Schlumberger

Company:	**SG INTERESTS I, LTD.**
Well:	**FEDERAL 11-89-17 #1**
Field:	**BULL MOUNTAIN**
County:	**GUNNISON** State: **COLORADO**

County: GUNNISON
Field: BULL MOUNTAIN
Location: 3401' FNL & 2116' FEL
Well: FEDERAL 11-89-17 #1
Company: SG INTERESTS I, LTD.

CEMENT VOLUME LOG

GAMMA RAY

LOCATION
3401' FNL & 2116' FEL

Elev.: K.B. 7444.00 ft
G.L. 7425.00 ft
D.F. 7443.00 ft

Permanent Datum: GROUND LEVEL Elev.: 7425.00 ft
Log Measured From: KELLY BUSHING 19.00 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

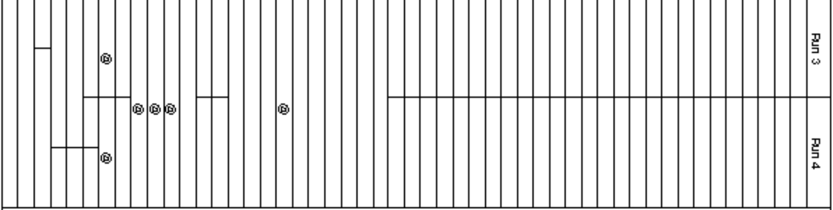
API Serial No.	Section	Township	Range
05-051-06086-0000	17	11S	89W

TIGHT HOLE

Logging Date		26-Sep-2009					
Run Number		1					
Depth Driller		4940 ft					
Schlumberger Depth		4943 ft					
Bottom Log Interval		4925 ft					
Top Log Interval		405 ft					
Casing Driller Size @ Depth		13.375 in	@	405 ft		@	
Casing Schlumberger		405 ft					
Bit Size		12.250 in					
Type Fluid In Hole		FRESH MUD					
MUD Density	Viscosity	10.1 lbm/gal	52 s				
MUD Fluid Loss	PH		9.8				
MUD Source Of Sample		FLOW LINE					
RM @ Measured Temperature		0.870 ohm.m	@	60 degF		@	
RMF @ Measured Temperature		0.652 ohm.m	@	60 degF		@	
RMC @ Measured Temperature		1.305 ohm.m	@	60 degF		@	
Source RMF	RMC	CALCULATED	CALCULATED				
RM @ MRT	RMF @ MRT	0.385 @ 144	0.289 @ 144		@		@
Maximum Recorded Temperatures		144 degF					
Circulation Stopped	Time	26-Sep-2009		4:30			
Logger On Bottom	Time	26-Sep-2009		12:50			
Unit Number	Location	2276	VERNAL				
Recorded By		KATIE WALSH					
Witnessed By		ED WEST					

	Run 1	Run 2

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		
MUD 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			



DEPTH SUMMARY LISTING

Date Created: 26-SEP-2009 13:07:35

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-B	Type:	CMTD-B/A	Type:	7-46A XS
Serial Number:	6197	Serial Number:	2725	Serial Number:	7232
Calibration Date:	23-AUG-2009	Calibration Date:	24-SEPT-200	Length:	24000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	100518		
Calibration Cable Type:	7-46P	Number of Calibration Points:	9	Conveyance Method:	Wireline
Wheel Correction 1:	-9	Calibration RMS:	29	Rig Type:	LAND
Wheel Correction 2:	-8	Calibration Peak Error:	45		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	184.80 FT
Rig Up Length At Bottom:	184.50 FT
Rig Up Length Correction:	0.30 FT
Stretch Correction:	3.00 FT
Tool Zero Check At Surface:	0.30 FT

Depth Control Remarks

1. This is the first run in hole and therefore the reference for all subsequent logs
2. IDW used as primary depth control; Z-chart used as secondary
3. All Schlumberger depth control policies followed
4.
5.
6.

DISCLAIMER
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.

OTHER SERVICES1	OTHER SERVICES2
OS1: FMI	OS1:
OS2: PEX	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Tool run as per tool sketch	
Tool run with two 1.5 " centralizers and one bow spring eccentralizer	
Data invalid in tight spots and washouts	
Repeat performed at 3000'	
Logged at 3600'/hr	
Neutron corrected for hole size and standoff	
Density corrected for hole size	

RUN 1		RUN 2	
SERVICE ORDER #:	B49A00010	SERVICE ORDER #:	
PROGRAM VERSION:	17C0-154	PROGRAM VERSION:	
FLUID LEVEL:	20 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1

RUN 2

SURFACE EQUIPMENT

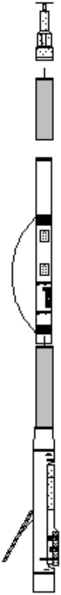
GSR-U/Y
NCT-B
CNB-AB
NCS-VB
WITM (DTS)-A

