RELIANCE
OILFIELD SERVICES

Pulsed Neutron Gamma Ray Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal PA 33-23
Field	Parachute
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal PA 33-23
Field Parachute
County Garfield State Colorado
Location: API # : 05-045-24306
SEC 26 TWP 6S RGE 95W
Other Services
RBL

Permanent Datum	Ground Level	Elevation 5486.3'	Elevation
Log Measured From	Kelly Bushing	24 FT	K.B. 5510.3' D.F. 5509.3' G.L. 5486.3'
Drilling Measured From	Kelly Bushing		

Date	15-OCT-2020
Run Number	Two
Depth Driller	9170 FT
Depth Logger	9097 FT
Bottom Logged Interval	9097 FT
Top Log Interval	4970 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	14:00
Equipment Number	HD-0331
Location	Grand Junction, CO
Recorded By	Z Fisher
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	1126 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9129 FT
Intermediate #2					
Liner					

<<< Fold Here >>>

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 14-OCT-2020
Log ran from 9097 FT to 4970 FT
Pulsed Neutron Data logged with the Hunter RAS Tool

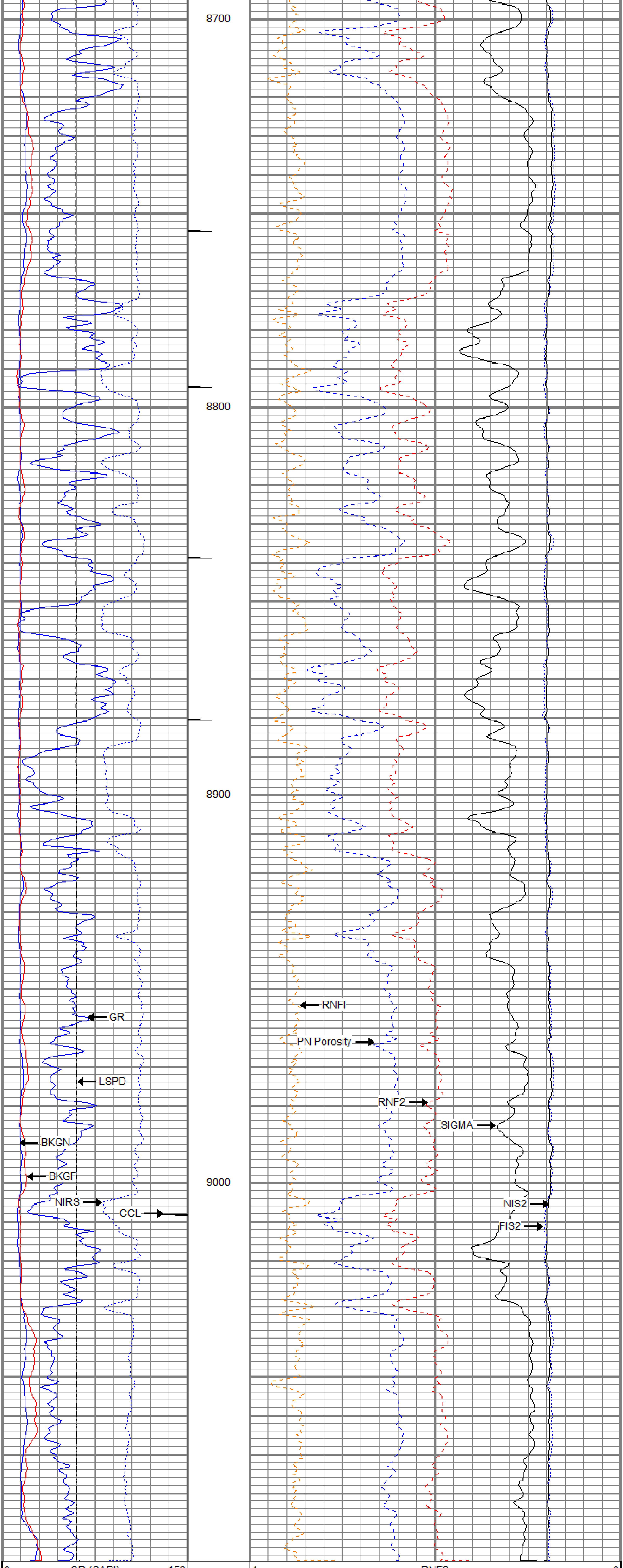
Thank you for choosing Reliance Oilfield Services, LLC!

