HALLIBURTON

BOREHOLE COMPENSATED SONIC ARRAY TOOL CEMENT BOND LOG

COMPANY	**ENTEK GRB, LLC.**
WELL	**SLATER DOME FEDERAL 24-9DL (ST#1)**
FIELD	**WILDCAT (S. SLATER DOME AREA)**
COUNTY	**MOFFAT**
STATE	**CO**

COMPANY	**ENTEK GRB, LLC.**
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COUNTY	**MOFFAT** STATE **CO**

API No. 05081076240000

Location SURFACE HOLE LOCATION:
2257' FSL AND 431' FEL
BOTTOM HOLE LOCATION @ 6657' MD, 6607.5' TVD:
566' S AND 281' W FROM WELLHEAD (proj.)

Sect. 24 Twp. 12N Rge. 89W

Other Services:
CSNG
DSNT/SDLT
ACRT

Permanent Datum	GL	Elev. 7050.0 ft	Elev.: K.B. 7069.5 ft
Log measured from	KB	19.5 ft above perm. Datum	D.F. 7068.0 ft
Drilling measured from	KB		G.L. 7050.0 ft

Date	13-Sep-11		
Run No.	ONE		
Depth - Driller	6657.00 ft		
Depth - Logger	6650.0 ft		
Bottom - Logged Interval	2516.0 ft		
Top - Logged Interval	100.0 ft		
Casing - Driller	9.625 in @ 2520.0 ft	@	@
Casing - Logger	2516.0 ft		
Bit Size	8.750 in	@	@
Type Fluid in Hole	WBM (KSiO4)		
Density / Viscosity	9.2 ppg / 46.00 s/qt		
PH / Fluid Loss	10.50 pH / 9.0 cptm		
Source of Sample	MUD TANK		
Rm @ Meas. Temperature	0.810 ohmm @ 66.30 degF	@	@
Rmf @ Meas. Temperature	0.74 ohmm @ 57.90 degF	@	@
Rmc @ Meas. Temperature	1.140 ohmm @ 63.00 degF	@	@
Source Rmf / Rmc	MEAS / MEAS		
Rm @ BHT	0.34 ohmm @ 162.0 degF	@	@
Time Since Circulation	10.2 hr		
Time on Bottom	13-Sep-11 03:47		
Max. Rec. Temperature	162.0 degF @ 6650.0 ft	@	@
Equipment / Location	11170614 / RS, WY		
Recorded By	J. MAYNE	B. PEDERSEN	
Witnessed By	BILL EUCKER		

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Service Ticket No.: 8420325 API Serial No.: 05081076240000 PGM Version: WL INSITE R3.2.3 (Build 5)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

Date	Sample No.				
Depth-Driller					
Type Fluid in Hole					
Density	Viscosity				
Ph	Fluid Loss				
Source of Sample					
Rm @ Meas. Temp		@		@	
Rmf @ Meas. Temp.		@		@	
Rmc @ Meas. Temp.		@		@	
Source Rmf	Rmc				
Rm @ BHT		@		@	
Rmf @ BHT		@		@	
Rmc @ BHT		@		@	

RESISTIVITY SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
ONE	ACRT	N/A	0" S.O.	N/A
	E104_S103			

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	11602914	Serial No.	11105782	Serial No.	10947725	Serial No.	11020488
Model No.	GTET	Model No.	BSAT	Model No.	SDLT-I	Model No.	DSNT-I
Diameter	3.625"	No. of Cent.	3.625"	Diameter	4.5"	Diameter	3.625"
Detector Model No.	102A	Spacing	0.5'	Log Type	GAM/GAM	Log Type	THERM/ THERM
Type	SCINT			Source Type	Cs137	Source Type	Am241Be
Length	8"	LSA [Y/N]	N/A	Serial No.	5235GW	Serial No.	08-018
Distance to Source	10'	FWDA [Y/N]	N/A	Strength	1.78 Ci	Strength	15 Ci

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	6650'	2516'	REC	0	150	30%	-10%	55.5 usec/ft	30%	-10%	2.68 g/cc	30%	-10%	SAND
ONE	2516'	100'	REC	0	150							30%	-10%	SAND

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: RWCH-GTET-DSNT-SDLT-ACRT RAN IN COMBINATION

ANNULAR HOLE VOLUME CALCULATED FOR 7" CASING

BOREHOLE RUGOSITY, TENSION PULLS AND WASHOUTS MAY EFFECT LOG QUALITY

CUSTOMER SHOWN AND ACCEPTED LOG RESPONSE AT 350'