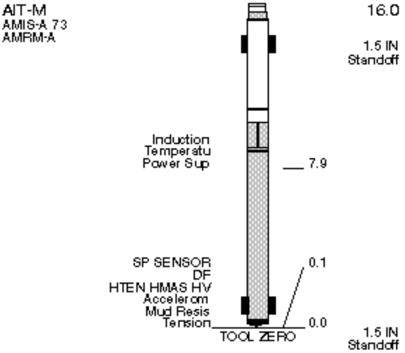
DOWNHOLE EQUIPMENT

LEH-QT 43.6
LEH-QT

DTC-H 40.6
ECH-KC
DTCH0-A 9466
DTCH1-A

HILTH-FTB 37.6
HGNSD-H
HMCA-H
HGNH
NLS-KL
NSR-F 1260
HACCZ-H 3577
HCNT-H
HGR
HRCC-H
HRMS-H
HRGD-H
GLS-VJ 5234
MCFL Device-H
HILT Nucl. LS-H 42767
HILT Nucl. SS-H 27758
HILT Nucl. BS-H 26701
BOW-SPR
NPV-N





MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Schlumberger

MAIN PASS
1" = 100'

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_025LUP	FN:24	PRODUCER	26-Sep-2009 12:47	4954.5 FT	100.5 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_031PUP	FN:30	PRODUCER	26-Sep-2009 14:15	4957.5 FT	103.5 FT

Integrated Hole/Cement Volume Summary

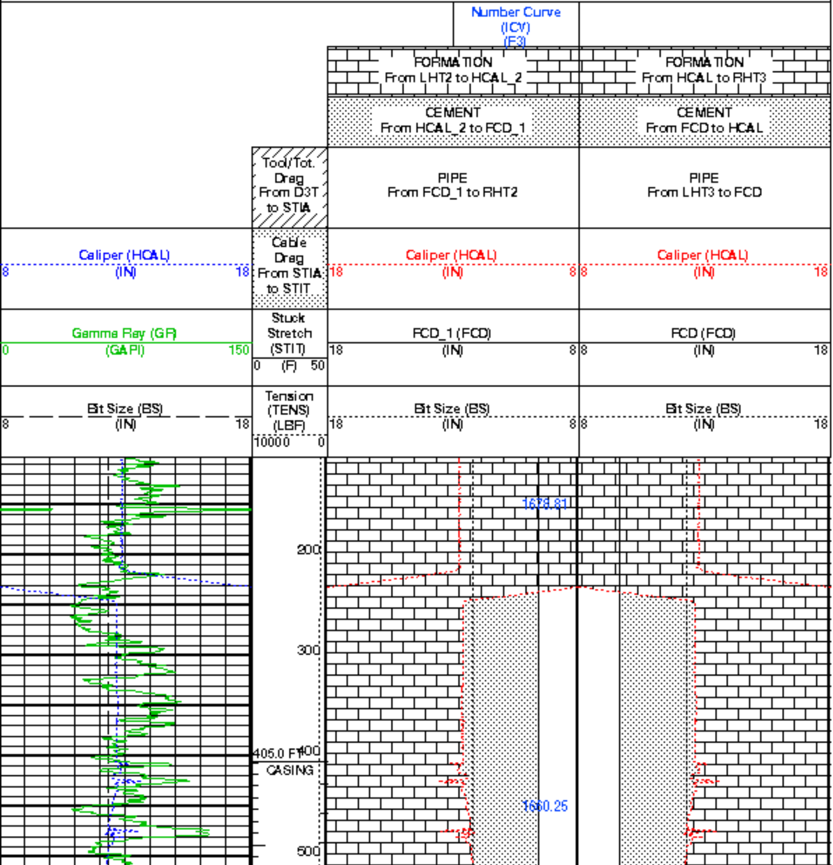
Hole Volume = 3971.93 F3
Cement Volume = 1678.81 F3 (assuming 9.63 IN casing O.D.)
Computed from 4943.0 FT to 405.0 FT using data channel(s) HCAL

