HALLIBURTON

DUAL SPACED NEUTRON SPECTRAL DENSITY ARRAY COMPENSATED TRUE RESISTIVITY

COMPANY KINDER MORGAN CO2 Co. L.P.
WELL COW CANYON CS #1
FIELD/BLOCK MCELMO DOME
COUNTY MONTEZUMA
STATE CO

COMPANY **KINDER MORGAN CO2 Co. L.P.**

WELL **COW CANYON CS #1**

FIELD/BLOCK **MCELMO DOME**

COUNTY **MONTEZUMA** STATE **CO**

API No. 05-083-06709-0000

Location SURFACE HOLE LOCATION:
1350' FNL & 210' FWL

LATITUDE: 37.52617
LONGITUDE: -108.93944

Sect. 27 Twp. 38N Rge. 19W

Other Services:
RWCH
CSNG
XRMI
WSTT
DLLT

Permanent Datum	GL	Elev. 6459.0 ft	Elev.: K.B. 6482.0 ft
Log measured from	KB	, 23.0 ft above perm. Datum	D.F. 6482.0 ft
Drilling measured from	KB		G.L. 6459.0 ft

Date		06-Mar-14					
Run No.		ONE					
Depth - Driller		8660.00 ft					
Depth - Logger		8659.0 ft					
Bottom - Logged Interval		8657.0 ft					
Top - Logged Interval		8303.0 ft					
Casing - Driller		7.000 in	@ 8305.0 ft	@		@	
Casing - Logger		8303.0 ft					
Bit Size		6.000 in		@		@	
Type Fluid in Hole		WATER-BASED MUD					
Density	Viscosity	8.6 ppg	29.00 s/qt				
PH	Fluid Loss	8.70 pH					
Source of Sample		MUD TANK					
Rm @ Meas. Temperature		0.163 ohmm	@ 62.50 degF	@		@	
Rmf @ Meas. Temperature		0.17 ohmm	@ 65.20 degF	@		@	
Rmc @ Meas. Temperature		N/A	@ N/A	@		@	
Source Rmf	Rmc	MEASURED	MEASURED				
Rm @ BHT		0.08 ohmm	@ 140.0 degF	@		@	
Time Since Circulation		8.4 hr					
Time on Bottom		06-Mar-14 12:53					
Max. Rec. Temperature		140.0 degF	@ 8660.0 ft	@		@	
Equipment	Location	11871076	GJ, CO				
Recorded By		P. DIMPFL					
Witnessed By		C. SLAUGH					

Fold here

Service Ticket No.: 901171182 API Serial No.: 05-083-06709-0000 PGM Version: WL INSITE R3.8.4 (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	ECCENT	N/A
		I - 11585787			
		S - 11585797			

EQUIPMENT DATA

	GAMMA	ACOUSTIC	DENSITY	NEUTRON
Run No.	ONE		ONE	ONE
Serial No.	11005602		10951300	10993888
Model No.	GTET		SDLT-I	DSNT-I
Diameter	3.625"		4.5"	3.625"
Detector Model No.	GTET		GAMMA-GAMMA	NEU-THERM
Type	SCINT		Cs137	Am241Be
Length	8"	LSA [Y/N]	5153GW	DSN-388
Distance to Source	18'	FWDA [Y/N]	1.5 Ci	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	8659	8303	REC	0 API	150 API				0.3	-0.1	2.71 g/cc	0.3	-0.1	LIME

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: RUN ONE: RWCH-GTET-CSNG--DSNT-SDLT--ACRT-BN RAN IN COMBINATION

RUN TWO: RWCH-GTET-WSTT-XRMI-BN RAN IN COMBINATION

RUN:THREE: RWCH-BRIDLE-CR-SP-BRIDLE-BS-GTET-CSNG-DLLT-MSFL-BN RAN IN COMBINATION

ANNULAR HOLE VOLUME CALCULATED USING 4.5 INCH CASING

BORHOLE RUGOSITY, TENSION PULLS, AND WASHOUTS MAY EFFECT LOG QUALITY AND REPEATABILITY

DSN DENCENTRALIZER NOT RUN DUE TO BIT SIZE

MUD PRESS WAS PERFORMED, HOWEVER, THE MUDCAKE RETRIEVED WAS NOT PLENTIFUL ENOUGH TO MEASURE ACCURATELY DUE TO LIGHTWEIGHT MUD

YOU CREW TODAY: T. RAFF B. CALDWELL RIG: NABORS M13

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, GRAND JUNCTION, CO (970) 523-3600

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PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	6.000	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	8.600	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	25000.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.163	ohmm
	SHARED	TRM	Temperature of Mud	62.5	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	65.0	degF
	SHARED	TD	Total Well Depth	8660.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	SHARED	BHSM	Borehole Size Master Tool	NONE	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa /	AFAC	Archie A factor	0.6200	

CrossPlot	AFAC	Archie A factor	0.6200	
Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GRSO	Gamma Tool Standoff	0.250	in
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
CSNG	CGOK	Process CSNG Data?	Yes	
CSNG	CENT	Is Tool Centralized?	No	
CSNG	GBOK	Gamma Enviromental Corrections?	Yes	
CSNG	BARF	Barite Correction Factor	1.00	
CSNG	ORDG	Use Fixed Gain	No	
CSNG	ORDO	Use Fixed Offset	No	
CSNG	ORDR	Use Fixed Resolution Degradation Factor	No	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	DNTP	Temperature Correction Type	None	
DSNT	DPRS	DSN Pressure Correction Type	None	
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
SDLT	CLOK	Process Caliper Outputs?	Yes	
SDLT Pad	DNOK	Process Density?	Yes	
SDLT Pad	DNOK	Process Density EVR?	No	
SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
ACRt Sonde	TPOS	Tool Position	Eccentered	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm

BOTTOM

Data: KIND_MOR_CS_1\0001 TRIPLE_CSNG\007 06-Mar-14 13:25 Up @8662.5f **Date: 06-Mar-14 14:18:37**

