

# HALLIBURTON

## COMPENSATED SPECTRAL NATURAL GAMMA

COMPANY		NOBLE ENERGY	
WELL		RUFF C08-27D	
FIELD		WATTENBERG	
COUNTY		WELD	
STATE		CO	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date		26-Nov-11	
Run No.		ONE	
Depth - Driller		7196.00 ft	
Depth - Logger		7187.0 ft	
Bottom - Logged Interval		7144 ft	
Top - Logged Interval		CSG	
Casing - Driller		8.625 in @ 678.0 ft	
Casing - Logger		676.0 ft	
Bit Size		7.875 in	
Type Fluid in Hole		WATER BASED MUD	
Density		10.1 ppg	
Viscosity		45.00 s/qt	
PH		8.30 pH	
Fluid Loss		9.5 cpm	
Source of Sample		MUD CELL	
Rm @ Meas. Temperature		1.150 ohmm @ 54.70 degF	
Rmf @ Meas. Temperature		0.72 ohmm @ 75.00 degF	
Rmc @ Meas. Temperature		0.798 ohmm @ 75.00 degF	
Source Rmf		CHART	
Rmc		CHART	
Rm @ BHT		0.30 ohmm @ 229.0 degF	
Time Since Circulation		5.0 hr	
Time on Bottom		26-Nov-11 22:03	
Max. Rec. Temperature		229.0 degF @ 7187.0 ft	
Equipment		10800785	
Location		BRIGHTON	
Recorded By		C. BLUE	
Witnessed By			

COMPANY	NOBLE ENERGY	Other Services:
WELL	RUFF C08-27D	RWCH
FIELD	WATTENBERG	GTET
COUNTY	WELD	DSNT/SDLT
STATE	CO	ACRT
API No.	05123342690000	
Location	SHL: 289' FNL & 1809' FEL NWNE BHL: 75' FNL & 1320' FEL NWNE LAT: 40.33334° LONG: -104.57148°	
Sect.	8	
Twp.	4N	
Rge.	64W	
Elev.	4765.0 ft	
D.F.	4778.0 ft	
G.L.	4765.0 ft	

Fold here

Service Ticket No.: 9087814				API Serial No.: 05123342690000				PGM Version: WL INSITE R3.4.4 (Build 2)							
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE								RESISTIVITY SCALE CHANGES							
Date		Sample No.						Type Log		Depth		Scale Up Hole		Scale Down Hole	
Depth-Driller															
Type Fluid in Hole															
Density		Viscosity													
Ph		Fluid Loss													
Source of Sample								RESISTIVITY EQUIPMENT DATA							
Rm @ Meas. Temp		@		@				Run No.		Tool Type & No.		Pad Type		Tool Pos.	
Rmf @ Meas. Temp.		@		@				ONE		ACRT 584-585		N/A		0.5" S.O.	
Rmc @ Meas. Temp.		@		@											
Source Rmf		Rmc													
Rm @ BHT		@		@											
Rmf @ BHT		@		@											
Rmc @ BHT		@		@											
EQUIPMENT DATA															
GAMMA				ACOUSTIC				DENSITY				NEUTRON			
Run No.		ONE		Run No.				Run No.		ONE		Run No.		ONE	
Serial No.		11259758		Serial No.				Serial No.		10951319		Serial No.		11219332	
Model No.		GTET		Model No.				Model No.		SDLT		Model No.		DSNT	
Diameter		3.625"		No. of Cent.				Diameter		4.5"		Diameter		3.625"	
Detector Model No.		102A		Spacing				Log Type		GAM/GAM		Log Type		THERM/THERM	
Type		SCINT						Source Type		Cs137		Source Type		Am241Be	
Length		8"		LSA [Y/N]				Serial No.		5256 GW		Serial No.		DSN 430	
Distance to Source		17'		FWDA [Y/N ]				Strength		1.5 Ci		Strength		15 Ci	
LOGGING DATA															
GENERAL				GAMMA				ACOUSTIC				DENSITY			

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	TD	6981	REC	0	250				20%	0%	2.68 g/cc	20%	0%	SAND		
ONE	6981	6734	REC	0	250				20%	0%	2.71 g/cc	20%	0%	LIME		
ONE	6734	CSG	REC	0	250				20%	0%	2.68 g/cc	20%	0%	SAND		
DIRECTIONAL INFORMATION																
Maximum Deviation									@	KOP						@
Remarks:																
RWCH/GTET/CSNG/DSNT/SDLT/ACRT RAN IN COMBINATION																
ANNULAR HOLE VOLUME CALCULATED FOR 4.5 INCH PRODUCTION CASING																
TENSION PULLS, WASHOUTS, AND BOREHOLE RUGOSITY AFFECT TOOL RESPONSE																
CREW: J. WALKER, D. WALKER, N. GOULD																
RIG: ENSIGN 132																
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES -- BRIGHTON, CO -- (303) 825-4346																
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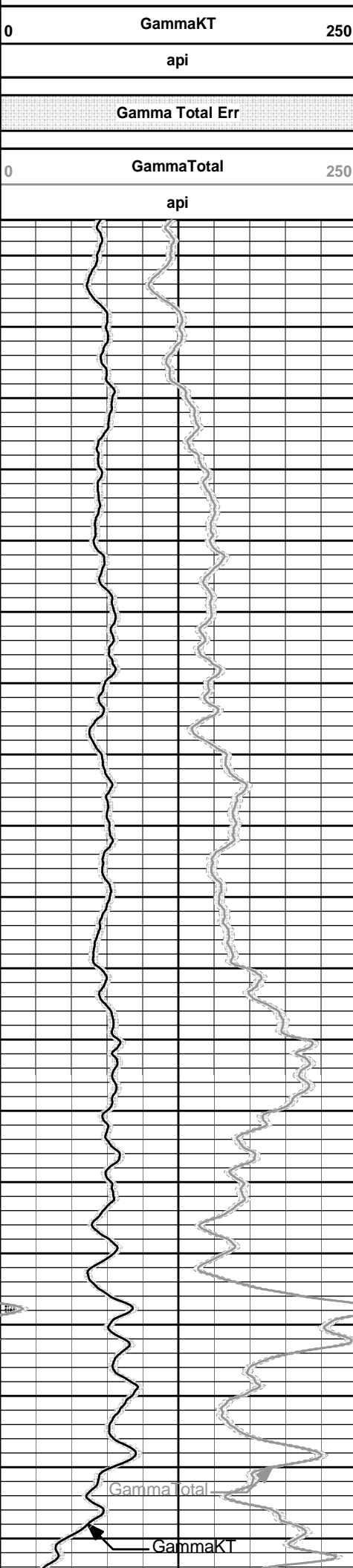
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PARAMETERS REPORT