RELIANCE
OILFIELD SERVICES

Main Pass

Database File	e:\data\tep\federal pa 33-23\pn\tep_federal pa 33-23_pn_10-15-20.db
Dataset Pathname	runSHIFTED/merge1
Presentation Format	ros_pdn_hunter
Dataset Creation	Sun Oct 18 17:51:22 2020
Charted by	Depth in Feet scaled 1:240

Left	Curve	Right
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
0	FIS2 (cps)	45000
0	NIS2 (cps	100000



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 (cps100000

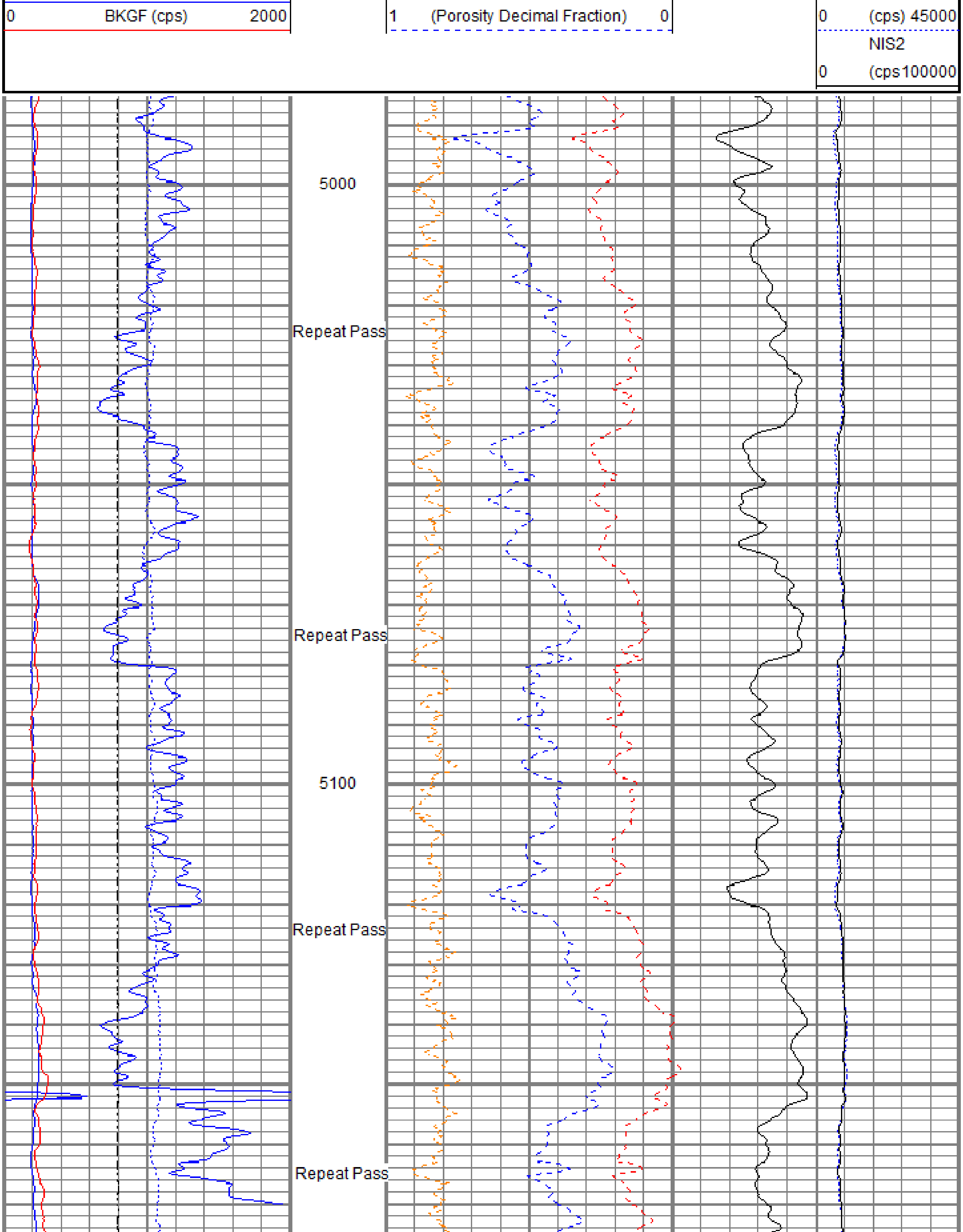
RELIANCE
OILFIELD SERVICES

Repeat Pass

Database File	e:\data\tep\federal pa 33-23\pn\tep_federal pa 33-23_pn_10-15-20.db
Dataset Pathname	repeat.2
Presentation Format	ros_pdn_hunter
Dataset Creation	Fri Oct 16 10:05:48 2020
Charted by	Depth in Feet scaled 1:240

