 / 12:15			
Logger On Bottom / Time	4-Mar-2008 / 21:52			
Unit Number / Location	4301 / NORMAN WELLS			
Recorded By	J.ROLLINGS / R. JACOBS			
Witnessed By	G. TIMMONS / G. DEON			

Logging Date				
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Driller Size @ Depth	@	@		
Casing Schlumberger				
Bit Size				
Type Fluid In Hole				
MUD Density / Viscosity				
MUD Fluid Loss / PH				
Source Of Sample				
RM @ Measured Temperature	@	@	@	@
RMF @ Measured Temperature	@	@	@	@
RMC @ Measured Temperature	@	@	@	@
Source RMF / RMC				
RM @ MRT / RMF @ MRT	@	@	@	@
Maximum Recorded Temperatures				
Circulation Stopped / Time				
Logger On Bottom / Time				
Unit Number / Location				
Recorded By				
Witnessed By				

Run 1
Run 2
Run 3
Run 4

DEPTH SUMMARY LISTING

Date Created: 5-MAR-2008 1:25:55

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-B	Type:	CMTD-B/A	Type:	7-46A XXS
Serial Number:	6423	Serial Number:	2565	Serial Number:	6199
Calibration Date:	15-FEB-2008	Calibration Date:	15-FEB-2008	Length:	7800.14 M
Calibrator Serial Number:	4	Calibrator Serial Number:	-999	Conveyance Method:	Wireline
Calibration Cable Type:	7-46P	Calibration Gain:	0.88	Rig Type:	LAND
Wheel Correction 1:	-4	Calibration Offset:	336.00		
Wheel Correction 2:	-5				

Depth Control Parameters

Log Sequence:	Subsequent Trip To the Well
Reference Log Name:	PLATFORM EXPRESS COMPENSATED NEUTRON DUAL LITHOLOGY DENSITY LOG
Reference Log Run Number:	ONE
Reference Log Date:	23-FEB-2008
Subsequent Trip Down Log Correction:	1.00 M

Depth Control Remarks

1. IDW IS PRIMARY DEPTH MEASUREMENT
2. Z-CHART USED AS A SECONDARY DEPTH MEASUREMENTS
3. MAIN PASS TIED INTO PREVIOUS RUN AS PER SLB DEPTH CONTROL PROCEDURES
4. PPC CLOSED BEFORE CS AT 1207M CAUSED TENSION TO REDUCE AND THEREFORE DEPTH SHIFT IN CASING
5. DOWNLOG WAS TIED INTO MAIN PASS OF RUN 1 AND MAIN PASS OF RUN 2 WAS TIED INTO DOWNLOG RUN2 TO VERIFY DI
6.

OTHER SERVICES1		OTHER SERVICES2
OS1:	PEX-HRLA-TLD2-CMR-ML	OS1:
OS2:	MSCT	OS2:
OS3:	FMI-DSI-HNGS-EMS	OS3:
OS4:	MDT	OS4:
OS5:	VSP	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
ALL PRESENTATIONS AS PER LOGGING PROGRAM DATED FEB 6,2008	
INTERVALS CONFIRMED ON LOCATION BY WELLSITE GEOLOGIST	
MAXIMUM TEMPERATURE TAKEN FROM HEAD THERMOMETER	
RM1= 0.0484, RM2=0.047 & RM3=0.048 OHMS, RMF1=0.044 & RMF2=0.0436 OHMS, RMC=0.103 OHMS	
SP READING ERRATIC, CHECKED GROUND & REDUCED ALL NOISE AROUND	
SP OP CHECKED BEFORE RUNNING IN HOLE - SP GROUND IN THE SUMP 5 FT BELOW	
PPC RAN ECCENTERED TO ECCENTERALIZE THE CMR, POWER APPLIED TO ARM 3 ONLY	
HIRES SANDSTONE: TD-ICS	
TLD2 RAN 90 DEG OFFSET TO BOTTOM TLD	
NEUTRON RAN ECCENTERED WITH TWO 120 DEG OFFSET BOWSPRINGS	
CMR INTERVAL: TD - 1445M	
CMR LOGGED WITH DEFAULT MASTER CAL VALUES ON REPEAT PASS	
CMR LOGGED TUNED @ 1500M AND ALF UPDATED FOR MAIN PASS	
REPEAT PASS REQUESTED FROM 1570-1485M	
PPC CLOSED BEFORE CASING CAUSED TENSION TO CHANGE AT 1207M	
RIG: AKITA 51	
CREW: BILLY LIAM, LARRY DUDUS	

RUN 1		RUN 2	
SERVICE ORDER #:	11958996	SERVICE ORDER #:	
PROGRAM VERSION:	15C0-309	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1

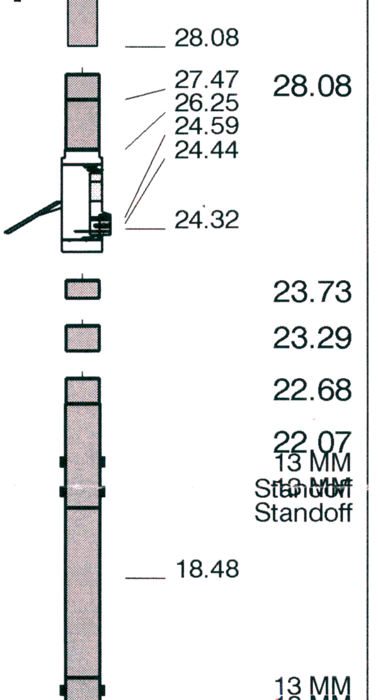
RUN 2

SURFACE EQUIPMENT

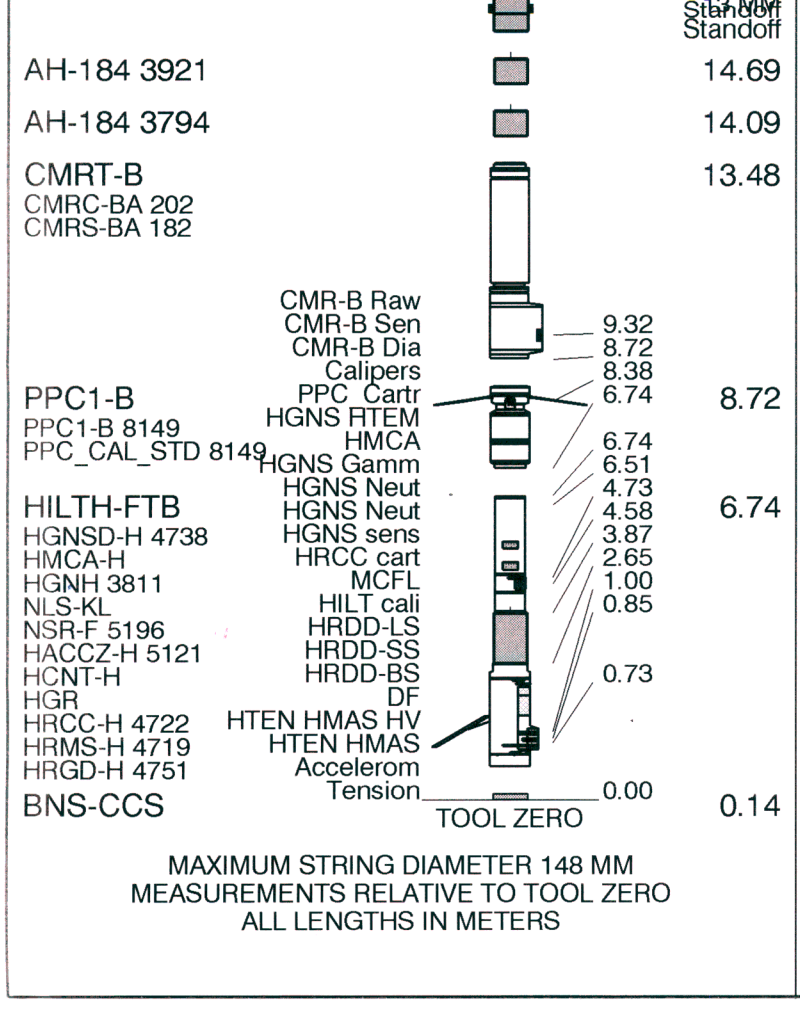
GSR-U/Y 11
NCT-B
CNB-AB
NCS-VB

WITM (DTS)-A

DOWNHOLE EQUIPMENT



Tool	Depth
LEH-QT 2657	33.82
AH-169 185	32.93
SPA-A 9936 SPA-A 9936	32.52
DTC-H ECH-KC 10485	31.30
MLT-B MLT-B 109	30.39
HILTH2-FTB HTBCD2-H2 3733 HMCA-H 3733 HRCC-H2 3990 HRMS-H2 3983 HRGD-H2 4709 GLS-VJ2 1984 MCFL2 Device-H2	28.08
AH-90 DEG OFFSET	23.73
AH-184 2713	23.29
AH-184 3800	22.68
HRLT-B HRUH-B 1716 HRUC-B 1714 HRLS-B 1704 HRLH-B 763 HRLC-B 951 AH-270 759	22.07



MAXIMUM STRING DIAMETER 148 MM
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Company: PETRO-CANADA **Well: PETRO-CANADA BLACKWATER KWIJIKA M-59**

