



## LWD MEMORY LOG

**Gamma Ray**  
**Azimuthal Gamma Ray**

Scale: **Company: Bonanza Creek Oil Company**

**Well:** Antelope Federal 44-20-1 / AKRLNC

Measured Depth	Field:	Weld County
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Depth Reference: **County: Weid** **County: United States**

Driller's Depth  
State: Colorado

Status:	Surface Location:	Other Services
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Final Print	Latitude:	040 22 46.345 N
	Longitude:	104° 20' 47.756" W

API No: 05-123-49090-00

Job ID: 109775619

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SEC: 20    TWN: 5N    RGE: 62W

Permanent Datum (P.D.):	Mean Sea Level	Elevation:	0.00 ft
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Log Measured From:	Rig Floor	Above P.D.	4672.00 ft
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Dates	Interval Drilled	Magnetic Field Reference
1998-01-01	0-1000	0.0000
1998-01-02	1000-2000	0.0001
1998-01-03	2000-3000	0.0002
1998-01-04	3000-4000	0.0003
1998-01-05	4000-5000	0.0004
1998-01-06	5000-6000	0.0005
1998-01-07	6000-7000	0.0006
1998-01-08	7000-8000	0.0007
1998-01-09	8000-9000	0.0008
1998-01-10	9000-10000	0.0009
1998-01-11	10000-11000	0.0010
1998-01-12	11000-12000	0.0011
1998-01-13	12000-13000	0.0012
1998-01-14	13000-14000	0.0013
1998-01-15	14000-15000	0.0014
1998-01-16	15000-16000	0.0015
1998-01-17	16000-17000	0.0016
1998-01-18	17000-18000	0.0017
1998-01-19	18000-19000	0.0018
1998-01-20	19000-20000	0.0019
1998-01-21	20000-21000	0.0020
1998-01-22	21000-22000	0.0021
1998-01-23	22000-23000	0.0022
1998-01-24	23000-24000	0.0023
1998-01-25	24000-25000	0.0024
1998-01-26	25000-26000	0.0025
1998-01-27	26000-27000	0.0026
1998-01-28	27000-28000	0.0027
1998-01-29	28000-29000	0.0028
1998-01-30	29000-30000	0.0029
1998-01-31	30000-31000	0.0030
1998-02-01	31000-32000	0.0031
1998-02-02	32000-33000	0.0032
1998-02-03	33000-34000	0.0033
1998-02-04	34000-35000	0.0034
1998-02-05	35000-36000	0.0035
1998-02-06	36000-37000	0.0036
1998-02-07	37000-38000	0.0037
1998-02-08	38000-39000	0.0038
1998-02-09	39000-40000	0.0039
1998-02-10	40000-41000	0.0040
1998-02-11	41000-42000	0.0041
1998-02-12	42000-43000	0.0042
1998-02-13	43000-44000	0.0043
1998-02-14	44000-45000	0.0044
1998-02-15	45000-46000	0.0045
1998-02-16	46000-47000	0.0046
1998-02-17	47000-48000	0.0047
1998-02-18	48000-49000	0.0048
1998-02-19	49000-50000	0.0049
1998-02-20	50000-51000	0.0050
1998-02-21	51000-52000	0.0051
1998-02-22	52000-53000	0.0052
1998-02-23	53000-54000	0.0053
1998-02-24	54000-55000	0.0054
1998-02-25	55000-56000	0.0055
1998-02-26	56000-57000	0.0056
1998-02-27	57000-58000	0.0057
1998-02-28	58000-59000	0.0058
1998-02-29	59000-60000	0.0059
1998-03-01	60000-61000	0.0060
1998-03-02	61000-62000	0.0061
1998-03-03	62000-63000	0.0062
1998-03-04	63000-64000	0.0063
1998-03-05	64000-65000	0.0064
1998-03-06	65000-66000	0.0065
1998-03-07	66000-67000	0.0066
1998-03-08	67000-68000	0.0067
1998-03-09	68000-69000	0.0068
1998-03-10	69000-70000	0.0069
1998-03-11	70000-71000	0.0070
1998-03-12	71000-72000	0.0071
1998-03-13	72000-73000	0.0072
1998-03-14	73000-74000	0.0073
1998-03-15	74000-75000	0.0074
1998-03-16	75000-76000	0.0075
1998-03-17	76000-77000	0.0076
1998-03-18	77000-78000	0.0077
1998-03-1		

Date From: 2019-04-25 Top: (ft) 17.00 Azi Reference North: True Dip Angle: (deg)

Serial Date	Bottom:	17 Dec. 00	Mean Deflection North Component (mm)
Date 10:	2000-03-03		total magnetic field strength: (mT)