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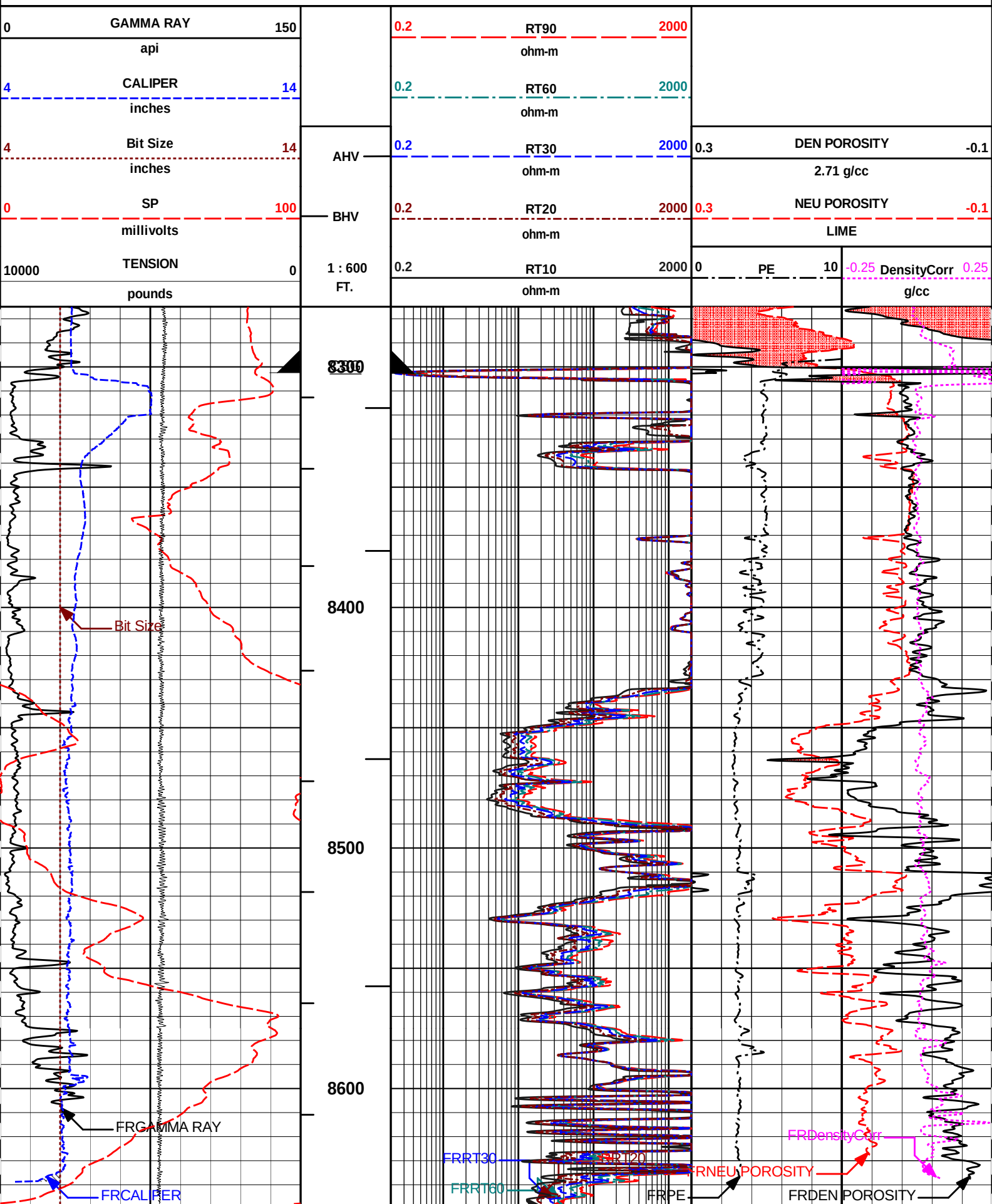
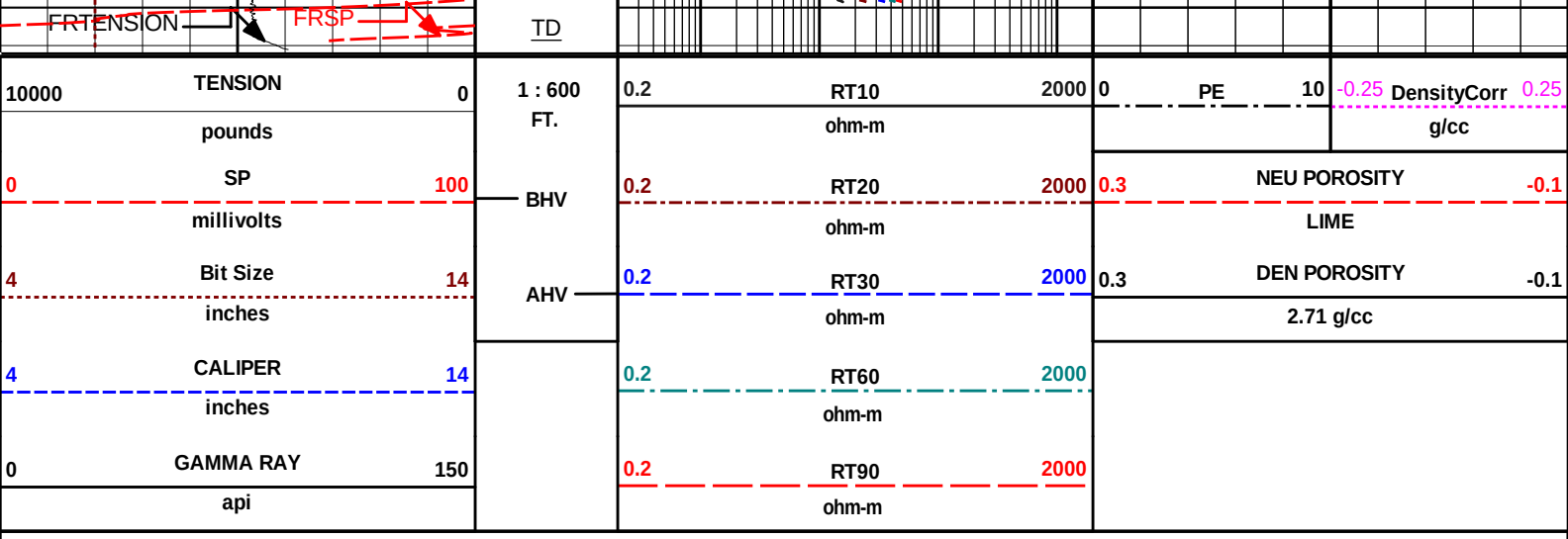
Plot Time: 06-Mar-14 17:32:14
Plot Range: 8275 ft to 8662.17 ft
Data: KIND_MOR_CS_1\Well Based\MAIN
Plot File: \\COMP\I_ENCANA_TRIPLE_2"

MAIN PASS 2" = 100'


0
GAMMA RAY
150
api
4
CALIPER
14
inches
4
Bit Size
14
inches
0
SP
100
millivolts
10000
TENSION
0
pounds
AHV
BHV
1 : 600
FT.
0.2
RT90
2000
ohm-m
0.2
RT60
2000
ohm-m
0.2
RT30
2000
ohm-m
0.2
RT20
2000
ohm-m
0.2
RT10
2000
ohm-m
0.3
DEN POROSITY
-0.1
2.71 g/cc
0.3
NEU POROSITY
-0.1
LIME
0
PE
10
-0.25
DensityCorr
0.25
g/cc
8300
8400
8500
8600
Bit Size
FRGAMMA RAY
FRCALIPER
FRRT30
FRRT60
FRRT20
FRPE
FRNEUPOROSITY
FRDensityCorr
FRDEN POROSITY