LATITUDE: 40.979345

LONGITUDE: -107.319226

TODAY'S CREW: J.DAVIS, J. SUTA, M. GRAHM RIG: DHS 18

*** THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, ROCK SPRINGS, WY (307) 352-8600 ***

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

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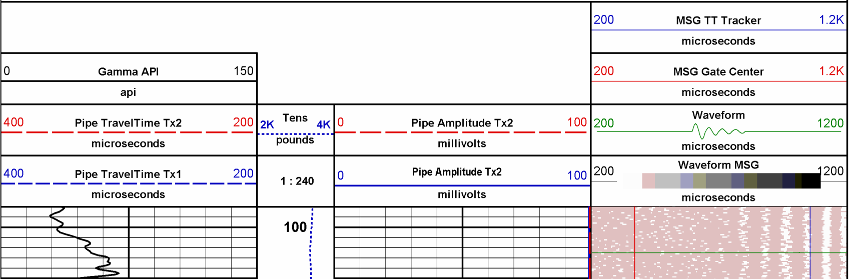
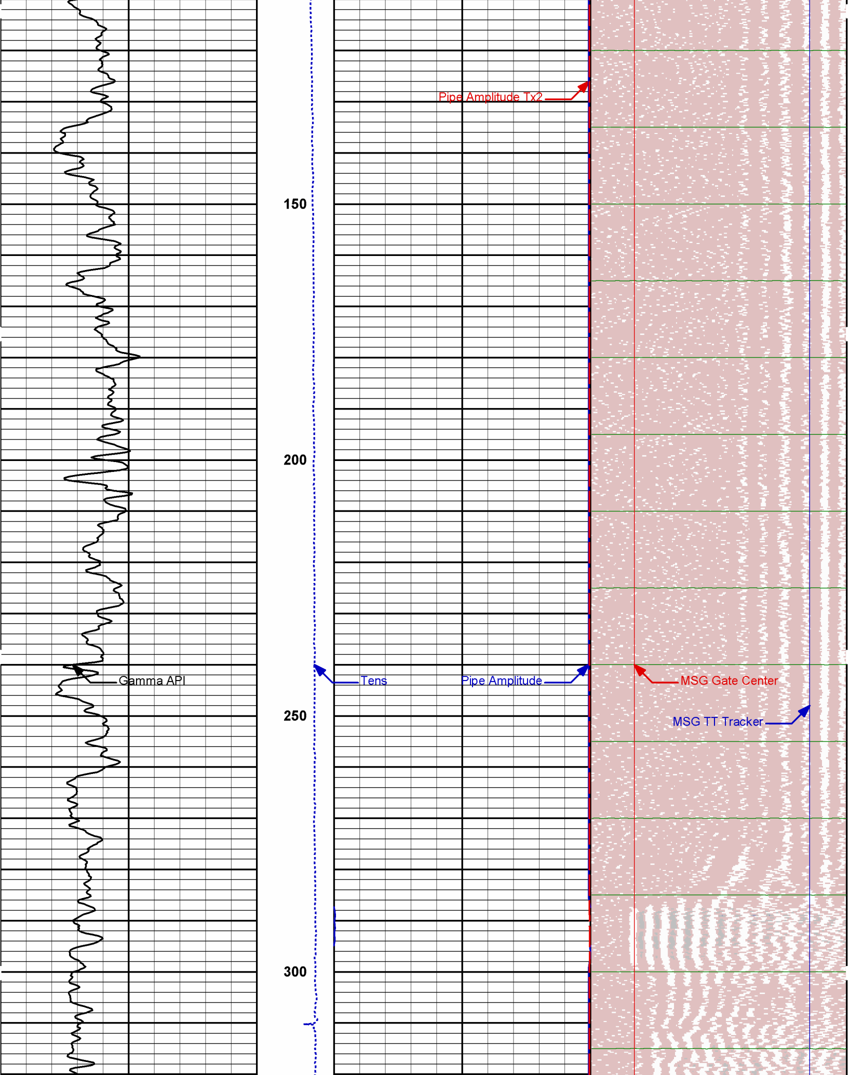
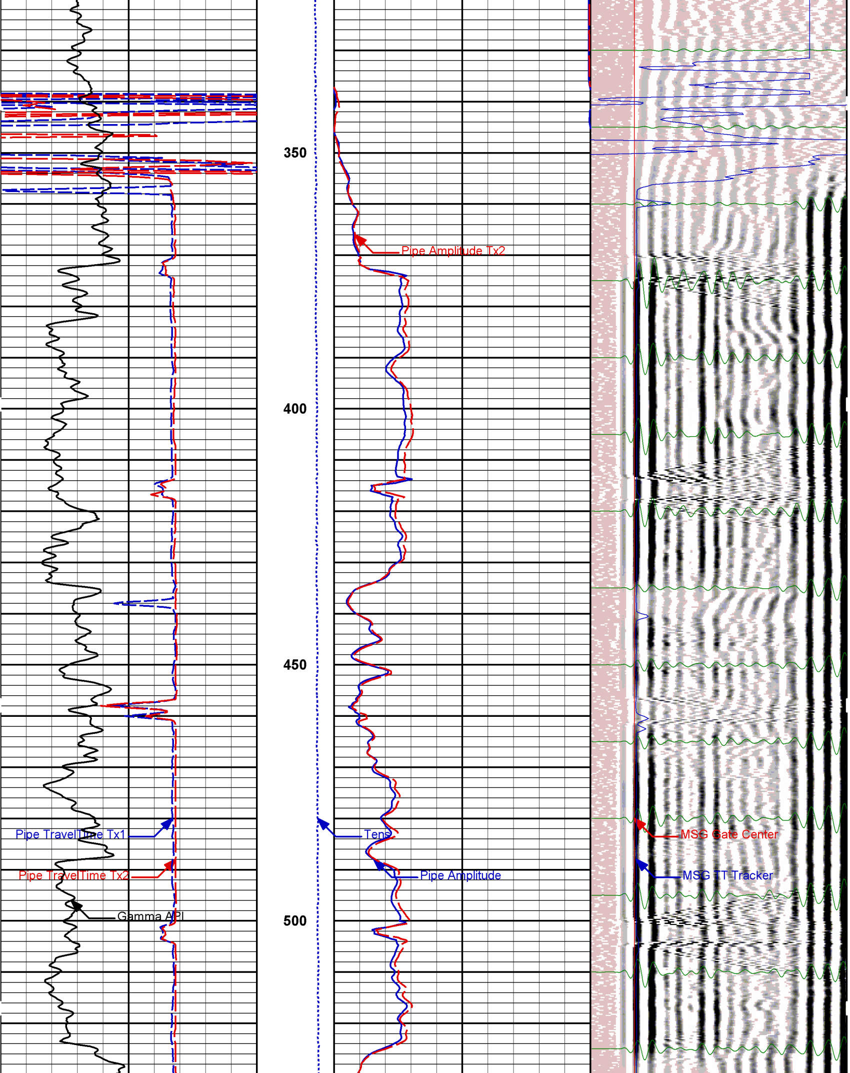
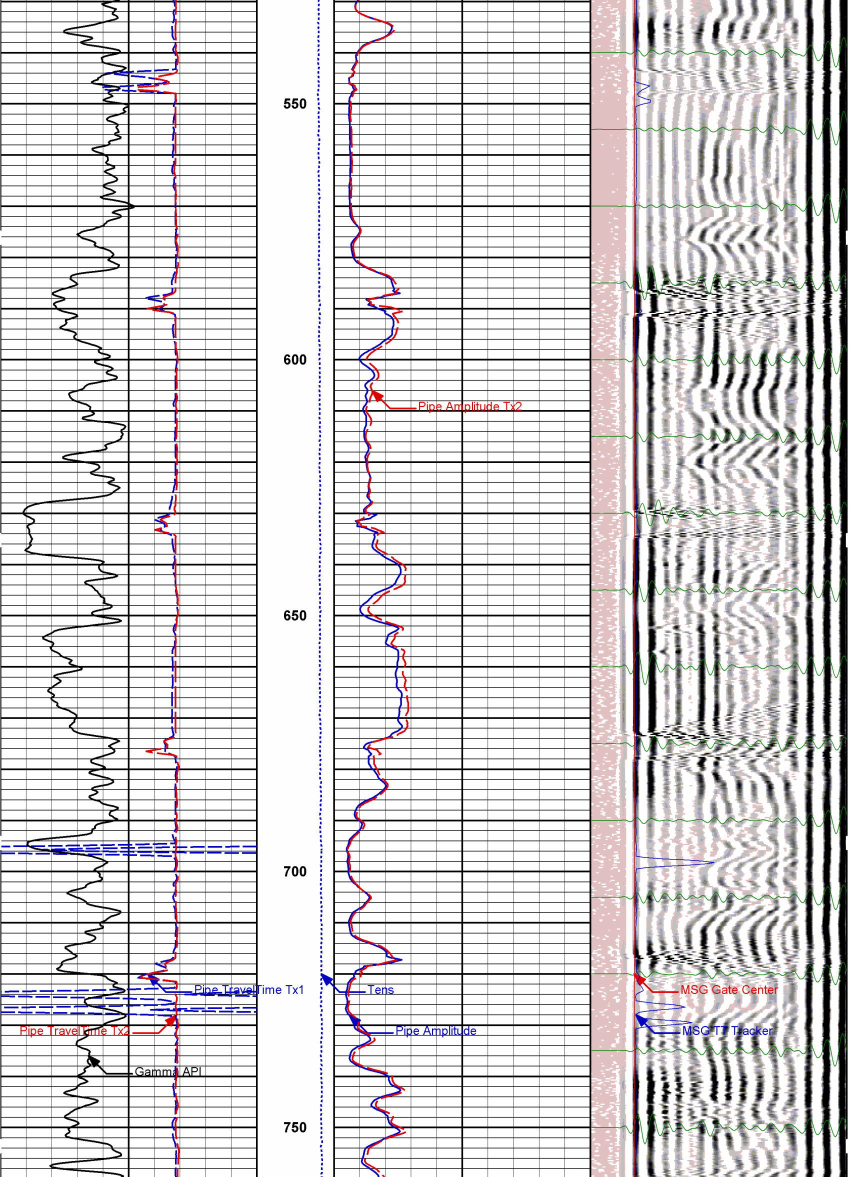
Plot Time: 13-Sep-11 11:10:52
Plot Range: 96 ft to 2526 ft
Data: {ActiveWell}\Well Based\MAIN_CBL\*
Plot File: \\CBL\BSAT_CBL_M