Depth ((ft))	Tool Name	Description	Value	Units
TOP				
	DSNT	Neutron Lithology	Sandstone	
	SDLT Pad	Formation Density Matrix	2.680	g/cc
6734.00				
	DSNT	Neutron Lithology	Limestone	
	SDLT Pad	Formation Density Matrix	2.710	g/cc
6981.00				
	SHARED	Bit Size	7.875	in
	SHARED	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	Mud Base	Water	
	SHARED	Borehole Fluid Weight	10.100	ppg
	SHARED	Weighting Agent	Barite	
	SHARED	Borehole salinity	0.00	ppm
	SHARED	Formation Salinity NaCl	0.00	ppm
	SHARED	Percent K in Mud by Weight?	0.00	%
	SHARED	Mud Resistivity	1.150	ohmm
	SHARED	Temperature of Mud	54.7	degF
	SHARED	Logging Interval is Cased?	No	
	SHARED	AHV Casing OD	4.500	in
	SHARED	Surface Temperature	50.0	degF
	SHARED	Total Well Depth	7187.00	ft
	SHARED	Bottom Hole Temperature	229.0	degF
	SHARED	Navigation and Survey Master Tool	NONE	
	SHARED	High Res Z Accelerometer Master Tool	GTET	

SHARED	Temperature Master Tool	NONE	
SHARED	Borehole Size Master Tool	NONE	
GTET	Process Gamma Ray?	Yes	
GTET	Gamma Tool Standoff	0.000	in
GTET	Process Gamma Ray EVR?	No	
GTET	Tool Position for Gamma Ray Tools.	Eccentered	
CSNG	Process CSNG Data?	Yes	
CSNG	Is Tool Centralized?	No	
CSNG	Gamma Enviromental Corrections?	Yes	
CSNG	Barite Correction Factor	1.00	
CSNG	Use Fixed Gain	No	
CSNG	Use Fixed Offset	No	
CSNG	Use Fixed Resolution Degradation Factor	No	
DSNT	Process DSN?	Yes	
DSNT	Process DSN EVR?	No	
DSNT	Neutron Lithology	Sandstone	
DSNT	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.000	in
DSNT	Temperature Correction Type	None	
DSNT	DSN Pressure Correction Type	None	
DSNT	View More Correction Options	No	
DSNT	Use TVD for Gradient Corrections?	No	
DSNT	Logging Horizontal Water Tank?	No	
SDLT	Process Caliper Outputs?	Yes	
SDLT Pad	Process Density?	Yes	
SDLT Pad	Process Density EVR?	No	
SDLT Pad	Logging Calibration Blocks?	No	
SDLT Pad	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	Disable temperature warning	No	
SDLT Pad	Formation Density Matrix	2.680	g/cc
SDLT Pad	Formation Density Fluid	1.000	g/cc
Microlog Pad	Process MicroLog Outputs?	Yes	
ACRt Sonde	Process ACRt?	Yes	
ACRt Sonde	Minimum Tool Standoff	0.50	in
ACRt Sonde	Temperature Correction Source	FP Lwr & FP Up	
ACRt Sonde	Tool Position	Free Hanging	
ACRt Sonde	Rmud Source	Mud Cell	
ACRt Sonde	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	Threshold Quality	0.50	
BOTTOM			
Data: RUFF_C08_27D\0001 NOBLE\002.01 26-Nov-11 23:04 Up			Date: 26-Nov-11 23:05:07

<b>HALLIBURTON</b>		Plot Time: 26-Nov-11 23:13:59 Plot Range: 6545 ft to 7153 ft Data: RUFF_C08_27D\Well Based\CSNG\ Plot File: \\CSNG\CSNG-FS - Primary 1_240
MAIN PASS 5" = 100'		
Gamma KT Err		Uranium Err