Input DLIS Files

DEFAULT	TLD_MCFL_CNL_CAL_ML_013PUP FN:20	PRODUCER	05-Mar-2008 01:01	1644.7 M	1124.1 M

CMR DEPTH LOG REPORT

PARAMETER SUMMARY

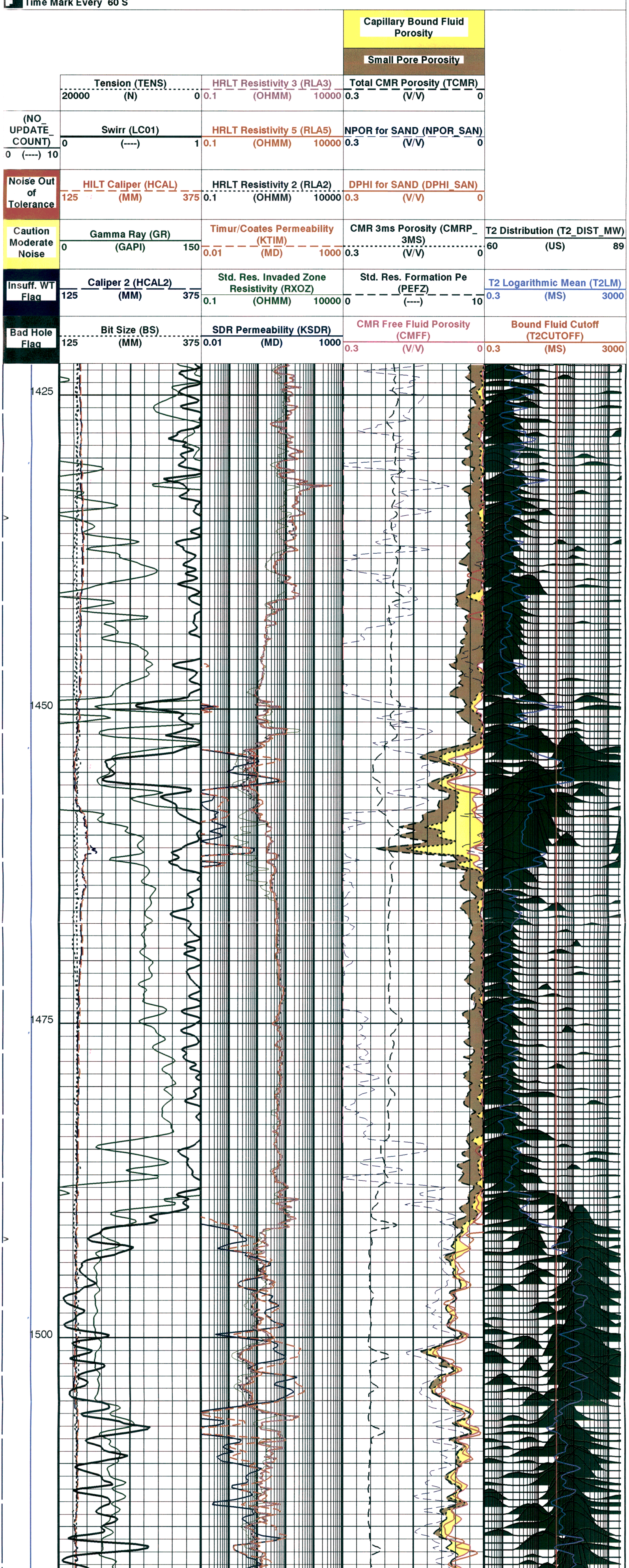
Tool Type: CMR-Plus	Cart. Number: 202	Sonde Number: 182	
Kit Number: 28	DHC Version : 16.4	DSP Version : 13	SP Version : 2062001
Mode: Expert Depth Log - B Mode		LFST Freq(khz) : 2248	LFST Temp(degc) : 30.85
Log Direction: Up	Polarization Correction: On	EPM: Yes	EPM T1/T2: Auto
Despiking: Off	High Res: Off	KBFV: Off	DMRP: On
Echo Spacing(us):	(200 200)		
Polarization Times(sec) for:	T1=1s: (infinity 0.02)	T1=3s: (7.002 0.02)	T1=5s: (6.429 0.02)
Number of Echoes:	(1800 30)		
Repetition:	(1 10)	Duty Cycle (highest): 0.0282	
Regularization:	Auto		
T2 Min(msec): 0.3	T2 Max(msec): 3000	T2 Cutoff(msec): 33	T1/T2: 2
Number of Components: 30	Downhole Stacking: 3	Uphole Stacking: 1	First Echo Used: No
Multiple T2 Cutoffs(msec):	(0.3 1 3 10 33 100 300 1000 3000)		
Sample Int.(in): 7.5	Req Log Speed (f/h): 1000		

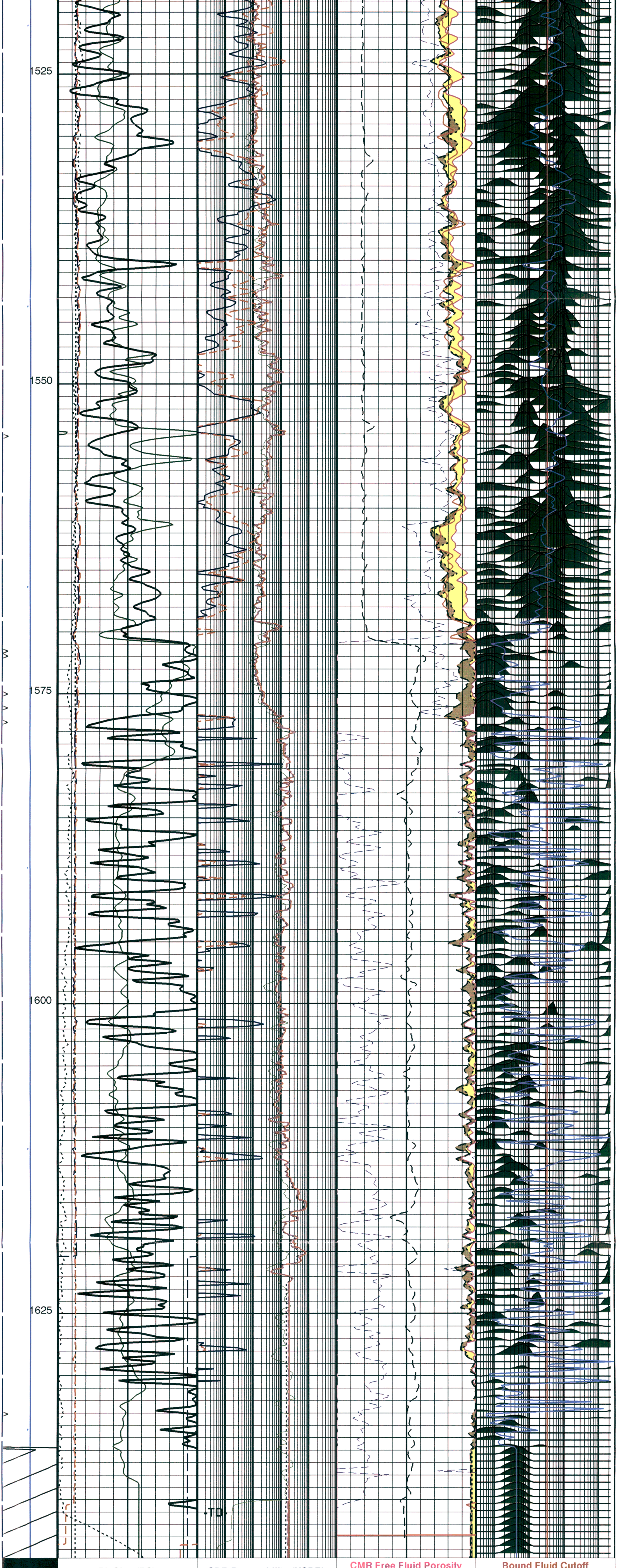
DMRP PARAMETERS

60/40 rule: Yes

PIP SUMMARY

Time Mark Every 60 S





Bad Hole Flag	Bit Size (BS) 125 (MM) 375	SDR Permeability (KSDR) 0.01 (MD) 1000	CMR Free Fluid Porosity (CMFF) 0.3 (V/V) 0	Bound Fluid Cutoff (T2CUTOFF) 0.3 (MS) 3000
Insuff. WT Flag	Caliper 2 (HCAL2) 125 (MM) 375	Std. Res. Invaded Zone Resistivity (RXOZ) 0.1 (OHMM) 10000	Std. Res. Formation Pe (PEFZ) 0 (----) 10	T2 Logarithmic Mean (T2LM) 0.3 (MS) 3000
Caution Moderate Noise	Gamma Ray (GR) 0 (GAPI) 150	Timur/Coates Permeability (KTIM) 0.01 (MD) 1000	CMR 3ms Porosity (CMRP_3MS) 0.3 (V/V) 0	T2 Distribution (T2_DIST_MW) 60 (US) 89
Noise Out of Tolerance	HILT Caliper (HCAL) 125 (MM) 375	HRLT Resistivity 2 (RLA2) 0.1 (OHMM) 10000	DPHI for SAND (DPHI_SAN) 0.3 (V/V) 0	
(NO_UPDATE_COUNT) 0 (----) 10	Swirr (LC01) 0 (----) 1	HRLT Resistivity 5 (RLA5) 0.1 (OHMM) 10000	NPOR for SAND (NPOR_SAN) 0.3 (V/V) 0	
	Tension (TENS) 20000 (N) 0	HRLT Resistivity 3 (RLA3) 0.1 (OHMM) 10000	Total CMR Porosity (TCMR) 0.3 (V/V) 0	
			Small Pore Porosity	
			Capillary Bound Fluid Porosity	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
HILTH-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1000	K/M3
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HSCO	Hole Size Correction Option	YES	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HiRes	
NSAR	HRDD Depth Sampling Rate	25.4	MM
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
CMRT-B: Combinable Magnetic Resonance Tool - B			
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HRLT-B: High Resolution Laterolog Array - B			
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
KFAC_HRLT	HRLT K Factor Option	SONDE	
HILTH2-FTB: High resolution Integrated Logging Tool-DTS2			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1000	K/M3
FSCO	Formation Salinity Correction Option	NO	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M

HSCO	Hole Size Correction Option	YES	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
NMT	HILT Nuclear Mud Type	NOBARITE	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
DIR: Directional Survey Computation			
SPVD	TVD of Starting Point	0	M
TIMD	Along-hole depth of Tie-in Point	1198	M
TIVD	TVD of Tie-in Point	1198	M
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
STI: Stuck Tool Indicator			
TDL	Total Depth - Logger	1641.00	M
System and Miscellaneous			
BS	Bit Size	156.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	177.800	MM
CWEI	Casing Weight	34.20	KG/M
DFD	Drilling Fluid Density	1315.00	K/M3
DO	Depth Offset for Playback	0.0	M
MST	Mud Sample Temperature	15.40	DEGC
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	0.0440	OHMM

Format: CMRT_Depth_Log_RB Vertical Scale: 1:240 Graphics File Created: 05-Mar-2008 17:50

OP System Version: 15C0-309

MCM

HILTH-FTB	SRPC-3402-Q3_2007	PPC1-B	15C0-309
CMRT-B	15C0-309	HRLT-B	15C0-309
HILTH2-FTB	SRPC-3402-Q3_2007	MLT-B	15C0-309
DTC-H	15C0-309	SPA-A	9936