HALLIBURTON

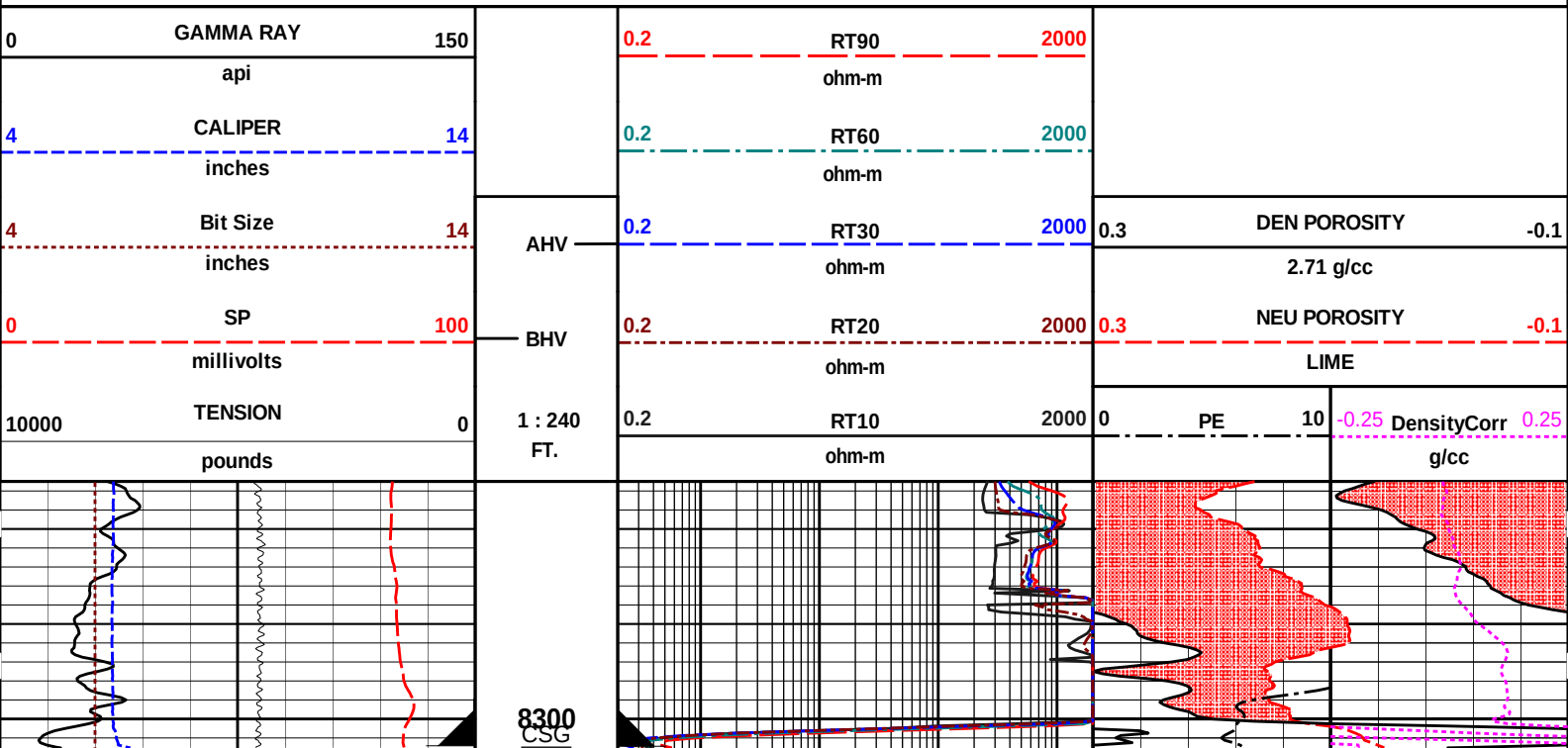
Plot Time: 06-Mar-14 17:32:16
Plot Range: 8275 ft to 8662.17 ft
Data: KIND_MOR_CS_1\Well Based\MAIN\
Plot File: \\COMP\I_ENCANA_TRIPLE_2"

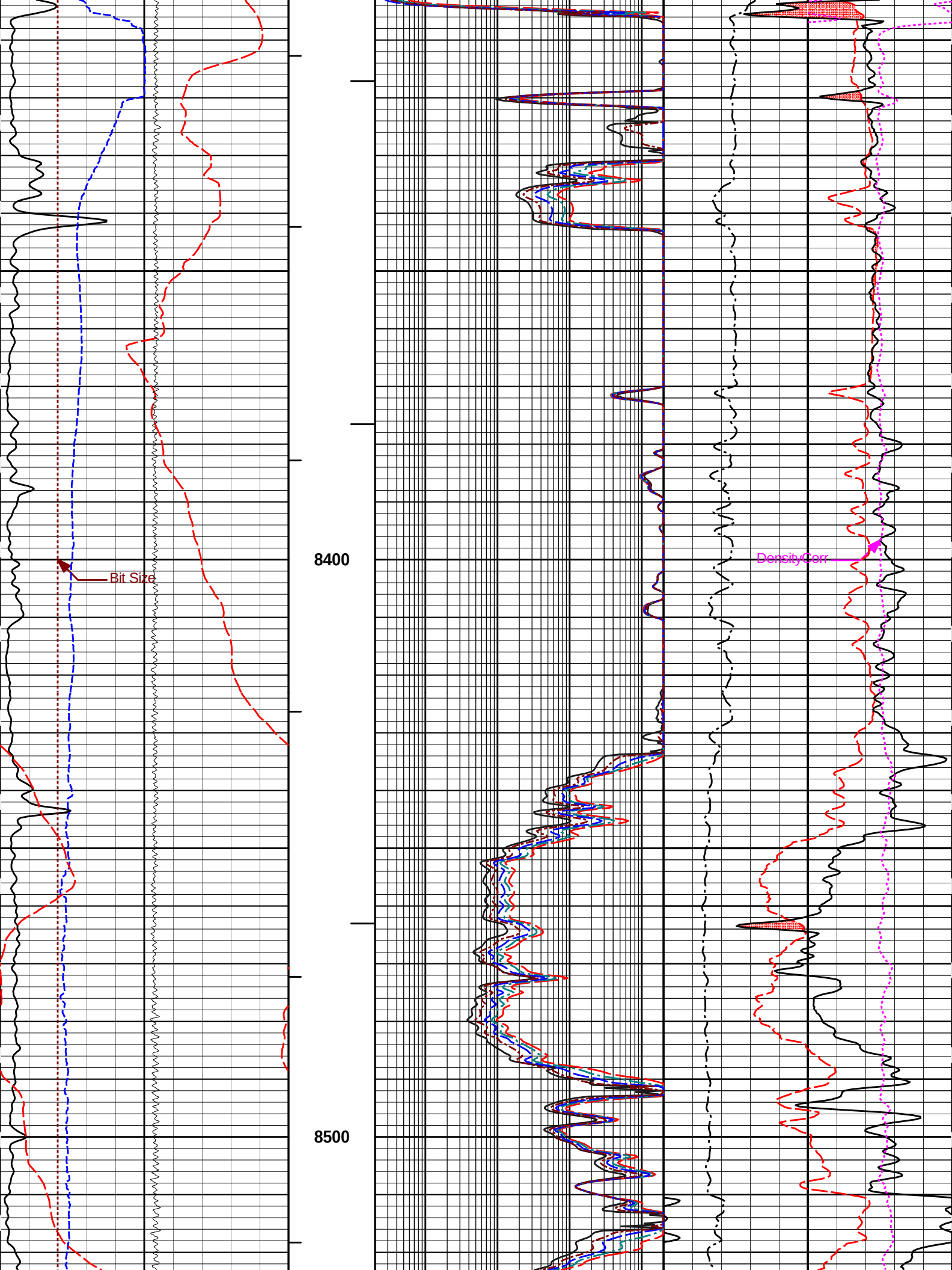
MAIN PASS 2" = 100'

