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OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Federal PA 424-13
Field	Parachute
County	Garfield
State	Colorado

Pulsed Neutron Gamma Ray Casing Collar Log

Company	TEP Rocky Mountain LLC
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Location:	API # : 05-045-24196
	SEC 13 TWP 6S RGE 95W
Other Services	RBL

Permanent Datum	Ground Level	Elevation	6571.1'	Elevation
Log Measured From	Kelly Bushing	24 FT		K.B. 6595.1'
Drilling Measured From	Kelly Bushing			D.F. 6594.1'
				G.L. 6571.1'

Date	25-JUN-2020
Run Number	One
Depth Driller	9868 FT
Depth Logger	9810 FT
Bottom Logged Interval	9810 FT
Top Log Interval	5753 FT
Open Hole Size	8.750"
Type Fluid	Fresh Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	--
Estimated Cement Top	--
Time Well Ready	ROA
Time Logger on Bottom	3:10
Equipment Number	HD-0359
Location	Grand Junction, CO
Recorded By	A. Ellsworth
Witnessed By	--

Borehole Record			Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To

Casing Record	Size (in)	Wgt (lbs/Ft)	Grade	Top	Bottom
Surface Casing	9 5/8	36	J-55	Surface	1125 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9817 FT
Intermediate #2					
Liner					

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

Log ran as per customer request
Depth referenced to Reliance Bond Log dated 25-JUN-2020
Log ran from 9810 FT to 5753 FT
Pulsed Neutron Data logged with the Hunter RAS Tool

Thank you for choosing Reliance Oilfield Services, LLC!

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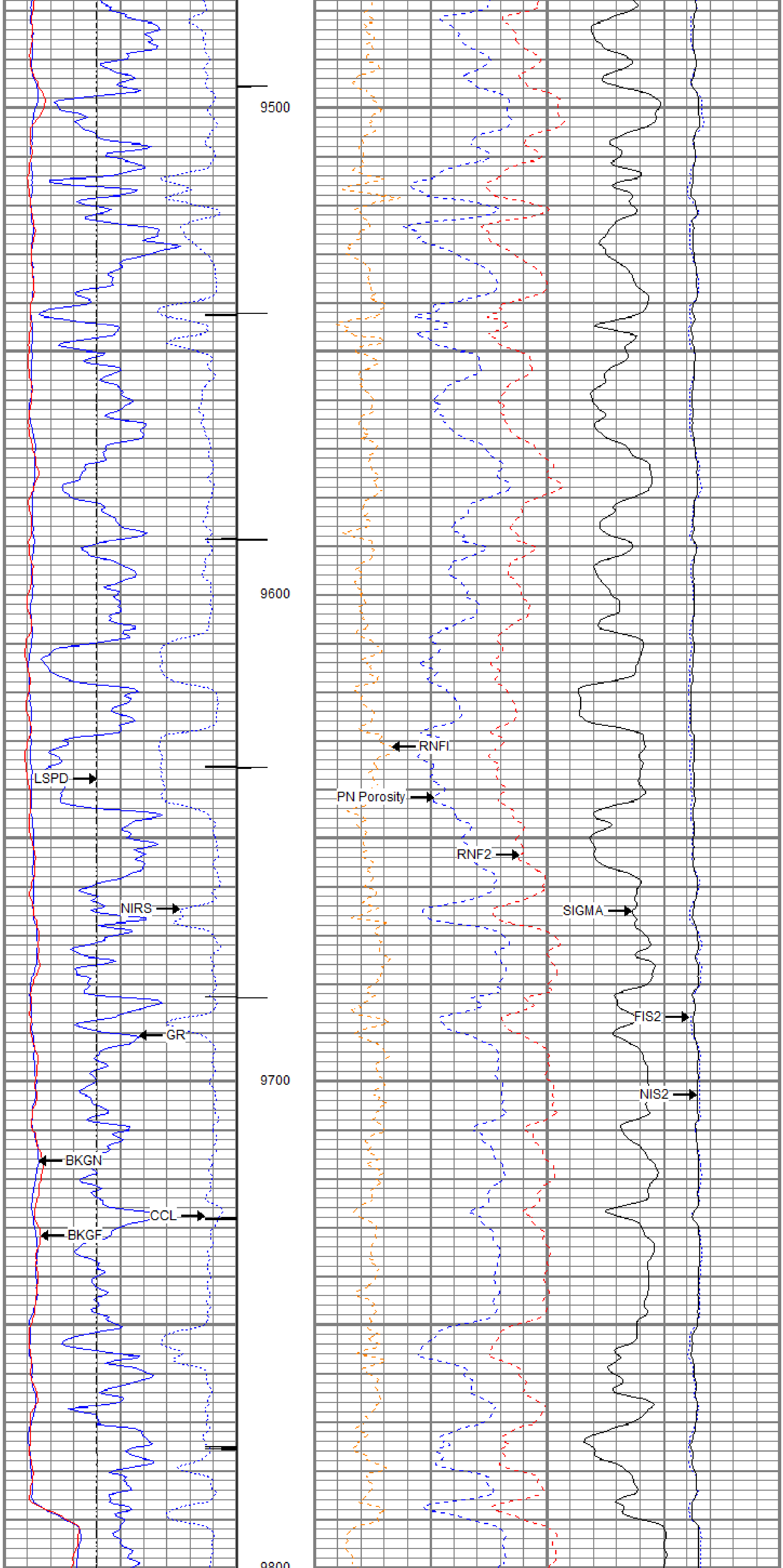
Main Pass