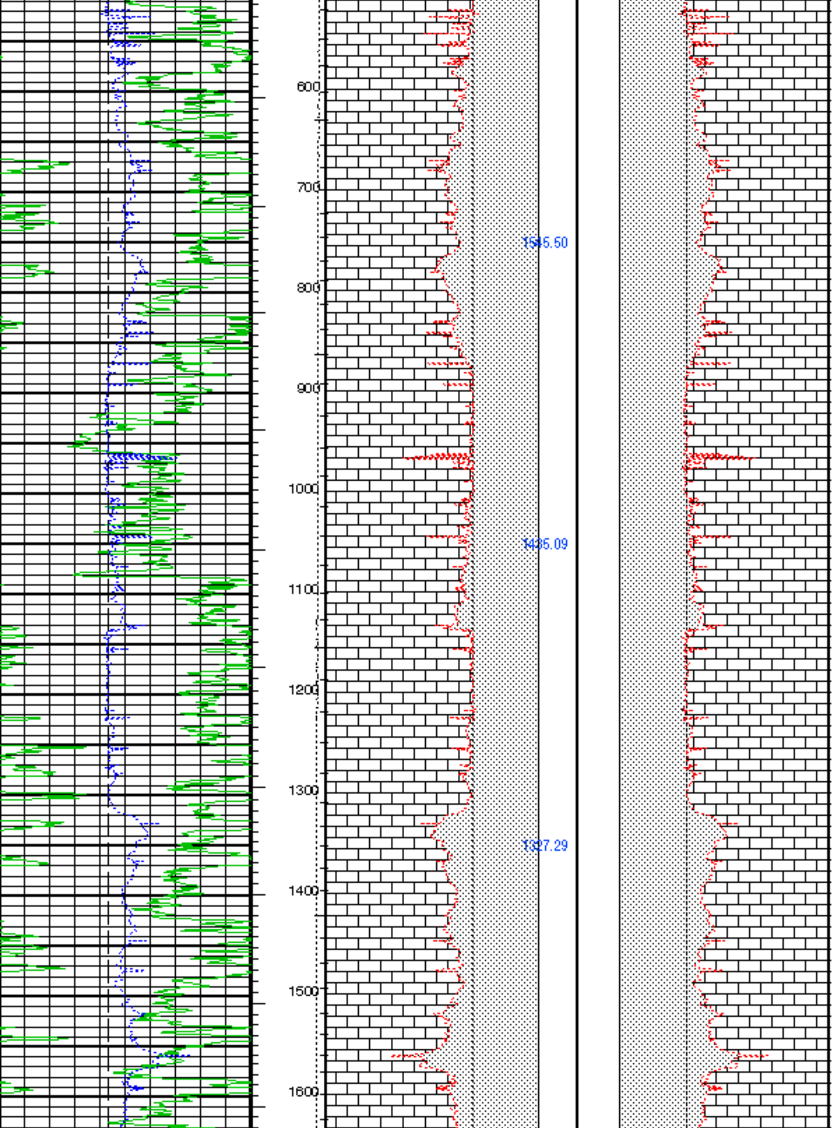
OP System Version: 17C0-154

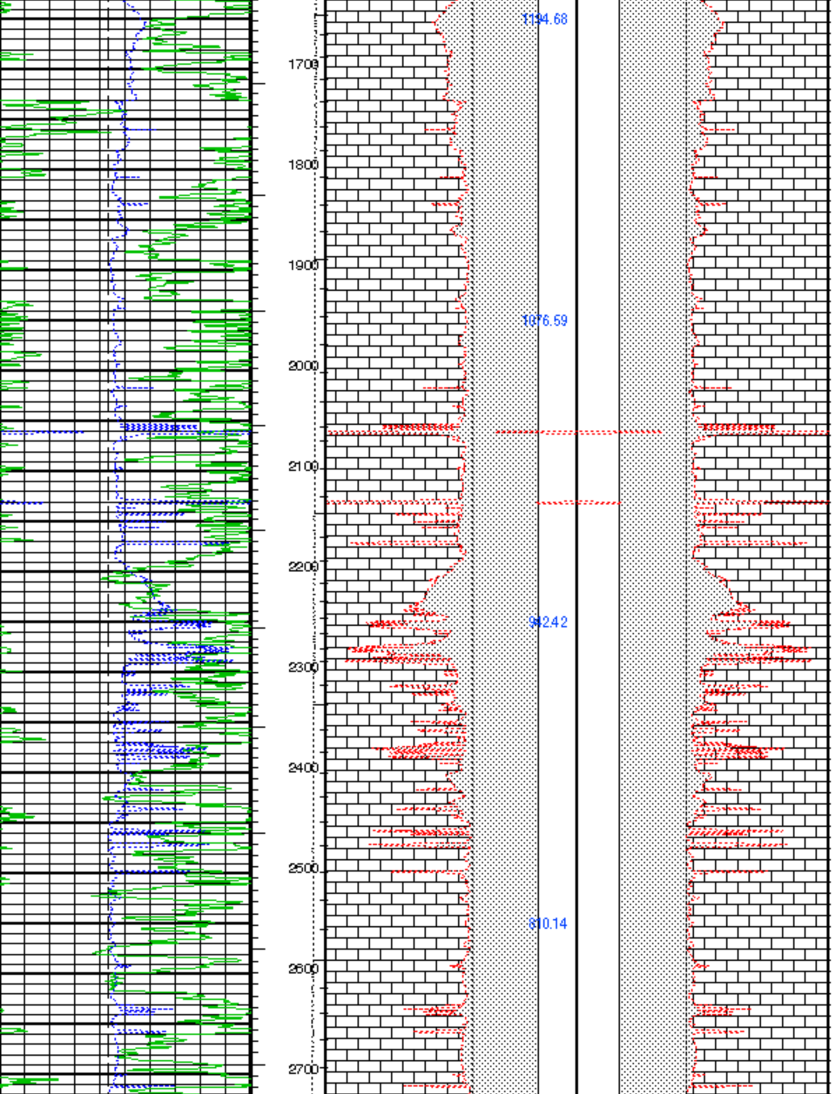
AIT-M	17C0-154	HILTH-FTB	17C0-154
DTC-H	17C0-154		