Input DLIS Files

DEFAULT	TLD_MCFL_CNL_CAL_ML_013PUP	FN:20	PRODUCER	05-Mar-2008 01:01	1644.7 M	1124.1 M

Input DLIS Files

DEFAULT	TLD_MCFL_CNL_CAL_ML_013PUP	FN:20	PRODUCER	05-Mar-2008 01:01	1644.7 M	1124.1 M

CMR DEPTH LOG REPORT

PARAMETER SUMMARY

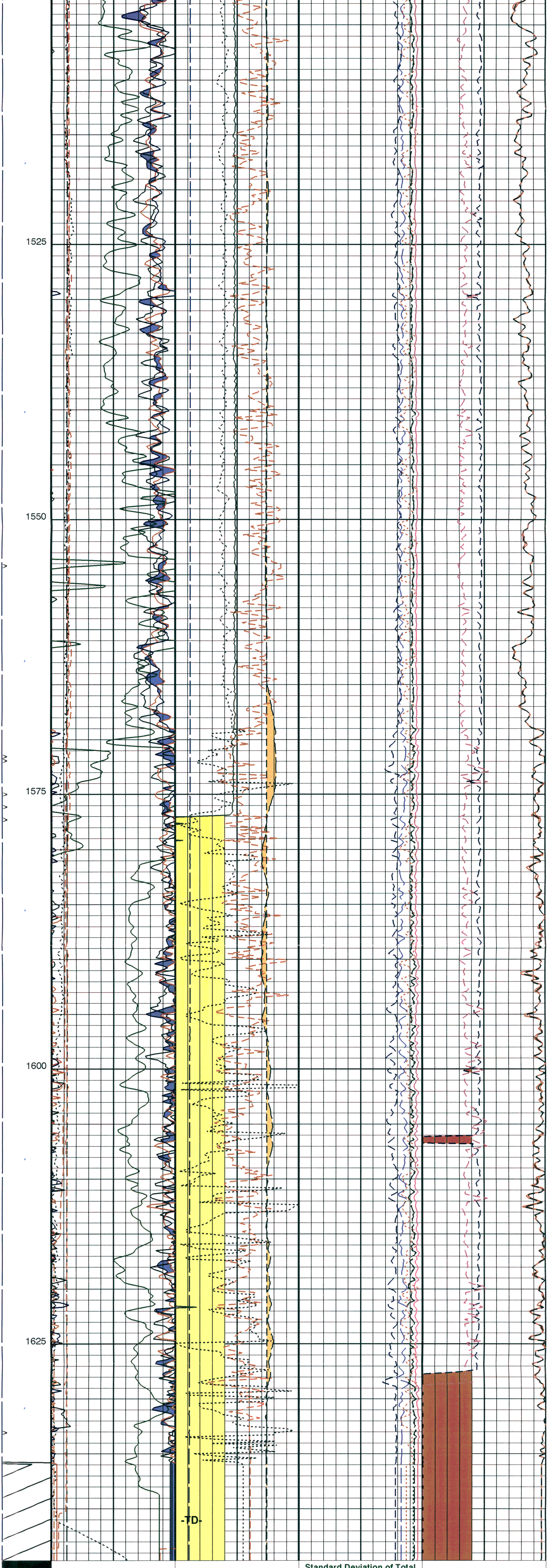
Tool Type: CMR-Plus	Cart. Number: 202	Sonde Number: 182	
Kit Number: 28	DHC Version : 16.4	DSP Version : 13	SP Version : 2062001
Mode: Expert Depth Log - B Mode		LFST Freq(khz) : 2248	LFST Temp(degc) : 30.85
Log Direction: Up	Polarization Correction: On	EPM: Yes	EPM T1/T2: Auto
Despiking: Off	High Res: Off	KBFV: Off	DMRP: On
Echo Spacing(us):	(200 200)		
Polarization Times(sec) for:	T1=1s: (infinity 0.02)	T1=3s: (7.002 0.02)	T1=5s: (6.429 0.02)
Number of Echoes:	(1800 30)		
Repetition:	(1 10)	Duty Cycle (highest): 0.0282	
Regularization:	Auto		
T2 Min(msec): 0.3	T2 Max(msec): 3000	T2 Cutoff(msec): 33	T1/T2: 2
Number of Components: 30	Downhole Stacking: 3	Uphole Stacking: 1	First Echo Used: No
Multiple T2 Cutoffs(msec):	(0.3 1 3 10 33 100 300 1000 3000)		
Sample Int.(in): 7.5	Req Log Speed (f/h): 1000		

DMRP PARAMETERS

60/40 rule: Yes

PIP SUMMARY

Time Mark Every 60 S



Bad Hole Flag	Bit Size (BS) 125 (MM) 375	CMR Temperature (CMR_TEMP) 20 (DEGC) 120	Standard Deviation of Total Bound Fluid Porosity (BFV_SIG) 0.1 (V/V) 0	CMRP - T1T2max (CMRP_T1T2R_MAX) 0.4 (V/V) 0
Insuff. WT Flag	Caliper (MCAL) 125 (MM) 375	CMR System Gain (CMR_GAIN) 0 (----) 1	Standard Deviation of Free Fluid Porosity (CMFF_SIG) 0.1 (V/V) 0	CMRP - T1T2min (CMRP_T1T2R_MIN) 0.4 (V/V) 0
(NO_UPDATE_COUNT) 0 (----) 10	Gamma Ray (GR) 0 (GAPI) 100	Delta B0 (DELTA_B0) -0.5 (MTES) 0.5	Noise per Echo (NOISE_ENV[0]) 0.1 (V/V) 0	High Voltage When Loaded (HV_LOADED) 220 (V) 270
Tuning Mode (TUNING_MODE) -1 (----) 3	HILT Caliper (HCAL) 125 (MM) 375	Frequency without ALF (FREQ_WO_ALF) 2100 (KHZ) 2300	Tool Hardware Noise (NOISE_TOOL[0]) 0.1 (V/V) 0	High Voltage Peak Current (HV_PEAK_CUR) 0 (MA) 10000
	Window Porosity 2 to 3	Signal Phase (SPHASE[0]) -180 (DEG) 180	Tool WSUM Noise (NOISE_TOOL_WSUM[0]) 0.1 (V/V) 0	Total CMR Porosity from WT1 (TCMR_MW[0]) 0.4 (V/V) 0
	Tension (TENS) 20000 (N) 0	Operating Frequency (FREQ_OP) 2100 (KHZ) 2300	Standard Deviation of Total CMR Porosity (TCMR_SIG) 0.1 (V/V) 0	HV Loaded Below Limit
	Window Porosity 1 (CMR_RAW_PHI[0]) 0.4 (V/V) 0	ALF Frequency Correction	Caution Moderate Noise	CMRP max to min
	Window Porosity 2 (CMR_RAW_PHI[1]) 0.4 (V/V) 0	Delta B0 Caution	Noise Out of Tolerance	
	Window Porosity 3 (CMR_RAW_PHI[2]) 0.4 (V/V) 0			

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	DIR: Directional Survey Computation		
SPVD	TVD of Starting Point	0	M
TIMD	Along-hole depth of Tie-in Point	1198	M
TIVD	TVD of Tie-in Point	1198	M
	System and Miscellaneous		
BS	Bit Size	156.000	MM
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	NORMAL	

Format: CMRT_LQC_DEPTH_LOG Vertical Scale: 1:240 Graphics File Created: 05-Mar-2008 17:50

OP System Version: 15C0-309

MCM

HILTH-FTB	SRPC-3402-Q3_2007	PPC1-B	15C0-309
CMRT-B	15C0-309	HRLT-B	15C0-309
HILTH2-FTB	SRPC-3402-Q3_2007	MLT-B	15C0-309
DTC-H	15C0-309	SPA-A	9936

Input DLIS Files

DEFAULT	TLD_MCFL_CNL_CAL_ML_013PUP FN:20	PRODUCER	05-Mar-2008 01:01	1644.7 M	1124.1 M

Company: PETRO-CANADA — Well: PETRO-CANADA BLACKWATER KWIJIKA M-59

Input DLIS Files

DEFAULT	TLD_MCFL_CNL_CAL_ML_012PUP FN:18	PRODUCER	05-Mar-2008 00:48	1592.1 M	1406.3 M

CMR DEPTH LOG REPORT

PARAMETER SUMMARY

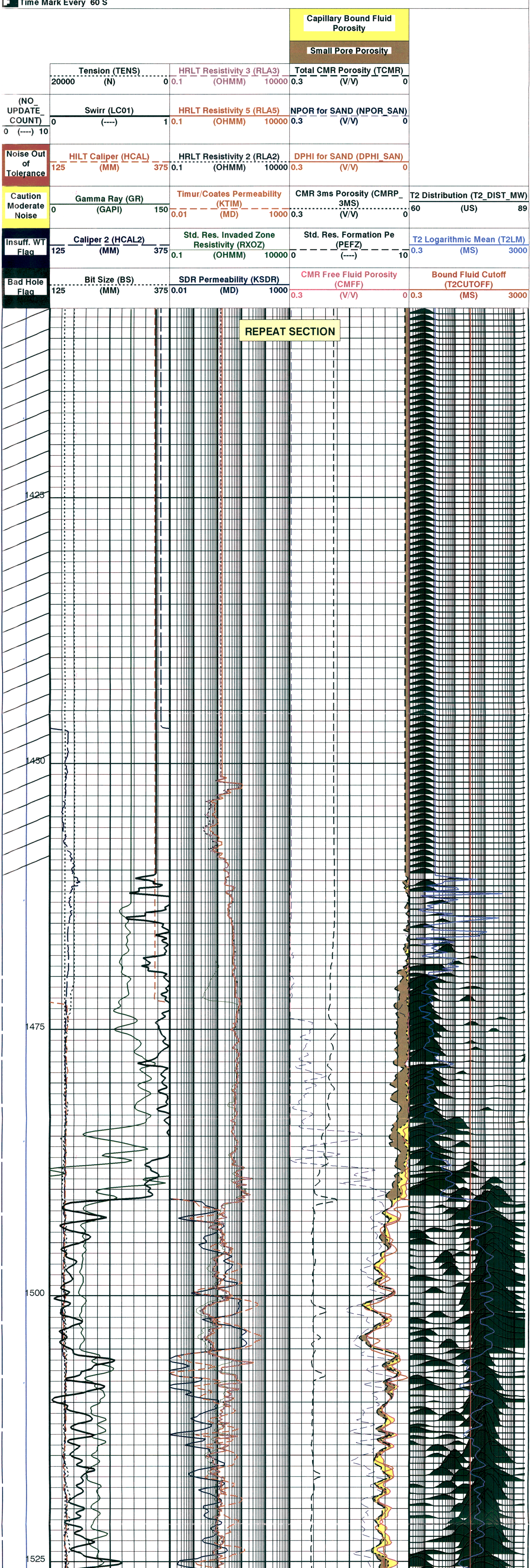
Tool Type: CMR-Plus	Cart. Number: 202	Sonde Number: 182	
Kit Number: 28	DHC Version : 16.4	DSP Version : 13	SP Version : 2062001
Mode: Expert Depth Log - B Mode		LFST Freq(khz) : 2248	LFST Temp(degc) : 30.85
Log Direction: Up	Polarization Correction: On	EPM: Yes	EPM T1/T2: Auto
Despiking: Off	High Res: Off	KBFV: Off	DMRP: On
Echo Spacing(us):	(200 200)		
Polarization Times(sec) for:	T1=1s: (infinity 0.02)	T1=3s: (7.002 0.02)	T1=5s: (6.429 0.02)
Number of Echoes:	(1800 30)		
Repetition:	(1 10)	Duty Cycle (highest): 0.0282	
Regularization:	Auto		
T2 Min(msec): 0.3	T2 Max(msec): 3000	T2 Cutoff(msec): 33	T1/T2: 2
Number of Components: 30	Downhole Stacking: 3	Uphole Stacking: 1	First Echo Used: No
Multiple T2 Cutoffs(msec):	(0.3 1 3 10 33 100 300 1000 3000)		
Sample Int.(in): 7.5	Req Log Speed (f/h): 1000		

