DUAL SPACED NEUTRON
SPECTRAL DENSITY
DUAL LATEROLOG
MICRO-SPHERICALLY
FOCUSED LOG

COMPANY	KINDER MORGAN CO2 Co. L.P.
WELL	GOODMAN POINT 27
FIELD/BLOCK	MCELMO DOME
COUNTY	MONTEZUMA
STATE	CO

COMPANY KINDER MORGAN CO2 Co. L.P.

WELL GOODMAN POINT 27

FIELD/BLOCK MCELMO DOME

COUNTY MONTEZUMA **STATE** CO

API No. 05083067170000

Location
SURFACE HOLE LOCATION:
935' FSL & 2105' FEL
BOTTOM HOLE LOCATION:
2225' FNL & 1096' FWL
LATITUDE: 37.373670
LONGITUDE: -108.761870

Other Services:
TPL
CSNG
WSTT
XRMI

Sect. 18 Twp. 36N Rge. 17W

Permanent Datum	GL	Elev. 7080.0 ft	Elev.: K.B.	7102.5 ft
Log measured from	KB	, 22.5 ft above perm. Datum	D.F.	7102.5 ft
Drilling measured from	KB		G.L.	7080.0 ft

Date	24-Aug-14		
Run No.	ONE		
Depth - Driller	8125.00 ft		
Depth - Logger	8073.0 ft		
Bottom - Logged Interval	8073.0 ft		
Top - Logged Interval	7400.0 ft		
Casing - Driller	7476.000 in @ 7476.0 ft	@	@
Casing - Logger	7472.0 ft		
Bit Size	6.000 in	@	@
Type Fluid in Hole	Water Based Mud		
Density / Viscosity	8.5 ppg / 29.00 s/qt		
PH / Fluid Loss	7.40 pH / 0.0 cptm		
Source of Sample	MUD TANK		
Rm @ Meas. Temperature	0.28 ohmm @ 65.20 degF	@	@
Rmf @ Meas. Temperature	N/A @ N/A	@	@
Rmc @ Meas. Temperature	N/A @ N/A	@	@
Source Rmf / Rmc	N/A / N/A		
Rm @ BHT	0.12 ohmm @ 160.0 degF	@	@
Time Since Circulation	24.3 hr		
Time on Bottom	24-Aug-14 21:51		
Max. Rec. Temperature	160.0 degF @ 8073.0 ft	@	@
Equipment / Location	11871076 / GJ, CO		
Recorded By	P. DIMPFL		
Witnessed By	C. SLAUGH		

Fold here

Service Ticket No.: 901604134 API Serial No.: 05083067170000 PGM Version: WL INSITE R4.2.0 (Build 2)

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	DLLT	N/A	CENT	N/A
	P744M864S19			
ONE	MSFL	SLIM PAD	CENT	N/A
	10281166			

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.	ONE	Run No.	ONE
Serial No.	11005602	Serial No.		Serial No.	10951300	Serial No.	10993888
Model No.	GTET	Model No.		Model No.	SDLT-I	Model No.	DSNT-I
Diameter	3.625"	No. of Cent.		Diameter	4.5"	Diameter	3.625"
Detector Model No.	GTET	Spacing		Log Type	GAMMA-GAMMA	Log Type	NEU-THERM
Type	SCINT			Source Type	Cs137	Source Type	Am241Be
Length	8"	LSA [Y/N]		Serial No.	5153GW	Serial No.	DSN-388
Distance to Source	N/A	FWDA [Y/N]		Strength	1.5 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	8073	7430	REC	0 API	150 API				30 %	-10 %	2.71 g/cc	30 %	-10 %	LIME

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: RUN ONE: CONNECTORSUB/FLEX/DTDD/HDDS/BRIDLE/CR/SP/BRIDLE/BS/GTET/FLEX/DLLT/MSFL/BN RAN IN COMBINATION

RUN TWO: CONNECTORSUB/FLEX/DTDD/HDDS/GTET/CSNG/FLEX/DSNT/SDLT/BN

ANNULAR HOLE VOLUME CALCULATED USING 4.5-INCH CASING

ON RUN TWO, TOOL BRIDGED OUT AT 7997', WE WERE TOLD TO LOG OUT FROM THERE.

CHLORIDES REPORTED TO BE 24,000 ppm

MUD PRESS PERFORMED, NO MUDCAKE/FILTRATE WAS PRODUCED

DOWNLOG AND REPEAT NOT PERFORMED DUE TO TOOLPUSH CONVEYANCE.

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

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

HALLIBURTON

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	8.500	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	SHARED	BSAL	Borehole salinity	35000.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.284	ohmm
	SHARED	TRM	Temperature of Mud	65.2	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	8125.00	ft
	SHARED	BHT	Bottom Hole Temperature	160.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / 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	
	Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
	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	
	GTET	BHSM	Borehole Size Source Tool	SDLT	
	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	
	CSNG	BHSM	Borehole Size Source Tool	SDLT	
	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	
	DSNT	BHSM	Borehole Size Source Tool	SDLT	
	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
	SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
BOTTOM					

