RELIANCE
OILFIELD SERVICES

Pulsed Neutron
Gamma Ray
Casing Collar Log

Company	Laramie Energy LLC
Well	CC Federal 0697-03-01W
Field	Grand Valley
County	Garfield
State	Colorado

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Field Grand Valley
County Garfield State Colorado

Location: API # : 05-045-23992
SEC 4 TWP 6S RGE 97W

Other Services
RBL

Permanent Datum Ground Level Elevation 8609'
Log Measured From Kelly Bushing 30 FT
Drilling Measured From Kelly Bushing

Elevation
K.B. 8639'
D.F. 8638'
G.L. 8609'

Date	20-AUG-2019
Run Number	Two
Depth Driller	10422 FT
Depth Logger	10319 FT
Bottom Logged Interval	10315 FT
Top Log Interval	4887 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	10:00
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	2598 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10422 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 17-AUG-2019
Log ran from 10315 FT to 4887 FT
Pulsed Neutron Data logged with the Hunter RAS Tool

Thank you for choosing Reliance Oilfield Services, LLC!

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Main Pass

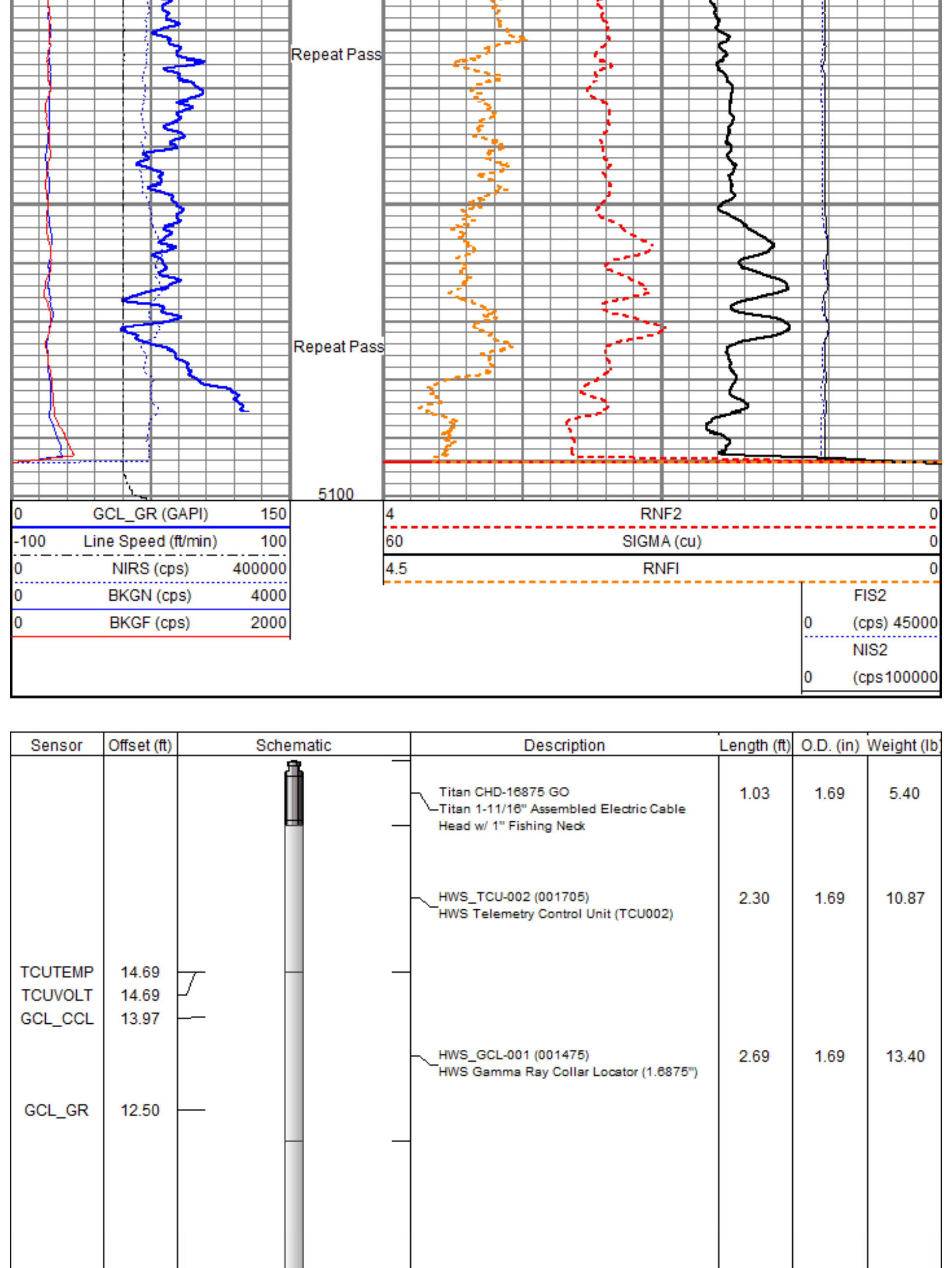
Database File	f:\data\laramie\cc federal 0697-03-01w\pn\laramie energy_cc federal 0697-03-01w_pn_08-20-19.db
Dataset Pathname	runSHIFTED/merge1
Presentation Format	ros_pdn_hunter
Dataset Creation	Fri Sep 06 13:57:07 2019
Charted by	Depth in Feet scaled 1:240