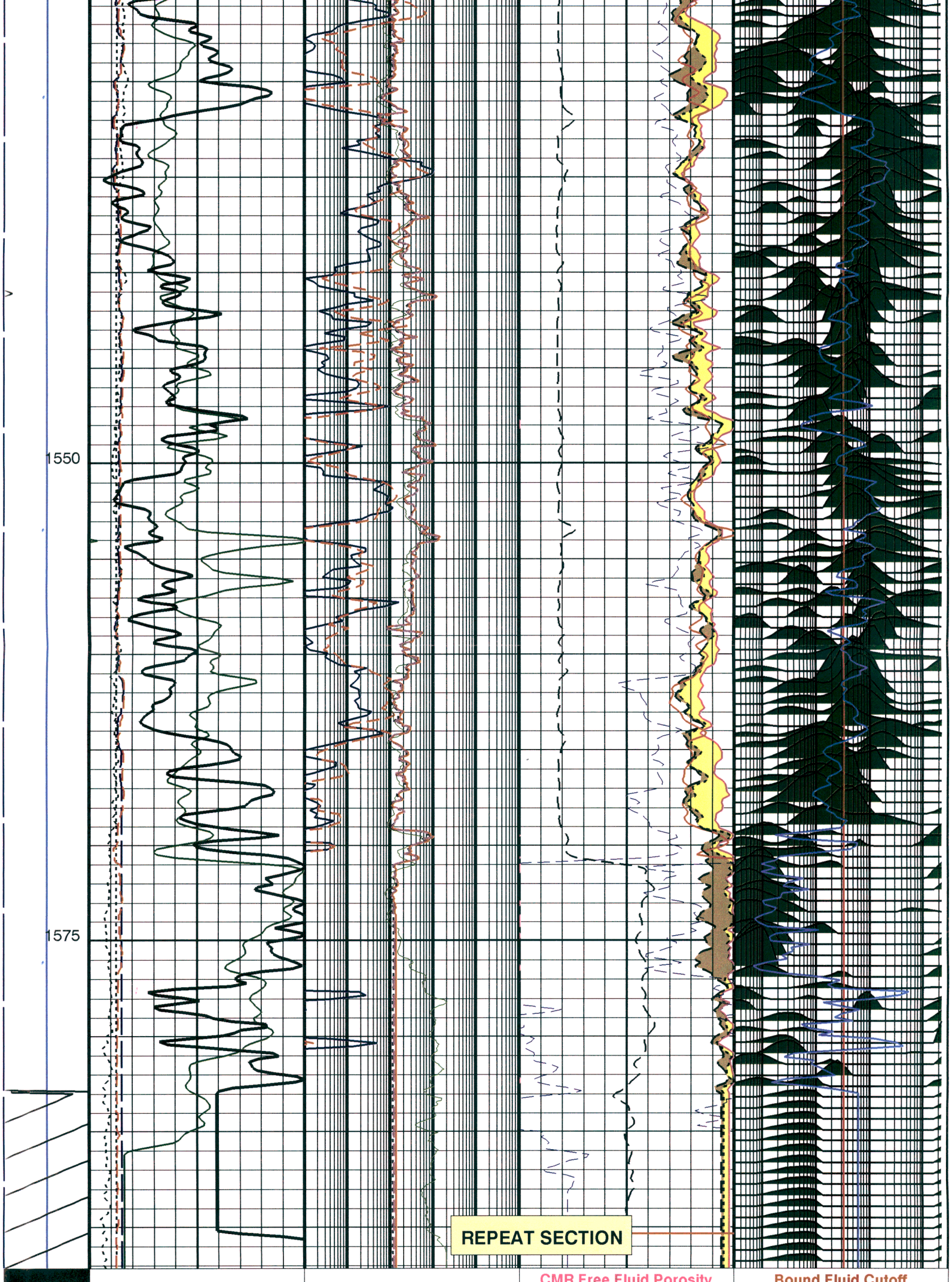
DMRP PARAMETERS

60/40 rule: Yes

PIP SUMMARY

Time Mark Every 60 S





Bad Hole Flag	Bit Size (BS) 125 (MM) 375	SDR Permeability (KSDR) 0.01 (MD) 1000	CMR Free Fluid Porosity (CMFF) 0.3 (V/V) 0	Bound Fluid Cutoff (T2CUTOFF) 0.3 (MS) 3000
Insuff. WT Flag	Caliper 2 (HCAL2) 125 (MM) 375	Std. Res. Invaded Zone Resistivity (RXOZ) 0.1 (OHMM) 10000	Std. Res. Formation Pe (PEFZ) 0 (----) 10	T2 Logarithmic Mean (T2LM) 0.3 (MS) 3000
Caution Moderate Noise	Gamma Ray (GR) 0 (GAPI) 150	Timur/Coates Permeability (KTIM) 0.01 (MD) 1000	CMR 3ms Porosity (CMRP_3MS) 0.3 (V/V) 0	T2 Distribution (T2_DIST_MW) 60 (US) 89
Noise Out of Tolerance	HILT Caliper (HCAL) 125 (MM) 375	HRLT Resistivity 2 (RLA2) 0.1 (OHMM) 10000	DPHI for SAND (DPHI_SAN) 0.3 (V/V) 0	
(NO_UPDATE_COUNT) 0 (----) 10	Swirr (LC01) 0 (----) 1	HRLT Resistivity 5 (RLA5) 0.1 (OHMM) 10000	NPOR for SAND (NPOR_SAN) 0.3 (V/V) 0	
	Tension (TENS) 20000 (N) 0	HRLT Resistivity 3 (RLA3) 0.1 (OHMM) 10000	Total CMR Porosity (TCMR) 0.3 (V/V) 0	
			Small Pore Porosity	
			Capillary Bound Fluid Porosity	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
HILTH-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1000	K/M3
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal-like Formation Option	NO	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HSCO	Hole Size Correction Option	YES	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HiRes	
NSAR	HRDD Depth Sampling Rate	25.4	MM
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
CMRT-B: Combinable Magnetic Resonance Tool - B			
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HRLT-B: High Resolution Laterolog Array - B			
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
KFAC_HRLT	HRLT K Factor Option	SONDE	
HILTH2-FTB: High resolution Integrated Logging Tool-DTS2			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1000	K/M3
FSCO	Formation Salinity Correction Option	NO	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HSCO	Hole Size Correction Option	YES	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
NMT	HILT Nuclear Mud Type	NOBARITE	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SOCN	Standoff Distance	3.175	MM
SOCO	Standoff Correction Option	YES	
DIR: Directional Survey Computation			
SPVD	TVD of Starting Point	0	M
TIMD	Along-hole depth of Tie-in Point	1198	M
TIVD	TVD of Tie-in Point	1198	M
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
STI: Stuck Tool Indicator			
TDL	Total Depth - Logger	1641.00	M
System and Miscellaneous			
BS	Bit Size	156.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	177.800	MM
CWEI	Casing Weight	34.20	KG/M
DFD	Drilling Fluid Density	1315.00	K/M3
DO	Depth Offset for Playback	0.0	M
MST	Mud Sample Temperature	15.40	DEGC
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	0.0440	OHMM

Format: CMRT_Depth_Log_RB Vertical Scale: 1:240 Graphics File Created: 05-Mar-2008 17:38

OP System Version: 15C0-309

MCM

HILTH-FTB	SRPC-3402-Q3_2007	PPC1-B	15C0-309
CMRT-B	15C0-309	HRLT-B	15C0-309
HILTH2-FTB	SRPC-3402-Q3_2007	MLT-B	15C0-309
DTC-H	15C0-309	SPA-A	9936

Input DLIS Files

DEFAULT TLD_MCFL_CNL_CAL_ML_012PUP FN:18 PRODUCER 05-Mar-2008 00:48 1592.1 M 1406.3 M

Company: PETRO-CANADA Well: PETRO-CANADA BLACKWATER KWIJIKA M-59

Input DLIS Files

DEFAULT TLD_MCFL_CNL_CAL_ML_012PUP FN:18 PRODUCER 05-Mar-2008 00:48 1592.1 M 1406.3 M

CMR DEPTH LOG REPORT

PARAMETER SUMMARY

Tool Type: CMR-Plus	Cart. Number: 202	Sonde Number: 182	
Kit Number: 28	DHC Version : 16.4	DSP Version : 13	SP Version : 2062001
Mode: Expert Depth Log - B Mode		LFST Freq(khz) : 2248	LFST Temp(degc) : 30.85
Log Direction: Up	Polarization Correction: On	EPM: Yes	EPM T1/T2: Auto
Despiking: Off	High Res: Off	KBFV: Off	DMRP: On
Echo Spacing(us):	(200 200)		
Polarization Times(sec) for:	T1=1s: (infinity 0.02)	T1=3s: (7.002 0.02)	T1=5s: (6.429 0.02)

Number of Echoes: (1800 30)
Repetition: (1 10) Duty Cycle (highest): 0.0282
Regularization: Auto