HALLIBURTON

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	

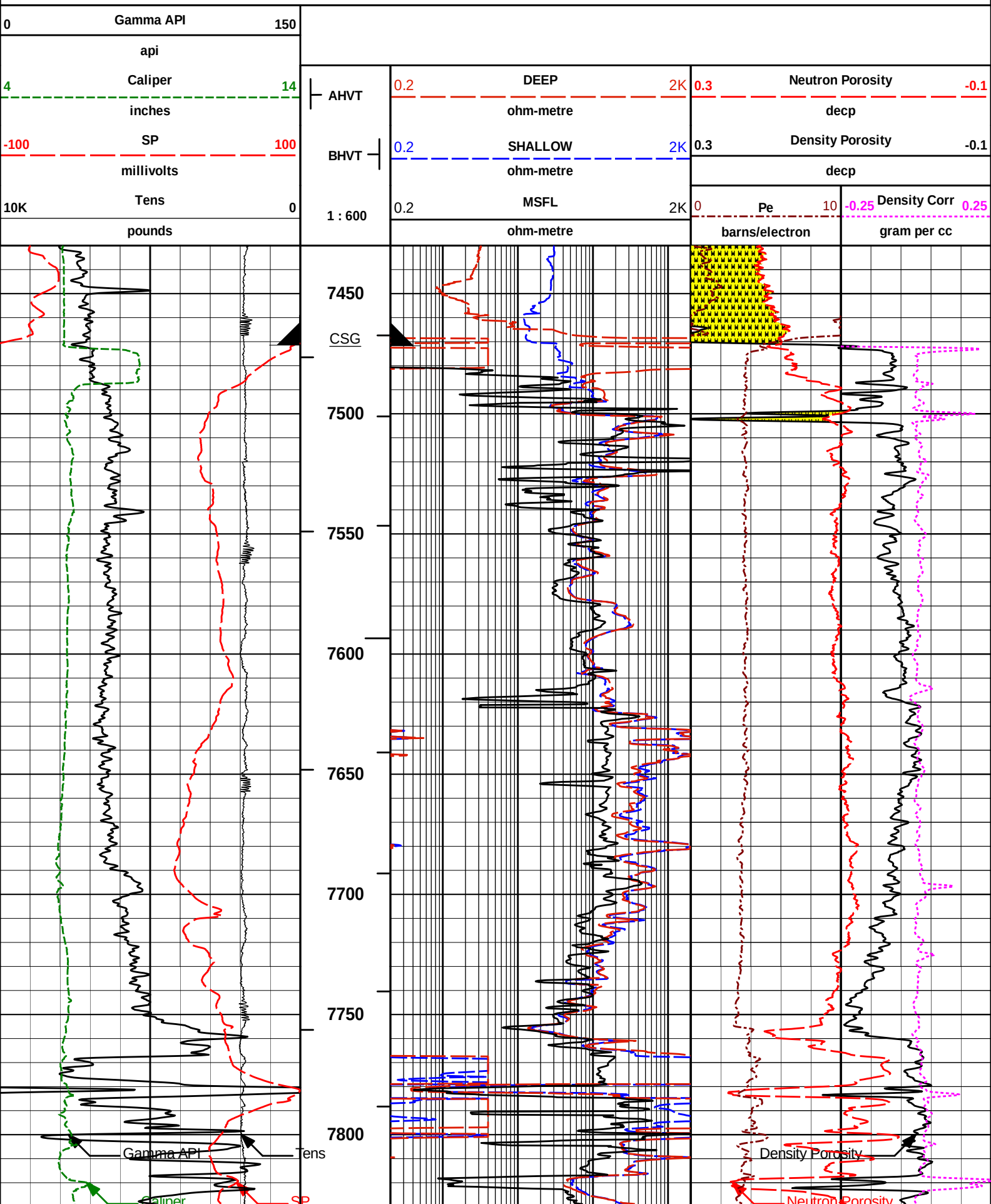
SHARED	MDBS	Mud Base	Water	
SHARED	MDWT	Borehole Fluid Weight	8.500	ppg
SHARED	WAGT	Weighting Agent	Natural	
SHARED	BSAL	Borehole salinity	35000.00	ppm
SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
SHARED	RMUD	Mud Resistivity	0.284	ohmm
SHARED	TRM	Temperature of Mud	65.2	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	8125.00	ft
SHARED	BHT	Bottom Hole Temperature	180.0	degF
SHARED	SVTM	Navigation and Survey Master Tool	NONE	
SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
SHARED	TEMM	Temperature Master Tool	NONE	
Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
Rwa / 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	
Rwa / CrossPlot	BHSM	Borehole Size Source Tool	MSFL	
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	
GTET	BHSM	Borehole Size Source Tool	MSFL	
DLLT-I Sonde	DLOK	Process Dual Laterolog?	Yes	
DLLT-I Sonde	DBOK	Process Dual Laterolog Borehole Corrections?	Yes	
DLLT-I Sonde	SBHD	Select Borehole Diam Source	Caliper	
DLLT-I Sonde	TPOS	Tool Position	Standoff	
DLLT-I Sonde	TMPC	Temperature Correction Type	Tool Value	
DLLT-I Sonde	DLOK	Calculate Dual Laterolog DI?	Yes	
DLLT-I Sonde	BHSM	Borehole Size Source Tool	MSFL	
MSFL	DLOK	Process MSFL?	Yes	
MSFL	SLPD	Use MSFL Slim Hole Pad?	Yes	
MSFL	SPDF	MSFL Slim Hole Pad K Factor	1.750	
MSFL	CLOK	Process Caliper Outputs?	Yes	