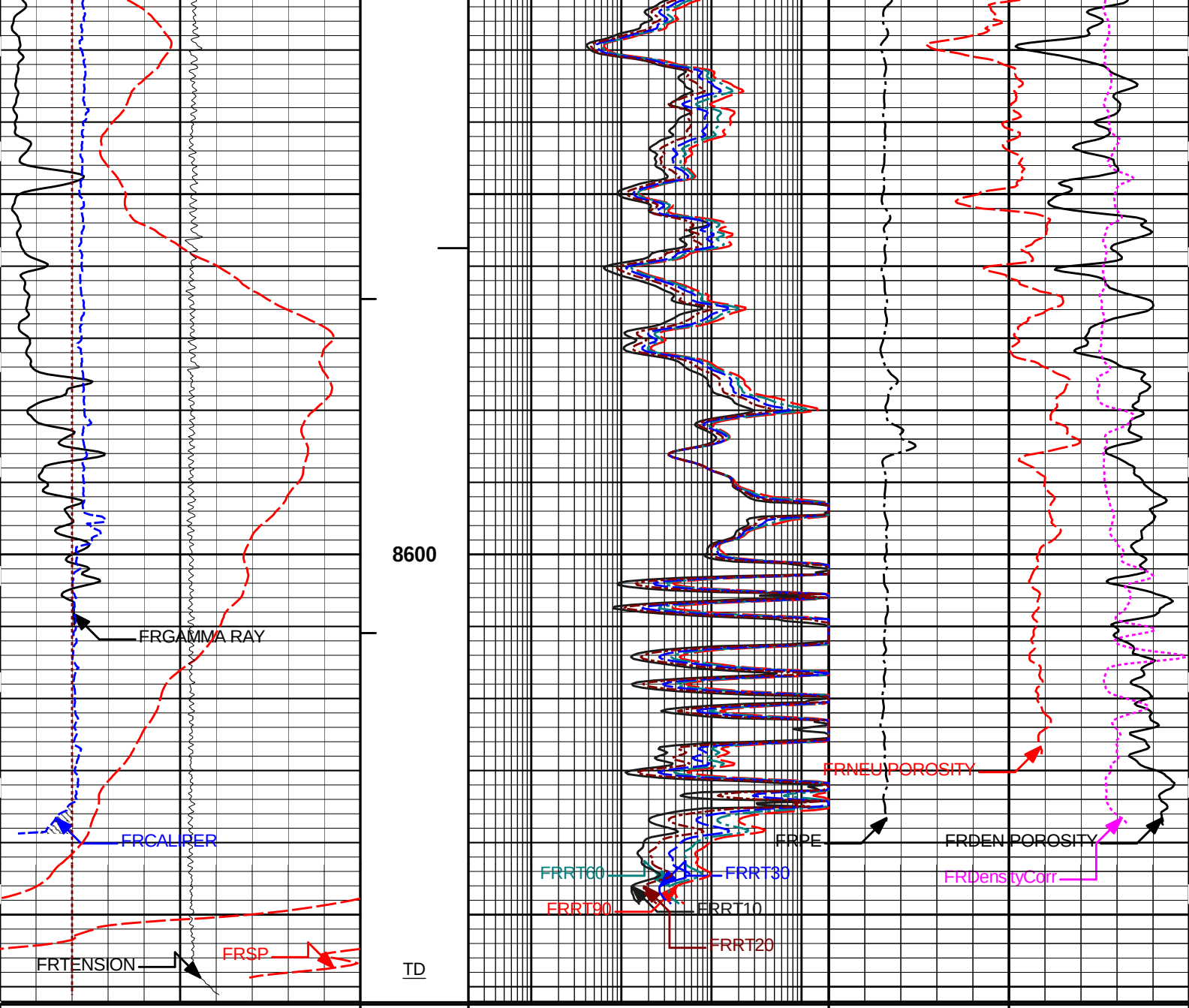
HALLIBURTON

Plot Time: 06-Mar-14 17:32:16
Plot Range: 8275 ft to 8662.17 ft
Data: KIND_MOR_CS_1\Well Based\MAIN\
Plot File: \\COMP\I_ENCANA_TRIPLE_M

MAIN PASS 5" = 100'




Bit Size
DensityCorr
8400
8500



10000 TENSION 0 pounds	1 : 240 FT.	0.2 RT10 2000 ohm-m
0 SP 100 millivolts	BHV	0.2 RT20 2000 ohm-m
4 Bit Size 14 inches	AHV	0.2 RT30 2000 ohm-m
4 CALIPER 14 inches		0.2 RT60 2000 ohm-m
0 GAMMA RAY 150 api		0.2 RT90 2000 ohm-m