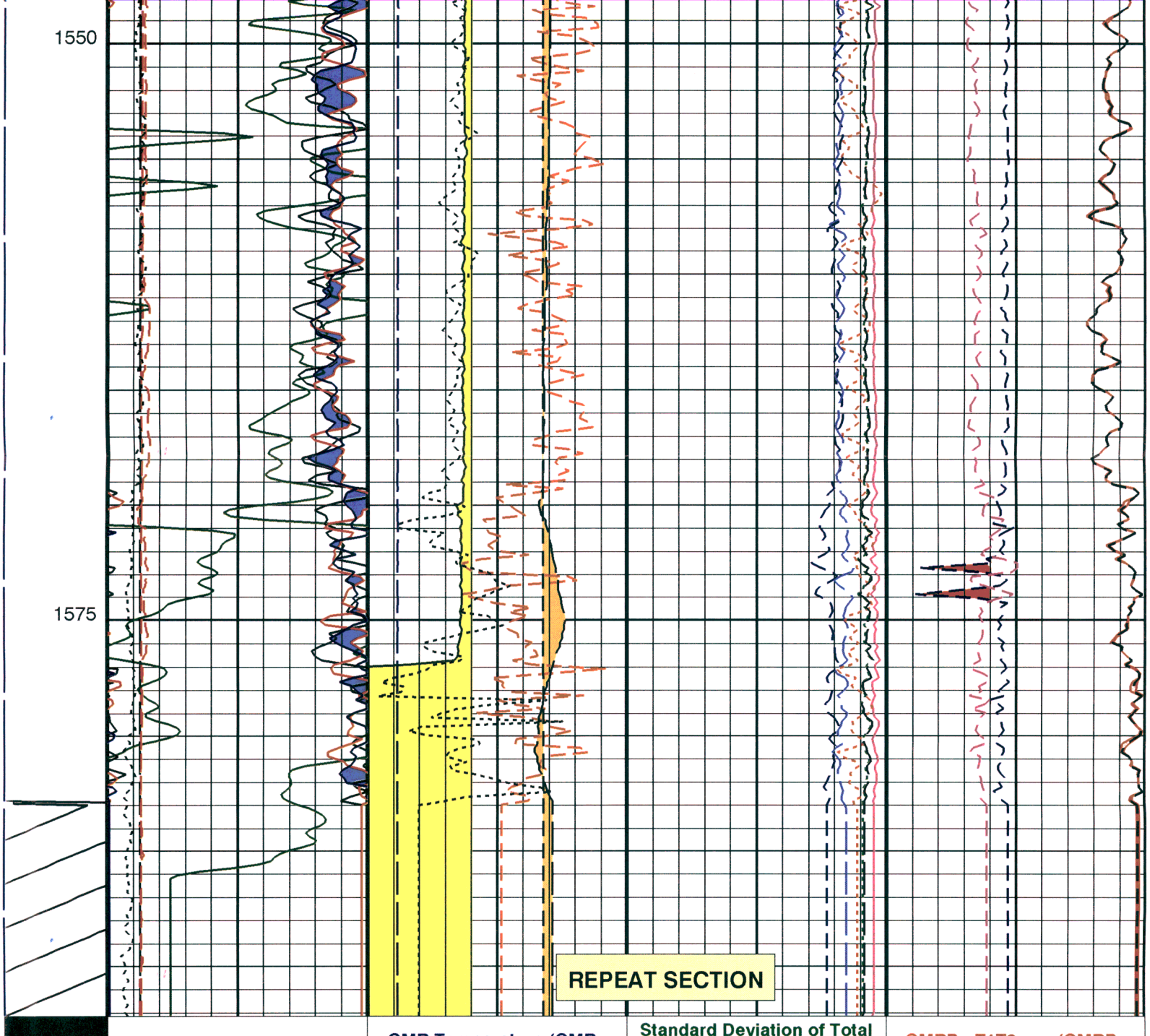
T2 Min(msec): 0.3 T2 Max(msec): 3000 T2 Cutoff(msec): 33 T1/T2: 2
Number of Components: 30 Downhole Stacking: 3 Uphole Stacking: 1 First Echo Used: No
Multiple T2 Cutoffs(msec): (0.3 1 3 10 33 100 300 1000 3000)
Sample Int.(in): 7.5 Req Log Speed (f/h): 1000

DMRP PARAMETERS

60/40 rule: Yes

PIP SUMMARY

Time Mark Every 60 S



Bad Hole Flag	Bit Size (BS) 125 (MM) 375	CMR Temperature (CMR_TEMP) 20 (DEGC) 120	Standard Deviation of Total Bound Fluid Porosity (BFV_SIG) 0.1 (V/V) 0	CMRP - T1T2max (CMRP_T1T2R_MAX) 0.4 (V/V) 0
Insuff. WT Flag	Caliper (MCAL) 125 (MM) 375	CMR System Gain (CMR_GAIN) 0 (----) 1	Standard Deviation of Free Fluid Porosity (CMFF_SIG) 0.1 (V/V) 0	CMRP - T1T2min (CMRP_T1T2R_MIN) 0.4 (V/V) 0
(NO_UPDATE_COUNT) 0 (----) 10	Gamma Ray (GR) 0 (GAPI) 100	Delta B0 (DELTA_B0) -0.5 (MTES) 0.5	Noise per Echo (NOISE_ENV[0]) 0.1 (V/V) 0	High Voltage When Loaded (HV_LOADED) 220 (V) 270
Tuning Mode (TUNING_MODE) -1 (----) 3	HILT Caliper (HCAL) 125 (MM) 375	Frequency without ALF (FREQ_WO_ALF) 2100 (KHZ) 2300	Tool Hardware Noise (NOISE_TOOL[0]) 0.1 (V/V) 0	High Voltage Peak Current (HV_PEAK_CUR) 0 (MA) 10000
	Window Porosity 2 to 3	Signal Phase (SPHASE[0]) -180 (DEG) 180	Tool WSUM Noise (NOISE_TOOL_WSUM[0]) 0.1 (V/V) 0	Total CMR Porosity from WT1 (TCMR_MW[0]) 0.4 (V/V) 0
	Tension (TENS) 20000 (N) 0	Operating Frequency (FREQ_OP) 2100 (KHZ) 2300	Standard Deviation of Total CMR Porosity (TCMR_SIG) 0.1 (V/V) 0	HV Loaded Below Limit
	Window Porosity 1 (CMR_RAW_PHI[0]) 0.4 (V/V) 0	ALF Frequency Correction	Caution Moderate Noise	CMRP max to min
	Window Porosity 2 (CMR_RAW_PHI[1]) 0.4 (V/V) 0	Delta B0 Caution	Noise Out of Tolerance	
	Window Porosity 3 (CMR_RAW_PHI[2]) 0.4 (V/V) 0			

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	DIR: Directional Survey Computation		
SPVD	TVD of Starting Point	0	M
TIMD	Along-hole depth of Tie-in Point	1198	M
TIVD	TVD of Tie-in Point	1198	M
	System and Miscellaneous		
BS	Bit Size	156.000	MM
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	NORMAL	

Format: CMRT_LQC_DEPTH_LOG Vertical Scale: 1:240 Graphics File Created: 05-Mar-2008 17:38

OP System Version: 15C0-309

MCM

HILTH-FTB	SRPC-3402-Q3_2007	PPC1-B	15C0-309
CMRT-B	15C0-309	HRLT-B	15C0-309
HILTH2-FTB	SRPC-3402-Q3_2007	MLT-B	15C0-309
DTC-H	15C0-309	SPA-A	9936

Input DLIS Files

DEFAULT	TLD_MCFL_CNL_CAL_ML_012PUP	FN:18	PRODUCER	05-Mar-2008 00:48	1592.1 M	1406.3 M

CMRT LARMOR FREQUENCY SEARCH REPORT - Tue Mar 04 22:54:25 2008

Search Accepted

ALF Offset: value, std dev (deg): 14.5 , 0.94
Offset relative to master value (deg): 2.1

Search Results:

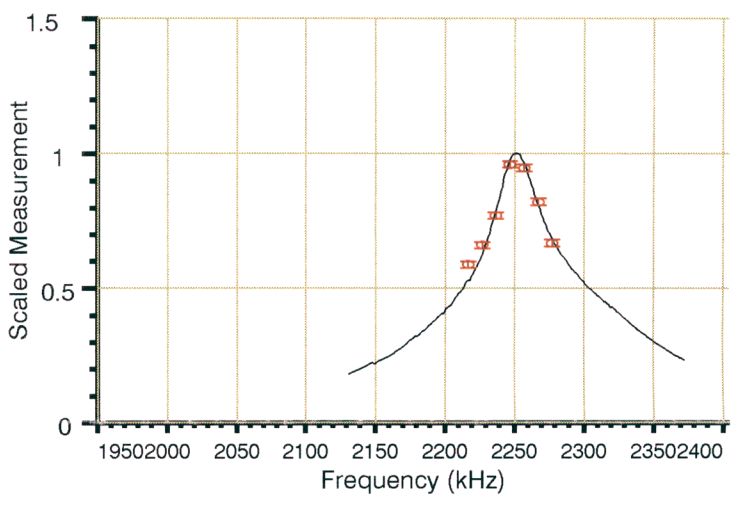
Larmor Frequency (kHz): **2248**
Temperature (degc): **30.9**

Search Parameters:

Central Frequency (kHz): 2244
Central Frequency Selection: Current Freq
Echo Count Used: 32

Measured Data:

Frequency	Amplitude	RMS Noise	Std Deviation
2214	80.00	4.03	3.5280
2224	90.00	2.85	3.5234
2234	105.00	3.49	3.5066
2244	131.00	3.26	3.5077
2254	129.00	4.60	3.5075
2264	112.00	3.17	3.5196
2274	91.00	2.85	3.5109



Related Data:

Depth(m):	1500.2
Average Cable Speed (ft/h):	0.0
Delta Temperature (degc):	0.1
Measurement Time (sec):	87.2
HV Peak Current (mA):	3621.1
Previous LFST Freq (at Temp):	2244
Frequency Std Deviation (kHz):	0.72
Number of Echoes:	300
Polarization Time (sec):	0.400
System Gain:	0.446

Freq estimate from Temp (kHz):	2234
Tune Table Offset (kHz):	1.9
Sonde Number:	182
Cartridge Number:	202

CMRT LARMOR FREQUENCY SEARCH REPORT - Tue Mar 04 22:51:35 2008

Search Accepted

ALF Offset: value, std dev (deg): 10.5 , 0.80
Offset relative to master value (deg): -1.9

Search Results:

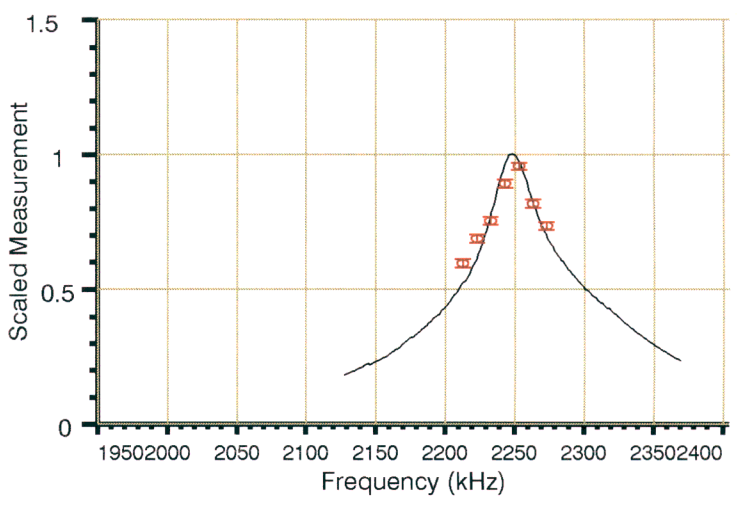
Larmor Frequency (kHz): **2245**
Temperature (degc): **30.8**