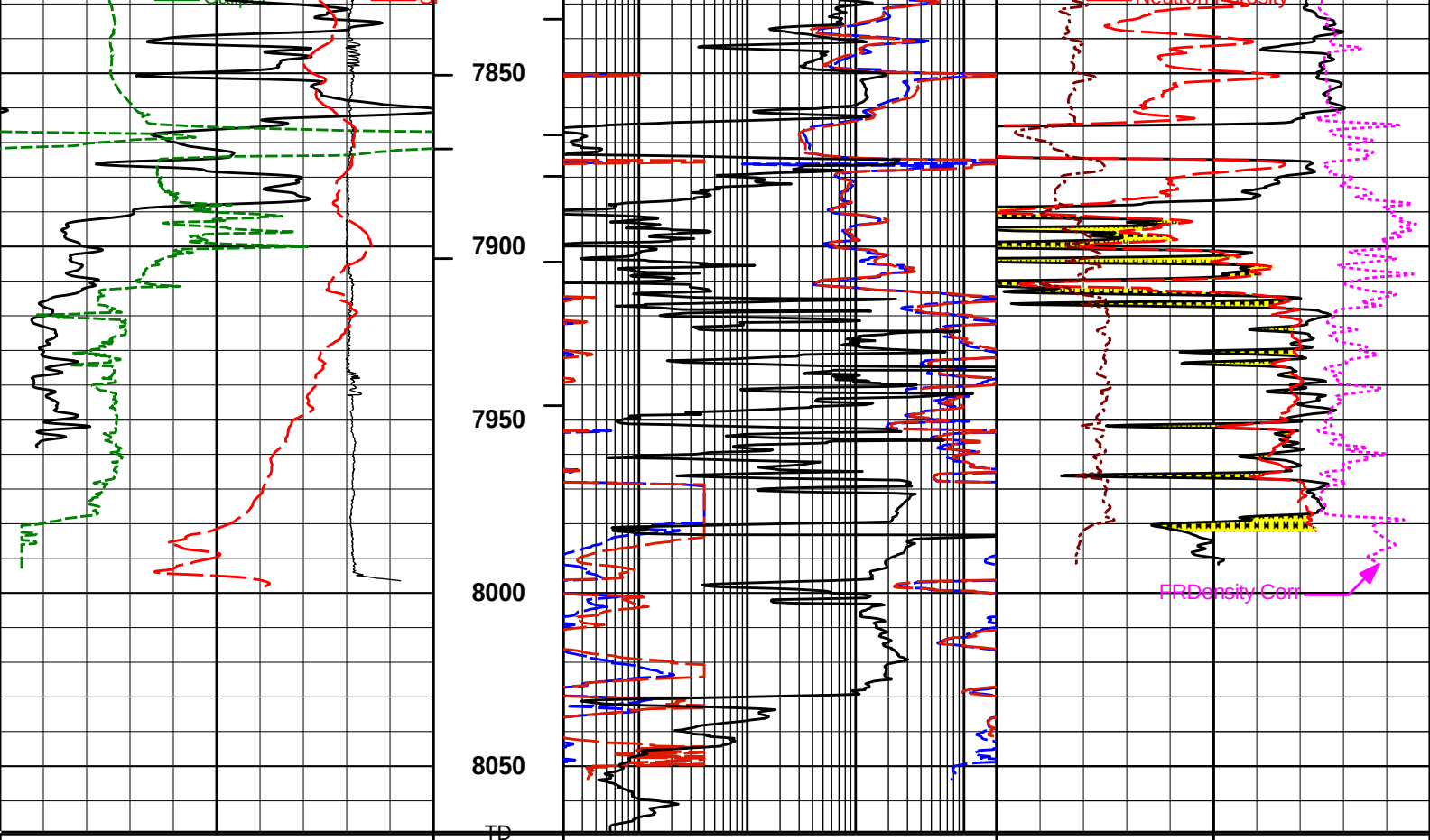
BOTTOM

HALLIBURTON

Plot Time: 25-Aug-14 12:53:38
Plot Range: 7430 ft to 8069 ft
Data: GOODPOINT_27\Well Based*
Plot File: \\COMP\COMP_DLLT_2"

MAIN PASS, 2" = 100'


0
Gamma API
150
api
Caliper
4
14
inches
-100
SP
100
millivolts
10K
Tens
0
pounds
AHVT
BHVT
1 : 600
0.2
DEEP
2K
ohm-metre
0.2
SHALLOW
2K
ohm-metre
0.2
MSFL
2K
ohm-metre
0.3
Neutron Porosity
-0.1
decp
0.3
Density Porosity
-0.1
decp
0
Pe
10
barns/electron
-0.25
Density Corr
0.25
gram per cc
7450
CSG
7500
7550
7600
7650
7700
7750
7800
Gamma API
Tens
Caliper
SP
Density Porosity
Neutron Porosity



10K	Tens	0	TD	0.2	MSFL	2K	0	Pe	10	-0.25	Density Corr	0.25
	pounds		1 : 600		ohm-metre			barns/electron			gram per cc	
-100	SP	100	BHVT	0.2	SHALLOW	2K	0.3	Density Porosity	-0.1			
	millivolts				ohm-metre			decp				
4	Caliper	14	AHVT	0.2	DEEP	2K	0.3	Neutron Porosity	-0.1			
	inches				ohm-metre			decp				
0	Gamma API	150										
	api											

HALLIBURTON

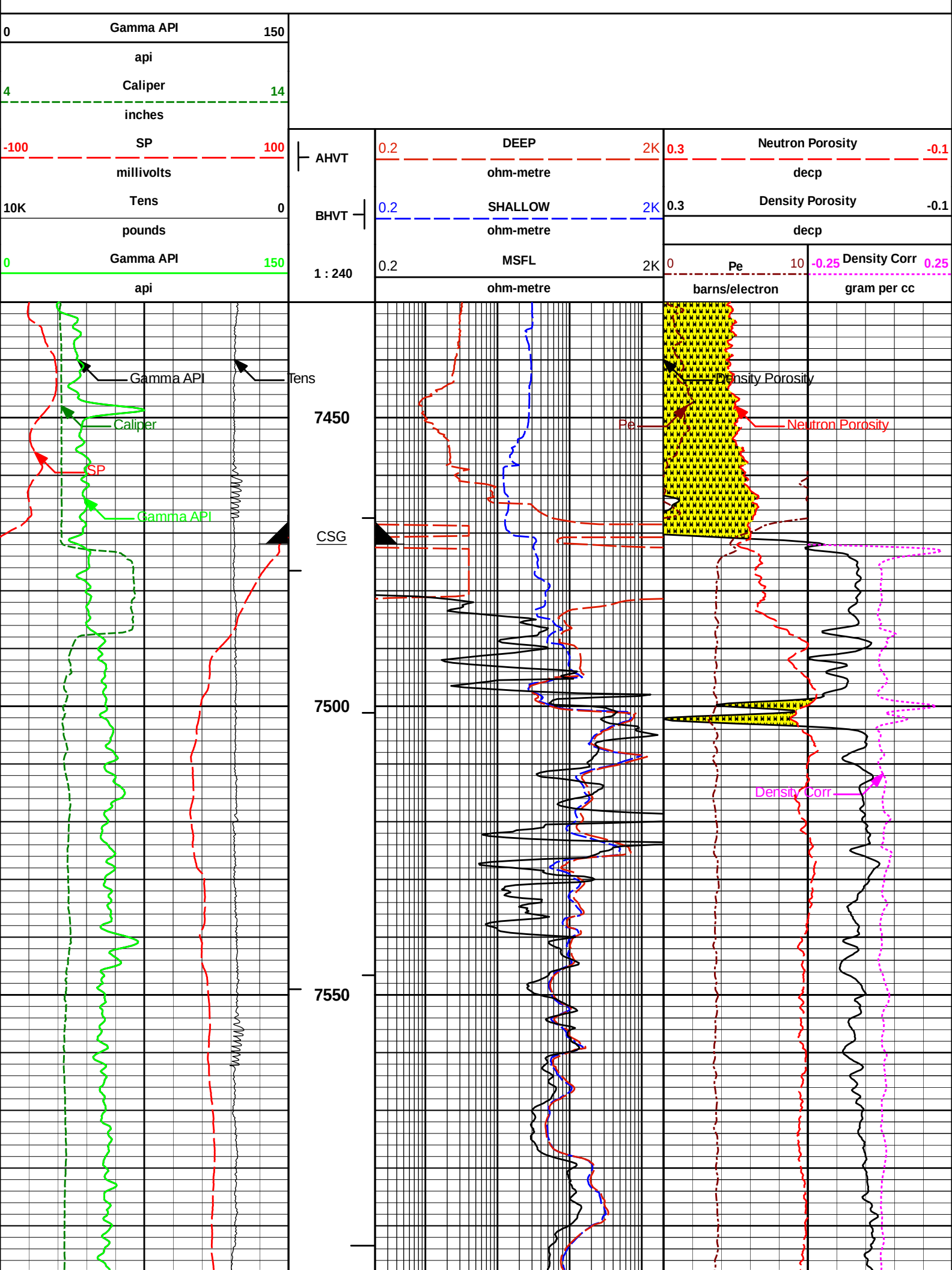
Plot Time: 25-Aug-14 12:53:41
Plot Range: 7430 ft to 8069 ft
Data: GOODPOINT_27\Well Based*\
Plot File: \\COMP\COMP_DLLT_2"

