RELIANCE
OILFIELD SERVICES

Pulsed Neutron
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Clough NR 334-3
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Clough NR 334-3
Field Rulison
County Garfield State Colorado
Location: API # : 05-045-23909
SEC 3 TWP 6S RGE 94W
Other Services: RBL

Permanent Datum	Ground Level	Elevation 6719.1'	Elevation K.B. 6743.1' D.F. 6742.1' G.L. 6719.1'
Log Measured From	Kelly Bushing	24 FT	
Drilling Measured From	Kelly Bushing		

Date	15-JAN-2018
Run Number	Two
Depth Driller	9995 FT
Depth Logger	9796 FT
Bottom Logged Interval	9790 FT
Top Log Interval	5553 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	4:40
Equipment Number	HD-0359
Location	Grand Junction, CO
Recorded By	Z. Fisher
Witnessed By	D.Welsh

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	1108 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9954 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-JAN-2018
Log ran from 9790 FT to 5553 FT
Pulsed Neutron Data logged with the Hunter RAS Tool

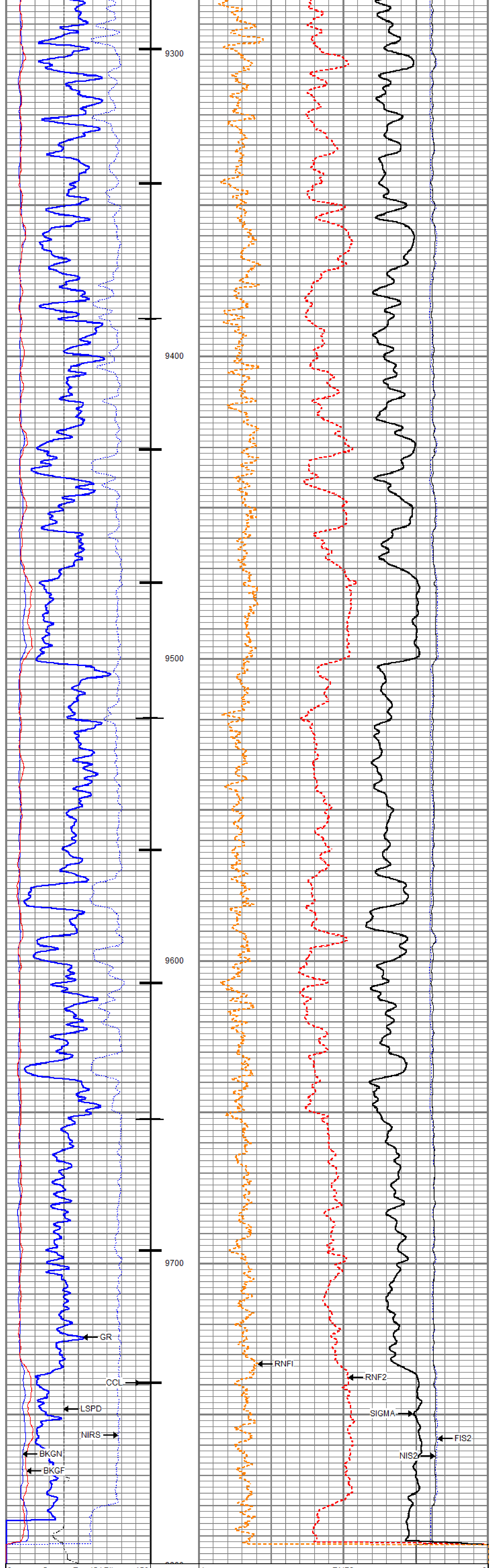
Thank you for choosing Reliance Oilfield Services, LLC!