Search Parameters:

Central Frequency (kHz): 2240
Central Frequency Selection: Current Freq
Echo Count Used: 32

Measured Data:

Frequency	Amplitude	RMS Noise	Std Deviation
2210	64.00	3.53	3.2337
2220	74.00	2.20	3.2376
2230	81.00	3.32	3.2103
2240	96.00	2.55	3.1935
2250	103.00	3.71	3.2127
2260	88.00	3.29	3.2181
2270	79.00	3.62	3.2299



Related Data:

Depth(m):	1499.7
Average Cable Speed (ft/h):	63.1
Delta Temperature (degc):	-0.2
Measurement Time (sec):	95.1
HV Peak Current (mA):	3610.5
Previous LFST Freq (at Temp):	2234
Frequency Std Deviation (kHz):	0.99
Number of Echoes:	300
Polarization Time (sec):	0.400
System Gain:	0.461

Freq estimate from Temp (kHz):	2234
Tune Table Offset (kHz):	1.6
Sonde Number:	182
Cartridge Number:	202

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Stab Measurement Summary							
Before: 3-Mar-2008 14:18							
BS Window Ratio	0.7418	N/A	0.7463	N/A	N/A	N/A	
BS Window Sum	28600	N/A	28620	N/A	N/A	N/A	CPS
SS Window Ratio	0.4827	N/A	0.4782	N/A	N/A	N/A	
SS Window Sum	12770	N/A	12740	N/A	N/A	N/A	CPS
LS Window Ratio	0.3018	N/A	0.3019	N/A	N/A	N/A	
LS Window Sum	1503	N/A	1500	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations
Before: 3-Mar-2008 14:18

BS PM High Voltage (Command)	1369	N/A	1350	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1426	N/A	1439	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1322	N/A	1335	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Crystal Quality Resolutions Calibration
Before: 3-Mar-2008 14:18

BS Crystal Resolution	10.83	N/A	10.70	N/A	N/A	N/A	%
SS Crystal Resolution	8.828	N/A	9.424	N/A	N/A	N/A	%
LS Crystal Resolution	8.889	N/A	8.971	N/A	N/A	N/A	%

High resolution Integrated Logging Tool-DTS Wellsite Calibration - MCFL Calibration
Before: 3-Mar-2008 14:19

Raw B0 Resistivity	3875	N/A	3864	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3823	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3823	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HILT Caliper Calibration
Before: 3-Mar-2008 14:12

HILT Caliper Zero Measurement	203.2	N/A	193.8	N/A	N/A	N/A	MM
HILT Caliper Plus Measurement	304.8	N/A	303.5	N/A	N/A	N/A	MM

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Detector Calibration
Before: 3-Mar-2008 14:39

Gamma Ray Background	30.00	N/A	21.54	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	180.5	N/A	180.5	N/A	N/A	16.41	GAPI
Gamma Ray (Calibrated)	162.0	N/A	162.0	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Zero Measurement
Master: 15-Jan-2008 15:00 Before: 3-Mar-2008 14:34

CNTC Background	26.64	26.64	27.19	N/A	N/A	3.996	CPS
CFTC Background	26.42	26.42	27.76	N/A	N/A	3.963	CPS

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Ratio Measurement
Master: 15-Jan-2008 15:00

Thermal Near Corr. (Tank)	5800	6123	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2592	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.362	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Accelerometer Calibration
Before: 23-Feb-2008 14:50

Z-Axis Acceleration	9.810	N/A	9.810	N/A	N/A	N/A	M/S2

High resolution Integrated Logging Tool-DTS Master Calibration - Inversion results
Master: 15-Feb-2008 16:22

Rho Aluminum	2596	2597	--	--	--	--	K/M3
Rho Magnesium	1686	1688	--	--	--	--	K/M3
Pe Aluminum	2.570	2.564	--	--	--	--	
Pe Magnesium	2.650	2.613	--	--	--	--	

High resolution Integrated Logging Tool-DTS Master Calibration - Deviation Summary
Master: 15-Feb-2008 16:22

BS Average Deviation	0	0.2990	--	--	--	--	%
BS Max Deviation	0	1.040	--	--	--	--	%
SS Average Deviation	0	0.4137	--	--	--	--	%
SS Max Deviation	0	0.9796	--	--	--	--	%
LS Average Deviation	0	0.5746	--	--	--	--	%
LS Max Deviation	0	1.170	--	--	--	--	%

Combinable Magnetic Resonance Tool - B Master Calibration - Date of Master Calibration: 16-Jan-2008
Master: 4-Mar-2008 20:45

Tool Temperature MCAL	27.00	17.02	--	--	--	--	DEGC
LOOP Measurement MCAL	2300	1863	--	--	--	--	
Hall Probe B0 MCAL	52.00	52.77	--	--	--	--	MTES
Cal. Fixture Amplitude MCAL	37.50	27.91	--	--	--	--	%

High Resolution Laterolog Array - B Wellsite Calibration - HRLT M01
Before: 4-Mar-2008 21:13

HRLT M0-M1 Voltage Plus - 0	0	N/A	-321.3	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 1	0	N/A	-369.6	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 2	0	N/A	-339.0	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 3	0	N/A	-337.9	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 4	0	N/A	-324.2	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 5	0	N/A	-328.0	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 6	0	N/A	360.0	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus - 7	0	N/A	-322.7	N/A	N/A	9.681	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT M12
Before: 4-Mar-2008 21:13

HRLT M1-M2 Voltage Plus - 0	0	N/A	1766	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 1	0	N/A	2023	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 2	0	N/A	1853	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 3	0	N/A	1849	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 4	0	N/A	1778	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 5	0	N/A	1801	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 6	0	N/A	-1979	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT M23
Before: 4-Mar-2008 21:13

HRLT M2-M3 Voltage Plus - 0	0	N/A	1750	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 1	0	N/A	2023	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 2	0	N/A	1853	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 3	0	N/A	1851	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 4	0	N/A	1773	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 5	0	N/A	1795	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 6	0	N/A	-1966	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V34
Before: 4-Mar-2008 21:13

HRLT A3-A4 Voltage Plus - 0	0	N/A	68940	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 1	0	N/A	79390	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 2	0	N/A	73020	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 3	0	N/A	73280	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 4	0	N/A	70190	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 5	0	N/A	71100	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 6	0	N/A	-76000	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V45
Before: 4-Mar-2008 21:13

HRLT A4-A5 Voltage Plus - 0	0	N/A	68810	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 1	0	N/A	79180	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 2	0	N/A	72840	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 3	0	N/A	73110	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 4	0	N/A	70030	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 5	0	N/A	70950	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 6	0	N/A	-75800	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V56
Before: 4-Mar-2008 21:13

HRLT A5-A6 Voltage Plus - 0	0	N/A	69210	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 1	0	N/A	79760	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 2	0	N/A	73350	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 3	0	N/A	73600	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 4	0	N/A	70450	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 5	0	N/A	71380	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 6	0	N/A	-76370	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT VTP
Before: 4-Mar-2008 21:13

HRLT Torpedo-M0 Voltage - 0	0	N/A	-68580	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 1	0	N/A	-79420	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 2	0	N/A	-73070	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 3	0	N/A	-73360	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 4	0	N/A	-70270	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 5	0	N/A	-71210	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 6	0	N/A	75970	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 7	0	N/A	-70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT VBD
Before: 4-Mar-2008 21:13

HRLT Bridle#9-M0 Voltage - 0	0	N/A	-68590	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 1	0	N/A	-79400	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 2	0	N/A	-73040	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 3	0	N/A	-73340	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 4	0	N/A	-70260	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 5	0	N/A	-71190	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 6	0	N/A	75950	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 7	0	N/A	-70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT ISO
Before: 4-Mar-2008 21:13

HRLT Source Current Plus - 0	0	N/A	286.2	N/A	N/A	8.520	UA
HRLT Source Current Plus - 1	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 2	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 3	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 4	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 5	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 6	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 7	0	N/A	281.1	N/A	N/A	8.520	UA

High Resolution Laterolog Array - B Wellsite Calibration - HRLT MV
Before: 4-Mar-2008 21:13

HRLT Vertical Voltage Pl - 0	0	N/A	-323.0	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 1	0	N/A	-362.2	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 2	0	N/A	-331.7	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 3	0	N/A	-328.9	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 4	0	N/A	-313.0	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 5	0	N/A	-332.1	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 6	0	N/A	367.3	N/A	N/A	9.681	UV
HRLT Vertical Voltage Pl - 7	0	N/A	-322.7	N/A	N/A	9.681	UV

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration - Stab Measurement Summary
Before: 3-Mar-2008 13:15

BS2 Window Ratio	0.7383	N/A	0.7405	N/A	N/A	N/A	
BS2 Window Sum	26790	N/A	26910	N/A	N/A	N/A	CPS
SS2 Window Ratio	0.4880	N/A	0.4824	N/A	N/A	N/A	
SS2 Window Sum	12320	N/A	12240	N/A	N/A	N/A	CPS
LS2 Window Ratio	0.2973	N/A	0.3019	N/A	N/A	N/A	
LS2 Window Sum	1478	N/A	1468	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration - Photo-multiplier High Voltages Calibrations
Before: 3-Mar-2008 13:15

BS2 PM High Voltage (Command)	1403	N/A	1356	N/A	N/A	N/A	V
SS2 PM High Voltage (Command)	1315	N/A	1307	N/A	N/A	N/A	V
LS2 PM High Voltage (Command)	1334	N/A	1341	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration - Crystal Quality Resolutions Calibration
Before: 3-Mar-2008 13:15

BS2 Crystal Resolution	11.04	N/A	10.82	N/A	N/A	N/A	%
SS2 Crystal Resolution	9.084	N/A	9.536	N/A	N/A	N/A	%
LS2 Crystal Resolution	8.323	N/A	8.362	N/A	N/A	N/A	%

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration - MCFL2 Calibration
Before: 3-Mar-2008 13:06

Raw B0 Resistivity	3875	N/A	3837	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3813	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3820	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration - HILT2 Caliper Calibration
Before: 3-Mar-2008 13:05

HILT2 Caliper Zero Measurement	203.2	N/A	178.7	N/A	N/A	N/A	MM
HILT2 Caliper Plus Measurement	304.8	N/A	283.9	N/A	N/A	N/A	MM