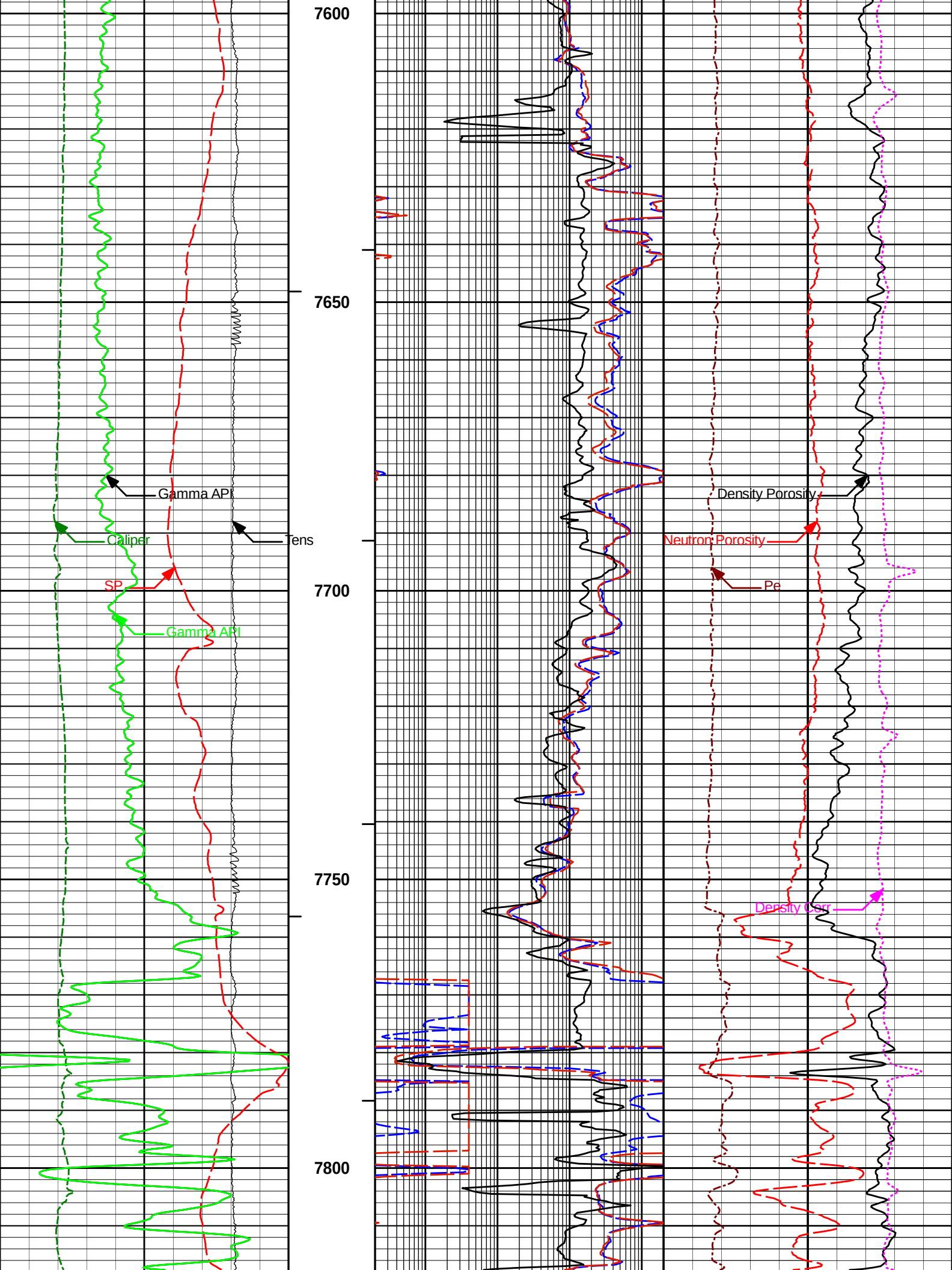
MAIN PASS, 2" = 100'