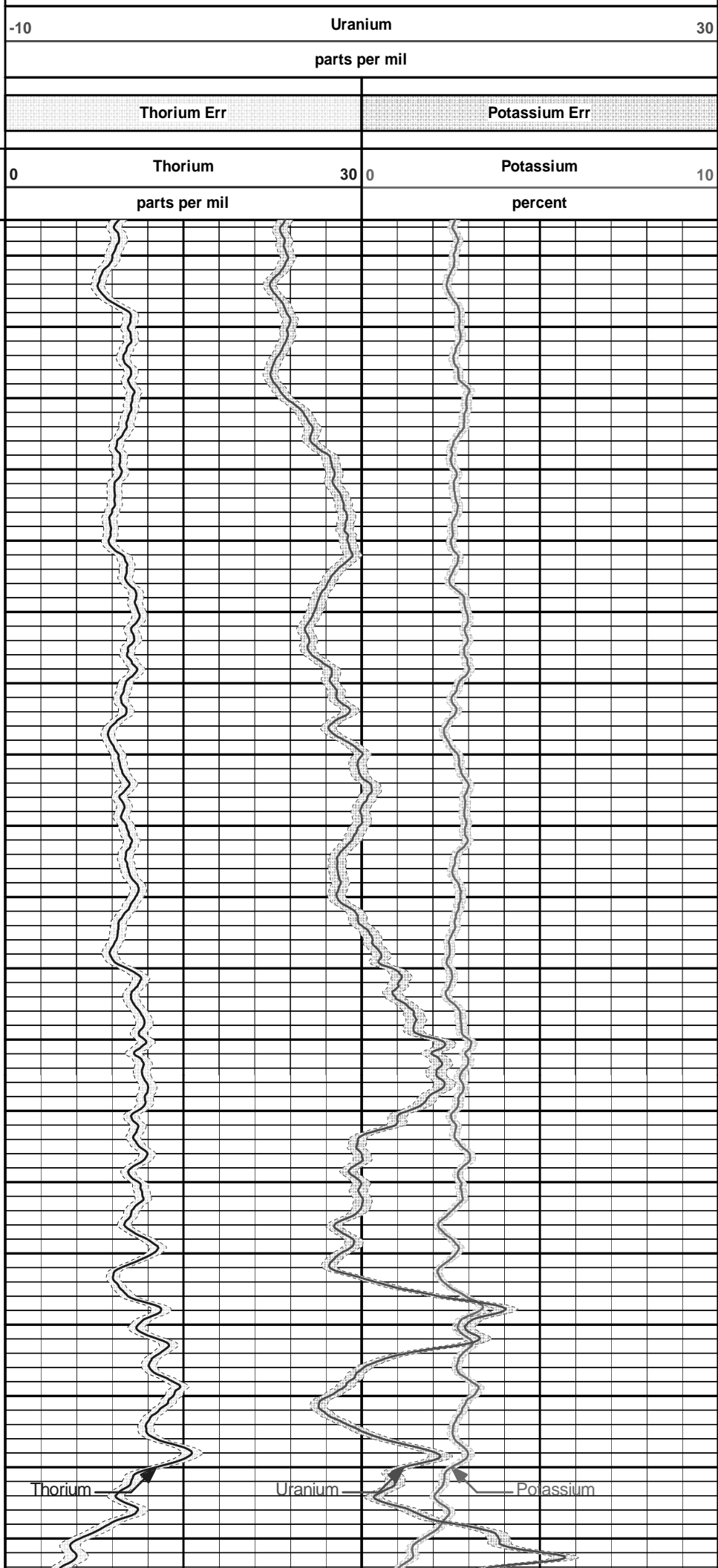
1 : 240  
MD

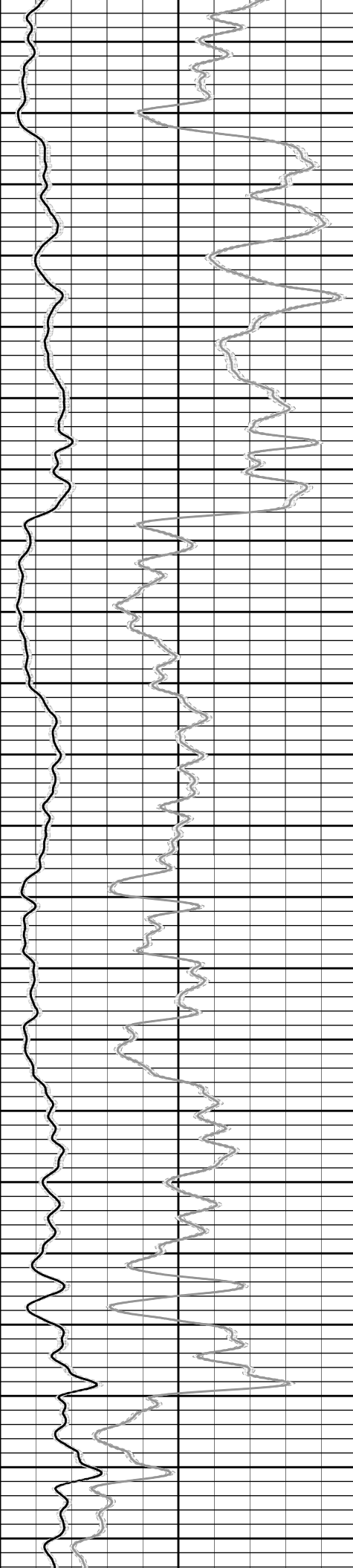
6550

6600

6650

6700





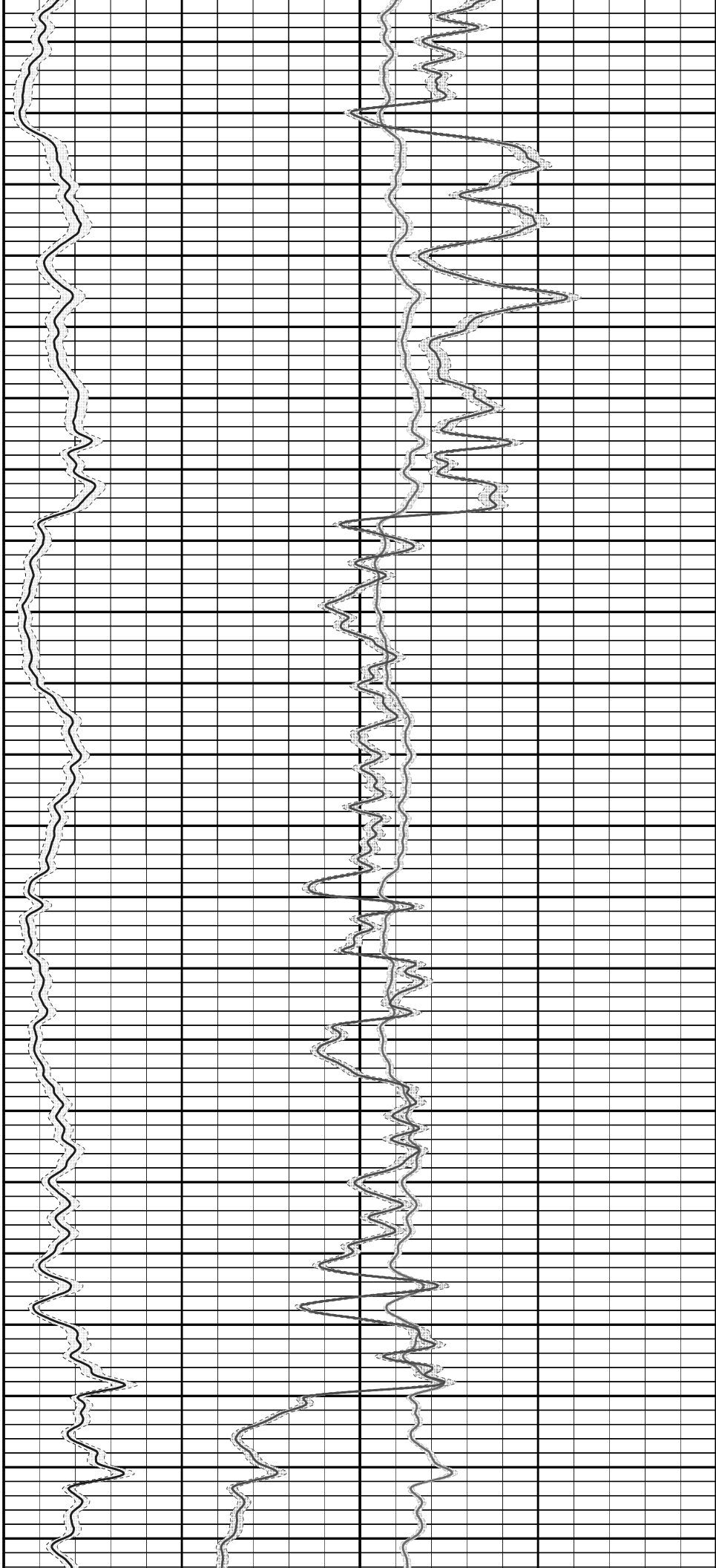
6750