Spud Date: 2019-04-25	Mag to Reference North Correction: (deg)
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Borehole Record

Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
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13.500	17.00	1637.00	9.625	36.00	17.00	1
17.00						

0.000	1007.00	17100.00				

[illegible][illegible][illegible][illegible]

	Mean		Deviation	
	1	2	1	2
1	1.00	1.00	0.00	0.00
2	0.00	1.00	1.00	0.00
3	0.00	0.00	0.00	1.00
4	0.00	0.00	0.00	0.00

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Diesel-Oil Based Mud	1637.00	17163.00	8.500	15526.00	18.14	125.58	90.12
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[illegible][illegible][illegible]

Acquisition System	Software Version	Author

Baker Hughes Cadence	RT 5.0	Rig:	Akita 519
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Plot Studio	5.0.8260.3	Contractor:	Akita Drilling
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## Log Run Summary

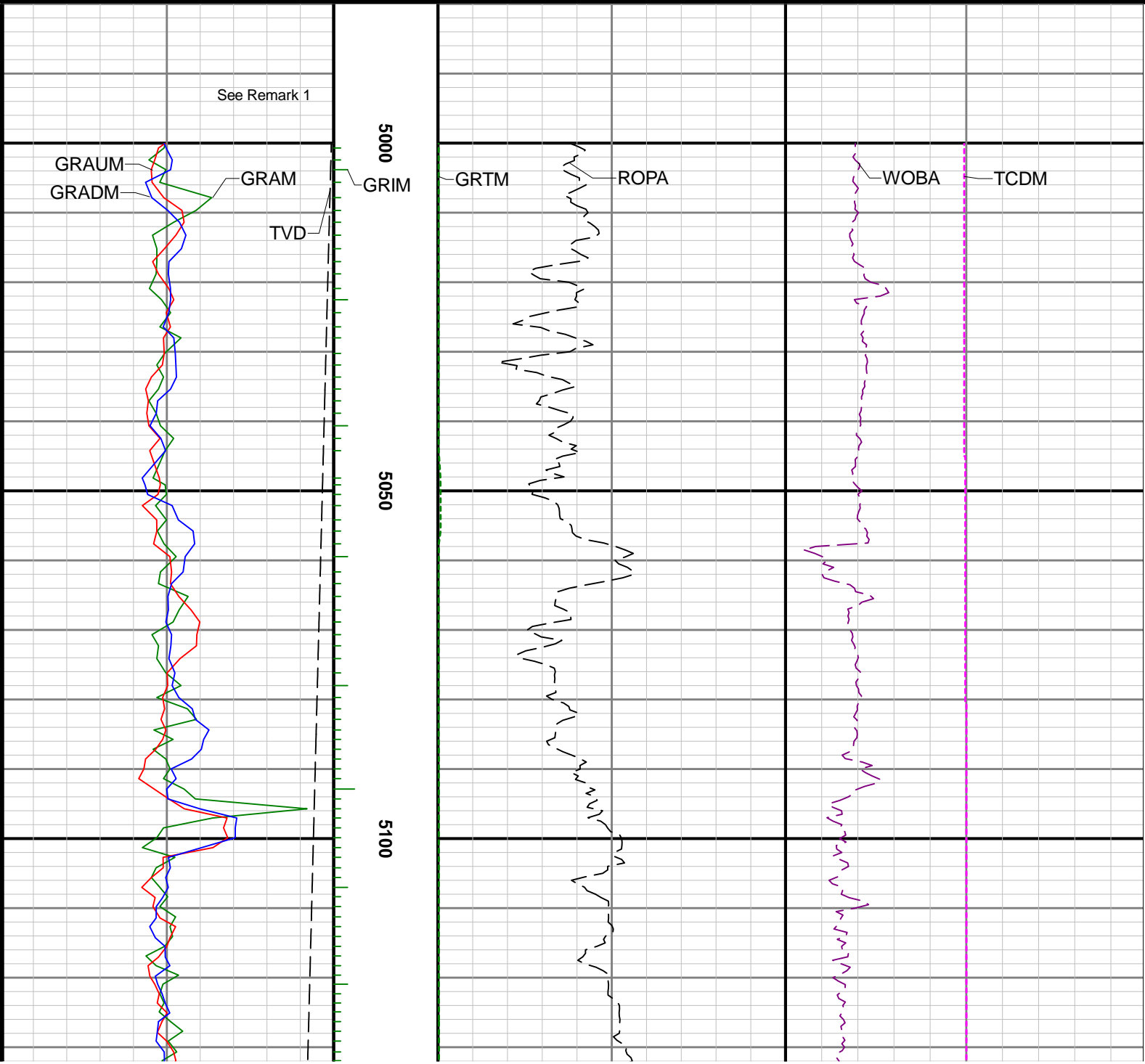
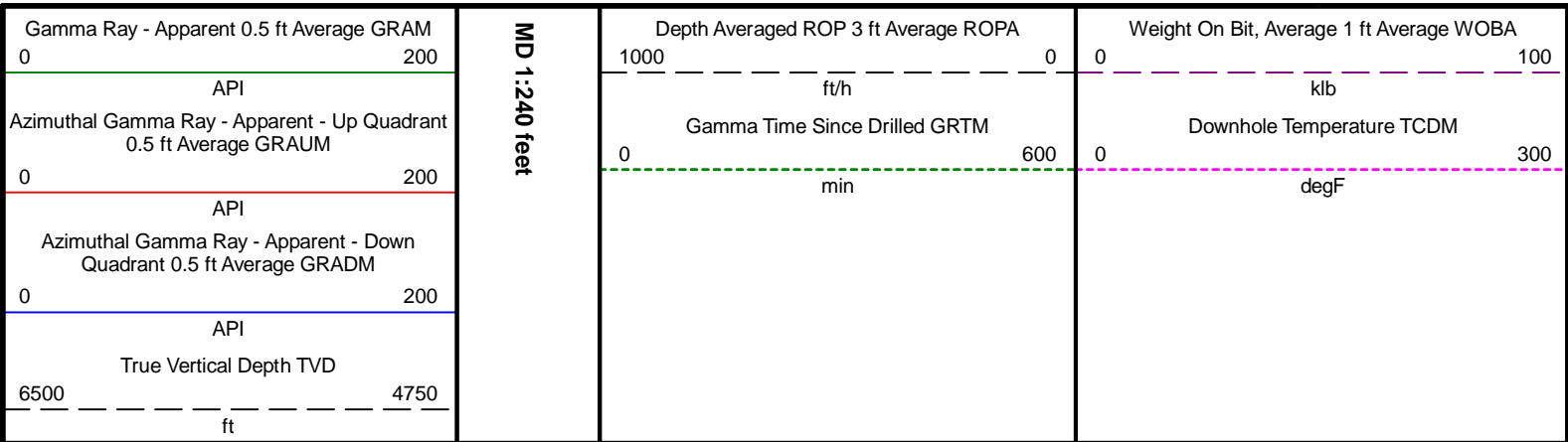
Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours
						Top	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	13.500	PDC	2.50	Steerable	0.00	0.00	17.00	1637.00	2019-04-25 09:57	2019-04-25 17:38	7.02
2	2	8.500	PDC	3.00	Rotary Steerable	5000.00	17150.00	1637.00	17163.00	2019-05-02 02:05	2019-05-05 00:13	74.35