Database File	e:\data\tep\federal pa 424-13\pn\tep_federal pa 424-13_pn_06-25-20.db
Dataset Pathname	runSHIFTED/merge1
Presentation Format	ros_pdn_hunter
Dataset Creation	Mon Jun 29 10:17:20 2020
Charted by	Depth in Feet scaled 1:240



0	GR (GAPI)	150
	PN Casing Collar Locator	
-100	Line Speed (ft/min)	100
0	NIRS (cps)	400000
0	BKGN (cps)	4000
0	BKGF (cps)	2000

4	RNF2	0
60	SIGMA (cu)	0
4.5	RNFI	-1
1	PN Porosity (Sandstone)	0
	FIS2	
0	(cps)	45000
	NIS2	
0	(cps	100000

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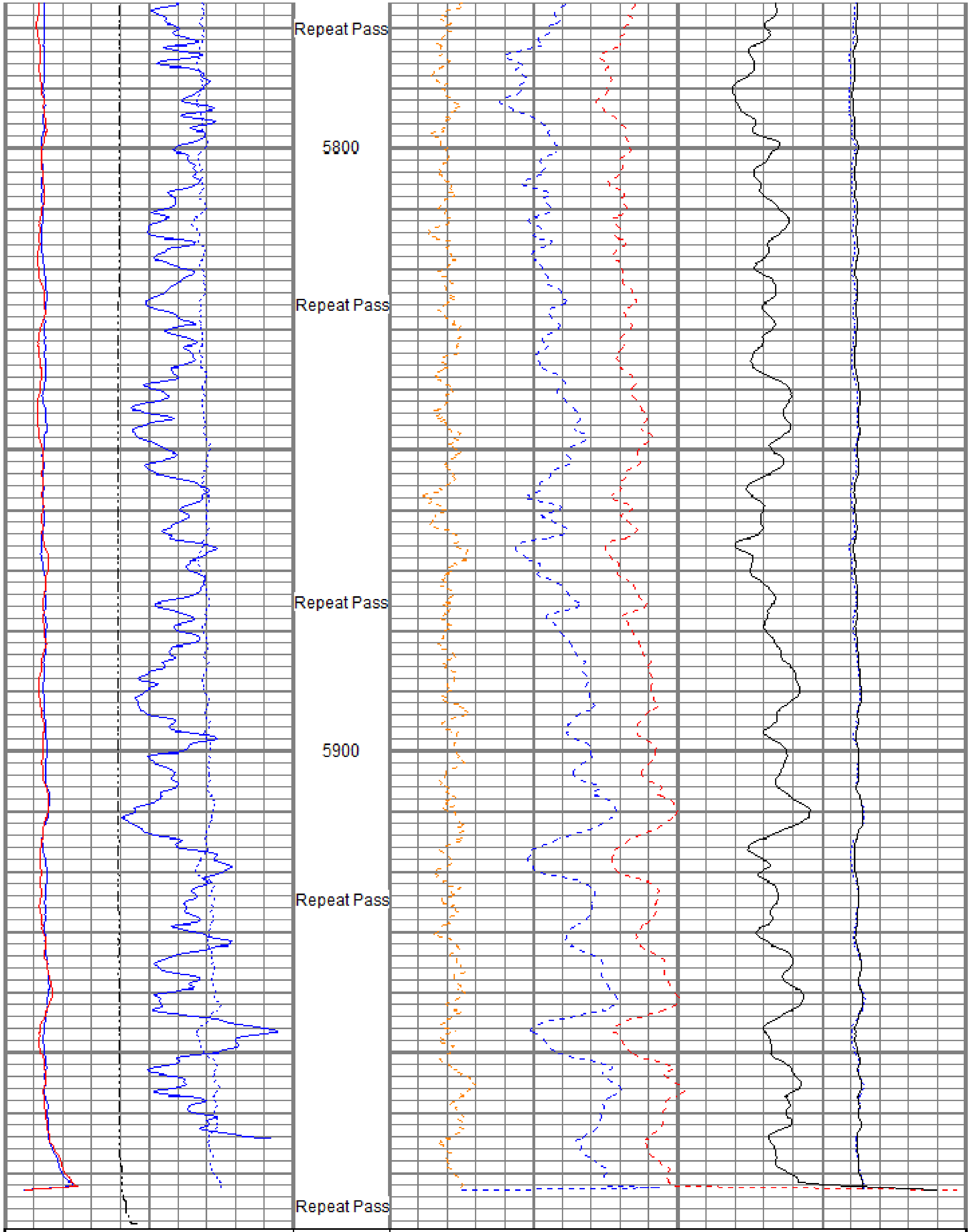
Repeat Pass

Database File	e:\data\tep\federal pa 424-13\pn\tep_federal pa 424-13_pn_06-25-20.db
Dataset Pathname	repeat.2
Presentation Format	ros_pdn_hunter
Dataset Creation	Thu Jun 25 13:03:45 2020
Charted by	Depth in Feet scaled 1:240

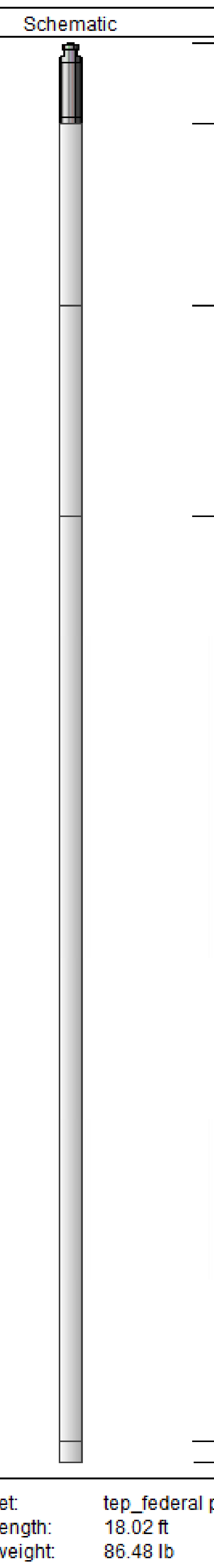
0	GR (GAPI)	150
-100	Line Speed (ft/min)	100
0	NIRS (cps)	400000
0	BKGN (cps)	4000
0	BKGF (cps)	2000