High resolution Integrated Logging Tool-DTS2 Master Calibration - Inversion results
Master: 22-Feb-2008 12:27

Rho Aluminum	2596	2601	--	--	--	--	K/M3
Rho Magnesium	1686	1686	--	--	--	--	K/M3
Pe Aluminum	2.570	2.561	--	--	--	--	
Pe Magnesium	2.650	2.617	--	--	--	--	

High resolution Integrated Logging Tool-DTS2 Master Calibration - Deviation Summary
Master: 22-Feb-2008 12:27

BS2 Average Deviation	0	0.2741	--	--	--	--	%
BS2 Max Deviation	0	1.036	--	--	--	--	%
SS2 Average Deviation	0	0.3569	--	--	--	--	%
SS2 Max Deviation	0	1.416	--	--	--	--	%
LS2 Average Deviation	0	0.5074	--	--	--	--	%
LS2 Max Deviation	0	1.283	--	--	--	--	%

MicroLog - B Wellsite Calibration - MLT Caliper Calibration
Before: 3-Mar-2008 13:47

MLT Caliper Small Ring	203.2	N/A	162.1	N/A	N/A	N/A	MM
MLT Caliper Large Ring	304.8	N/A	265.8	N/A	N/A	N/A	MM

MicroLog - B Wellsite Calibration - MLT Micro Inverse Calibration
Before: 3-Mar-2008 13:45

Micro Inverse Zero	0	N/A	0.0006272	N/A	N/A	0.2000	OHMM
Micro Inverse Plus	5.000	N/A	4.872	N/A	N/A	0.2000	OHMM

MicroLog - B Wellsite Calibration - MLT Micro Normal Calibration
Before: 3-Mar-2008 13:45

Micro Normal Zero	0	N/A	0.002347	N/A	N/A	0.2000	OHMM
Micro Normal Plus	6.720	N/A	6.560	N/A	N/A	0.2000	OHMM

The GLS-VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT-B Water Temperature	19.4	DEGC.
Thermal Housing Size	85.750	MM.
NSR-F serial number	5196	

The GLS-VJ2 source activity is acceptable.

High resolution Integrated Logging Tool-DTS / Equipment Identification

Primary Equipment:		
HILT high-Resolution Mechanical Sonde	HRMS - H	4719
HILT Rxo Gamma-ray Device	HRGD - H	4751
HILT Micro Cylindrically Focused Log Dev	MCFL - H	
GR Logging Source	GLS - VJ	5041
HILT High Res. Control Cartridge	HRCC - H	4722
HILT Gamma-Ray Neutron Sonde-DTS	HGNS - H	4738
HGNS Gamma-Ray Device	HGR -	
HGNS Neutron Detector with Alpha Source	HCNT - H	
Auxiliary Equipment:		
Neutron Calibration Tank	NCT - B	
Gamma Source Radioactive	GSR - U/Y	11
HGNS Housing	HGNH -	3811

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Stab Measurement Summary

Phase	BS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before	0.7047 (Minimum) / 0.7418 (Nominal) / 0.7788 (Maximum)	0.7463	Before	0.4586 (Minimum) / 0.4827 (Nominal) / 0.5069 (Maximum)	0.4782	Before	0.2867 (Minimum) / 0.3018 (Nominal) / 0.3169 (Maximum)	0.3019
Phase	**BS Window Sum CPS**	**Value**	**Phase**	**SS Window Sum CPS**	**Value**	**Phase**	**LS Window Sum CPS**	**Value**
Before	27170 (Minimum) / 28600 (Nominal) / 30030 (Maximum)	28620	Before	12130 (Minimum) / 12770 (Nominal) / 13410 (Maximum)	12740	Before	1428 (Minimum) / 1503 (Nominal) / 1578 (Maximum)	1500

Before: 3-Mar-2008 14:18

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Photo-multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before	1269 (Minimum) / 1369 (Nominal) / 1469 (Maximum)	1350	Before	1326 (Minimum) / 1426 (Nominal) / 1526 (Maximum)	1439	Before	1222 (Minimum) / 1322 (Nominal) / 1422 (Maximum)	1335

Before: 3-Mar-2008 14:18

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before	9.831 (Minimum) / 10.83 (Nominal) / 11.83 (Maximum)	10.70	Before	7.828 (Minimum) / 8.828 (Nominal) / 9.828 (Maximum)	9.424	Before	7.889 (Minimum) / 8.889 (Nominal) / 9.889 (Maximum)	8.971

Before: 3-Mar-2008 14:18

High resolution Integrated Logging Tool-DTS Wellsite Calibration
MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before	3565 (Minimum) / 3875 (Nominal) / 4185 (Maximum)	3864	Before	3524 (Minimum) / 3830 (Nominal) / 4136 (Maximum)	3823	Before	3524 (Minimum) / 3830 (Nominal) / 4136 (Maximum)	3823

Before: 3-Mar-2008 14:19

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement MM	Value	Phase	HILT Caliper Plus Measurement MM	Value
Before	152.4 (Minimum) / 203.2 (Nominal) / 254.0 (Maximum)	193.8	Before	228.6 (Minimum) / 304.8 (Nominal) / 381.0 (Maximum)	303.5

Before: 3-Mar-2008 14:12

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before	0 (Minimum) / 30.00 (Nominal) / 120.0 (Maximum)	21.54	Before	164.1 (Minimum) / 180.5 (Nominal) / 196.9 (Maximum)	180.5	Before	147.0 (Minimum) / 162.0 (Nominal) / 177.0 (Maximum)	162.0

Before: 3-Mar-2008 14:39

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master	5.000 (Minimum) / 26.64 (Nominal) / 40.00 (Maximum)	26.64	Master	5.000 (Minimum) / 26.42 (Nominal) / 40.00 (Maximum)	26.42
Before		27.19	Before		27.76

Master: 15-Jan-2008 15:00 Before: 3-Mar-2008 14:34

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master	4700 (Minimum) / 5800 (Nominal) / 6900 (Maximum)	6123	Master	1900 (Minimum) / 2400 (Nominal) / 2900 (Maximum)	2592	Master	2.120 (Minimum) / 2.159 (Nominal) / 2.540 (Maximum)	2.362

Master: 15-Jan-2008 15:00

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Accelerometer Calibration

Phase	Z-Axis Acceleration M/S2	Value
Before	9.610 (Minimum) / 9.810 (Nominal) / 10.01 (Maximum)	9.810

Before: 23-Feb-2008 14:50

High resolution Integrated Logging Tool-DTS Master Calibration
Inversion results

Phase	Rho Aluminum K/M3	Value	Phase	Rho Magnesium K/M3	Value
Master	2586 (Minimum) / 2596 (Nominal) / 2606 (Maximum)	2597	Master	1676 (Minimum) / 1686 (Nominal) / 1696 (Maximum)	1688
Phase	**Pe Aluminum**	**Value**	**Phase**	**Pe Magnesium**	**Value**
Master	2.470 (Minimum) / 2.570 (Nominal) / 2.670 (Maximum)	2.564	Master	2.550 (Minimum) / 2.650 (Nominal) / 2.750 (Maximum)	2.613

Master: 15-Feb-2008 16:22

High resolution Integrated Logging Tool-DTS Master Calibration
Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master	-0.6000 (Minimum) / 0 (Nominal) / 0.6000 (Maximum)	0.2990	Master	-1.000 (Minimum) / 0 (Nominal) / 1.000 (Maximum)	0.4137	Master	-1.500 (Minimum) / 0 (Nominal) / 1.500 (Maximum)	0.5746
Phase	**BS Max Deviation %**	**Value**	**Phase**	**SS Max Deviation %**	**Value**	**Phase**	**LS Max Deviation %**	**Value**
Master	-1.600 (Minimum) / 0 (Nominal) / 1.600 (Maximum)	1.040	Master	-2.500 (Minimum) / 0 (Nominal) / 2.500 (Maximum)	0.9796	Master	-3.500 (Minimum) / 0 (Nominal) / 3.500 (Maximum)	1.170

Master: 15-Feb-2008 16:22

High resolution Integrated Logging Tool-DTS Master Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master	5.000 (Minimum) / 26.64 (Nominal) / 40.00 (Maximum)	26.64	Master	5.000 (Minimum) / 26.42 (Nominal) / 40.00 (Maximum)	26.42

Master: 15-Jan-2008 15:00

High resolution Integrated Logging Tool-DTS Master Calibration
Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master	4700 (Minimum) / 5800 (Nominal) / 6900 (Maximum)	6123	Master	1900 (Minimum) / 2400 (Nominal) / 2900 (Maximum)	2592	Master	2.120 (Minimum) / 2.159 (Nominal) / 2.540 (Maximum)	2.362

Master: 15-Jan-2008 15:00

Combinable Magnetic Resonance Tool - B / Equipment Identification

Primary Equipment:		
CMR-B Sonde	CMRS - BA	182
CMR Cartridge	CMRC - BA	202
Auxiliary Equipment:		

Combinable Magnetic Resonance Tool - B Master Calibration
Date of Master Calibration: 16-Jan-2008

Phase	Tool Temperature MCAL DEGC	Value	Phase	LOOP Measurement MCAL	Value	Phase	Hall Probe B0 MCAL MTES	Value
Master	10.00 (Minimum) / 27.00 (Nominal) / 44.00 (Maximum)	17.02	Master	1500 (Minimum) / 2300 (Nominal) / 2900 (Maximum)	1863	Master	50.00 (Minimum) / 52.00 (Nominal) / 55.00 (Maximum)	52.77
Phase	**Cal. Fixture Amplitude MCAL %**	**Value**						
Master	25.00 (Minimum) / 37.50 (Nominal) / 50.00 (Maximum)	27.91						

Master: 4-Mar-2008 20:45

High Resolution Laterolog Array - B / Equipment Identification

Primary Equipment:		
HRLT Sonde	HRLS - B	1704
Auxiliary Equipment:		
HRLT lower Housing	HRLH - B	763
HRLT Lower Cartridge	HRLC - B	951
HRLT upper Housing	HRUH - B	1716
HRLT Upper Cartridge	HRUC - B	1714

High Resolution Laterolog Array - B Wellsite Calibration
HRLT M01

Idx	Phase	HRLT M0-M1 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-321.3	-322.7	-280.7	-379.7
1	Before		-369.6	-322.7	-280.7	-379.7
2	Before		-339.0	-322.7	-280.7	-379.7
3	Before		-337.9	-322.7	-280.7	-379.7