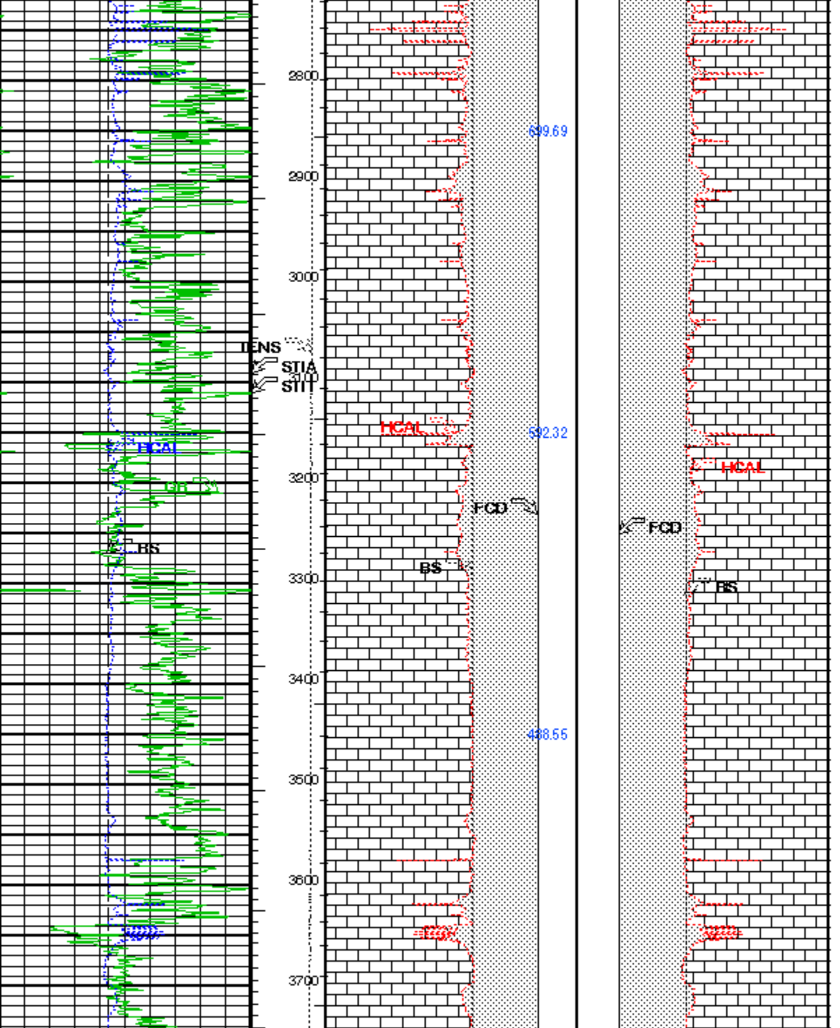
PIP SUMMARY

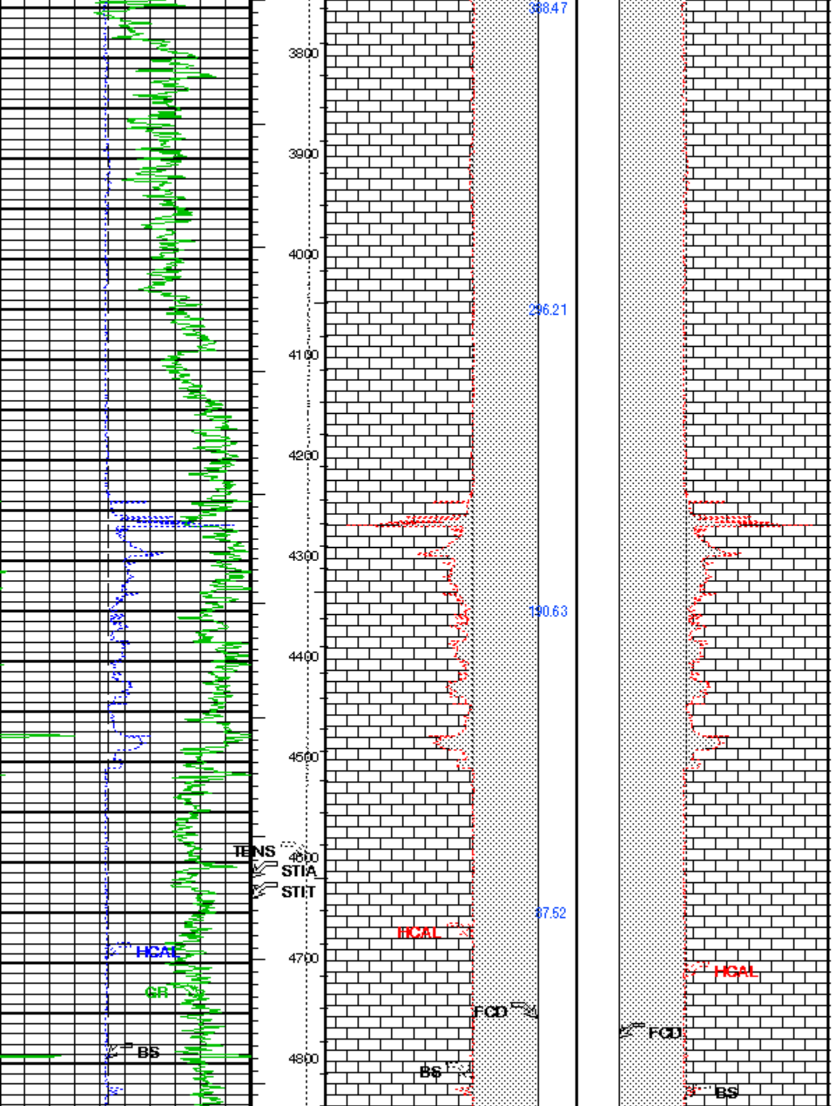
⊢ Integrated Hole Volume Minor Pip Every 10 F3
⊢ Integrated Hole Volume Major Pip Every 100 F3
⊣ Integrated Cement Volume Minor Pip Every 10 F3
⊣ Integrated Cement Volume Major Pip Every 100 F3