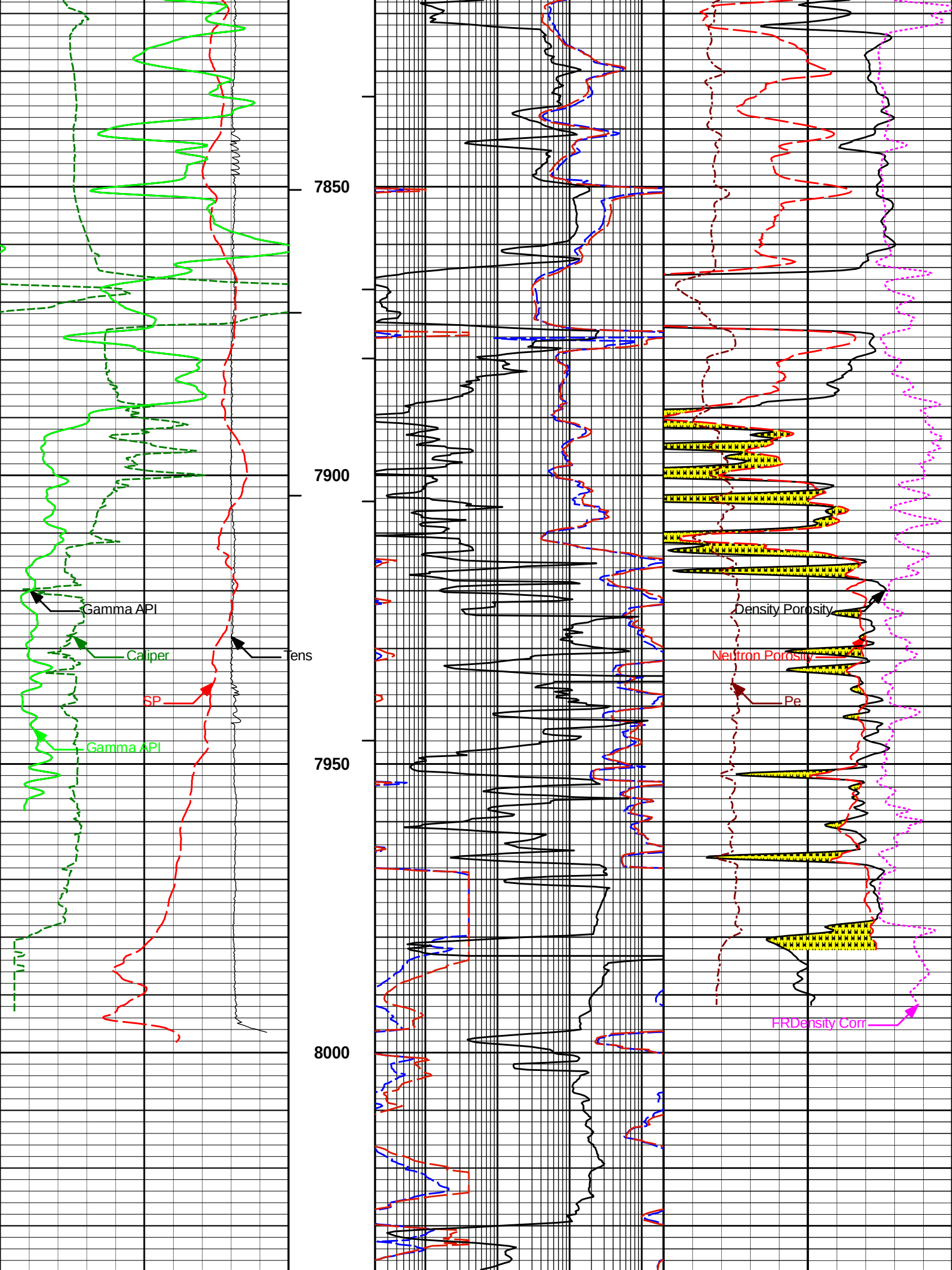
HALLIBURTON

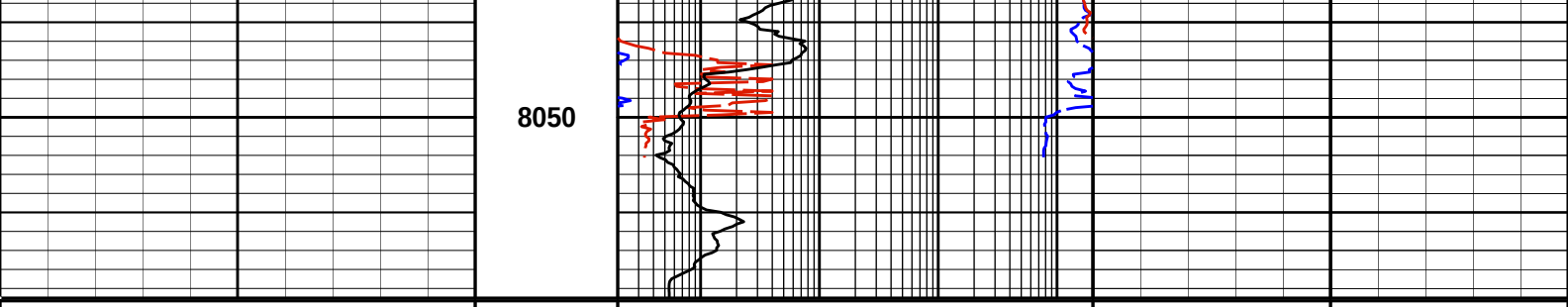
Plot Time: 25-Aug-14 12:53:41
Plot Range: 7430 ft to 8069 ft
Data: GOODPOINT_27\Well Based*\
Plot File: \\COMP\COMP_DLLT

REPEAT PASS 5" = 100'


0
Gamma API
150
api
4
Caliper
14
inches
-100
SP
100
millivolts
10K
Tens
0
pounds
0
Gamma API
150
api
AHVT
BHVT
1 : 240
0.2
DEEP
2K
ohm-metre
0.2
SHALLOW
2K
ohm-metre
0.2
MSFL
2K
ohm-metre
0.3
Neutron Porosity
-0.1
decp
0.3
Density Porosity
-0.1
decp
0
Pe
10
barns/electron
-0.25
Density Corr
0.25
gram per cc
Gamma API
Tens
Caliper
SP
Gamma API
CSG
7450
7500
7550
Pe
Density Porosity
Neutron Porosity
Density Corr


7600
7650
7700
7750
7800
Gamma API
Caliper
Tens
SP
Gamma API
Density Porosity
Neutron Porosity
Pe
Density Corr


7850
7900
7950
8000
Gamma API
Caliper
Tens
SP
Gamma API
Density Porosity
Neutron Porosity
Pe
FRDensity Corr



0 Gamma API 150	1 : 240	0.2 MSFL 2K	0 Pe 10	-0.25 Density Corr 0.25	
api		ohm-metre	barns/electron	gram per cc	
10K Tens 0	BHVT	0.2 SHALLOW 2K	0.3 Density Porosity -0.1		
pounds		ohm-metre	decp		
-100 SP 100	AHVT	0.2 DEEP 2K	0.3 Neutron Porosity -0.1		
millivolts		ohm-metre	decp		
4 Caliper 14					
inches					
0 Gamma API 150					
api					

HALLIBURTON

Plot Time: 25-Aug-14 12:53:44
Plot Range: 7430 ft to 8069 ft
Data: GOODPOINT_27\Well Based*\
Plot File: \\COMP\COMP_DLLT

REPEAT PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11958949**	**Reference Calibration Date:**	**10-Jul-14 10:47:44**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**25-Aug-14 00:10:53**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**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	26.3	26.7	api
Background + Calibrator	266.4	269.9	api
Calibrator	240.1	243.2	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11958949**	**Reference Calibration Date:**	**25-Aug-14 00:10:53**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**25-Aug-14 00:16:26**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**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	26.7	26.0	api
Background + Calibrator	269.9	270.1	api
Calibrator	243.2	244.1	api

