RELIANCE
OILFIELD SERVICES

Pulsed Neutron
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC
Well Federal RWF 312-12
Field Rulison
County Garfield
State Colorado

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Field Rulison
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Location: API # : 05-045-24275
SEC 12 TWP 6S RGE 94W

Other Services
RBL

Permanent Datum	Ground Level	Elevation	5466.8'
Log Measured From	Kelly Bushing	24 FT	
Drilling Measured From	Kelly Bushing		

Elevation
K.B. 5490.8'
D.F. 5489.8'
G.L. 5466.8'

Date	22-FEB-2020		
Run Number	One		
Depth Driller	8820 FT		
Depth Logger	8742 FT		
Bottom Logged Interval	8742 FT		
Top Log Interval	4479 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	11:45		
Equipment Number	HD-0359		
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	1040 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	8780 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-FEB-2020
Log ran from 8742 FT to 4479 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	f:\data\tep\federal rwf 312-12_pn\tep_federal rwf 312-12_pn_02-22-20.db
Dataset Pathname	run1SHIFTED/merge1
Presentation Format	ros_pdn_hunter
Dataset Creation	Tue Feb 25 14:10:40 2020
Charted by	Depth in Feet scaled 1:240

Min	Curve	Max
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	4	RNF2	0
	PN Casing Collar Locator		60	SIGMA (cu)	0
-100	Line Speed (ft/min)	100	4.5	RNFI	-1
0	NIRS (cps)	400000	1	PN Porosity (Sandstone)	0
0	BKGN (cps)	4000	0	FIS2 (cps)	45000
0	BKGF (cps)	2000	0	NIS2 (cps	100000

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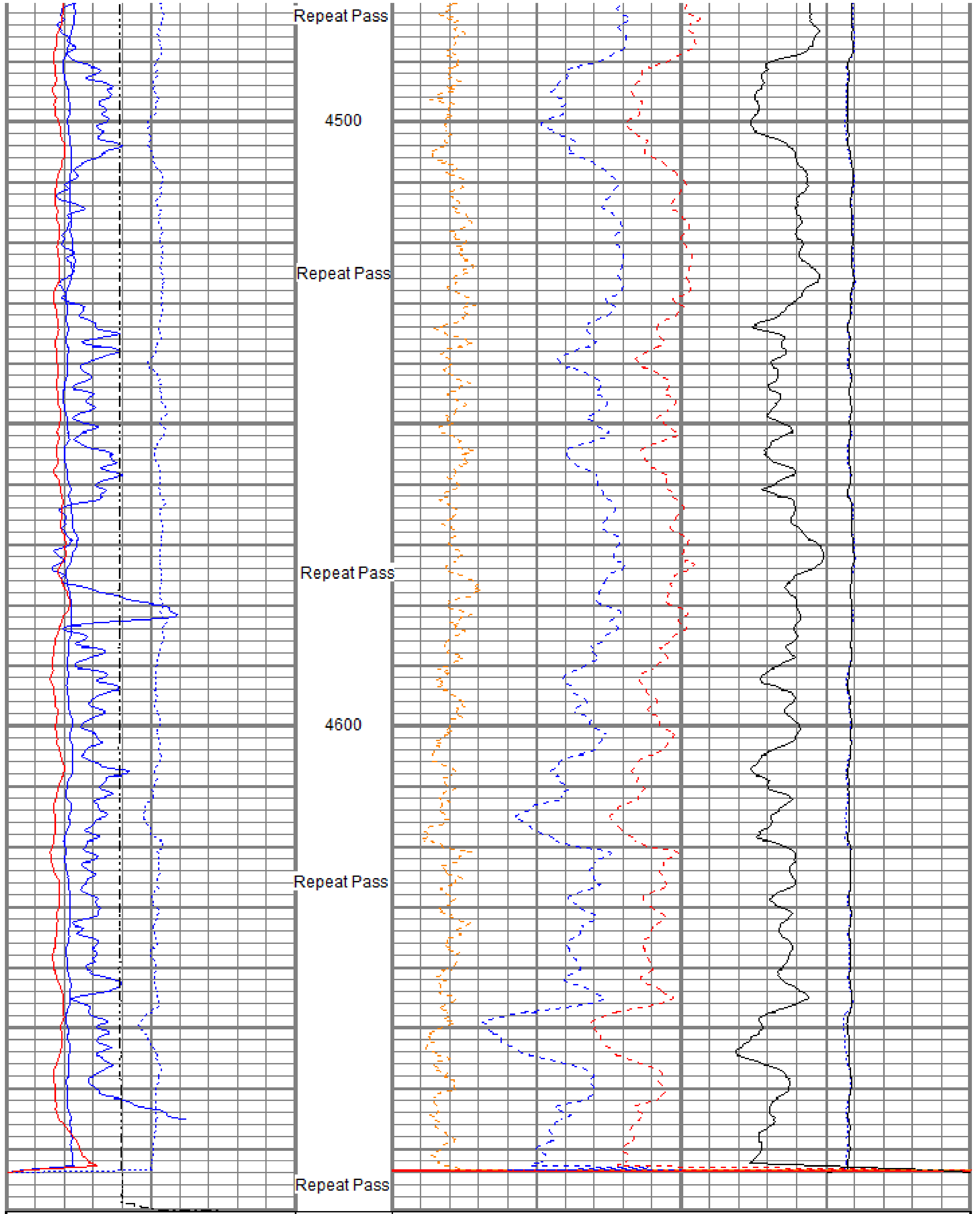
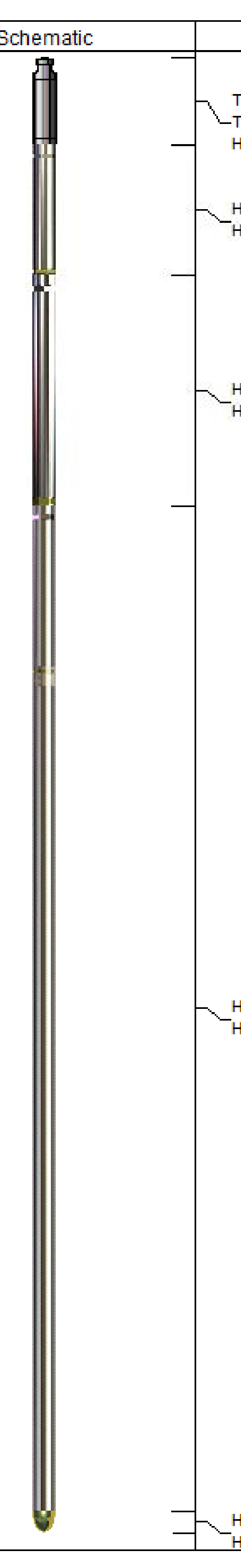
Repeat Pass