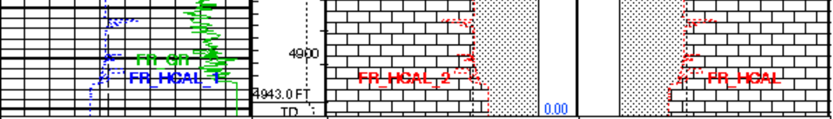












Bit Size (BS) 8 (IN) 18	Tension (TENS) (LBF) 10000 0	Bit Size (BS) 18 (IN) 8	Bit Size (BS) 8 (IN) 18
Gamma Ray (GR) 0 (GAPI) 150	Stuck Stretch (STIT) 0 (F) 50	FCD_1 (FCD) 18 (IN) 8	FCD (FCD) 8 (IN) 18
Caliper (HCAL) 8 (IN) 18	Cable Drag From STIA to STIT	Caliper (HCAL) 18 (IN) 8	Caliper (HCAL) 8 (IN) 18
	Tool/Tot. Drag From D3T to STIA	PIPE From FCD_1 to RHT2	PIPE From LHT3 to FCD
		CEMENT From HCAL_2 to FCD_1	CEMENT From FCD to HCAL
		FORMATION From LHT2 to HCAL_2	FORMATION From HCAL to RHT3
		Number Curve (ICV) (F3)	

PIP SUMMARY

⊢ Integrated Hole Volume Minor Pip Every 10 F3
⊢ Integrated Hole Volume Major Pip Every 100 F3
⊣ Integrated Cement Volume Minor Pip Every 10 F3
⊣ Integrated Cement Volume Major Pip Every 100 F3

Format: Cement_Volume   Vertical Scale: 1" per 100'   Graphics File Created: 26-Sep-2009 14:15

OP System Version: 17C0-154

AIT-M	17C0-154	HILTH-FTB	17C0-154
DTC-H	17C0-154		

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_025LUP	FN:24	PRODUCER	26-Sep-2009 12:47	4954.5 FT	100.5 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_031PUP	FN:30	PRODUCER	26-Sep-2009 14:15

CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool - MWellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase							
Master: 7-Aug-2009 10:55 Before: 26-Sep-2009 11:53							
Thru Cal Magnitude - 0	0	0.5685	0.5687	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	1.164	1.164	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	0.5761	0.5766	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	0.6508	0.6513	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	1.222	1.223	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	1.776	1.777	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	1.776	1.778	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	1.281	1.281	N/A	N/A	N/A	V
Thru Cal Phase - 0	0	188.1	191.7	N/A	N/A	N/A	DEG
Thru Cal Phase - 1	0	187.1	190.6	N/A	N/A	N/A	DEG
Thru Cal Phase - 2	0	183.5	187.1	N/A	N/A	N/A	DEG
Thru Cal Phase - 3	0	182.7	186.3	N/A	N/A	N/A	DEG
Thru Cal Phase - 4	0	176.5	180.1	N/A	N/A	N/A	DEG
Thru Cal Phase - 5	0	174.9	178.5	N/A	N/A	N/A	DEG
Thru Cal Phase - 6	0	174.9	178.5	N/A	N/A	N/A	DEG
Thru Cal Phase - 7	0	173.9	177.7	N/A	N/A	N/A	DEG
Array Induction Tool - MWellsite Calibration - Electronics Calibration Check - Auxiliary							
Master: 7-Aug-2009 10:55 Before: 26-Sep-2009 11:53							
Array Induction SPA Plus	991.0	987.7	987.5	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	-0.1182	-0.1090	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9170	0.9149	0.9147	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	-0.0001195	-0.0001071	N/A	N/A	N/A	V
Array Induction Tool - MWellsite Calibration - Test Loop Gain Correction							
Master: 7-Aug-2009 10:55							
Test Loop Gain Correctio - 0	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio - 1	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio - 2	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio - 3	0	1.006	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio - 4	0	0.9926	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio - 5	0	0.9914	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio - 6	0	0.9993	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio - 7	0	1.015	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio - 0	0	0.4803	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio - 1	0	0.6600	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio - 2	0	0.005779	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio - 3	0	0.06616	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio - 4	0	0.03251	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio - 5	0	-0.1772	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio - 6	0	0.1867	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio - 7	0	-0.1263	N/A	N/A	N/A	N/A	DEG
Array Induction Tool - MWellsite Calibration - Sonde Error Correction							
Master: 7-Aug-2009 10:55							
R Sonde Error Correction - 0	0	-68.01	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 1	0	161.2	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 2	0	105.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 3	0	58.09	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 4	0	34.09	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 5	0	12.63	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 6	0	9.179	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 7	0	-1.217	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 0	0	17.68	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 1	0	-185.2	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 2	0	149.9	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 3	0	62.93	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 4	0	16.87	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 5	0	6.946	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 6	0	-12.16	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 7	0	0.9241	N/A	N/A	N/A	N/A	MM/M
Array Induction Tool - MWellsite Calibration - Mud Gain Correction							
Master: 7-Aug-2009 10:55							
Coarse - Mag, Real, Imag - 0	0	0.9495	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 1	0	0.9495	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 2	0	0.9495	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 0	0	0.9513	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 1	0	0.9514	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 2	0	0.9514	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Stab Measurement Summary							
Before: 24-Sep-2009 4:26							
BS Window Ratio	0.7475	N/A	0.7469	N/A	N/A	N/A	
BS Window Sum	26580	N/A	26540	N/A	N/A	N/A	CPS
SS Window Ratio	0.4823	N/A	0.4843	N/A	N/A	N/A	
SS Window Sum	11890	N/A	11860	N/A	N/A	N/A	CPS
LS Window Ratio	0.2991	N/A	0.2976	N/A	N/A	N/A	
LS Window Sum	1327	N/A	1313	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations
Before: 24-Sep-2009 4:26

