RELIANCE OILFIELD SERVICES

Pulsed Neutron Gamma Ray Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal PA 413-24
Field	Parachute
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal PA 413-24
Field Parachute
County Garfield State Colorado
Location: API # : 05-045-23896
SEC 24 TWP 6S RGE 95W

Other Services
RBL

Permanent Datum	Ground Level	Elevation	5371'
Log Measured From	Kelly Bushing	24 FT	
Drilling Measured From	Kelly Bushing		

Elevation
K.B. 5395'
D.F. ---
G.L. 5371'

Date	22-SEPT-2019
Run Number	One
Depth Driller	8935 FT
Depth Logger	8874 FT
Bottom Logged Interval	8862 FT
Top Log Interval	4735 FT
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	---
Estimated Cement Top	---
Time Well Ready	ROA
Time Logger on Bottom	19:47
Equipment Number	HD-0359
Location	Grand Junction, CO
Recorded By	J.Donnelly
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	1122 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	8894 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 22-SEPT-2019
Log ran from 8862 FT to 4735 FT
Pulsed Neutron data logged with Hunter RAS Tool

Thank you for choosing Reliance Oilfield Services, LLC!!

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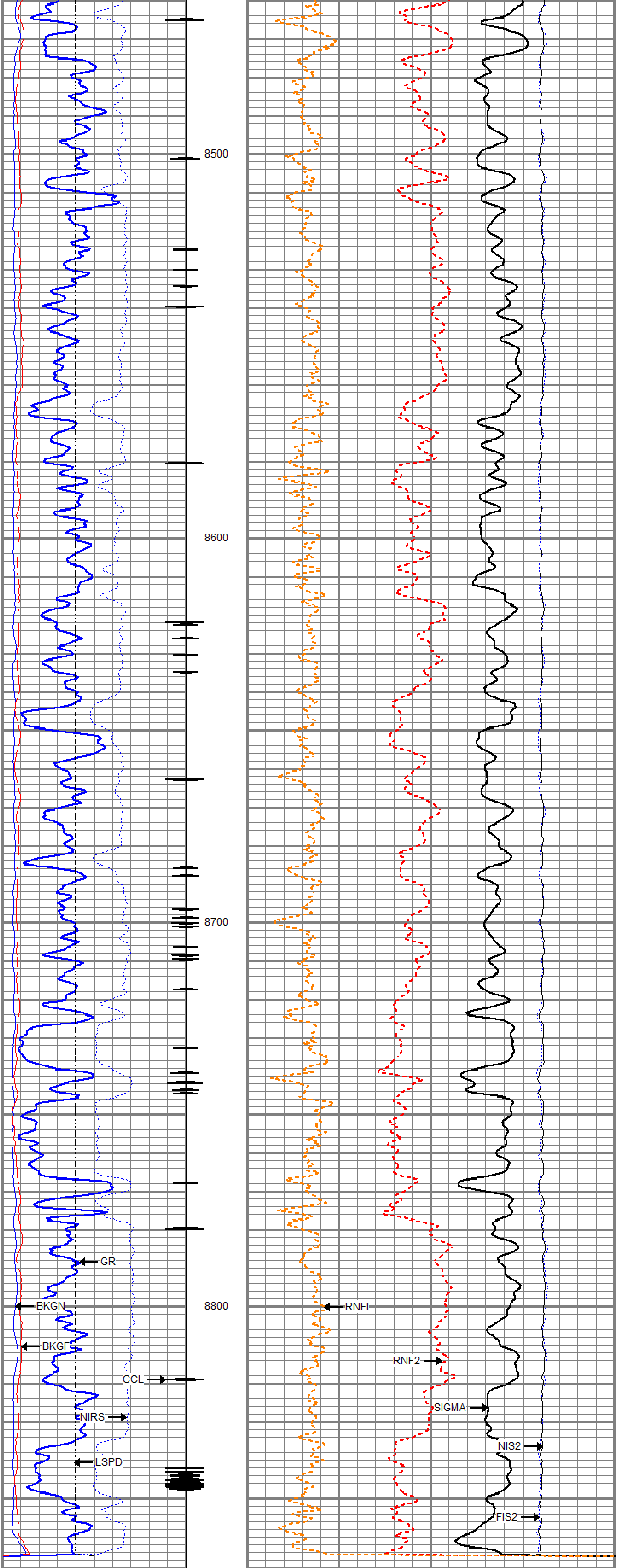
Main Pass