RELIANCE
OILFIELD SERVICES

Main Pass

Database File	tep\tep_clough nr 334-3_pn_01-15-19\tep_clough_nr_334-3_pn_1-15-2019.db
Dataset Pathname	main_shift/merge1
Presentation Format	ros_pdn_hunter
Dataset Creation	Tue Jan 15 15:39:03 2019
Charted by	Depth in Feet scaled 1:240

Left scale	Curve	Right scale
0	Gamma Ray (GAPI)	150
	Casing Collar Locator	
-100	Line Speed (ft/min)	100
0	NIRS	400000
0	BKGN (cps)	4000
0	BKGF (cps)	2000
4	RNF2	0
60	SIGMA (cu)	0
4.5	RNFI	0
0	FIS2	45000
0	NIS2	100000



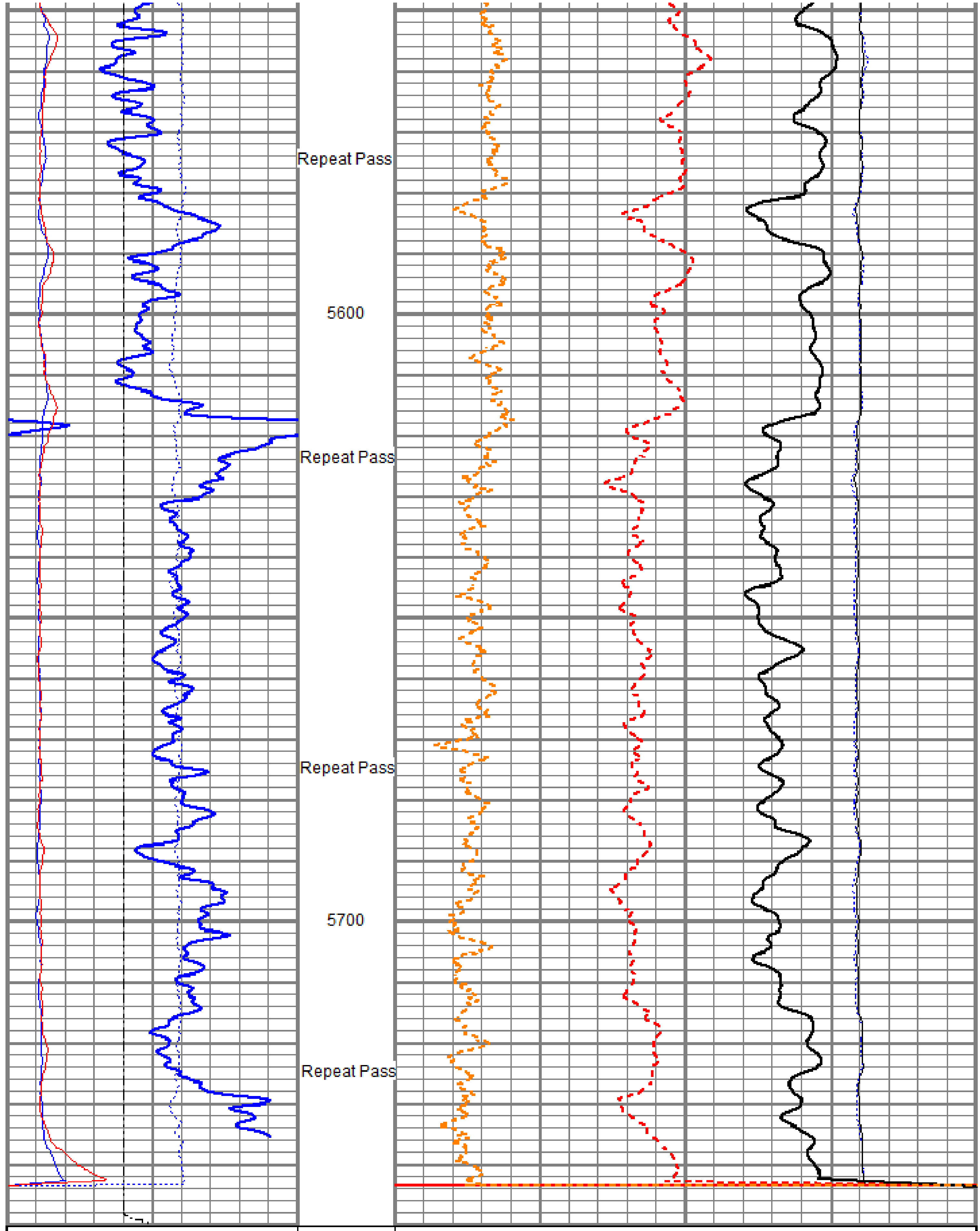
Min	Curve	Max	Min	Curve	Max
0	Gamma Ray (GAPI)	150	4	RNF2	0
	Casing Collar Locator		60	SIGMA (cu)	0
-100	Line Speed (ft/min)	100	4.5	RNFI	0
0	NIRS (cps)	400000	0	FIS2	45000
0	BKGN (cps)	4000	0	NIS2	100000
0	BKGF (cps)	2000			