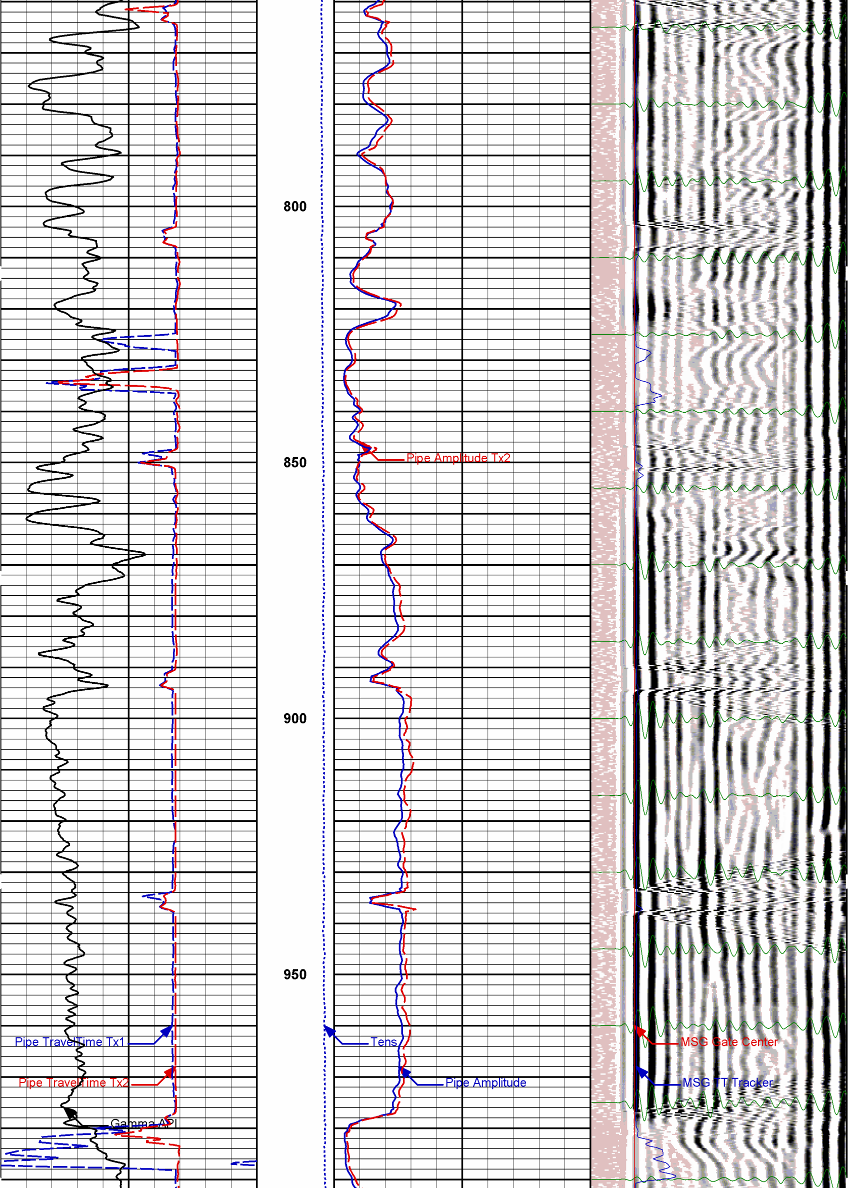
MAIN PASS 5"=100'