Database File	c:\techlog-projects\tep\federal pa 413-24\import\tep_federal pa 413-24_pn_09-22-19.db
Dataset Pathname	SHIFTED/merge1
Presentation Format	ros_pdn_hunter
Dataset Creation	Wed Sep 25 14:46:05 2019
Charted by	Depth in Feet scaled 1:240

0 GR (GAPI) 150
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 0

FIS2
0 (cps) 45000
NIS2
0 (cps100000



0 GR (GAPI) 150		4 RNF2 0	
Casing Collar Locator		60 SIGMA (cu) 0	
-100 Line Speed (ft/min) 100		4.5 RNFI 0	
0 NIRS (cps) 400000			FIS2 0 (cps) 45000
0 BKGN (cps) 4000			NIS2 0 (cps100000
0 BKGF (cps) 2000			

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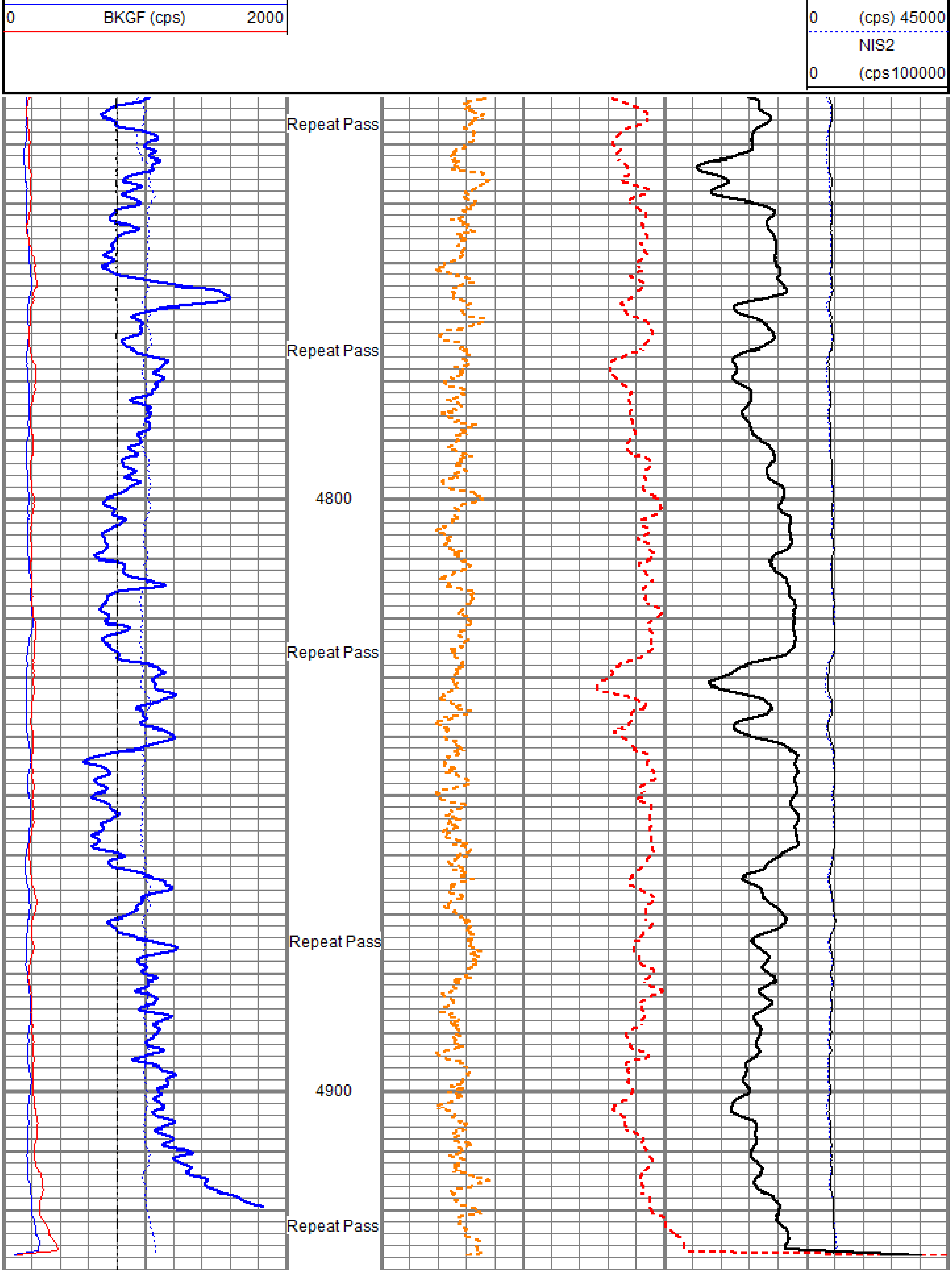
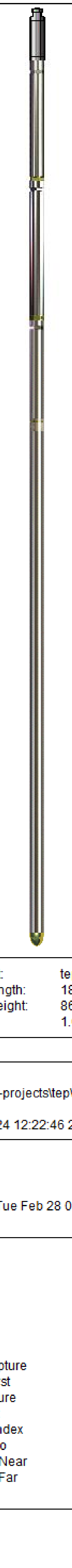
Repeat Pass