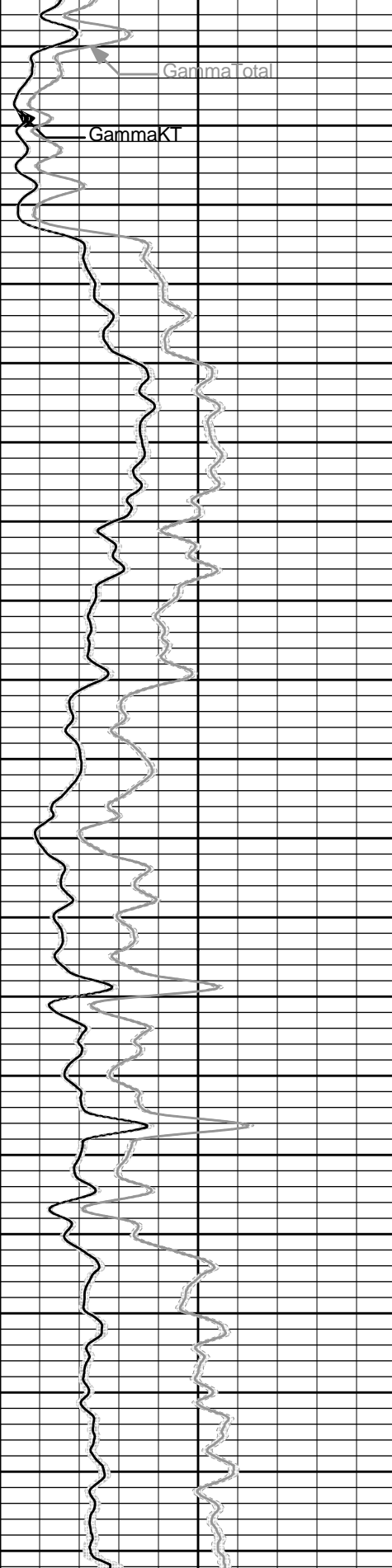
6800

6850

6900

6950





7000

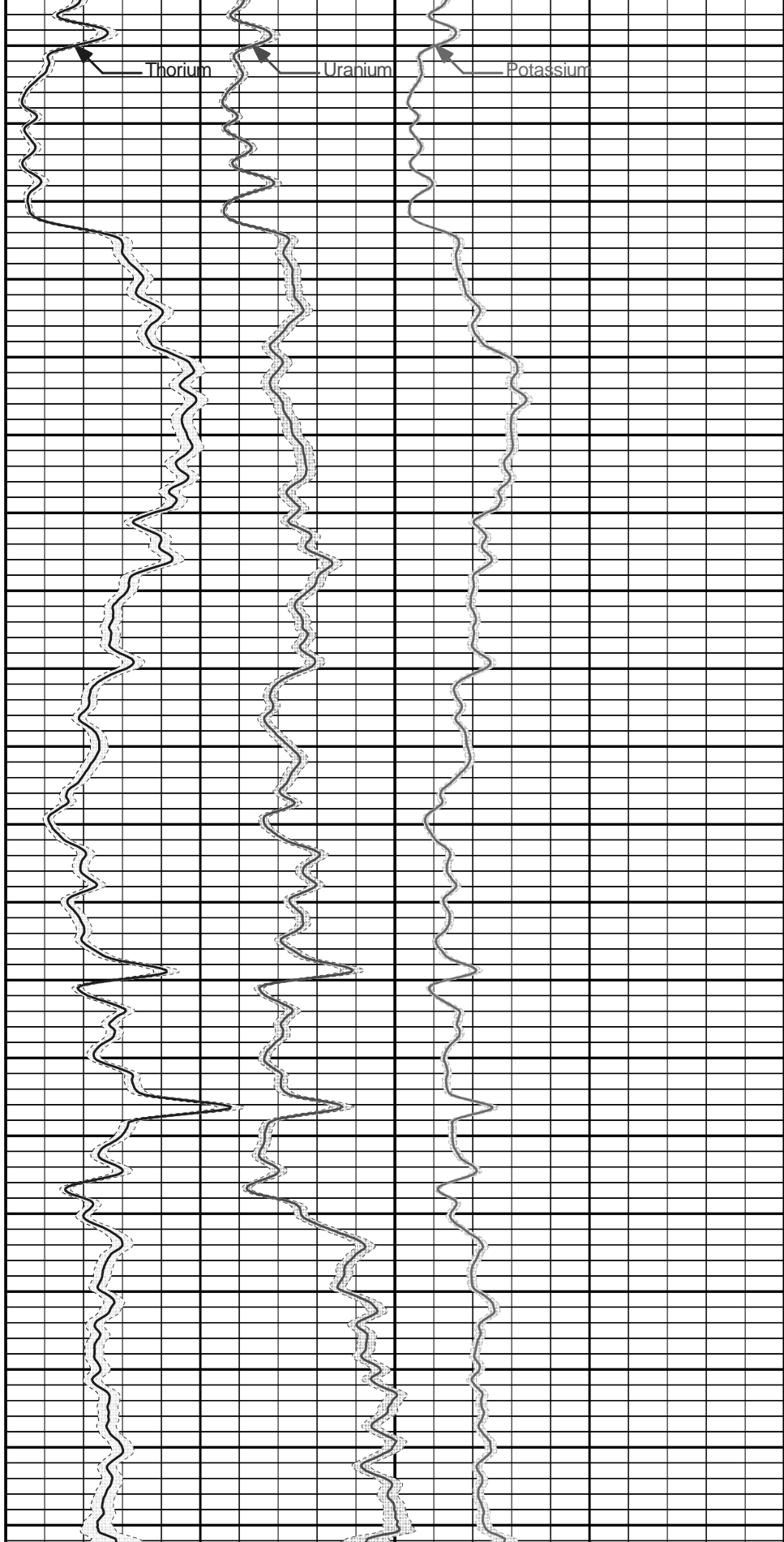
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7100