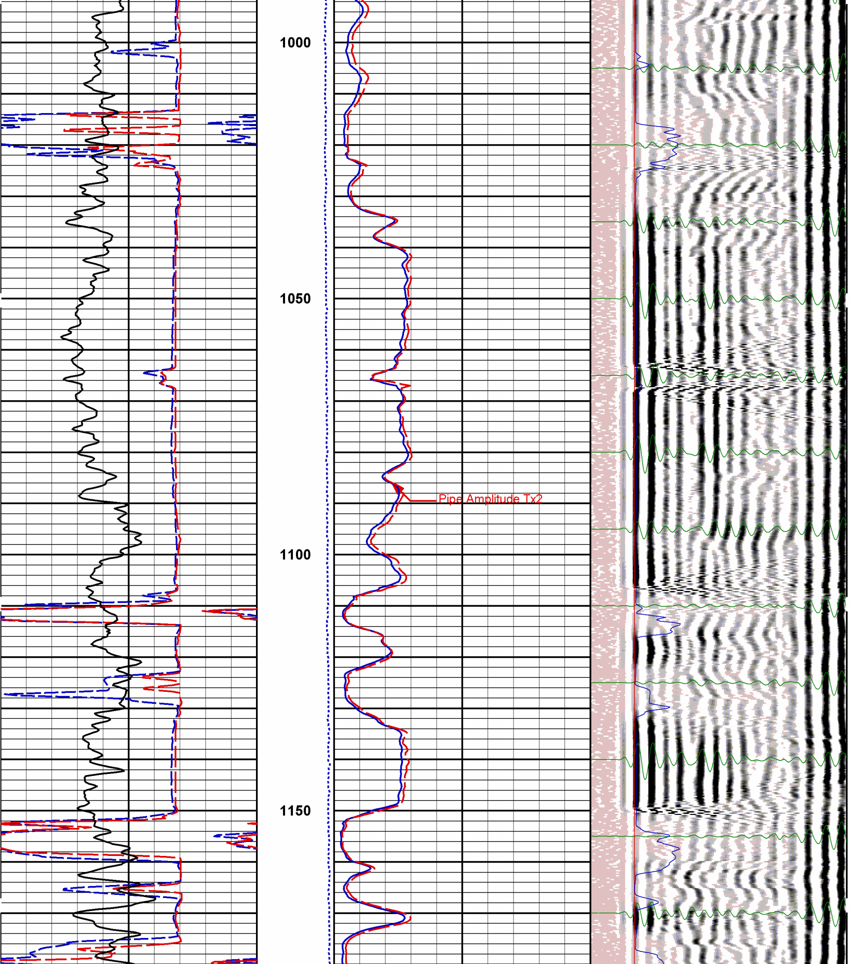


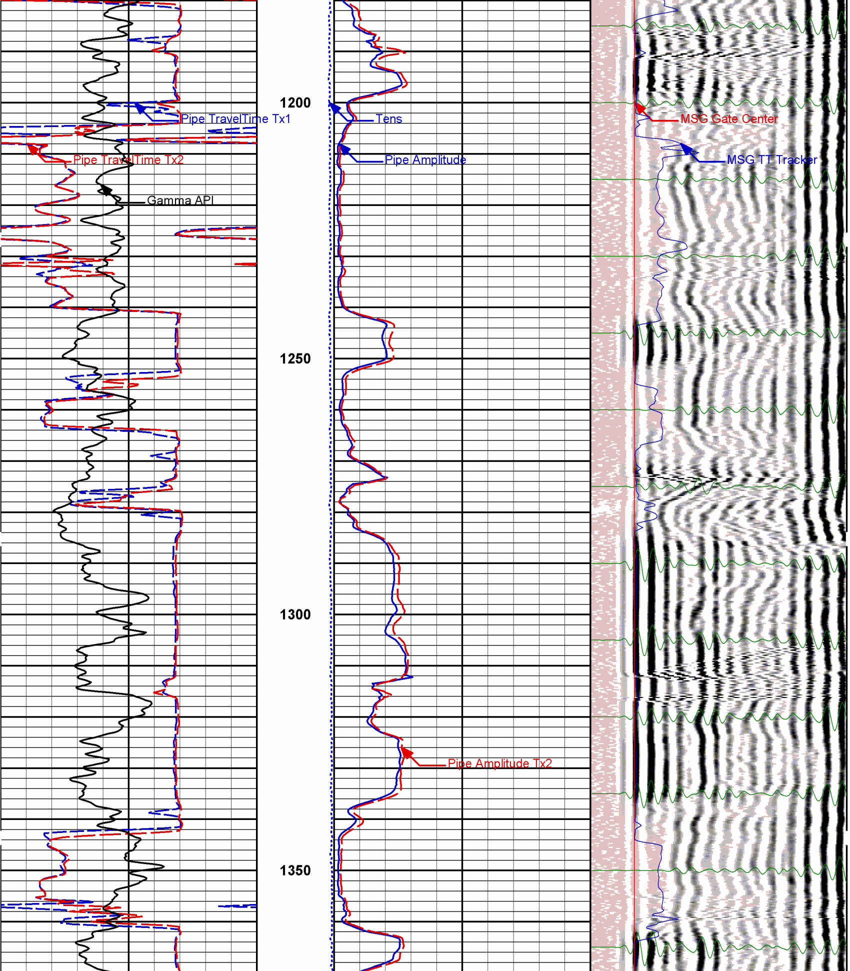


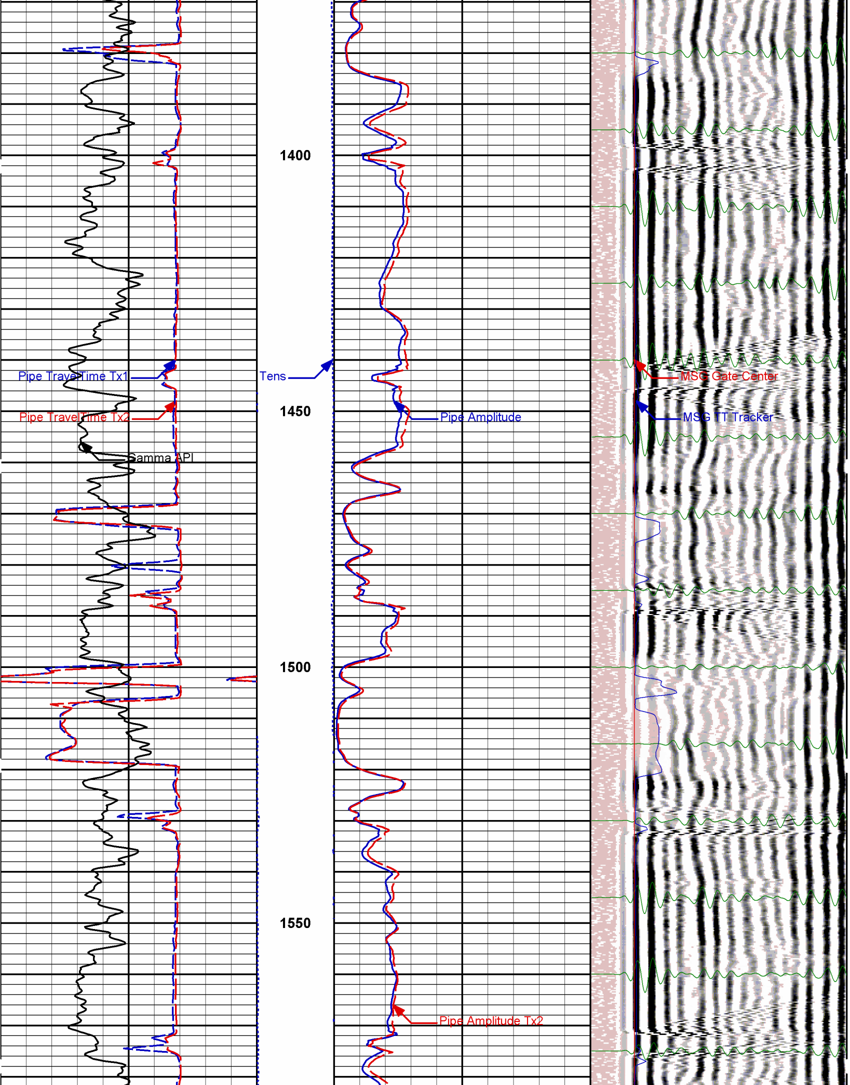


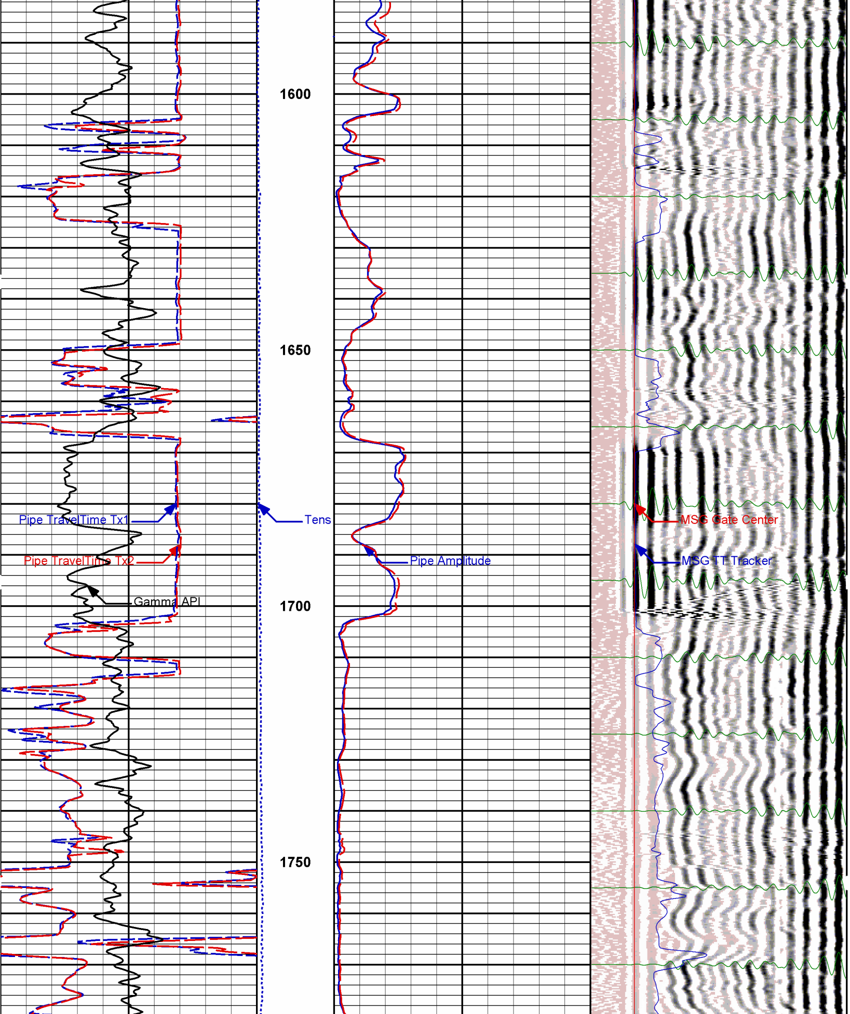


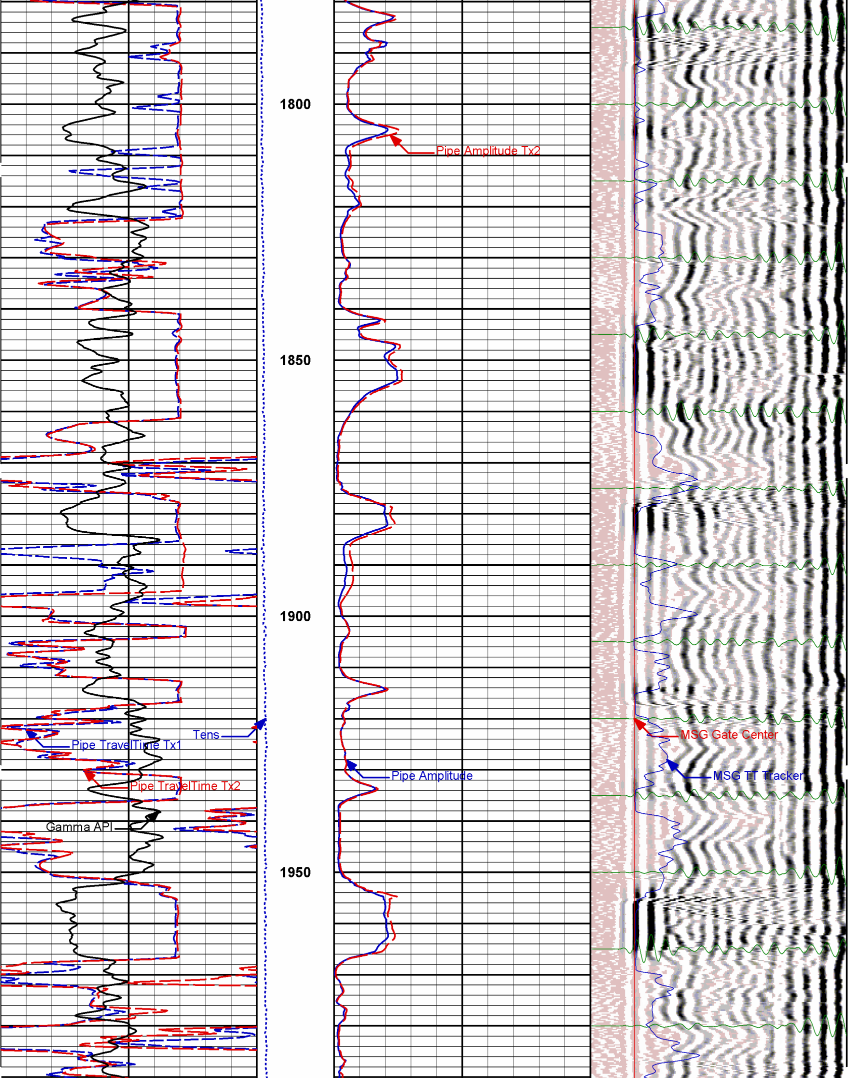


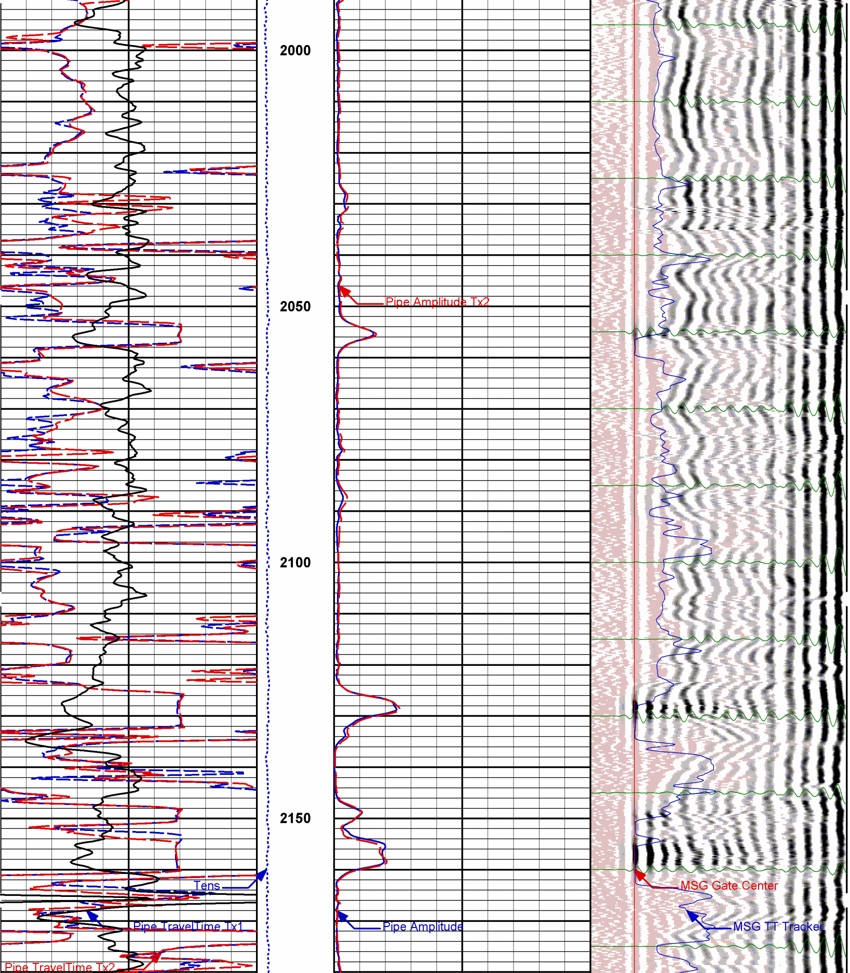


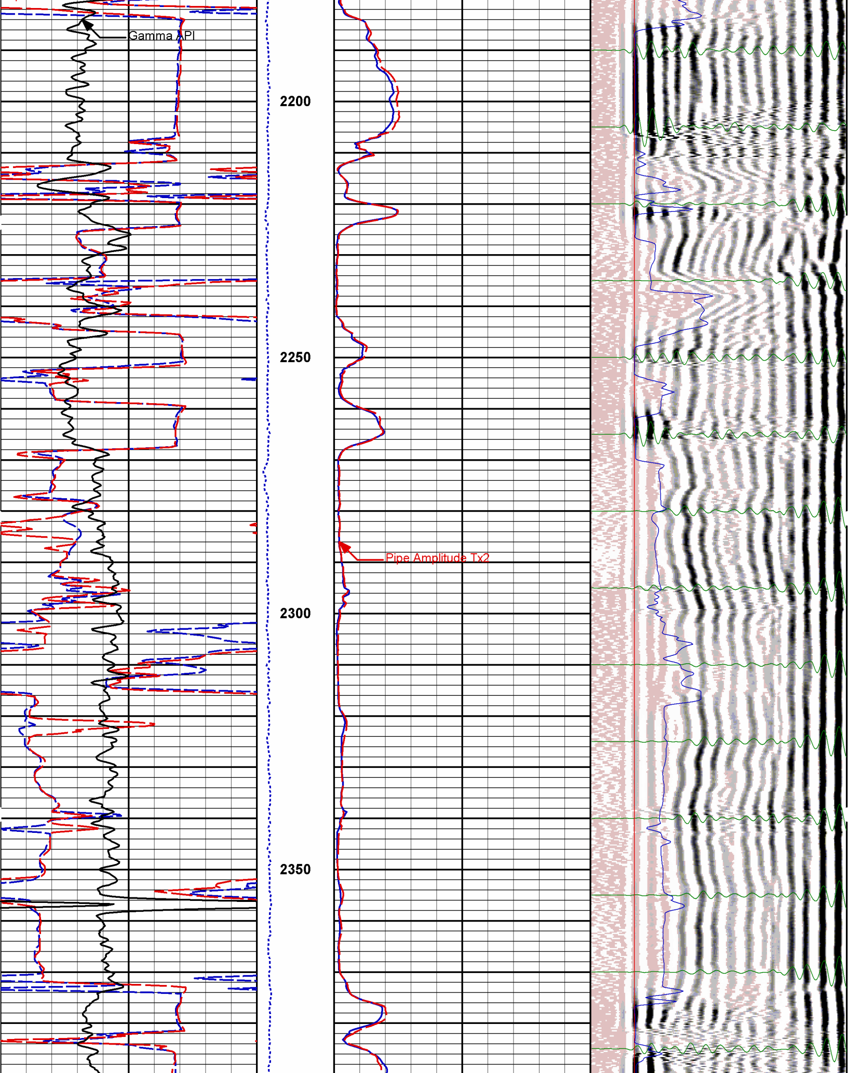


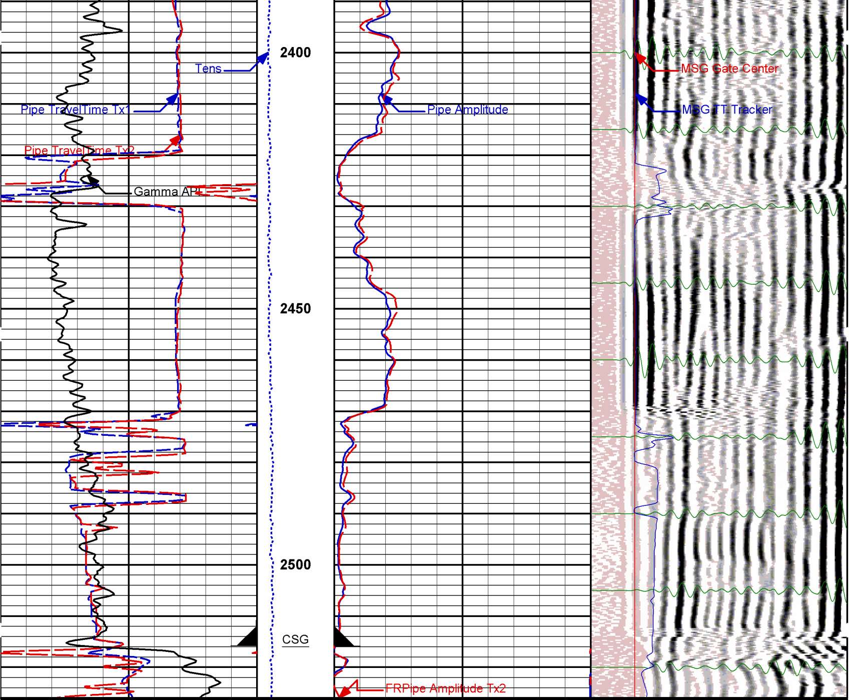












400 Pipe TravelTime Tx1 200 microseconds	1 : 240	0 Pipe Amplitude Tx2 100 millivolts	200 Waveform MSG 1200 microseconds
400 Pipe TravelTime Tx2 200 microseconds	Tens 2K 4K pounds	0 Pipe Amplitude Tx2 100 millivolts	200 Waveform 1200 microseconds
0 Gamma API 150 api			200 MSG Gate Center 1.2K microseconds
			200 MSG TT Tracker 1.2K microseconds