Shop	Field	Difference	Tolerance
243.2	244.1	-0.9	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name: CSNG - 11568970
Reference Calibration Date: 19-Jun-14 15:17:00
Engineer: B. RIDDEL
Calibration Date: 13-Aug-14 10:08:35
Software Version: WL INSITE R4.2.0 (Build 2)
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 #	23.2	23.1	Channel #
583 KEV Peak Channel #	52.2	51.9	Channel #
2614 KEV Peak Channel #	215.9	214.4	Channel #
Calibrate Temperature	68.9	82.9	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	1659.9	CPS	314.6	300.0	API
Background	158.0	CPS	43.2	28.6	API

Gamma Ray Gain: 0.91
Expected Gain Range: 0.85 - 1.15
Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION

Tool Name: CSNG - 11568970
Reference Calibration Date: 13-Aug-14 10:08:35
Engineer: P. DIMPFL
Calibration Date: 25-Aug-14 00:21:12
Software Version: WL INSITE R4.2.0 (Build 2)
Calibration Version: 1
Source SN:

TITANIUM CASE	Shop	Field	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.1	23.1	Channel #
583 KEV Peak Channel #	51.9	51.7	Channel #
2614 KEV Peak Channel #	214.4	214.0	Channel #
Calibrate Temperature	82.9	77.1	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	1393.2	CPS	300.0	295.3	API
Background	112.8	CPS	28.6	23.9	API

Gamma Ray Gain: 1.07

Expected Gain Range: 0.85 - 1.15

Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 10993888 **Reference Calibration Date:** 28-Jun-14 10:40:51

Engineer: P. DIMPFL **Calibration Date:** 03-Aug-14 14:27:06

Software Version: WL INSITE R4.2.0 (Build 2) **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 SNOW BLOCK

Calibration Tank Water Temperature: 73 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.989	0.993	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):	0.2156	0.2169	0.0013	+/- 0.0020
Calibrated Ratio:	9.88	9.93	0.045	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0734	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:** 03-Aug-14 14:27:06

Engineer: P. DIMPFL **Calibration Date:** 25-Aug-14 00:23:45

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

Logging Source S/N: DSN-388

Snow Block S/N: GJ SNOW BLOCK

Snow Block S/N: GJ SNOW BLOCK

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0734	0.0654	-0.0080	+/- 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: 10-Jul-14 11:12:44
Engineer: P. DIMPFL
Calibration Date: 03-Aug-14 15:53:21
Software Version: WL INSITE R4.2.0 (Build 2)
Calibration Version: 1
Host Tool Name: DSNT - 10993888

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-2293.52	-2095.47	-7000.00 - -1000.00
Pad Gain	0.0003755	0.0003729	0.000200 - 0.000600
Arm Offset	-2435.91	-3502.47	-5000.00 - 3000.00
Arm Gain	0.0004306	0.0005158	0.000300 - 0.000700
Arm Power	0.000004077	-0.000002471	-0.000010000 - 0.000010000

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)	1.94	2.00	0.06	+/- 0.20
Medium Ring (in)	3.70	3.75	0.05	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.62	6.50	-0.12	+/- 0.20
Medium Ring (in)	8.20	8.25	0.05	+/- 0.20
Large Ring (in)	15.02	15.00	-0.02	+/- 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: 03-Aug-14 15:53:21
Engineer: P. DIMPFL
Calibration Date: 25-Aug-14 00:15:33
Software Version: WL INSITE R4.2.0 (Build 2)
Calibration Version: 1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.76	0.01	+/- 0.10
Ring Diameter	8.25	8.14	-0.11	+/- 0.15

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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	**SDLT Pad - 10865876**	**Reference Calibration Date:**	**28-Jun-14 12:17:40**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**03-Aug-14 15:38:55**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**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	1.0235	1.0532	0.90 - 1.10
Near Dens Gain	1.0169	1.0252	0.90 - 1.10
Near Peak Gain	1.0166	1.0144	0.90 - 1.10
Near Lith Gain	0.9896	0.9742	0.90 - 1.10
Far Bar Gain	1.0115	1.0160	0.90 - 1.10
Far Dens Gain	1.0003	1.0033	0.90 - 1.10
Far Peak Gain	0.9977	0.9959	0.90 - 1.10
Far Lith Gain	0.9770	0.9676	0.90 - 1.10
Near Bar Offset	-0.0278	-0.2911	NONE
Near Dens Offset	0.0302	-0.0384	NONE
Near Peak Offset	0.0199	0.0465	NONE
Near Lith Offset	0.2260	0.3562	NONE
Far Bar Offset	0.0261	-0.0137	NONE
Far Dens Offset	0.1086	0.0820	NONE
Far Peak Offset	0.1163	0.1291	NONE
Far Lith Offset	0.2551	0.3125	NONE
Near Bar Background	869.66	868.92	700 - 1450
Near Dens Background	291.23	289.61	230 - 480
Near Peak Background	129.43	130.68	100 - 210
Near Lith Background	157.91	156.51	125 - 260
Far Bar Background	536.80	537.85	450 - 900
Far Dens Background	208.59	208.18	175 - 345
Far Peak Background	83.12	83.34	70 - 140
Far Lith Background	86.65	86.62	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.671	1.680	0.009	+/- 0.015
Pe	2.518	2.581	0.063	+/- 0.150
ALUMINUM				
Density (g/cc)	2.599	2.607	0.008	+/- 0.01500
Pe	3.198	3.203	0.005	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector	Far Detector

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0038	+/- 0.0110	-0.0029	+/- 0.0140
Magnesium Block	0.0024	+/- 0.0110	0.0009	+/- 0.0140
Aluminum Block	-0.0008	+/- 0.0110	-0.0006	+/- 0.0140
Resolution	8.89	6.00 - 11.50	9.52	6.00 - 11.50
Internal Verifier(B+D+P+L)	1446	1200 - 2700	916	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:** 03-Aug-14 15:38:55

Engineer: P. DIMPFL **Calibration Date:** 25-Aug-14 00:11:16

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

Pad Temperature: 72.8 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1445.720	1445.138	-0.582	15.339
Far (B+D+P+L) cps	915.990	904.337	-11.653	16.414
Near Resolution	8.89	9.02	0.130	0.50
Far Resolution	9.52	9.72	0.200	1.00