BS PM High Voltage (Command)	1260	N/A	1237	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1307	N/A	1303	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1361	N/A	1361	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Crystal Quality Resolutions Calibration
Before: 24-Sep-2009 4:26

BS Crystal Resolution	11.04	N/A	10.94	N/A	N/A	N/A	%
SS Crystal Resolution	9.693	N/A	9.855	N/A	N/A	N/A	%
LS Crystal Resolution	8.473	N/A	8.669	N/A	N/A	N/A	%

High resolution Integrated Logging Tool-DTS Wellsite Calibration - MCFL Calibration
Before: 24-Sep-2009 4:26

Raw B0 Resistivity	3875	N/A	3877	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3821	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3826	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HILT Caliper Calibration
Before: 24-Sep-2009 4:32

HILT Caliper Zero Measurement	8.000	N/A	8.931	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	13.03	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Detector Calibration
Before: 24-Sep-2009 4:18

Gamma Ray Background	30.00	N/A	36.15	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	173.1	N/A	173.1	N/A	N/A	15.73	GAPI
Gamma Ray (Calibrated)	165.0	N/A	173.1	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Zero Measurement
Master: 14-Aug-2009 10:31 Before: 24-Sep-2009 4:20

CNTC Background	27.70	27.70	27.52	N/A	N/A	4.155	CPS
CFTC Background	32.32	32.32	30.05	N/A	N/A	4.848	CPS

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Ratio Measurement
Master: 14-Aug-2009 10:31

Thermal Near Corr. (Tank)	5800	5240	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	3400	2150	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.437	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Accelerometer Calibration
Before: 26-Sep-2009 11:55

Z-Axis Acceleration	32.19	N/A	32.13	N/A	N/A	N/A	F/S2

High resolution Integrated Logging Tool-DTS Master Calibration - Inversion results
Master: 3-Sep-2009 15:34

Rho Aluminum	2.596	2.597	–	–	–	–	G/C3
Rho Magnesium	1.686	1.691	–	–	–	–	G/C3
Pe Aluminum	2.570	2.517	–	–	–	–	
Pe Magnesium	2.650	2.621	–	–	–	–	

High resolution Integrated Logging Tool-DTS Master Calibration - Deviation Summary
Master: 3-Sep-2009 15:34

BS Average Deviation	0	0.5355	–	–	–	–	%
BS Max Deviation	0	1.267	–	–	–	–	%
SS Average Deviation	0	0.3114	–	–	–	–	%
SS Max Deviation	0	1.045	–	–	–	–	%
LS Average Deviation	0	0.8996	–	–	–	–	%
LS Max Deviation	0	2.338	–	–	–	–	%

The GLS-VJ source activity is acceptable.

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

NCT-B Water Temperature	67.6	DEGF.
Thermal Housing Size	3.374	IN.
NSR-F serial number	1260	

Array Induction Tool - M / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose	AMRM - A	
Array Induction Sonde	AMIS - A	73

Auxiliary Equipment:

Array Induction Tool - M Wellsite Calibration

Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6886		0.8100	188.1		197.0
	Before	0.6887			191.7		
1	Master	1.164		1.270	187.1		196.0
	Before	1.164			190.8		
2	Master	0.6761		0.8200	183.6		192.0
	Before	0.6768			187.1		
3	Master	0.8608		0.7000	182.7		191.0
	Before	0.8613			188.3		
4	Master	1.222		1.340	176.6		186.0
	Before	1.223			180.1		
5	Master	1.776		1.960	174.9		182.0
	Before	1.777			178.6		
6	Master	1.776		1.960	174.9		181.0
	Before	1.778			178.6		
7	Master	1.281		1.410	173.9		176.0
	Before	1.281			177.7		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 7-Aug-2008 10:56 Before: 28-Sep-2008 11:53

Array Induction Tool - M Wellsite Calibration

Electronics Calibration Check - Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		887.7	Master		-0.1182
Before		887.6	Before		-0.1080
941.0 (Minimum)	991.0 (Nominal)	1040 (Maximum)	-60.00 (Minimum)	0 (Nominal)	60.00 (Maximum)
Phase	**Array Induction Temperature Plus V**	**Value**	**Phase**	**Array Induction Temperature Zero V**	**Value**
Master		0.9149	Master		-0.0001186
Before		0.9147	Before		-0.0001071
0.8710 (Minimum)	0.9170 (Nominal)	0.9630 (Maximum)	-0.06000 (Minimum)	0 (Nominal)	0.06000 (Maximum)

Master: 7-Aug-2008 10:56 Before: 28-Sep-2008 11:53

Array Induction Tool - M Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.014		0.4803	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.011		0.8800	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.012		0.006779	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.006		0.08816	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

4	0.9928				0.03251			
		0.9600 (Minimum)	1.000 (Nominal)	1.060 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9914				-0.1772			
		0.9600 (Minimum)	1.000 (Nominal)	1.060 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	0.9983				0.1887			
		0.9600 (Minimum)	1.000 (Nominal)	1.060 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.016				-0.1283			
		0.9600 (Minimum)	1.000 (Nominal)	1.060 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 7-Aug-2009 10:55