0 PE 10	-0.25 DensityCorr 0.25 g/cc
0.3 NEU POROSITY -0.1 LIME	
0.3 DEN POROSITY -0.1 2.71 g/cc	

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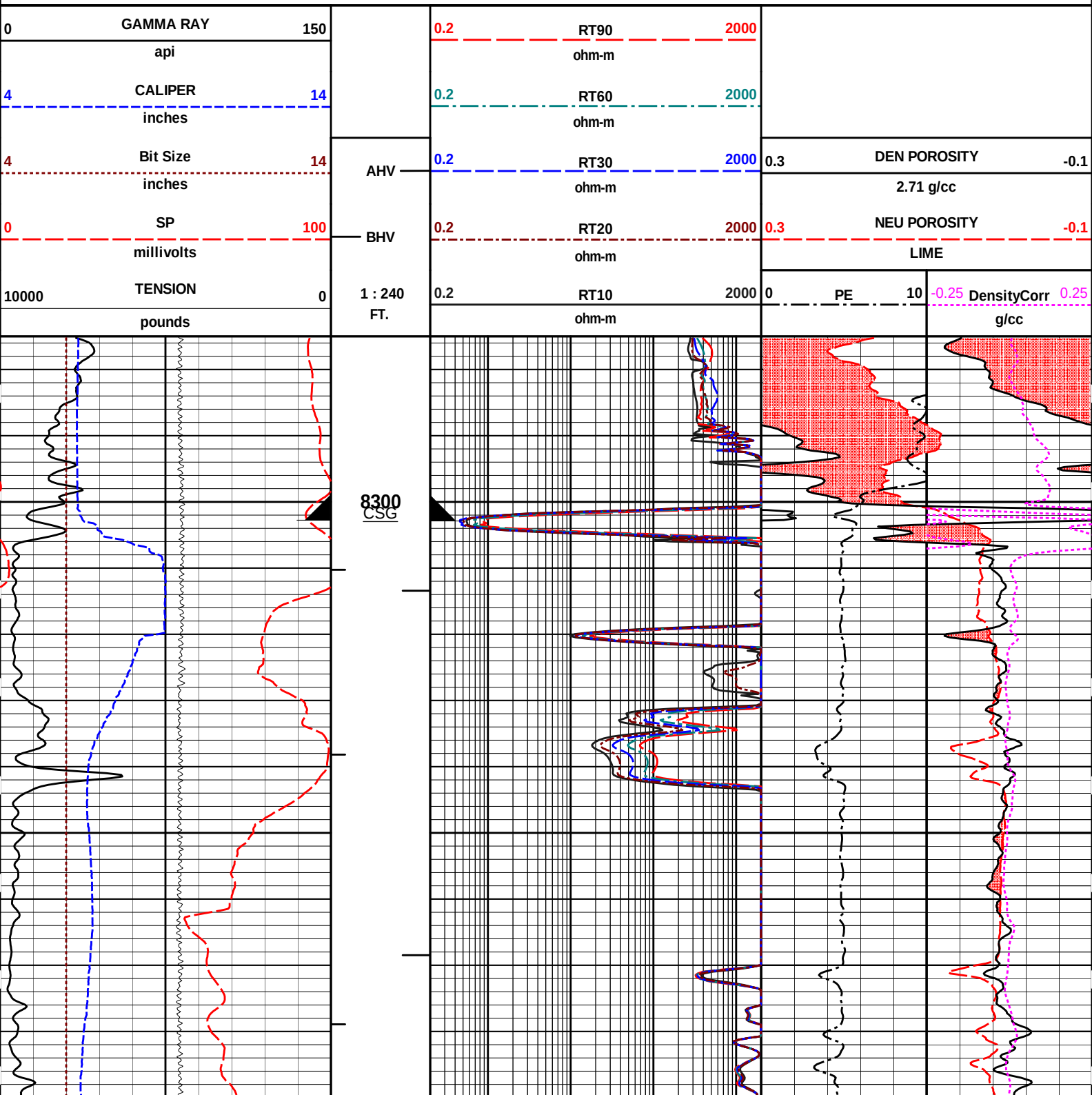
Plot Time: 06-Mar-14 17:32:19
Plot Range: 8275 ft to 8662.17 ft
Data: KIND_MOR_CS_1\Well Based\MAIN\
Plot File: \\COMP\I_ENCANA_TRIPLE_M

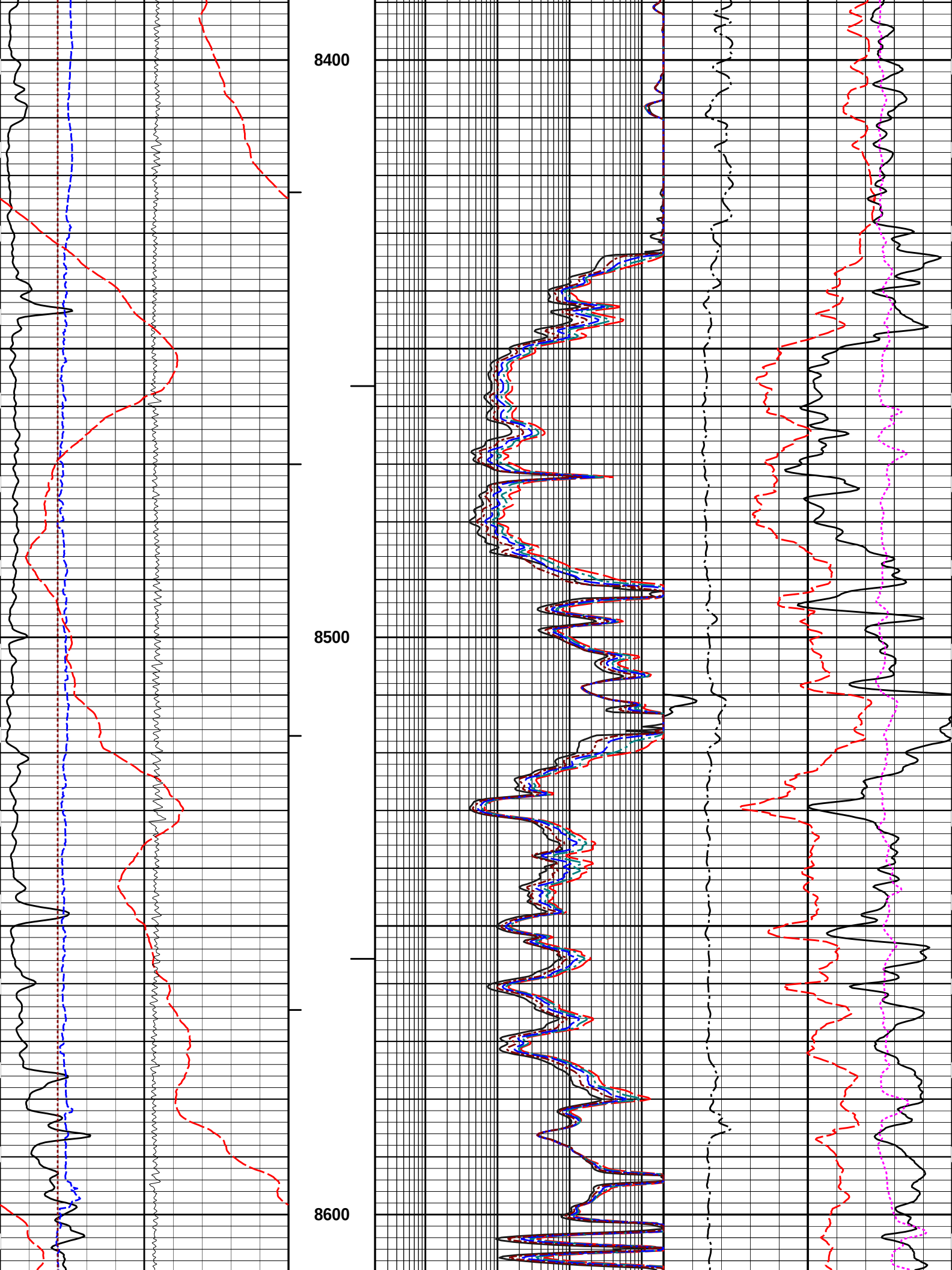
MAIN PASS 5" = 100'