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

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11958949						
Gamma Ray Calibrator	243.2	244.1	----------	-0.9	+/- 9.00	api
CSNG-11568970						
60 KEV Peak Channel #	48.0	48.0	----------	0.0	----------	Channel #
239 KEV Peak Channel #	23.1	23.1	----------	0.0	----------	Channel #
583 KEV Peak Channel #	51.9	51.7	----------	0.2	----------	Channel #
2614 KEV Peak Channel #	214.4	214.0	----------	0.4	----------	Channel #
DSNT-10993888						
Snow-Block Porosity	0.0734	0.0654	----------	0.0080	+/- 0.0150	decp
SDLT-10951300						
Pad Extension	3.75	3.76	----------	-0.01	+/-0.10	in
Ring Diameter	8.25	8.14	----------	0.11	+/-0.15	in
SDLT Pad-10865876						

Near(B+D+P+L)	1445.720	1445.138	----------	0.582	+/-15.339	cps
Far(B+D+P+L)	915.990	904.337	----------	11.653	+/-16.414	cps

Date: GOODPOINT_27|0003.TBL SDLT_DSNT_GSNG|003.01.25 Aug 14 13:16 Up Date: 25 Aug 14 13:43:15

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11005602**	**Reference Calibration Date:**	**07-Jun-14 11:26:04**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**13-Jul-14 18:28:44**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**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	41.1	40.0	api
Background + Calibrator	291.4	283.2	api
Calibrator	250.2	243.2	api

DUAL LATEROLOG SHOP CALIBRATION

Tool Name:	**DLLT-I Sonde - P744M864S419**	**Reference Calibration Date:**	**21-Jul-14 16:05:35**
Engineer:	**K. NORMAND**	**Calibration Date:**	**21-Jul-14 16:10:23**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**Calibration Version:**	**1**
Host Tool Name:	**DLLT-I Measurement - 10281396**	**Extra Host Tool Name1:**	**DLLT-I Power and Telemetry - 11280790**

Measurement	Deep Measured	Deep Calibrated	Shallow Measured	Shallow Calibrated	Units
External Cal Point #1	1.02	1.04	0.97	1.00	ohmm
External Cal Point #2	119.47	119.47	99.93	99.63	ohmm
External Cal Point #3	1538.10	1541.79	1024.08	1019.96	ohmm
External Check Point	1535.53	1539.21	1023.21	1019.09	ohmm
Internal Reference	15.87	15.87	20.23	20.20	ohmm

DUAL LATEROLOG FIELD CALIBRATION

Tool Name:	**DLLT-I Sonde - P744M864S419**	**Reference Calibration Date:**	**21-Jul-14 16:10:23**
Engineer:	**P. DIMPFL**	**Calibration Date:**	**24-Aug-14 11:25:42**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**Calibration Version:**	**1**

Measurement	Deep Shop	Deep Field	Shallow Shop	Shallow Field	Units
Internal Reference	15.87	15.86	20.20	20.20	ohmm

PASS/FAIL SUMMARY

Measurement	Difference	Tolerance	Pass/Fail
Internal Deep	0.02	+/- 0.8	Passed
Internal Shallow	0.00	+/- 0.8	Passed

MICRO SPHERICALLY FOCUSED LOG SHOP CALIBRATION

Tool Name:	**MSFL - 10281166**	**Reference Calibration Date:**	**21-Jul-14 16:16:00**
Engineer:	**K. NORMAND**	**Calibration Date:**	**21-Jul-14 16:18:21**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**Calibration Version:**	**1**

Measurement	Measured	Calibrated	Units
External Cal Point #1	0.20	0.20	ohmm

External Cal Point #2	20.00	20.00	ohmm
External Cal Point #3	2003.86	2000.00	ohmm
Internal Reference	20.62	20.61	ohmm

MICRO SPHERICALLY FOCUSED LOG FIELD CALIBRATION

Tool Name: MSFL - 10281166 **Reference Calibration Date:** 21-Jul-14 16:18:21

Engineer: P. DIMPFL **Calibration Date:** 24-Aug-14 11:26:02

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

Measurement	Shop	Field	Change	Control Limit On	Units
Internal Reference	20.61	20.61	-0.005	0.800	ohmm

PASS/FAIL SUMMARY

Internal Reference:	Passed

CALIPER SHOP CALIBRATION

Tool Name: MSFL - 10281166 **Reference Calibration Date:** 21-Jul-14 16:22:02

Engineer: K. NORMAND **Calibration Date:** 21-Jul-14 16:24:02

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

CALIBRATION RINGS AND INTERNAL

Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change
RING DIAMETER:			
Ring #1 (in)	8.27	8.25	0.0200
Ring #2 (in)	15.00	15.00	0.0000
Hi/Lo Internal:			
Lo Internal (in)	3.27	3.24	0.0300
Hi Internal (in)	12.62	12.61	0.0100

CALIPER FIELD CALIBRATION

Tool Name: MSFL - 10281166 **Reference Calibration Date:** 21-Jul-14 16:24:02

Engineer: P. DIMPFL **Calibration Date:** 24-Aug-14 11:26:33

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Lo Internal (in)	3.24	3.24	-0.008	+/- 0.500
Hi Internal (in)	12.61	12.61	0.002	+/- 0.500

PASS/FAIL SUMMARY

Lo Internal Check:	Passed
Hi Internal Check:	Passed

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11005602						
Gamma Ray Calibrator	243.2	----------	----------	0.0	+/- 9.00	api
DLLT-I Sonde-P744M864S419						
Deep Internal Ref.	15.87	15.86	----------	0.01	+/- 0.8	ohmm
Shallow Internal Ref.	20.20	20.20	----------	0.00	+/- 0.8	ohmm
MSFL-10281166						
MSFL Internal Ref.	20.61	20.61	----------	0.00	+/- 0.800	ohmm

Caliper Lo. Internal	3.24	3.24	----------	0.00	+/- 0.500	in
Caliper Hi. Internal	12.61	12.61	----------	0.00	+/- 0.500	in

Data: GOODPOINT_27\0001 TPL_DLLT\002 24-Aug-14 21:51 Up @8074.0f **Date: 25-Aug-14 04:24:27**