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	BKGN (cps)	4000	0	(cps)	45000
0	BKGF (cps)	2000		NIS2	
			0	(cps	100000

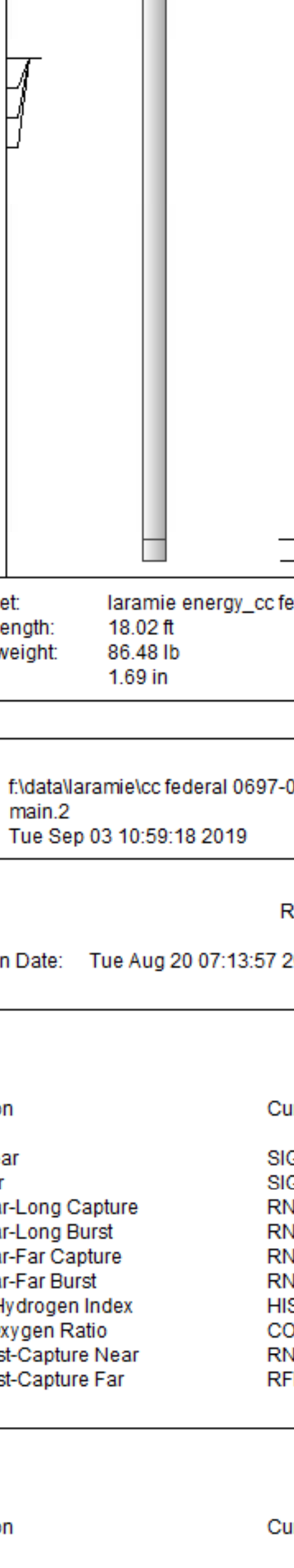
Repeat Pass

Database File f:\data\laramie\cc federal 0697-03-01w\pn\laramie energy_cc federal 0697-03-01w_pn_08-20-19.db
Dataset Pathname repeat.2
Presentation Format ros_pdn_hunter
Dataset Creation Tue Sep 03 11:00:52 2019
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	0
0	BKGN (cps)	4000		FIS2	
0	BKGF (cps)	2000	0	(cps)	45000
				NIS2	
			0	(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	0
0	BKGN (cps)	4000		FIS2	
0	BKGF (cps)	2000	0	(cps)	45000
				NIS2	
			0	(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
		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 (001475) 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 (003040) 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: laramie energy_cc federal 0697-03-01w_pn_08-20-19.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 f:\data\laramie\cc federal 0697-03-01w\pn\laramie energy_cc federal 0697-03-01w_pn_08-20-19.db
Dataset Pathname main.2
Dataset Creation Tue Sep 03 10:59:18 2019

RAS Calibration Report

Calibration Date: Tue Aug 20 07:13:57 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	7.81	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	2.05	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:	001475	
Tool Model:	001	
Performed:	Fri Oct 19 14:55:00 2018	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	
Calibrator Reading:	1.0	
Sensitivity:	1.0000	GAPI/

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State	Colorado