7150

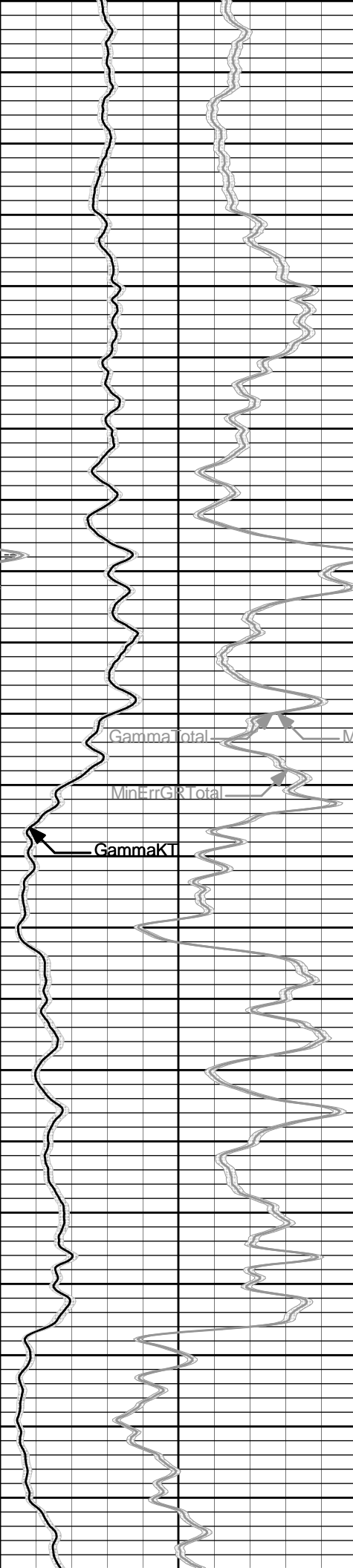
0	GammaTotal	250
	api	
	Gamma Total Err	

1 : 240  
MD



0	Thorium	30	0	Potassium	10
	parts per mil			percent	
	Thorium Err			Potassium Err	





6650

6700

6750

6800

Gamma Total

MaxErrGRTotal

MinErrGRTotal

GammaKT

Spectrum Gain

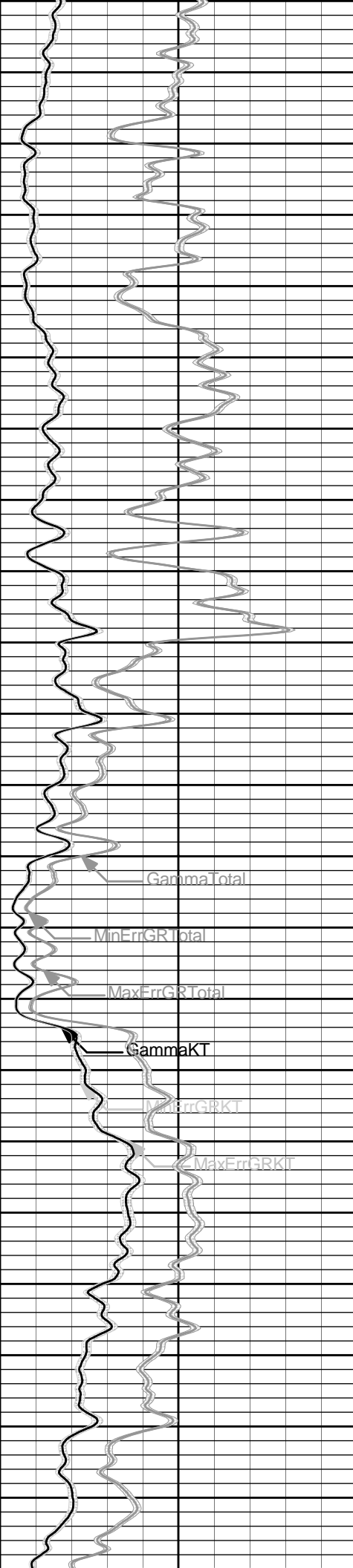
Spectrum Offset

Resol Degrad

Fitting Error

Barre Fact Avg





6850

6900

6950

7000

7050

GammaTotal

MinErrGRTotal

MaxErrGRTotal

GammaKT

MinErrGRKT

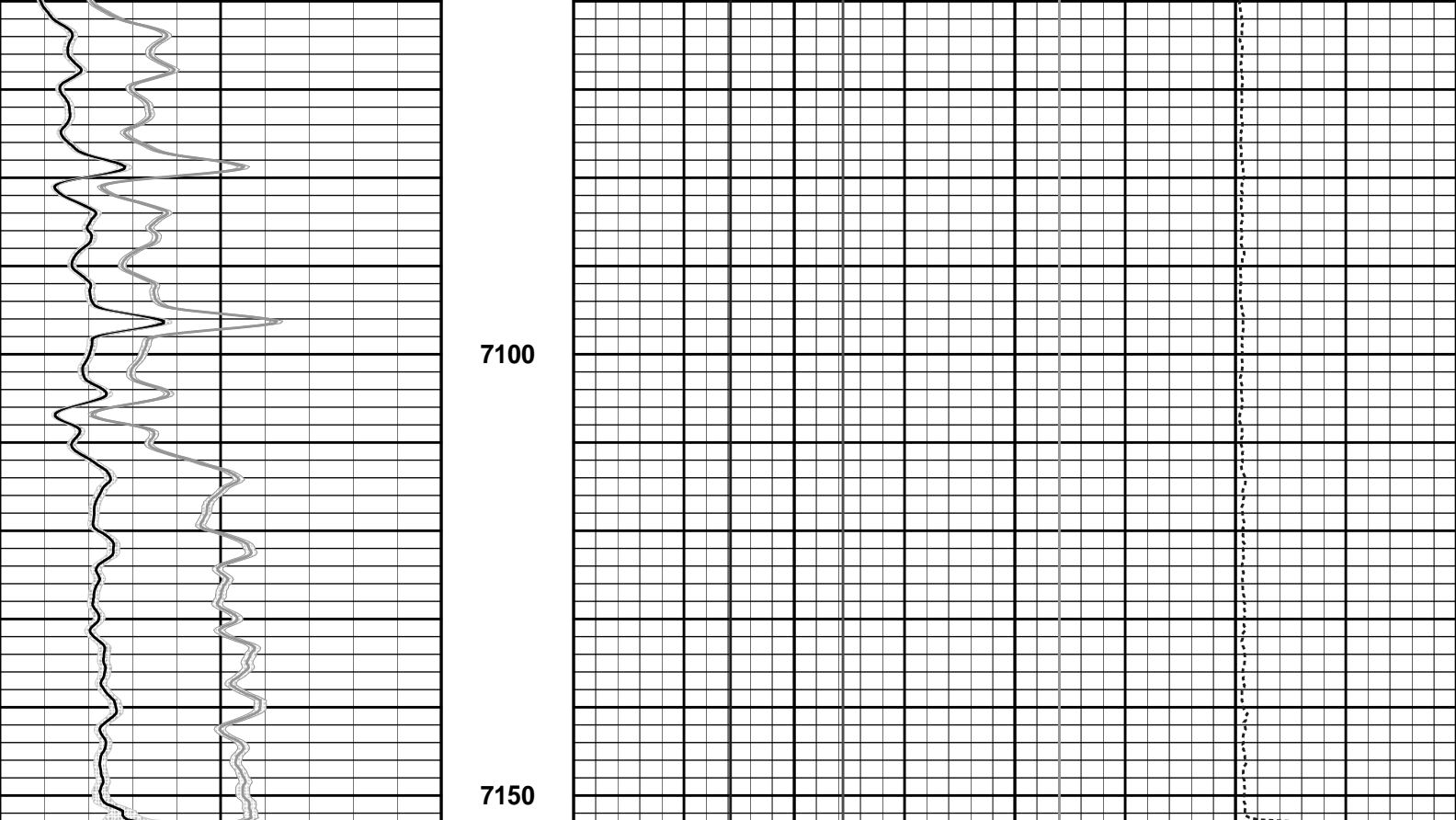
MaxErrGRKT

Spectrum Gain

Spectrum Offset

Resol Degrad

Fitting Error



0	GammaKT	250	1 : 240 MD	-10	Spectrum Offset	10	0.9	Spectrum Gain	1.1	0	Resol Degrade	20	0	Fitting Error	2
	api														
0	GammaTotal	250											0	Barite Fact Avg	1
	api														
	Gamma Total Err														
	Gamma KT Err														

HALLIBURTON

Plot Time: 26-Nov-11 23:14:05  
Plot Range: 6545 ft to 7153 ft  
Data: RUFF\_C08\_27D\Well Based\CSNG\  
Plot File: \CSNG\CSNG-FS - Quality 1\_240

MAIN PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	GTET - 11259758	Reference Calibration Date:	13-Oct-11 16:53:13
Engineer:	C. BLUE	Calibration Date:	04-Nov-11 10:15:03
Software Version:	WL INSITE R3.4.2 (Build 2)	Calibration Version:	1

Calibrator Source S/N: TB 290  
Calibrator API Reference:230.00 api

Measurement	Measured	Calibrated	Units
Background	75.4	77.0	api
Background + Calibrator	304.6	311.1	api
Calibrator	229.1	234.0	api

CSNG-FS SHOP CALIBRATION

Tool Name:	CSNG - 10846351	Reference Calibration Date:	11-Oct-11 11:35:16
Engineer:	C. BLUE	Calibration Date:	04-Nov-11 10:29:39
Software Version:	WL INSITE R3.4.2 (Build 2)	Calibration Version:	1
Source SN:	TB 290		

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.6	23.6	Channel #
583 KEV Peak Channel #	53.2	52.9	Channel #
2614 KEV Peak Channel #	219.1	218.4	Channel #
Calibrate Temperature	60.2	70.7	degF

Pass/Fail Summary	Centroid
239 KEV Peak	Passed
583 KEV Peak	Passed
2614 KEV Peak	Passed

Blanket Reference Value: 230.00 API

Calibrator Value: 261.2 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1694.0	CPS	323.6	327.6	API
Background	343.4	CPS	62.4	66.4	API

Gamma Ray Gain: 0.97

Expected Gain Range: 0.85 - 1.15

Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	DSNT - 11219332	Reference Calibration Date:	11-Oct-11 16:20:36