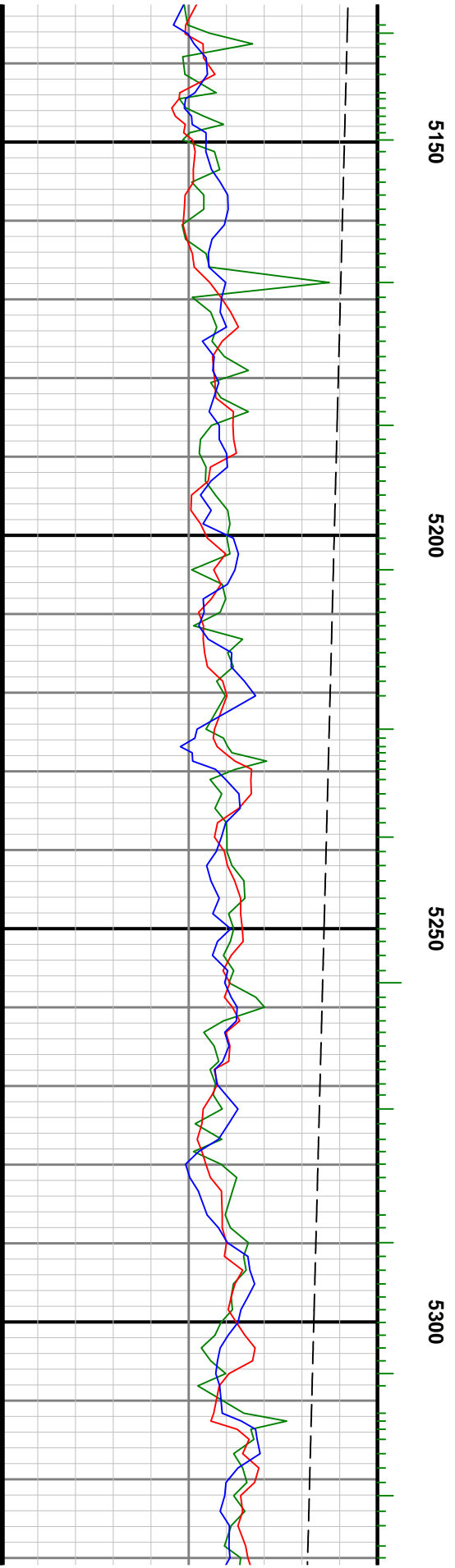
## Crew

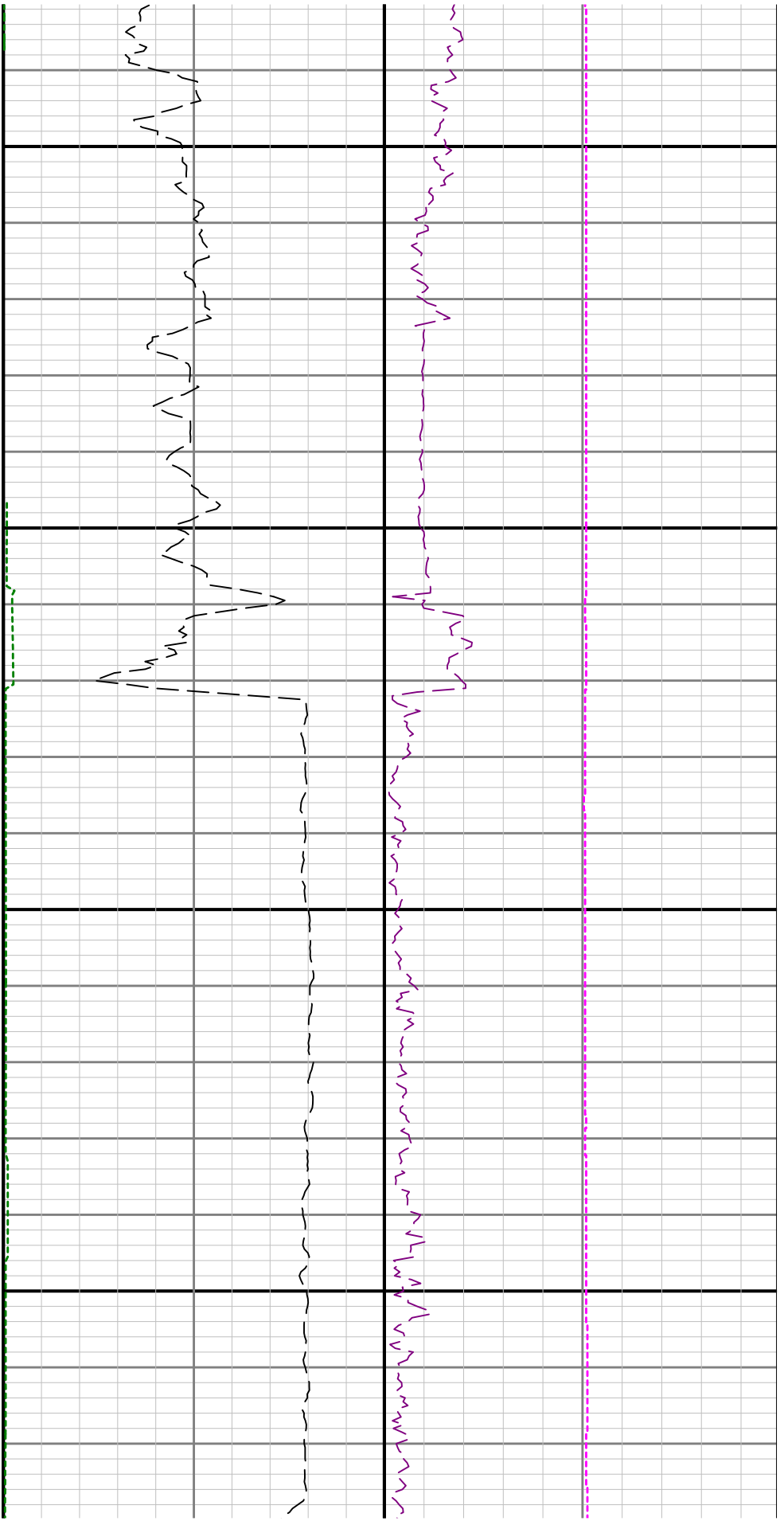
Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Steve Bueghly	2019-04-30	2019-05-05						

## Mud Properties Record

Curve Mnemonics		
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	Gamma Ray - Time Since Drilled - Memory	min
GRADM	Gamma Ray - Apparent - Down Quadrant - Memory 0.5 ft Average	API
GRAUM	Gamma Ray - Apparent - Up Quadrant - Memory 0.5 ft Average	API
TCDM	Directional Real-Time Survey Temperature	degF







5350

5400

5450

5500