4	RNF2	0
60	SIGMA (cu)	0
4.5	RNFI	-1
	PN Porosity (Sandstone)	
1	(Porosity Decimal Fraction)	0
	FIS2	
0	(cps)	45000
	NIS2	
0	(cps	100000



0	GR (GAPI)	150
-100	Line Speed (ft/min)	100
0	NIRS (cps)	400000
0	BKGN (cps)	4000
0	BKGF (cps)	2000

4	RNF2	0
60	SIGMA (cu)	0
4.5	RNFI	-1
	PN Porosity (Sandstone)	
1	(Porosity Decimal Fraction)	0
	FIS2	
0	(cps)	45000
	NIS2	
0	(cps	100000



Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			Titan CHD-16875 GO Titan 1-11/16" Assembled Electric Cable Head w/ 1" Fishing Neck	1.03	1.69	5.40
TCUTEMP TCUVOLT GCL_CCL	14.69 14.69 13.97		HWS_TCU-002 (001705) HWS Telemetry Control Unit (TCU002)	2.30	1.69	10.87
GCL_GR	12.50		HWS_GCL-001 (000262) HWS Gamma Ray Collar Locator (1.6875")	2.69	1.69	13.40
Long Far Near Anci	6.25 6.25 6.25 6.25		HWS_RAS-RAS002 (003040) Hunter Well Science Pulsed Neutron Tool	11.75	1.69	55.82
LOCTIM UTCTIM	0.00 0.00		HWS_TBN-001 (001724) HWS Terminator Bull Nose (1.6875")	0.25	1.69	0.99

Dataset: tep_federal pa 424-13_pn_06-25-20.db: field/well/run1/main.2
Total length: 18.02 ft
Total weight: 86.48 lb
O.D.: 1.69 in

Calibration Report

Database File	e:\data\tep\federal pa 424-13\pn\tep_federal pa 424-13_pn_06-25-20.db
Dataset Pathname	main.2
Dataset Creation	Thu Jun 25 13:01:32 2020

RAS Calibration Report

Calibration Date: Thu Jun 11 14:55 2020

Meas #: 003041

Water Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	23.1	24.1	0.23
Sigma Far	SIGF	22.8	23.5	0.27
Ratio Near-Long Capture	RNL2	5.79	6.45	0.04
Ratio Near-Long Burst	RNLB	6.49	6.87	0.04
Ratio Near-Far Capture	RNF2	1.85	2.01	0.01
Ratio Near-Far Burst	RNFB	2.03	2.16	0.01
Spectral Hydrogen Index	HIS2	12.84	12.61	0.16
Carbon-Oxygen Ratio	CORS	1.34	1.30	0.05
Ratio Burst-Capture Near	RNBC	1.46	1.73	0.01
Ratio Burst-Capture Far	RFBC	1.50	1.67	0.01

Hydrocarbon Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	25.7	26.8	0.25
Sigma Far	SIGF	25.1	25.5	0.45
Ratio Near-Long Capture	RNL2	1.78	2.98	0.02
Ratio Near-Long Burst	RNLB	2.57	4.38	0.02
Ratio Near-Far Capture	RNF2	0.98	1.30	0.01
Ratio Near-Far Burst	RNFB	1.30	1.64	0.01
Spectral Hydrogen Index	HIS2	16.68	17.41	0.28
Carbon-Oxygen Ratio	CORS	1.51	1.54	0.04
Ratio Burst-Capture Near	RNBC	2.23	2.46	0.02
Ratio Burst-Capture Far	RFBC	2.09	2.18	0.02

Gamma Ray Calibration Report

Serial Number:	000262	
Tool Model:	001	
Performed:	(Not Performed)	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	
Calibrator Reading:	1.0	
Sensitivity:	1.0000	GAPI/

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