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Plot Time: 13-Sep-11 11:10:54
Plot Range: 96 ft to 2526 ft
Data: {ActiveWell}\Well Based\MAIN_CBL\*
Plot File: \\CBL\BSAT_CBL_M

MAIN PASS 5"=100'

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CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11602914**	**Reference Calibration Date:**	**30-Aug-11 14:13:35**
Engineer:	**D. CULVER**	**Calibration Date:**	**30-Aug-11 14:22:49**
Software Version:	**WL INSITE R3.2.3 (Build 5)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-270

Calibrator API Reference:259.00 api

Equivalent Calibrator API Reference:263.5 api

Measurement	Measured	Calibrated	Units
Background	37.4	35.9	api
Background + Calibrator	311.6	299.5	api
Calibrator	262.1	263.5	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11602914**	**Reference Calibration Date:**	**30-Aug-11 14:22:49**
Engineer:	**J. MAYNE**	**Calibration Date:**	**12-Sep-11 17:29:55**
Software Version:	**WL INSITE R3.2.3 (Build 5)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-270

Calibrator API Reference:259.00 api

Equivalent Calibrator API Reference:263.5 api

Field Verification	Shop	Field	Units
Background	35.9	39.6	api
Background + Calibrator	299.5	302.6	api
Calibrator	263.5	263.0	api

Shop	Field	Difference	Tolerance
263.5	263.0	0.5	+/- 9.00

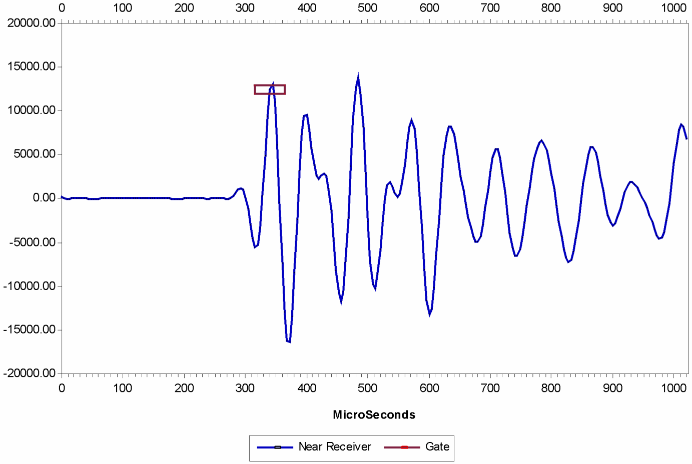
CBL-BSAT SHOP CALIBRATION

Tool Name:	**CBL-BSAT - 11105782**	**Reference Calibration Date:**	**09-Sep-11 06:14:36**
Engineer:	**D. CULVER**	**Calibration Date:**	**09-Sep-11 06:15:17**
Software Version:	**WL INSITE R3.2.3 (Build 5)**	**Calibration Version:**	**1**
Calibration Type:	**Well @ 123.87 ft**	**Calibration Depth:**	**123.87 ft**
Casing Weight:	**26.00 lbpf**	**Casing OD:**	**7.000 in**

Sensor	Measured	Calibrated	Difference	Units
Amplitude Tx1	62.20	62.20	0.00	mV
Amplitude Tx2	62.10	62.20	0.00	mV
Pipe Reference TT	-----	235.00	-----	us

Sensor	Raw Value	Units
Amplitude Tx1	12,613.20	mV
Amplitude Tx2	14,561.90	mV
Pipe TT from Tx1	342.00	us
Pipe TT from Tx2	342.00	us

Calibration - CBL Waveform



CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11602914						
Gamma Ray Calibrator	263.5	263.0	-----------	0.5	+/- 9.00	api