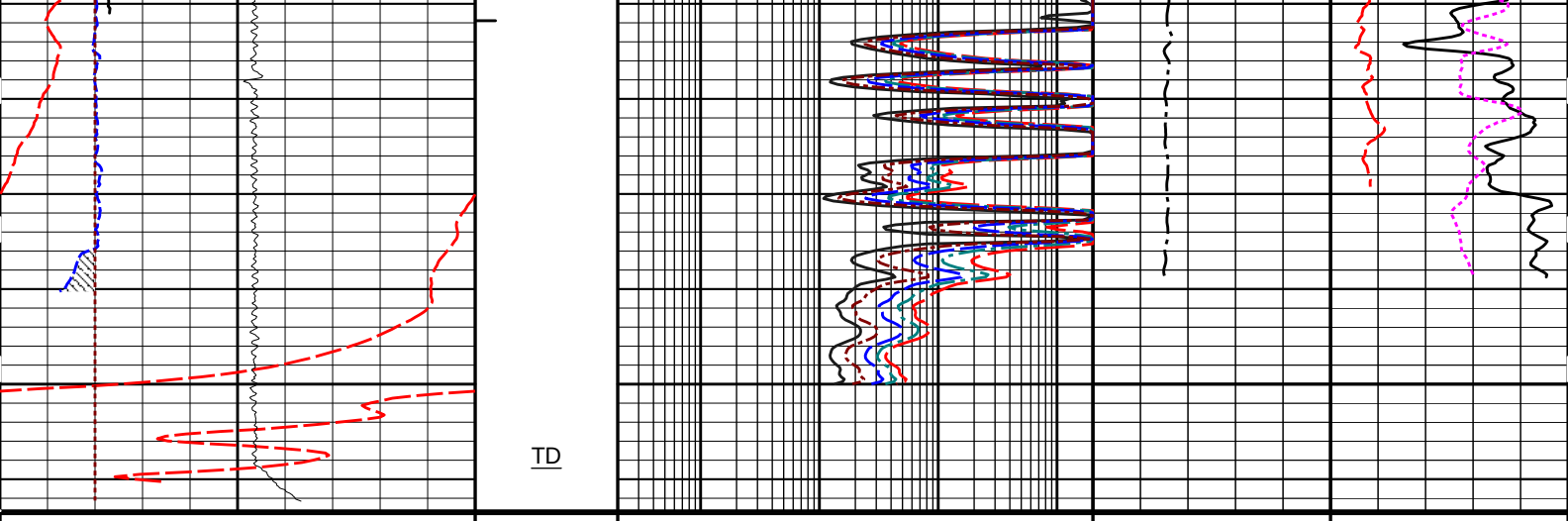
HALLIBURTON

Plot Time: 06-Mar-14 17:32:19
Plot Range: 8275 ft to 8663.33 ft
Data: KIND_MOR_CS_1\Well Based\REPEAT\
Plot File: \\COMP\I_ENCANA_TRIPLE_M

REPEAT PASS 5" = 100'




8400
8500
8600



10000	TENSION	0	1 : 240 FT.	0.2	RT10	2000	0 PE 10	-0.25 DensityCorr 0.25
	pounds				ohm-m			g/cc
0	SP	100	BHV	0.2	RT20	2000	0.3 NEU POROSITY	-0.1
	millivolts				ohm-m		LIME	
4	Bit Size	14	AHV	0.2	RT30	2000	0.3 DEN POROSITY	-0.1
	inches				ohm-m		2.71 g/cc	
4	CALIPER	14		0.2	RT60	2000		
	inches				ohm-m			
0	GAMMA RAY	150		0.2	RT90	2000		
	api				ohm-m			

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Plot Time: 06-Mar-14 17:32:21
Plot Range: 8275 ft to 8663.33 ft
Data: KIND_MOR_CS_1\Well Based\REPEAT\
Plot File: \\COMP\I_ENCANA_TRIPLE_M

REPEAT PASS 5" = 100'

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CUSTOMER EVENT LOG

Event Type	Time & Date	Depth (ft)	Event Description
	06-Mar-14 12:10:55	1963.50	Logging 001 06-Mar-14 12:10 Dn @1963.5f
	06-Mar-14 12:18:56	3795.18	Halting 001 06-Mar-14 12:10 Dn @1963.5f
	06-Mar-14 12:19:25	3834.50	Logging 002 06-Mar-14 12:19 Dn @3834.5f
	06-Mar-14 12:40:00	8200.54	Halting 002 06-Mar-14 12:19 Dn @3834.5f
	06-Mar-14 12:40:13	8200.75	Logging 003 06-Mar-14 12:40 Up @8200.8f
	06-Mar-14 12:40:36	8198.22	Halting 003 06-Mar-14 12:40 Up @8200.8f
	06-Mar-14 12:40:56	8195.75	Logging 004 06-Mar-14 12:40 Up @8195.8f
	06-Mar-14 12:46:08	7968.00	Halting 004 06-Mar-14 12:40 Up @8195.8f
	06-Mar-14 12:47:42	7994.00	Logging 005 06-Mar-14 12:47 Dn @7994.0f
	06-Mar-14 12:53:28	8646.56	Halting 005 06-Mar-14 12:47 Dn @7994.0f
	06-Mar-14 12:53:49	8664.00	Logging 006 06-Mar-14 12:53 Up @8664.0f
	06-Mar-14 13:21:24	8261.47	Halting 006 06-Mar-14 12:53 Up @8664.0f
	06-Mar-14 13:25:24	8662.50	Logging 007 06-Mar-14 13:25 Up @8662.5f

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CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11005602**	**Reference Calibration Date:**	**06-Mar-14 09:59:43**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**06-Mar-14 10:04:33**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**

Calibrator Source S/N: MP051807-04
Calibrator API Reference:239.00 api
Equivalent Calibrator API Reference:243.2 api

Measurement	Measured	Calibrated	Units
Background	21.3	21.2	api
Background + Calibrator	265.1	264.4	api
Calibrator	243.8	243.2	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11005602**	**Reference Calibration Date:**	**06-Mar-14 10:04:33**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**06-Mar-14 10:16:22**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**

Calibrator Source S/N: MP051807-04
Calibrator API Reference:239.00 api
Equivalent Calibrator API Reference:243.2 api

Field Verification	Shop	Field	Units
Background	21.2	22.3	api
Background + Calibrator	264.4	261.4	api
Calibrator	243.2	239.1	api

Shop	Field	Difference	Tolerance
243.2	239.1	4.1	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name:	**CSNG - 11568970**	**Reference Calibration Date:**	**29-Jan-14 19:16:22**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**01-Mar-14 11:28:14**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**
Source SN:	**MP051807-04**		

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.3	23.5	Channel #
583 KEV Peak Channel #	52.3	52.3	Channel #
2614 KEV Peak Channel #	216.7	216.9	Channel #
Calibrate Temperature	55.5	53.2	degF

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

Blanket Reference Value: 239.00 API
Calibrator Value: 271.4 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	2190.1	CPS	319.4	412.1	API
Background	747.4	CPS	48.0	140.6	API

Gamma Ray Gain: 0.95
Expected Gain Range: 0.85 - 1.15
Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION

Tool Name:	**CSNG - 11568970**	**Reference Calibration Date:**	**01-Mar-14 11:28:14**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**06-Mar-14 10:14:32**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**
Source SN:			

TITANIUM CASE	Shop	Field	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.5	23.2	Channel #
583 KEV Peak Channel #	52.3	52.1	Channel #
2614 KEV Peak Channel #	216.9	215.7	Channel #
Calibrate Temperature	53.2	65.4	degF

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

Blanket Reference Value: 239.00 API
Calibrator Value: 271.4 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1349.0	CPS	412.1	289.2	API
Background	83.1	CPS	140.6	17.8	API

Gamma Ray Gain: 1.08
Expected Gain Range: 0.85 - 1.15
Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 10993888**	**Reference Calibration Date:**	**22-Jan-14 09:45:09**
Engineer:	**B. RIDDEL**	**Calibration Date:**	**24-Feb-14 09:25:16**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**