Array Induction Tool - M Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	-68.01				17.68			
		-231.0 (Minimum)	-68.00 (Nominal)	119.0 (Maximum)		-2260 (Minimum)	0 (Nominal)	2260 (Maximum)
1	161.2				-195.2			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	105.8				149.9			
		68.00 (Minimum)	111.0 (Nominal)	168.0 (Maximum)		-360.0 (Minimum)	0 (Nominal)	360.0 (Maximum)
3	58.09				62.93			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		-260.0 (Minimum)	0 (Nominal)	260.0 (Maximum)
4	24.09				16.87			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	12.63				6.946			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-60.00 (Minimum)	0 (Nominal)	60.00 (Maximum)
6	9.179				-12.16			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-1.217				0.9241			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 7-Aug-2009 10:55

Array Induction Tool - M Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse - Mag, Real, Imag			Value	Fine - Mag, Real, Imag		
0	0.9496				0.9613			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.9496				0.9614			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.9496				0.9614			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 7-Aug-2009 10:55

Array Induction Tool - M Master Calibration

Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6886		0.6100	188.1		187.0
1	Master	1.164		1.270	187.1		186.0
2	Master	0.6761		0.6200	183.6		182.0
3	Master	0.6608		0.7000	182.7		181.0
4	Master	1.222		1.340	176.6		186.0
5	Master	1.776		1.960	174.9		182.0
6	Master	1.776		1.960	174.9		181.0
7	Master	1.281		1.410	173.9		176.0
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 7-Aug-2009 10:55

Array Induction Tool - M Master Calibration

Electronics Calibration Check - Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		987.7	Master		-0.1182
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)			-60.00 (Minimum) 0 (Nominal) 60.00 (Maximum)	
Phase	**Array Induction Temperature Plus V**	**Value**	**Phase**	**Array Induction Temperature Zero V**	**Value**
Master		0.9149	Master		-0.0001186
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)			-0.06000 (Minimum) 0 (Nominal) 0.06000 (Maximum)	

Master: 7-Aug-2009 10:55

Array Induction Tool - M Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.014		0.4803	
		0.9600 (Minimum) 1.000 (Nominal) 1.060 (Maximum)		-3000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.011		0.8800	
		0.9600 (Minimum) 1.000 (Nominal) 1.060 (Maximum)		-3000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.012		0.006779	
		0.9600 (Minimum) 1.000 (Nominal) 1.060 (Maximum)		-3000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.006		0.06816	
		0.9600 (Minimum) 1.000 (Nominal) 1.060 (Maximum)		-3000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	0.9926		0.03261	
		0.9600 (Minimum) 1.000 (Nominal) 1.060 (Maximum)		-3000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	0.9914		-0.1772	
		0.9600 (Minimum) 1.000 (Nominal) 1.060 (Maximum)		-3000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	0.9983		0.1887	
		0.9600 (Minimum) 1.000 (Nominal) 1.060 (Maximum)		-3000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.016		-0.1263	
		0.9600 (Minimum) 1.000 (Nominal) 1.060 (Maximum)		-3000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: 7-Aug-2009 10:55

Array Induction Tool - M Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M	Value	X Sonde Error Correction MM/M
0	-68.01	▨	17.68	▨
		-231.0 (Minimum) -68.00 (Nominal) 119.0 (Maximum)		-2260 (Minimum) 0 (Nominal) 2260 (Maximum)
1	161.2	▨	-186.2	▨
		114.0 (Minimum) 169.0 (Nominal) 204.0 (Maximum)		-626.0 (Minimum) 0 (Nominal) 626.0 (Maximum)
2	106.8	▨	149.9	▨
		68.00 (Minimum) 111.0 (Nominal) 168.0 (Maximum)		-360.0 (Minimum) 0 (Nominal) 360.0 (Maximum)
3	63.09	▨	62.93	▨
		39.00 (Minimum) 64.00 (Nominal) 89.30 (Maximum)		-260.0 (Minimum) 0 (Nominal) 260.0 (Maximum)
4	24.09	▨	16.87	▨
		16.00 (Minimum) 26.00 (Nominal) 36.00 (Maximum)		-63.00 (Minimum) 0 (Nominal) 63.00 (Maximum)
5	12.63	▨	6.946	▨
		4.000 (Minimum) 14.00 (Nominal) 24.00 (Maximum)		-60.00 (Minimum) 0 (Nominal) 60.00 (Maximum)
6	9.179	▨	-12.16	▨
		6.000 (Minimum) 10.00 (Nominal) 16.00 (Maximum)		-30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)
7	-1.217	▨	0.9241	▨
		-6.000 (Minimum) 0 (Nominal) 6.000 (Maximum)		-30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)

Master: 7-Aug-2008 10:66

Array Induction Tool - M Master Calibration

Mud Gain Correction

Idx	Value	Coarse - Mag, Real, Imag	Value	Fine - Mag, Real, Imag
0	0.9496	▨	0.9613	▨
		0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)		0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)
1	0.9496	▨	0.9614	▨
		0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)		0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)
2	0.9496	▨	0.9614	▨
		0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)		0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)

Master: 7-Aug-2008 10:66

High resolution Integrated Logging Tool-DTS / Equipment Identification

Primary Equipment:		
HILT high-Resolution Mechanical Sonde	HRMS - H	
HILT Rxo Gamma-ray Device	HRGD - H	
HILT Micro Cylindrically Focused Log Dev	MCFL - H	
GR Logging Source	GLS - VJ	5234
HILT High Res. Control Cartridge	HRCC - H	
HILT Gamma-Ray Neutron Sonde-DTS	HGNS - H	
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	
HGNS Housing	HGNH -	