4	Before	-324.2	-322.7	-280.7	-379.7
5	Before	-328.0	-322.7	-280.7	-379.7
6	Before	360.0	322.7	379.7	280.7
7	Before	-322.7	-322.7	-280.7	-379.7
	(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High Resolution Laterolog Array - B Wellsite Calibration

HRLT M12

Idx	Phase	HRLT M1-M2 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1766	1781	2095	1549
1	Before		2023	1781	2095	1549
2	Before		1853	1781	2095	1549
3	Before		1849	1781	2095	1549
4	Before		1778	1781	2095	1549
5	Before		1801	1781	2095	1549
6	Before		-1979	-1781	-1549	-2095
7	Before		1781	1781	2095	1549
		(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High Resolution Laterolog Array - B Wellsite Calibration

HRLT M23

Idx	Phase	HRLT M2-M3 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1750	1781	2095	1549
1	Before		2023	1781	2095	1549
2	Before		1853	1781	2095	1549
3	Before		1851	1781	2095	1549
4	Before		1773	1781	2095	1549
5	Before		1795	1781	2095	1549
6	Before		-1966	-1781	-1549	-2095
7	Before		1781	1781	2095	1549
		(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High Resolution Laterolog Array - B Wellsite Calibration

HRLT V34

Idx	Phase	HRLT A3-A4 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68940	70000	82360	60900
1	Before		79390	70000	82360	60900
2	Before		73020	70000	82360	60900
3	Before		73280	70000	82360	60900
4	Before		70190	70000	82360	60900
5	Before		71100	70000	82360	60900
6	Before		-76000	-70000	-60900	-82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High Resolution Laterolog Array - B Wellsite Calibration

HRLT V45

Idx	Phase	HRLT A4-A5 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68810	70000	82360	60900
1	Before		79180	70000	82360	60900
2	Before		72840	70000	82360	60900
3	Before		73110	70000	82360	60900
4	Before		70030	70000	82360	60900
5	Before		70950	70000	82360	60900
6	Before		-75800	-70000	-60900	-82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High Resolution Laterolog Array - B Wellsite Calibration

HRLT V56

Idx	Phase	HRLT A5-A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		69210	70000	82360	60900
1	Before		79760	70000	82360	60900
2	Before		73350	70000	82360	60900
3	Before		73600	70000	82360	60900
4	Before		70450	70000	82360	60900
5	Before		71380	70000	82360	60900
6	Before		-76370	-70000	-60900	-82360
7	Before		70000	70000	82360	60900
		(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High Resolution Laterolog Array - B Wellsite Calibration

HRLT VTP

Idx	Phase	HRLT Torpedo-M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68580	-70000	-60900	-82360
1	Before		-79420	-70000	-60900	-82360
2	Before		-73070	-70000	-60900	-82360
3	Before		-73360	-70000	-60900	-82360
4	Before		-70270	-70000	-60900	-82360
5	Before		-71210	-70000	-60900	-82360
6	Before		75970	70000	82360	60900
7	Before		-70000	-70000	-60900	-82360
		(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High Resolution Laterolog Array - B Wellsite Calibration

HRLT VBD

Idx	Phase	HRLT Bridle#9-M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68590	-70000	-60900	-82360
1	Before		-79400	-70000	-60900	-82360
2	Before		-73040	-70000	-60900	-82360
3	Before		-73340	-70000	-60900	-82360
4	Before		-70260	-70000	-60900	-82360
5	Before		-71190	-70000	-60900	-82360
6	Before		75950	70000	82360	60900
7	Before		-70000	-70000	-60900	-82360
		(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High Resolution Laterolog Array - B Wellsite Calibration

HRLT ISO

Idx	Phase	HRLT Source Current Plus UA	Value	Nominal	Maximum	Minimum
0	Before		286.2	284.0	334.1	247.0
1	Before		281.1	281.1	330.7	244.4
2	Before		281.1	281.1	330.7	244.4
3	Before		281.1	281.1	330.7	244.4
4	Before		281.1	281.1	330.7	244.4
5	Before		281.1	281.1	330.7	244.4
6	Before		281.1	281.1	330.7	244.4
7	Before		281.1	281.1	330.7	244.4
		(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High Resolution Laterolog Array - B Wellsite Calibration

HRLT MV

Idx	Phase	HRLT Vertical Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-323.0	-322.7	-280.7	-379.7
1	Before		-362.2	-322.7	-280.7	-379.7
2	Before		-331.7	-322.7	-280.7	-379.7
3	Before		-328.9	-322.7	-280.7	-379.7
4	Before		-313.0	-322.7	-280.7	-379.7
5	Before		-332.1	-322.7	-280.7	-379.7
6	Before		367.3	322.7	379.7	280.7
7	Before		-322.7	-322.7	-280.7	-379.7
		(Minimum) (Nominal) (Maximum)				

Before: 4-Mar-2008 21:13

High resolution Integrated Logging Tool-DTS2 / Equipment Identification

Primary Equipment:

HILT2 high-Resolution Mechanical Sonde	HRMS - H2	3983
HILT2 Rxo Gamma-ray Device	HRGD - H2	4709
HILT2 Micro Cylindrically Focused Log De	MCFL - H2	
GR Logging Source	GLS - VJ2	1984
HILT2 High Res. Control Cartridge	HRCC - H2	3990
HILT2 HTBC DTS mode	HTBC - H2	3733
HTBC2 Communication Assembly DTS Mode	HMCA - H	3733

Auxiliary Equipment:

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration

Stab Measurement Summary

Phase	BS2 Window Ratio	Value	Phase	SS2 Window Ratio	Value	Phase	LS2 Window Ratio	Value
Before		0.7405	Before		0.4824	Before		0.3019

0.7014 (Minimum)	0.7383 (Nominal)	0.7753 (Maximum)	0.4636 (Minimum)	0.4880 (Nominal)	0.5124 (Maximum)	0.2824 (Minimum)	0.2973 (Nominal)	0.3122 (Maximum)

Phase	BS2 Window Sum CPS	Value	Phase	SS2 Window Sum CPS	Value	Phase	LS2 Window Sum CPS	Value
Before		26910	Before		12240	Before		1468
25450 (Minimum)	26790 (Nominal)	28130 (Maximum)	11710 (Minimum)	12320 (Nominal)	12940 (Maximum)	1405 (Minimum)	1478 (Nominal)	1552 (Maximum)

Before: 3-Mar-2008 13:15

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration

Photo-multiplier High Voltages Calibrations

Phase	BS2 PM High Voltage (Command) V	Value	Phase	SS2 PM High Voltage (Command) V	Value	Phase	LS2 PM High Voltage (Command) V	Value
Before		1356	Before		1307	Before		1341
1303 (Minimum)	1403 (Nominal)	1503 (Maximum)	1215 (Minimum)	1315 (Nominal)	1415 (Maximum)	1234 (Minimum)	1334 (Nominal)	1434 (Maximum)

Before: 3-Mar-2008 13:15

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS2 Crystal Resolution %	Value	Phase	SS2 Crystal Resolution %	Value	Phase	LS2 Crystal Resolution %	Value
Before		10.82	Before		9.536	Before		8.362
10.04 (Minimum)	11.04 (Nominal)	12.04 (Maximum)	8.084 (Minimum)	9.084 (Nominal)	10.08 (Maximum)	7.323 (Minimum)	8.323 (Nominal)	9.323 (Maximum)

Before: 3-Mar-2008 13:15

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration

MCFL2 Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3837	Before		3813	Before		3820
3565 (Minimum)	3875 (Nominal)	4185 (Maximum)	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)

Before: 3-Mar-2008 13:06

High resolution Integrated Logging Tool-DTS2 Wellsite Calibration

HILT2 Caliper Calibration

Phase	HILT2 Caliper Zero Measurement MM	Value	Phase	HILT2 Caliper Plus Measurement MM	Value
Before		178.7	Before		283.9
152.4 (Minimum)	203.2 (Nominal)	254.0 (Maximum)	228.6 (Minimum)	304.8 (Nominal)	381.0 (Maximum)

Before: 3-Mar-2008 13:05

High resolution Integrated Logging Tool-DTS2 Master Calibration

Inversion results

Phase	Rho Aluminum K/M3	Value	Phase	Rho Magnesium K/M3	Value
Master		2601	Master		1686
2586 (Minimum)	2596 (Nominal)	2606 (Maximum)	1676 (Minimum)	1686 (Nominal)	1696 (Maximum)
Phase	**Pe Aluminum**	**Value**	**Phase**	**Pe Magnesium**	**Value**
Master		2.561	Master		2.617
2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)	2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)

Master: 22-Feb-2008 12:27

High resolution Integrated Logging Tool-DTS2 Master Calibration

Deviation Summary

Phase	BS2 Average Deviation %	Value	Phase	SS2 Average Deviation %	Value	Phase	LS2 Average Deviation %	Value
Master		0.2741	Master		0.3569	Master		0.5074
-0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)	-1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)	-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)
Phase	**BS2 Max Deviation %**	**Value**	**Phase**	**SS2 Max Deviation %**	**Value**	**Phase**	**LS2 Max Deviation %**	**Value**
Master		1.036	Master		1.416	Master		1.283
-1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)	-2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)	-3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)

Master: 22-Feb-2008 12:27

MicroLog - B / Equipment Identification

Primary Equipment:

MicroLog - B (sonde)	MLT - B	109

Auxiliary Equipment:

MicroLog - B Wellsite Calibration

MLT Micro Inverse Calibration

Phase	Micro Inverse Zero OHMM	Value	Phase	Micro Inverse Plus OHMM	Value
Before		0.0006272	Before		4.872
-2.000 (Minimum)	0 (Nominal)	2.000 (Maximum)	1.000 (Minimum)	5.000 (Nominal)	9.000 (Maximum)

Before: 3-Mar-2008 13:45

MicroLog - B Wellsite Calibration

MLT Micro Normal Calibration

Phase	Micro Normal Zero OHMM	Value	Phase	Micro Normal Plus OHMM	Value
Before		0.002347	Before		6.560
-2.000 (Minimum)	0 (Nominal)	2.000 (Maximum)	2.720 (Minimum)	6.720 (Nominal)	10.72 (Maximum)

Before: 3-Mar-2008 13:45

DTS Telemetry Tool / Equipment Identification

Primary Equipment:

DTC-H Auxiliary Cartridge	DTCH - A	9397
DTC-H Telemetry Cartridge	DTCH - A	9397

Auxiliary Equipment:

DTCH Telemetry Cartridge Housing	ECH - KC	10485

Company: **PETRO-CANADA**

Schlumberger

Well: **PETRO-CANADA BLACKWATER KWIJIKA M-59**

Field: **KWIJIKA**

Province: **NORTHWEST TERRITORIES**

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