Engineer:	C. BLUE	Calibration Date:	11-Oct-11 16:36:25
Software Version:	WL INSITE R3.4.2 (Build 2)	Calibration Version:	1

Logging Source S/N: DSN-430

Tank Serial Number: 11068236

Reference value assigned to Tank: 53.720

Snow Block S/N: 100133139C

Calibration Tank Water Temperature: 68 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.984	0.984	0.900 - 1.100

WATER TANK SUMMARY (Horizontal Water Tank)

Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2224	0.2224	0.0001	+/- 0.0020
Calibrated Ratio:	10.11	10.11	0.002	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0827	0.02000 - 0.09000

PASS/FAIL SUMMARY	
Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DENSITY CALIPER SHOP CALIBRATION			
Tool Name:	SDLT - 10951319	Reference Calibration Date:	19-Nov-11 22:29:16
Engineer:	C. BLUE	Calibration Date:	19-Nov-11 22:34:39
Software Version:	WL INSITE R3.4.4 (Build 2)	Calibration Version:	1

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1951.45	-2064.13	-7000.00 - -1000.00
Pad Gain	0.0003744	0.0003823	0.000200 - 0.000600
Arm Offset	-1528.65	-1406.27	-5000.00 - 3000.00
Arm Gain	0.0005160	0.0005145	0.000300 - 0.000700
Arm Power	-0.000005584	-0.000005510	-0.000010 - 0.000010

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 4.50 in

CALIBRATION RINGS				
Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.71	3.75	0.04	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.48	6.50	0.02	+/- 0.20
Medium Ring (in)	8.24	8.25	0.01	+/- 0.20
Large Ring (in)	15.00	15.00	0.00	+/- 0.20

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed
PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION			
Tool Name:	ACRt Sonde - E2584-S2585	Reference Calibration Date:	28-Jul-11 15:52:08
Engineer:	C. BLUE	Calibration Date:	28-Jul-11 16:05:50
Software Version:	WL INSITE R3.2.5 (Build 2)	Calibration Version:	1

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper

A1 (80")	0.95	1.0012	1.05	0.95	1.0001	1.05	0.95	1.0006	1.05
A2 (50")	0.95	0.9994	1.05	0.95	1.0037	1.05	0.95	1.0091	1.05
A3 (29")	0.95	0.9959	1.05	0.95	1.0005	1.05	0.95	1.0031	1.05
A4 (17")	0.95	1.0040	1.05	0.95	1.0060	1.05	0.95	1.0110	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0014	1.05	0.95	1.0048	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9776	1.05	0.95	0.9812	1.05