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		0.7469	Before		0.4843	Before		0.2978
0.7101 (Minimum)	0.7476 (Nominal)	0.7849 (Maximum)	0.4582 (Minimum)	0.4823 (Nominal)	0.5064 (Maximum)	0.2842 (Minimum)	0.2991 (Nominal)	0.3141 (Maximum)
Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		26540	Before		11880	Before		1313
25250 (Minimum)	26580 (Nominal)	27910 (Maximum)	11290 (Minimum)	11890 (Nominal)	12480 (Maximum)	1260 (Minimum)	1327 (Nominal)	1393 (Maximum)

Before: 24-Sep-2009 4:26

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		1237	Before		1303	Before		1361
1160 (Minimum)	1260 (Nominal)	1360 (Maximum)	1207 (Minimum)	1307 (Nominal)	1407 (Maximum)	1261 (Minimum)	1361 (Nominal)	1461 (Maximum)

Before: 24-Sep-2009 4:26

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		10.94	Before		9.865	Before		8.869
10.04 (Minimum)	11.04 (Nominal)	12.04 (Maximum)	8.693 (Minimum)	9.693 (Nominal)	10.69 (Maximum)	7.473 (Minimum)	8.473 (Nominal)	9.473 (Maximum)

Before: 24-Sep-2009 4:26

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		3877	Before		3821	Before		3826
3686 (Minimum)	3876 (Nominal)	4186 (Maximum)	3624 (Minimum)	3830 (Nominal)	4136 (Maximum)	3624 (Minimum)	3830 (Nominal)	4136 (Maximum)

Before: 24-Sep-2009 4:28

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		8.931	Before		13.03
6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)	9.000 (Minimum)	12.00 (Nominal)	16.00 (Maximum)

Before: 24-Sep-2009 4:32

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		36.16	Before		173.1	Before		173.1
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	167.3 (Minimum)	173.1 (Nominal)	188.8 (Maximum)	160.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)

Before: 24-Sep-2009 4:18

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.70	Master		32.32
Before		27.62	Before		30.06
6.000 (Minimum)	27.70 (Nominal)	40.00 (Maximum)	6.000 (Minimum)	32.32 (Nominal)	40.00 (Maximum)

Master: 14-Aug-2009 10:31 Before: 24-Sep-2009 4:20

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		6240	Master		2160	Master		2.437
4700 (Minimum)	6300 (Nominal)	6900 (Maximum)	1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)	2.169 (Nominal)	2.640 (Maximum)

Master: 14-Aug-2009 10:31

High resolution Integrated Logging Tool-DTS
Wellsite Calibration
Accelerometer Calibration

Phase	Z-Axis Acceleration F/S2	Value
Before	▨	32.13
31.63 (Minimum)	32.19 (Nominal)	32.84 (Maximum)

Before: 26-Sep-2009 11:56

High resolution Integrated Logging Tool-DTS Master Calibration
Inversion results

Phase	Rho Aluminum G/C3	Value	Phase	Rho Magnesium G/C3	Value
Master	▨	2.697	Master	▨	1.691
2.688 (Minimum)	2.698 (Nominal)	2.808 (Maximum)	1.678 (Minimum)	1.688 (Nominal)	1.698 (Maximum)
Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master	▨	2.617	Master	▨	2.621
2.470 (Minimum)	2.670 (Nominal)	2.870 (Maximum)	2.560 (Minimum)	2.660 (Nominal)	2.760 (Maximum)

Master: 3-Sep-2009 16:34

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	▨	0.5365	Master	▨	0.3114	Master	▨	0.8896
-0.8000 (Minimum)	0 (Nominal)	0.8000 (Maximum)	-1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)	-1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)
Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master	▨	1.287	Master	▨	1.046	Master	▨	2.338
-1.800 (Minimum)	0 (Nominal)	1.800 (Maximum)	-2.600 (Minimum)	0 (Nominal)	2.600 (Maximum)	-3.600 (Minimum)	0 (Nominal)	3.600 (Maximum)

Master: 3-Sep-2009 16:34

High resolution Integrated Logging Tool-DTS Master Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master	▨	27.70	Master	▨	32.32
6.000 (Minimum)	27.70 (Nominal)	40.00 (Maximum)	6.000 (Minimum)	32.32 (Nominal)	40.00 (Maximum)

Master: 14-Aug-2009 10:31

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	▨	6240	Master	▨	2160	Master	▨	2.437
4700 (Minimum)	5800 (Nominal)	6900 (Maximum)	1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)	2.169 (Nominal)	2.640 (Maximum)

Master: 14-Aug-2009 10:31

DTS Telemetry Tool / Equipment Identification

Primary Equipment:		
DTC-H Auxiliary Cartridge	DTCH - A	
DTC-H Telemetry Cartridge	DTCH - A	9466
Auxiliary Equipment:		
DTCH Telemetry Cartridge Housing	ECH - KC	

Company:	**SG INTERESTS I, LTD.**
Well:	**FEDERAL 11-89-17 #1**
Field:	**BULL MOUNTAIN**
County:	**GUNNISON**
State:	**COLORADO**

Schlumberger

CEMENT VOLUME LOG

GAMMA RAY