Data: SL_DO_FE_24-9DL\0002 BSAT_QUAD_CSNG\002.01 13-Sep-11 10:41 Up **Date: 13-Sep-11 11:03:53**

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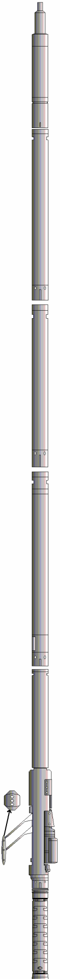
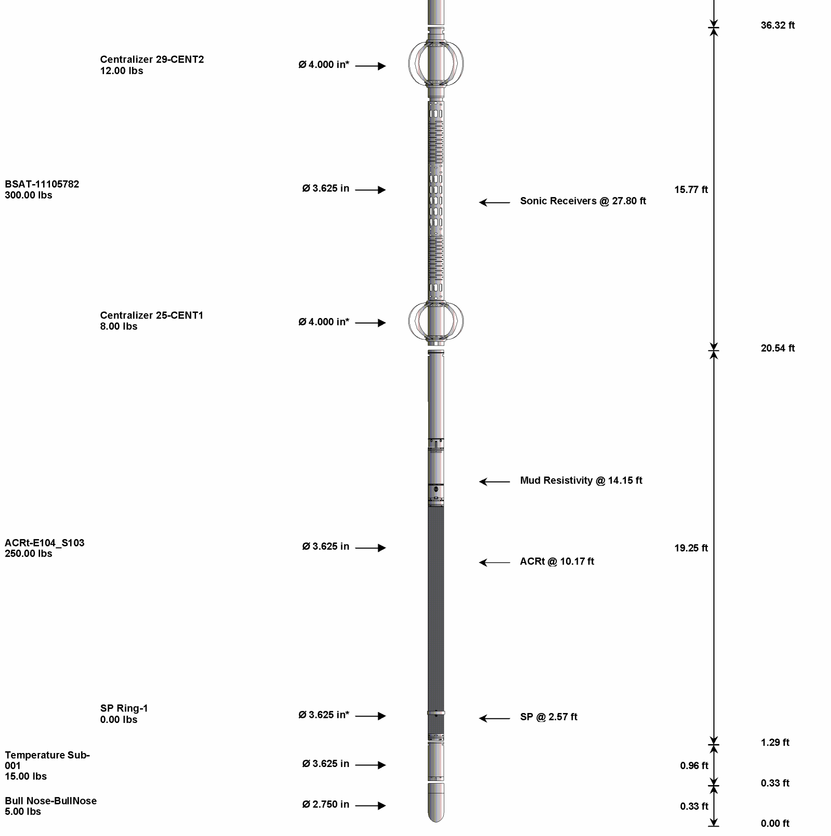
CUSTOMER EVENT LOG

Event Type	Time & Date	Depth (ft)	Event Description
	13-Sep-11 09:05:31	2608.25	Logging 001 13-Sep-11 09:05 Up @2608.3f
	13-Sep-11 09:09:14	2402.73	Halting 001 13-Sep-11 09:05 Up @2608.3f
	13-Sep-11 09:28:36	2609.25	Logging 002 13-Sep-11 09:28 Up @2609.3f
	13-Sep-11 10:12:14	84.31	Halting 002 13-Sep-11 09:28 Up @2609.3f
	13-Sep-11 10:42:57	2609.25	Relogging 002.01 13-Sep-11 10:41 Up
	13-Sep-11 10:44:34	84.31	Halting 002.01 13-Sep-11 10:41 Up

Data: SL_DO_FE_24-9DL\0002 BSAT_QUAD_CSNG\HW11182 **Date: 13-Sep-11 11:02:35**

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-11280120 135.00 lbs		Ø 3.625 in		Load Cell @ 81.74 ft BH Temperature @ 81.17 ft	6.25 ft	85.42 ft
GTET-11602914 165.00 lbs		Ø 3.625 in		GammaRay @ 73.11 ft	8.52 ft	79.17 ft
CSNG-11212563 114.00 lbs		Ø 3.625 in		CSNG @ 65.03 ft	8.17 ft	70.65 ft
DSNT-11020488 174.00 lbs		Ø 3.625 in		DSN Far @ 55.55 ft DSN Near @ 54.80 ft	9.69 ft	62.49 ft
SDLT-10947725 360.00 lbs		Ø 4.500 in Ø 4.750 in		SDL Microlog @ 44.99 ft SDL Caliper @ 44.80 ft SDL @ 44.79 ft	10.81 ft	52.80 ft
IQ Flex-ORANGE 140.00 lbs		Ø 3.625 in			5.67 ft	41.99 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	11280120	135.00	6.25		79.17	300.00
GTET	Gamma Telemetry Tool	11602914	165.00	8.52		70.65	60.00
CSNG	Compensated Spectral Natural Gamma	11212563	114.00	8.17		62.49	15.00
DSNT	Dual Spaced Neutron	11020488	174.00	9.69		52.80	60.00
SDLT	Spectral Density Tool	10947725	360.00	10.81		41.99	60.00
IQF	IQ Flex tool	ORANGE	140.00	5.67		36.32	300.00
BSAT	Borehole Sonic Array Tool	11105782	300.00	15.77		20.54	60.00
OBCEN	Centralizer - 29 in.Overbody	CENT2	12.00	2.42	*	33.22	300.00
OBCEN	Centralizer - 25 in. Overbody	CENT1	8.00	2.08	*	20.86	300.00
ACRt	Array Compensated True Resistivity	E104_S103	250.00	19.25		1.29	300.00
SP	SP Ring	1	0.00	0.25	*	2.57	300.00
TMAX	Temperature Sub - 3_625 OD	001	15.00	0.96		0.33	300.00
BLNS	Bull Nose	BullNose	5.00	0.33		0.00	300.00
Total			**1,678.00**	**85.42**			

* Not included in Total Length and Length Accumulation.

Data: SL_DO_FE_24-9DL\0001 BSAT_QUAD_CSNG\IDLE **Date: 13-Sep-11 01:32:18**

COMPANY	**ENTEK GRB, LLC.**		
WELL	**SLATER DOME FEDERAL 24-9DL (ST#1)**		
FIELD	**WILDCAT (S. SLATER DOME AREA)**		
COUNTY	**MOFFAT**	STATE	**CO**

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SONIC ARRAY TOOL