Database File	f:\data\tep\federal rwf 312-12_pn\tep_federal rwf 312-12_pn_02-22-20.db
Dataset Pathname	repeat.2
Presentation Format	ros_pdn_hunter
Dataset Creation	Sat Feb 22 16:34:56 2020
Charted by	Depth in Feet scaled 1:240

0	GCL_GR (GAPI)	150	4	RNF2	0
-100	Line Speed (ft/min)	100	60	SIGMA (cu)	0
0	NIRS (cps)	400000	4.5	RNFI	-1
0	BKGN (cps)	4000		PN Porosity (Sandstone)	
0	BKGF (cps)	2000	1	(Porosity Decimal Fraction)	0
			0	FIS2 (cps)	45000
			0	NIS2 (cps	100000



0	GCL_GR (GAPI)	150	4	RNF2	0
-100	Line Speed (ft/min)	100	60	SIGMA (cu)	0
0	NIRS (cps)	400000	4.5	RNFI	-1
0	BKGN (cps)	4000		PN Porosity (Sandstone)	
0	BKGF (cps)	2000	1	(Porosity Decimal Fraction)	0
			0	FIS2 (cps)	45000
			0	NIS2 (cps	100000



Sensor	Offset (ft)	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-001 (000279) HWS Telemetry Control Unit	1.52	1.69	7.80
GCL_GR	12.50	HWS_GCL-001 (001681) 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 rwf 312-12_pn_02-22-20.db: field/well/run1/main.2
Total length:	17.24 ft
Total weight:	83.41 lb
O.D.:	1.69 in

Calibration Report

Database File	f:\data\tep\federal rwf 312-12_pn\tep_federal rwf 312-12_pn_02-22-20.db
Dataset Pathname	main.2
Dataset Creation	Sat Feb 22 16:33:20 2020

RAS Calibration Report

Calibration Date: Sat Sep 16 14:23 2019

Meas #: 003040

Water Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	23.1	24.1	0.18
Sigma Far	SIGF	22.8	23.5	0.20
Ratio Near-Long Capture	RNL2	5.79	7.46	0.05
Ratio Near-Long Burst	RNLB	6.49	7.82	0.04
Ratio Near-Far Capture	RNF2	1.85	2.03	0.01
Ratio Near-Far Burst	RNFB	2.03	2.19	0.01
Spectral Hydrogen Index	HIS2	12.84	13.86	0.22
Carbon-Oxygen Ratio	CORS	1.34	1.85	0.07
Ratio Burst-Capture Near	RNBC	1.46	1.68	0.01
Ratio Burst-Capture Far	RFBC	1.50	1.61	0.01

Hydrocarbon Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	25.7	27.8	0.27
Sigma Far	SIGF	25.1	26.1	0.23
Ratio Near-Long Capture	RNL2	1.78	3.38	0.02
Ratio Near-Long Burst	RNLB	2.57	5.01	0.02
Ratio Near-Far Capture	RNF2	0.98	1.32	0.01
Ratio Near-Far Burst	RNFB	1.30	1.68	0.01
Spectral Hydrogen Index	HIS2	16.68	19.26	0.36
Carbon-Oxygen Ratio	CORS	1.51	2.04	0.06
Ratio Burst-Capture Near	RNBC	2.23	2.37	0.02
Ratio Burst-Capture Far	RFBC	2.09	2.09	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/

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County	Garfield
State	Colorado