Logging Source S/N: DSN-388
Tank Serial Number: GJ WATER TANK
Reference value assigned to Tank: 52.750
Snow Block S/N: GJ
Calibration Tank Water Temperature: 62 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	1.002	0.998	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):	0.2181	0.2169	0.0012	+/- 0.0020
Calibrated Ratio:	9.97	9.93	0.041	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0725	0.02000 - 0.09000

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

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name:	**DSNT - 10993888**	**Reference Calibration Date:**	**24-Feb-14 09:25:16**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**06-Mar-14 10:32:54**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**

Logging Source S/N: DSN-388

Snow Block S/N: GJ

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0725	0.0721	-0.0004	+/- 0.0150

PASS/FAIL SUMMARY	
Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 10951300**	**Reference Calibration Date:**	**31-Jan-14 12:48:44**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**26-Feb-14 13:54:45**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 10993888**		

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1687.82	-1465.93	-7000.00 - -1000.00
Pad Gain	0.0003601	0.0003676	0.000200 - 0.000600
Arm Offset	-3832.47	-3800.64	-5000.00 - 3000.00
Arm Gain	0.0005431	0.0005413	0.000300 - 0.000700
Arm Power	-0.000003815	-0.000003947	-0.000010000 - 0.000010000

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

Tool Diameter: 4.50 in

CALIBRATION RINGS				
	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change

Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	1.88	2.00	0.12	+/- 0.20
Medium Ring (in)	3.59	3.75	0.16	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.40	6.50	0.10	+/- 0.20
Medium Ring (in)	8.16	8.25	0.09	+/- 0.20
Large Ring (in)	14.96	15.00	0.04	+/- 0.20

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

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed

SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - 10951300
Reference Calibration Date: 26-Feb-14 13:54:45
Engineer: P. DIMPFL
Calibration Date: 06-Mar-14 10:29:23
Software Version: WL INSITE R3.8.4 (Build 5)
Calibration Version: 1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.82	0.07	+/- 0.10
Ring Diameter	8.25	8.24	-0.01	+/- 0.15

PASS/FAIL SUMMARY	
Pad Extension Check:	Passed
Diameter Check:	Passed

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 10865876
Reference Calibration Date: 22-Jan-14 12:09:55
Engineer: B. RIDDEL
Calibration Date: 26-Feb-14 10:13:53
Software Version: WL INSITE R3.8.4 (Build 5)
Calibration Version: 1

Logging Source S/N: 5153GW
Aluminum Block S/N: 63094 Density: 2.608g/cc Pe: 3.230
Magnesium Block S/N: 63387 Density: 1.681g/cc Pe: 2.600

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0679	1.0249	0.90 - 1.10
Near Dens Gain	1.0263	1.0139	0.90 - 1.10
Near Peak Gain	1.0085	1.0002	0.90 - 1.10
Near Lith Gain	0.9820	0.9746	0.90 - 1.10
Far Bar Gain	1.0156	1.0136	0.90 - 1.10
Far Dens Gain	1.0039	1.0020	0.90 - 1.10
Far Peak Gain	0.9957	0.9986	0.90 - 1.10
Far Lith Gain	0.9807	0.9808	0.90 - 1.10
Near Bar Offset	-0.4414	-0.0430	NONE
Near Dens Offset	-0.0603	0.0534	NONE
Near Peak Offset	0.0841	0.1574	NONE
Near Lith Offset	0.2867	0.3592	NONE
Far Bar Offset	-0.0183	0.0047	NONE

Far Dens Offset	0.0684	0.0906	NONE
Far Peak Offset	0.1276	0.1097	NONE
Far Lith Offset	0.2196	0.2355	NONE

Near Bar Background	877.31	876.04	700 - 1450
Near Dens Background	293.39	292.70	230 - 480
Near Peak Background	130.58	129.46	100 - 210
Near Lith Background	158.21	157.87	125 - 260
Far Bar Background	539.77	537.81	450 - 900
Far Dens Background	212.82	211.21	175 - 345
Far Peak Background	84.04	82.35	70 - 140
Far Lith Background	86.52	87.03	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.684	1.681	-0.003	+/- 0.015
Pe	2.619	2.552	-0.067	+/- 0.150
ALUMINUM				
Density (g/cc)	2.604	2.608	0.004	+/- 0.01500
Pe	3.187	3.172	-0.015	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0005	+/- 0.0110	-0.0000	+/- 0.0140
Magnesium Block	-0.0013	+/- 0.0110	-0.0019	+/- 0.0140
Aluminum Block	-0.0015	+/- 0.0110	-0.0014	+/- 0.0140
Resolution	9.03	6.00 - 11.50	9.39	6.00 - 11.50
Internal Verifier(B+D+P+L)	1456	1200 - 2700	918	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

SPECTRAL DENSITY FIELD CHECK

Tool Name:	**SDLT Pad - 10865876**	**Reference Calibration Date:**	**26-Feb-14 10:13:53**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**06-Mar-14 10:30:58**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**

Pad Temperature: 54.2 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1456.067	1452.665	-3.402	15.390

Far (B+D+P+L) cps	918.414	918.693	0.279	16.429
Near Resolution	9.03	9.02	-0.010	0.50
Far Resolution	9.39	9.60	0.210	1.00

PASS/FAIL SUMMARY	
Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt Sonde - 11585797
Reference Calibration Date: 27-Jan-14 10:27:38
Engineer: P. DIMPFL
Calibration Date: 28-Feb-14 10:57:00
Software Version: WL INSITE R3.8.4 (Build 5)
Calibration Version: 1
Host Tool Name: ACRt Instrument - 11585787

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A2 (50")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A3 (29")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A4 (17")	0.95	1.00	1.05	0.95	1.00	1.05	0.95	1.00	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.01	1.05	0.95	1.01	1.05
A6 (6")	N/A	N/A	N/A	0.95	1.00	1.05	0.95	1.00	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	-2.41	2	-6	-4.17	-2	-8	-5.42	-2
A2 (50")	-7	-1.92	0	-7	-3.44	0	-7	-4.78	0
A3 (29")	-27	-15.76	-9	-9	-4.34	-3	-7	-3.32	-1
A4 (17")	-180	-117.88	-60	-45	-34.98	-15	-39	-26.87	-13
A5 (10")	N/A	N/A	N/A	-150	-95.61	-50	-80	-49.16	-10
A6 (6")	N/A	N/A	N/A	175	310.19	525	90	157.45	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.85	1.3
36K	1.0	1.83	2.0
72K	1.0	1.10	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.01	1.05