Database File c:\techlog-projects\tep\federal pa 413-24\import\tep_federal pa 413-24_pn_09-22-19.db
Dataset Pathname Repeat.2
Presentation Format ros_pdn_hunter
Dataset Creation Mon Sep 23 08:13:01 2019
Charted by Depth in Feet scaled 1:240

0 GR (GAPI) 150		4 RNF2 0	
-100 Line Speed (ft/min) 100		60 SIGMA (cu) 0	
0 NIRS (cps) 400000		4.5 RNFI 0	
0 BKGN (cps) 4000			FIS2 0 (cps) 45000
0 BKGF (cps) 2000			NIS2 0 (cps100000



0 GR (GAPI) 150		4 RNF2 0	
-100 Line Speed (ft/min) 100		60 SIGMA (cu) 0	
0 NIRS (cps) 400000		4.5 RNFI 0	
0 BKGN (cps) 4000			FIS2 0 (cps) 45000
0 BKGF (cps) 2000			NIS2 0 (cps100000

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
			HWS_TCU-002 (001705) HWS Telemetry Control Unit (TCU002)	2.30	1.69	10.87
TCUTEMP TCUVOLT GCL_CCL	14.69 14.69 13.97					
			HWS_GCL-001 (001681) HWS Gamma Ray Collar Locator (1.6875")	2.69	1.69	13.40
GCL_GR	12.50					
Long Far Near Anci	6.25 6.25 6.25 6.25		HWS_RAS-RAS002 (003041) Hunter Well Science Pulsed Neutron Tool	11.75	1.69	55.82
			HWS_TBN-001 (001725) HWS Terminator Bull Nose (1.6875")	0.25	1.69	0.99

Dataset: tep_federal pa 413-24_pn_09-22-19.db: field/well/run1/Main.3
Total length: 18.02 ft
Total weight: 86.48 lb
O.D.: 1.69 in

Calibration Report

Database File c:\techlog-projects\tep\federal pa 413-24\import\tep_federal pa 413-24_pn_09-22-19.db
Dataset Pathname Main.3
Dataset Creation Tue Sep 24 12:22:46 2019

RAS Calibration Report

Calibration Date: Tue Feb 28 09:28 2019 Meas #: 003041

Water Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	23.1	24.1	0.40
Sigma Far	SIGF	22.8	23.6	0.38
Ratio Near-Long Capture	RNL2	5.79	8.61	0.07
Ratio Near-Long Burst	RNLB	6.49	8.91	0.05
Ratio Near-Far Capture	RNF2	1.85	2.05	0.01
Ratio Near-Far Burst	RNFB	2.03	2.22	0.01
Spectral Hydrogen Index	HIS2	12.84	13.36	0.18
Carbon-Oxygen Ratio	CORS	1.34	1.46	0.06
Ratio Burst-Capture Near	RNBC	1.46	1.75	0.01
Ratio Burst-Capture Far	RFBC	1.50	1.68	0.02

Hydrocarbon Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	25.7	26.5	0.44
Sigma Far	SIGF	25.1	25.6	0.67
Ratio Near-Long Capture	RNL2	1.78	3.87	0.04
Ratio Near-Long Burst	RNLB	2.57	5.76	0.03
Ratio Near-Far Capture	RNF2	0.98	1.34	0.01
Ratio Near-Far Burst	RNFB	1.30	1.71	0.01
Spectral Hydrogen Index	HIS2	16.68	18.40	0.33
Carbon-Oxygen Ratio	CORS	1.51	1.73	0.05
Ratio Burst-Capture Near	RNBC	2.23	2.48	0.02
Ratio Burst-Capture Far	RFBC	2.09	2.14	0.01

Gamma Ray Calibration Report

Serial Number:	001681	
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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