TYPICAL SONDE OFFSET RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	-5	-0.761	2	-6	-4.073	-2	-8	-5.268	-2
A2 (50")	-7	-1.957	-1	-6	-3.509	-2	-7	-4.574	-2
A3 (29")	-27	-12.918	-9	-9	-3.439	-3	-7	-3.298	-1
A4 (17")	-180	-94.666	-60	-45	-30.479	-15	-39	-25.503	-13
A5 (10")	N/A	N/A	N/A	-150	-86.802	-50	-80	-43.996	-10
A6 (6")	N/A	N/A	N/A	175	306.164	525	90	153.096	270

TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION			
Signal	Lower	R	Upper		Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K		0.6	0.9962	1.3	Mud Cell	0.95	0.997	1.05
36K		1.0	1.9266	2.0				
72K		1.0	1.2354	2.0				

SPECTRAL DENSITY SHOP CALIBRATION			
Tool Name:	SDLT Pad - M319P593	Reference Calibration Date:	11-Oct-11 14:53:33
Engineer:	C. BLUE	Calibration Date:	11-Oct-11 15:11:27
Software Version:	WL INSITE R3.4.2 (Build 2)	Calibration Version:	1

Logging Source S/N: 5256 GW		
Aluminum Block S/N: 63066	Density: 2.602g/cc	Pe: 3.100
Magnesium Block S/N: BRIGHTON	Density: 1.691g/cc	Pe: 2.650

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0609	1.0502	0.90 - 1.10
Near Dens Gain	1.0065	0.9922	0.90 - 1.10
Near Peak Gain	0.9937	0.9925	0.90 - 1.10
Near Lith Gain	0.9497	0.9545	0.90 - 1.10
Far Bar Gain	1.0075	1.0065	0.90 - 1.10
Far Dens Gain	0.9957	0.9939	0.90 - 1.10
Far Peak Gain	0.9907	0.9915	0.90 - 1.10
Far Lith Gain	0.9759	0.9729	0.90 - 1.10
Near Bar Offset	-0.5208	-0.4212	NONE
Near Dens Offset	-0.0081	0.1187	NONE
Near Peak Offset	0.0861	0.0941	NONE
Near Lith Offset	0.4054	0.3631	NONE
Far Bar Offset	-0.0882	-0.0806	NONE
Far Dens Offset	0.0174	0.0335	NONE
Far Peak Offset	0.0571	0.0507	NONE
Far Lith Offset	0.1737	0.1990	NONE
Near Bar Background	925.23	925.05	700 - 1450
Near Dens Background	925.23	925.05	700 - 1450
Near Peak Background	925.23	925.05	700 - 1450
Near Lith Background	925.23	925.05	700 - 1450
Far Bar Background	925.23	925.05	700 - 1450
Far Dens Background	925.23	925.05	700 - 1450
Far Peak Background	925.23	925.05	700 - 1450
Far Lith Background	925.23	925.05	700 - 1450

Near Dens Background	306.60	305.93	230 - 480
Near Peak Background	133.78	132.81	100 - 210
Near Lith Background	161.71	161.33	125 - 260
Far Bar Background	532.69	534.63	450 - 900
Far Dens Background	211.58	210.12	175 - 345
Far Peak Background	82.94	83.42	70 - 140
Far Lith Background	86.06	86.12	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.692	1.691	-0.001	+/- 0.015
Pe	2.607	2.605	-0.002	+/- 0.150
ALUMINUM				
Density (g/cc)	2.602	2.602	0.000	+/- 0.01500
Pe	3.052	3.064	0.012	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0003	+/- 0.0110	0.0003	+/- 0.0140
Magnesium Block	0.0010	+/- 0.0110	0.0001	+/- 0.0140
Aluminum Block	-0.0009	+/- 0.0110	0.0003	+/- 0.0140
Resolution	9.12	6.00 - 11.50	8.86	6.00 - 11.50
Internal Verifier(B+D+P+L)	1525	1200 - 2700	914	800 - 1700

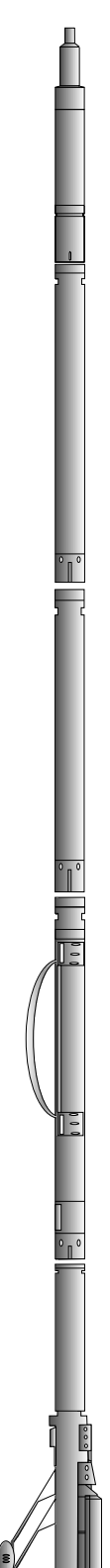
PASS/FAIL SUMMARY	
Background Quality Check:	Passed
Background Range Check:	Passed
Background Resolution Check:	Passed
Background Verification Check:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed
Gains Check:	Passed
Changes in Calibration Blocks:	Passed