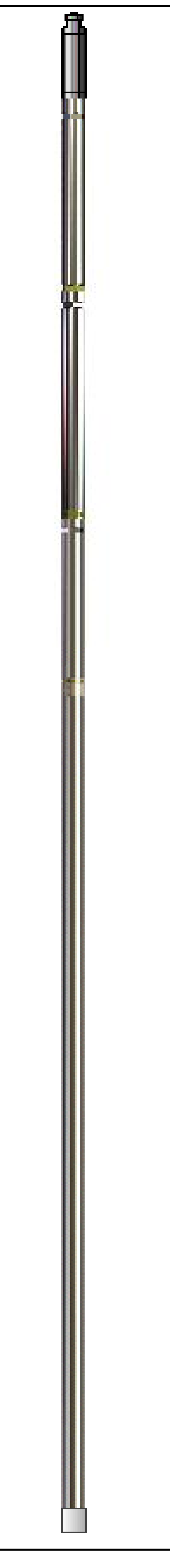
0 GR (GAPI) 150
-100 Line Speed (ft/min) 100
0 NIRS (cps) 400000
0 BKGN (cps) 4000
0 BKGF (cps) 2000

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 (cps100000



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 (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	14.72 14.72 14.00					
			HWS_GCL-001 (001681) HWS Gamma Ray Collar Locator (1.6875")	2.69	1.69	13.40
GCL_GR	12.53					
Long Far Near Anci	6.28 6.28 6.28 6.28		HWS_RAS-RAS002 (003041) Hunter Well Science Pulsed Neutron Tool	11.75	1.69	55.82
			HWS_BN_FLT-001 (000001) Bull Nose FLTE/CFT	0.28	1.69	0.44

Dataset:	tep_federal pa 33-23_pn_10-15-20.db: field/well/run1/main.2
Total length:	18.05 ft
Total weight:	85.93 lb
O.D.:	1.69 in

Calibration Report

Database File	e:\data\tep\federal pa 33-23\pn\tep_federal pa 33-23_pn_10-15-20.db
Dataset Pathname	main.2
Dataset Creation	Fri Oct 16 10:04:02 2020

RAS Calibration Report

Calibration Date: Fri Oct 09 13:11 2020

Meas #: 003040

Water Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	23.1	24.1	0.27
Sigma Far	SIGF	22.8	23.4	0.23
Ratio Near-Long Capture	RNL2	5.79	6.33	0.04
Ratio Near-Long Burst	RNLB	6.49	6.53	0.05
Ratio Near-Far Capture	RNF2	1.85	1.98	0.01
Ratio Near-Far Burst	RNFB	2.03	2.13	0.01
Spectral Hydrogen Index	HIS2	12.84	12.97	0.16
Carbon-Oxygen Ratio	CORS	1.34	1.32	0.05
Ratio Burst-Capture Near	RNBC	1.46	1.76	0.02
Ratio Burst-Capture Far	RFBC	1.50	1.70	0.01

Hydrocarbon Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	25.7	26.7	0.30
Sigma Far	SIGF	25.1	25.9	0.41
Ratio Near-Long Capture	RNL2	1.78	2.83	0.02
Ratio Near-Long Burst	RNLB	2.57	4.18	0.01
Ratio Near-Far Capture	RNF2	0.98	1.28	0.01
Ratio Near-Far Burst	RNFB	1.30	1.63	0.01
Spectral Hydrogen Index	HIS2	16.68	17.41	0.29
Carbon-Oxygen Ratio	CORS	1.51	1.54	0.05
Ratio Burst-Capture Near	RNBC	2.23	2.53	0.02
Ratio Burst-Capture Far	RFBC	2.09	2.20	0.02

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/

RELIANCE
OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Federal PA 33-23
Field	Parachute
County	Garfield
State	Colorado