PASS/FAIL SUMMARY	
GAIN RANGE CHK	PASS
SONDE OFFSET RANGE CHK	PASS
Tx CURRENT GAIN	PASS
Rmud VERIFICATION	PASS

TOOL OK TO LOG

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units

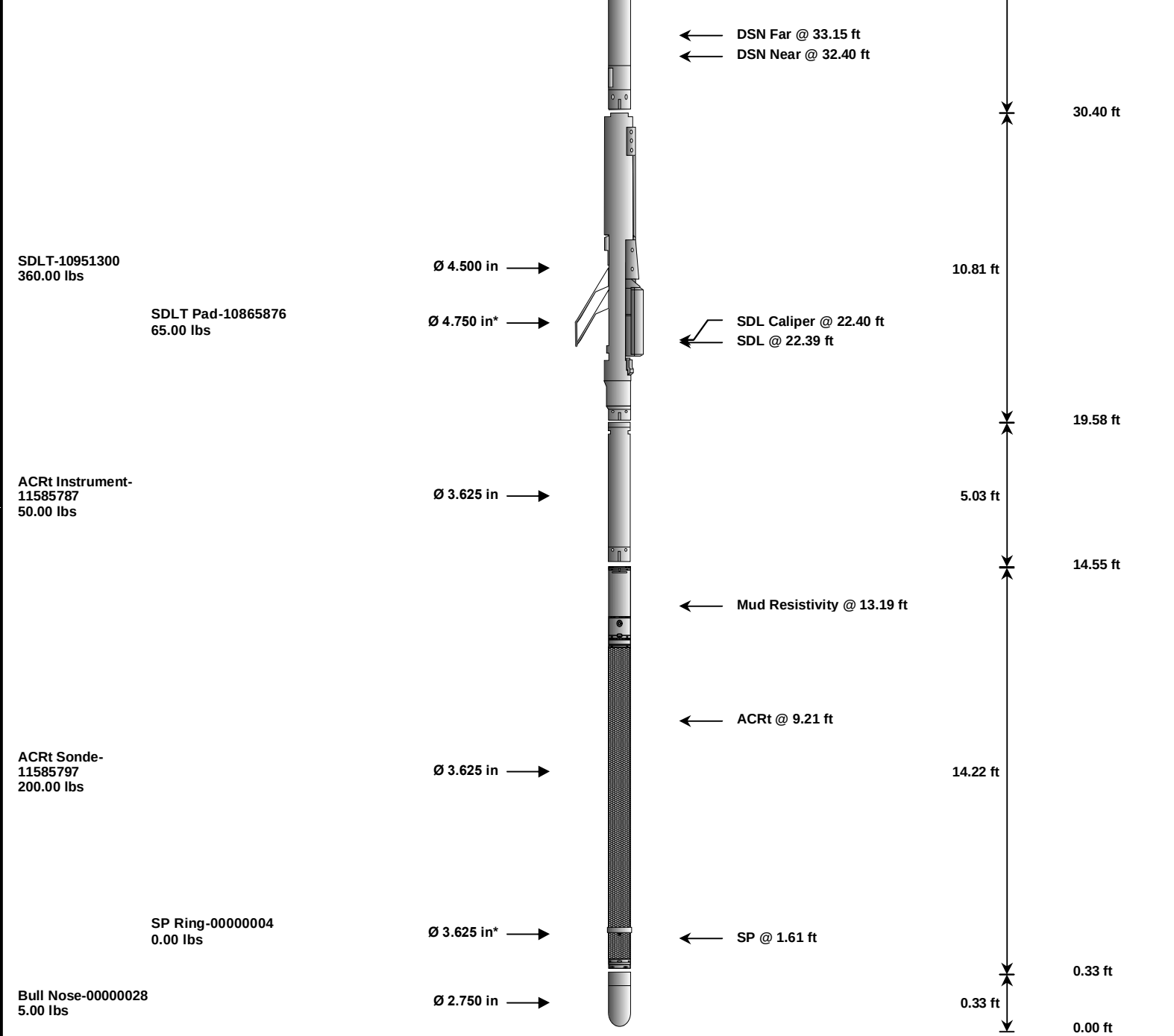
GTET-11005602						
Gamma Ray Calibrator	243.2	239.1	----------	4.1	+/- 9.00	api
CSNG-11568970						
60 KEV Peak Channel #	48.0	48.0	----------	0.0	----------	Channel #
239 KEV Peak Channel #	23.5	23.2	----------	0.3	----------	Channel #
583 KEV Peak Channel #	52.3	52.1	----------	0.2	----------	Channel #
2614 KEV Peak Channel #	216.9	215.7	----------	1.2	----------	Channel #
DSNT-10993888						
Snow-Block Porosity	0.0725	0.0721	----------	0.0004	+/- 0.0150	decp
SDLT-10951300						
Pad Extension	3.75	3.82	----------	-0.07	+/-0.10	in
Ring Diameter	8.25	8.24	----------	0.01	+/-0.15	in
SDLT Pad-10865876						
Near(B+D+P+L)	1456.067	1452.665	----------	3.402	+/-15.390	cps
Far(B+D+P+L)	918.414	918.693	----------	-0.279	+/-16.429	cps
ACRt Sonde-11585797						
Mud Cell	1.01	----------	----------	0.00	----------	ohm-m

Data: KIND_MOR_CS_1\0001 TRIPLE_CSNG\007 06-Mar-14 13:25 Up @8662.5f **Date: 06-Mar-14 14:19:07**

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						63.02 ft
RWCH-A032 135.00 lbs		Ø 3.625 in		Load Cell @ 59.34 ft BH Temperature @ 58.77 ft	6.25 ft	
						56.77 ft
GTET-11005602 165.00 lbs		Ø 3.625 in		GammaRay @ 50.71 ft	8.52 ft	
						48.25 ft
CSNG-11568970 114.00 lbs	UnivWearRing3.6-11568970 5.00 lbs	Ø 4.200 in* Ø 3.625 in		CSNG @ 42.62 ft	8.17 ft	
						40.08 ft
DSNT-10993888 174.00 lbs		Ø 3.625 in			9.69 ft	



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	A032	135.00	6.25		56.77	300.00
GTET	Gamma Telemetry Tool	11005602	165.00	8.52		48.25	60.00
CSNG	Compensated Spectral Natural Gamma	11568970	114.00	8.17		40.08	15.00
UWR3P6	Universal Wear Ring 3 5-8 inch	11568970	5.00	0.35	*	44.16	300.00
DSNT	Dual Spaced Neutron	10993888	174.00	9.69		30.40	60.00
SDLT	Spectral Density Tool	10951300	360.00	10.81		19.58	60.00
SDLP	Density Insite Pad	10865876	65.00	2.55	*	21.79	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11585787	50.00	5.03		14.55	300.00
ACRt	Array Compensated True Resistivity Sonde Section	11585797	200.00	14.22		0.33	300.00
SP	SP Ring	00000004	0.00	0.25	*	1.61	300.00
BLNS	Bull Nose	00000028	5.00	0.33		0.00	300.00
Total			**1,273.00**	**63.02**			

* Not included in Total Length and Length Accumulation.

Data: KIND_MOR_CS_1\0001 TRIPLE_CSNG\IDLE **Date: 06-Mar-14 11:54:22**

COMPANY	**KINDER MORGAN CO2 Co. L.P.**

WELL	**COW CANYON CS #1**		
FIELD	**MCELMO DOME**		
COUNTY	**MONTEZUMA**	STATE	**CO**

HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
ARRAY COMPENSATED
TRUE RESISTIVITY