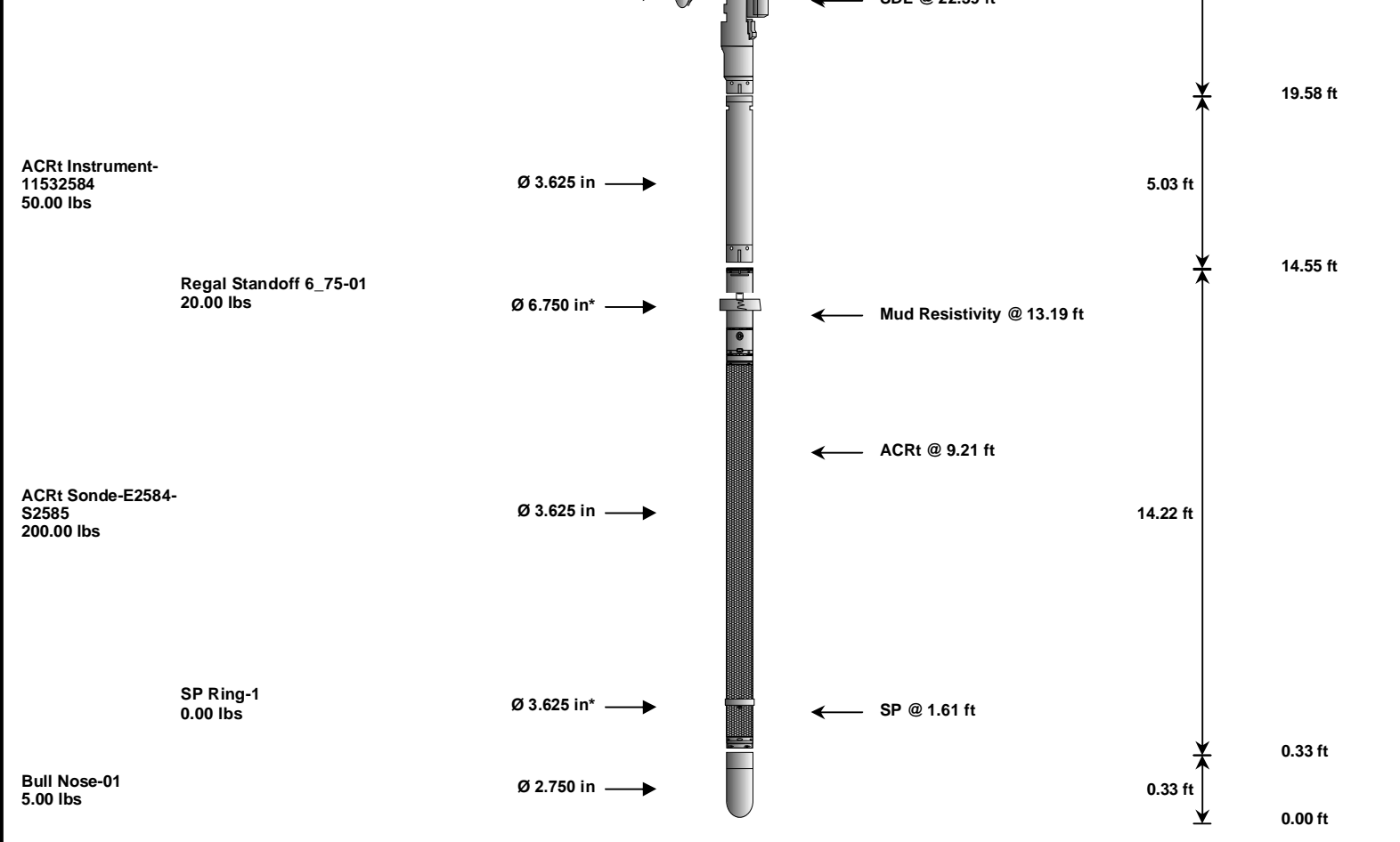
CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11259758						
Gamma Ray Calibrator	234.0	-----	-----	0.0	+/- 9.00	api
CSNG-10846351						
60 KEV Peak Channel #	48.0	-----	-----	0.0	-----	Channel #
239 KEV Peak Channel #	23.6	-----	-----	0.0	-----	Channel #
583 KEV Peak Channel #	52.9	-----	-----	0.0	-----	Channel #
2614 KEV Peak Channel #	218.4	-----	-----	0.0	-----	Channel #
DSNT-11219332						
Snow-Block Porosity	0.0827	-----	-----	0.0000	+/- -.--	decp
SDLT-10951319						
Pad Extension	3.75	-----	-----	0.00	+/-0.20	in
Ring Diameter	8.25	-----	-----	0.00	+/-0.20	in

Ring Diameter	0.25	-----	-----	0.00	-----	in
ACRt Sonde-E2584-S2585						
Mud Cell	0.997	-----	-----	0.000	-----	ohm-m
SDLT Pad-M319P593						
Near(B+D+P+L)	1525.120	-----	-----	0.000	+/-13.755	cps
Far(B+D+P+L)	914.289	-----	-----	0.000	+/-14.875	cps
Data: RUFF_C08_27D\0001 NOBLEVDLE				Date: 26-Nov-11 22:44:33		

**HALLIBURTON**

## TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						
RWCH-11078326 135.00 lbs		Ø 3.625 in →		← Load Cell @ 59.34 ft ← BH Temperature @ 58.77 ft	6.25 ft	63.02 ft
GTET-11259758 165.00 lbs		Ø 3.625 in →		← GammaRay @ 50.71 ft	8.52 ft	56.77 ft
CSNG-10846351 114.00 lbs		Ø 3.625 in →		← CSNG @ 42.62 ft	8.17 ft	48.25 ft
DSNT-11219332 174.00 lbs	DSN Decentralizer- 10935690 6.60 lbs	Ø 5.000 in* → Ø 3.625 in →		← DSN Far @ 33.15 ft ← DSN Near @ 32.40 ft	9.69 ft	40.08 ft
SDLT-10951319 360.00 lbs	SDLT Pad-M319P593 65.00 lbs Microlog Pad-10951319 8.00 lbs	Ø 4.500 in → Ø 4.750 in* → Ø 4.750 in* →		Microlog @ 22.58 ft SDL Caliper @ 22.40 ft SDL @ 22.39 ft	10.81 ft	30.40 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	11078326	135.00	6.25	56.77	300.00
GTET	Gamma Telemetry Tool	11259758	165.00	8.52	48.25	60.00
CSNG	Compensated Spectral Natural Gamma	10846351	114.00	8.17	40.08	15.00
DSNT	Dual Spaced Neutron	11219332	174.00	9.69	30.40	60.00
DCNT	DSN Decentralizer	10935690	6.60	5.13	* 33.73	300.00
SDLT	Spectral Density Tool	10951319	360.00	10.81	19.58	60.00
MICP	Microlog Pad	10951319	8.00	1.00	* 22.08	60.00
SDLP	Density Insite Pad	M319P593	65.00	2.55	* 21.79	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11532584	50.00	5.03	14.55	300.00
ACRt	Array Compensated True Resistivity	E2584-S2585	200.00	14.22	0.33	300.00
SP	SP Ring	1	0.00	0.25	* 1.61	300.00
RSOF	Regal Standoff 6.75in	01	20.00	0.52	* 13.24	300.00
BLNS	Bull Nose	01	5.00	0.33	0.00	300.00
<b>Total</b>			<b>1,302.60</b>	<b>63.02</b>		
* Not included in Total Length and Length Accumulation.						
Data: RUFF_C08_27D\0001 NOBLE\002 26-Nov-11 22:03 Up @7197.0f						Date: 26-Nov-11 22:43:36

COMPANY	NOBLE ENERGY		
WELL	RUFF C08-27D		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO
HALLIBURTON		COMPENSATED SPECTRAL NATURAL GAMMA	