RELIANCE OILFIELD SERVICES

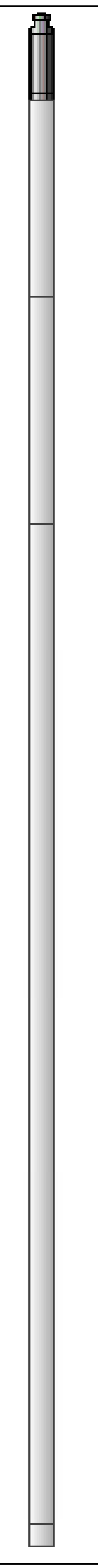
Repeat Pass

Database File tep\tep_clough nr 334-3_pn_01-15-19\tep_clough_nr_334-3_pn_1-15-2019.db
Dataset Pathname repeat.2
Presentation Format ros_pdn_hunter
Dataset Creation Tue Jan 15 09:29:34 2019
Charted by Depth in Feet scaled 1:240

Min	Curve	Max	Min	Curve	Max
0	Gamma Ray (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	0	FIS2 (cps)	45000
0	BKGF (cps)	2000	0	NIS2 (cps	100000



Min	Curve	Max	Min	Curve	Max
0	Gamma Ray (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	0	FIS2 (cps)	45000
0	BKGF (cps)	2000	0	NIS2 (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 (001704) HWS Telemetry Control Unit (TCU002)	2.30	1.69	10.87
GCL_GR GCL_GR	12.50 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 (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_clough_nr_334-3_pn_1-15-2019.db: field/well/run1/repeat.2
Total length: 18.02 ft
Total weight: 86.48 lb
O.D.: 1.69 in

Calibration Report

Database File c:\programdata\warrior\data\tep\tep_clough nr 334-3_pn_01-15-19\tep_clough_nr_334-3_pn_1-15-2019.db
Dataset Pathname repeat.2
Dataset Creation Tue Jan 15 09:29:34 2019

RAS Calibration Report

Calibration Date: Tue Jan 15 04:01:51 2019 Meas #: 003041

Water Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	23.1	24.2	0.35
Sigma Far	SIGF	22.8	23.4	0.46
Ratio Near-Long Capture	RNL2	5.79	6.61	0.05
Ratio Near-Long Burst	RNLB	6.49	6.90	0.05
Ratio Near-Far Capture	RNF2	1.85	2.02	0.02
Ratio Near-Far Burst	RNFB	2.03	2.19	0.01
Spectral Hydrogen Index	HIS2	12.84	13.24	0.21
Carbon-Oxygen Ratio	CORS	1.34	1.36	0.05
Ratio Burst-Capture Near	RNBC	1.46	1.74	0.02
Ratio Burst-Capture Far	RFBC	1.50	1.65	0.01

Hydrocarbon Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	25.7	26.5	0.49
Sigma Far	SIGF	25.1	25.9	0.54
Ratio Near-Long Capture	RNL2	1.78	3.07	0.03
Ratio Near-Long Burst	RNLB	2.57	4.52	0.02
Ratio Near-Far Capture	RNF2	0.98	1.31	0.01
Ratio Near-Far Burst	RNFB	1.30	1.67	0.01
Spectral Hydrogen Index	HIS2	16.68	18.05	0.35
Carbon-Oxygen Ratio	CORS	1.51	1.56	0.04
Ratio Burst-Capture Near	RNBC	2.23	2.47	0.02
Ratio Burst-Capture Far	RFBC	2.09	2.16	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/

RELIANCE OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Clough NR 334-3
Field	Rulison
County	Garfield
State	Colorado