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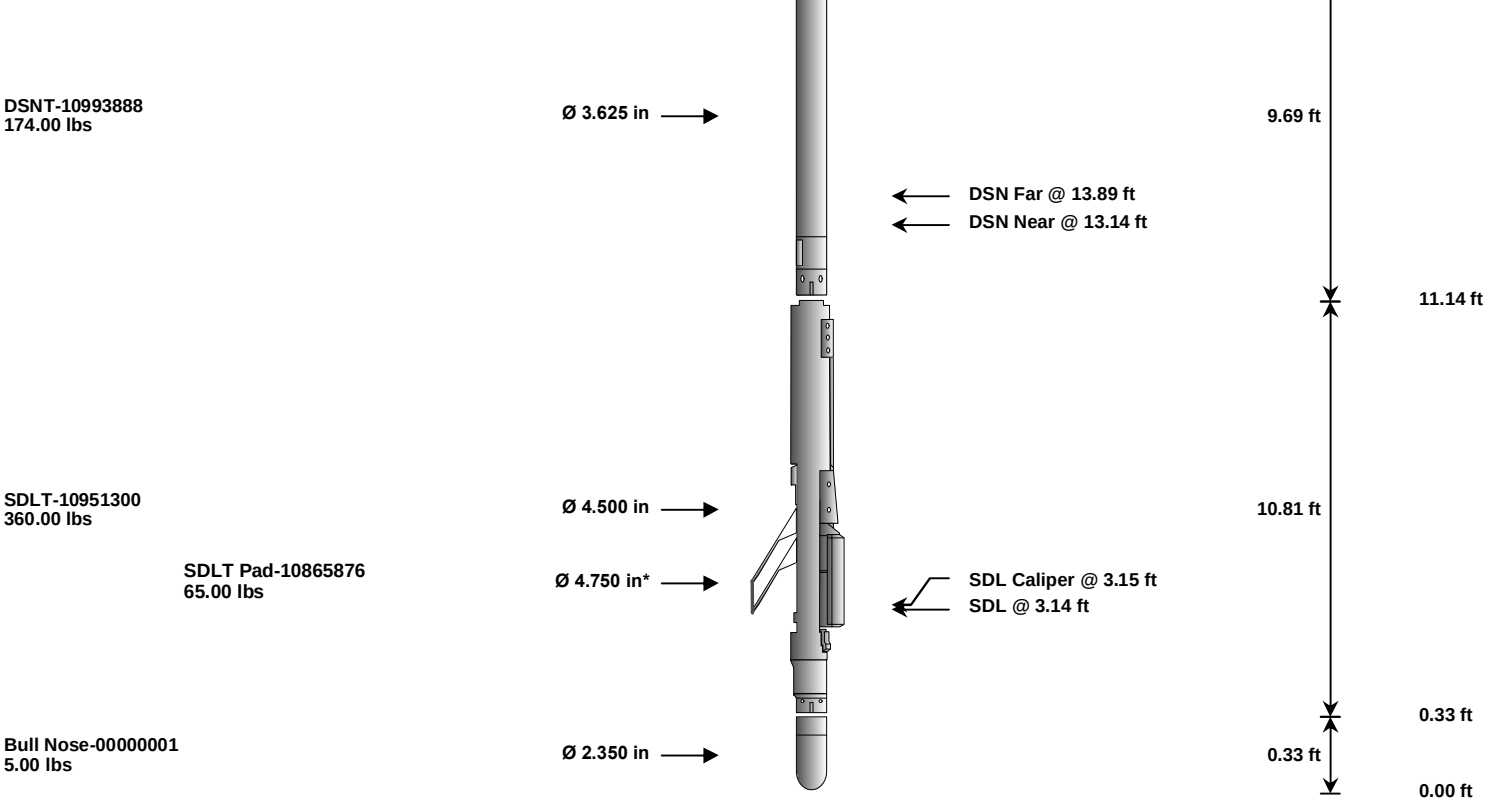
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						62.94 ft
Spacer-12345678 100.00 lbs		Ø 3.625 in			5.70 ft	
						57.24 ft
Flex Joint - Pressure Comp-10566136 140.00 lbs		Ø 3.625 in			5.97 ft	
						51.27 ft
DTDD-11411576 90.00 lbs		Ø 3.625 in		← Load Cell @ 50.18 ft ← Pad Locator @ 48.59 ft	3.66 ft	
						47.61 ft
HDDS-A-11736444 125.00 lbs		Ø 4.060 in			4.13 ft	
						43.49 ft
GTET-11958949 165.00 lbs		Ø 3.625 in		← GammaRay @ 37.42 ft	8.52 ft	
						34.97 ft
CSNG-11568970 114.00 lbs	UnivWearRing3.6-11568970 5.00 lbs	Ø 4.200 in* Ø 3.625 in		← CSNG @ 29.34 ft	8.17 ft	
						26.80 ft
Flex Joint - Pressure Comp-12152214 140.00 lbs		Ø 3.625 in			5.97 ft	
						20.83 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
SPC	Test	12345678	100.00	5.70		57.24	100.00
FLEX	Flex Joint - Pressure Compensated	10566136	140.00	5.97		51.27	300.00
DTDD	Downhole Tension Device	11411576	90.00	3.66		47.61	300.00
HDDS-A	Heavy Duty DITS Swivel tool.	11736444	125.00	4.13		43.49	300.00
GTET	Gamma Telemetry Tool	11958949	165.00	8.52		34.97	60.00
CSNG	Compensated Spectral Natural Gamma	11568970	114.00	8.17		26.80	15.00
UWR3P6	Universal Wear Ring 3 5-8 inch	11568970	5.00	0.35	*	30.88	300.00
FLEX	Flex Joint - Pressure Compensated	12152214	140.00	5.97		20.83	300.00
DSNT	Dual Spaced Neutron	10993888	174.00	9.69		11.14	60.00
SDLT	Spectral Density Tool	10951300	360.00	10.81		0.33	60.00
SDLP	Density Insite Pad	10865876	65.00	2.55	*	2.54	60.00
BLNS	Bull Nose	00000001	5.00	0.33		0.00	300.00
Total			**1,483.00**	**62.94**			

* Not included in Total Length and Length Accumulation.

Data: GOODPOINT_27\0002 TPL_SDLT_DSNT_CSNG\IDLE **Date: 25-Aug-14 04:04:45**

COMPANY	**KINDER MORGAN CO2 Co. L.P.**		
WELL	**GOODMAN POINT 27**		
FIELD	**MCELMO DOME**		
COUNTY	**MONTEZUMA**	STATE	**CO**

HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
DUAL LATEROLOG
MICRO-SPHERICALLY
FOCUSED LOG