



Gamma Ray

Scale:

Company: Noble Energy

1:1200 MD

Well: Hullabaloo Y21-716

Depth Reference:

Field: Weld County

Driller's Depth

County: Weld

Country: United States

State: Colorado

Status:

Final Print

Surface Location:
Latitude: 40° 45' 43" N
Longitude: 107° 41' 26" W

Other Services:

API No: 0512345232

Job ID: 8781231

SEC: 16 TWN: 2N RGE: 64W

Permanent Datum (P.D.): Mean Sea Level

Log Measured From: Rig Floor

Elevation: 4946.00 ft

Above P.D. 30.00 ft

Elev. KB: 4976.00 ft

Elev. DF: 4946.00 ft

Dates

Interval Logged

Magnetic Field Reference

Date From: 2017-10-08

Top: (ft)

2017.00

Azi Reference North: Grid

Dip Angle: (deg)

8.06

Date To: 2017-10-09

Bottom: (ft)

17414.00

Total Magnetic Field Strength: (nT)

52267

Spud Date: 2017-10-07

Mag to Reference North Correction: (deg)

7.45 E

Borehole Record

Casing Record

Hole Size (in)

From (ft)

To (ft)

Size (in)

Weight (lb/ft)

From (ft)

To (ft)

13.500

30.00

2029.00

9.625

36.00

30.00

2019.00

8.500

2029.00

17414.00

Gamma Ray

Company: Noble Energy

1:1200 MD

Well: Hullabaloo Y21-716

Field: Weld County

County: Weld

Country: United States

State: Colorado

Surface Location:
Latitude: 40° 45' 43" N
Longitude: 107° 41' 26" W

Other Services:

API No: 0512345232

Job ID: 8781231

SEC: 16 TWN: 2N RGE: 64W

Permanent Datum (P.D.): Mean Sea Level

Log Measured From: Rig Floor

Elevation: 4946.00 ft
Above P.D. 30.00 ft
Elev. KB: 4976.00 ft
Elev. DF: 4946.00 ft

Interval Logged

Magnetic Field Reference

Date From: 2017-10-08

Top: (ft) 2017.00

Azi Reference North: Grid

Dip Angle: (deg) 8.06

Date To: 2017-10-09

Bottom: (ft) 17414.00

Total Magnetic Field Strength: (nT) 52267

Spud Date: 2017-10-07

Mag to Reference North Correction: (deg) 7.45 E

Borehole Record

Casing Record

Hole Size (in)

From (ft)

To (ft)

Size (in)

Weight (lb/ft)

From (ft)

To (ft)

13.500

30.00

2029.00

9.625

36.00

30.00

2019.00

8.500

2029.00

17414.00

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 (h)
						Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	
1	1	8.500	PDC	2.00	AutoTrak Curve	2017.00	17402.00	2029.00	17414.00	2017-10-07 21:46	2017-10-11 15:08	83.15

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
John Bryson	2017-10-07	2017-10-12	Steve Cano	2017-10-08	2017-10-11			

Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
1941-01-05 16:51	1	15413.00	Oil Based Mud	9.2	9	N/A	N/A	84.5/15.5	Active Pit	23500	0.00
2017-10-07 12:46	1	2029.00	Oil Based Mud	8.6	9	N/A	N/A	84.1/15.9	Active Pit	32000	0.00
2017-10-10 12:07	1	4990.00	Oil Based Mud	9.0	9	N/A	N/A	83.6/16.4	Active Pit	27500	0.00
2017-10-10 12:08	1	9920.00	Oil Based Mud	9.3	8	N/A	N/A	84.4/15.6	Active Pit	25000	0.00

Equipment and Service Data

Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
1	ATC_SU	12339221	Near Bit VSS	5.93	6.74	7.000	4.330
1	ATC_SU	12339221	Near Bit Inclination	5.93	6.74	7.000	4.330
1	ATC_MWD	14219812	Gamma (single)	2.20	12.36	7.000	3.250
1	ATC_MWD	14219812	Directional (mag)	12.27	22.43	7.000	3.250

Service and Tool Mnemonics


Mnemonic	Name	Description
ATC_SU	ATC_SU	Auto Trak Curve Steering Unit
ATC_MWD	ATC_MWD	Auto Trak Curve MWD
ATC_LCPM	ATC_LCPM	Auto Trak Curve LCPM

Comments

- 1
- Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes, depth calibration and measurements could not be independently verified.
- 2
- Baker Hughes LWD run 1 utilized a 6.75 inch NaviGamma service (Gamma Ray and Directional) behind an 8.5 inch bit and rotary steerable assembly from 2029 to 17414 feet MD (2033 to 7101 feet TVD).
- 3
- Periodic gaps in gamma data are due to issues with memory module and drilling ahead while downlinking.

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	17412.00	8.500	1	The interval from 17402 to 17414 feet MD (7101 feet TVD) was not logged due to sensor offset at well TD.



Company

Well

Interval

Created

Noble Energy

Hullabaloo Y21-716

Date From: 2017-10-08 15:46:01

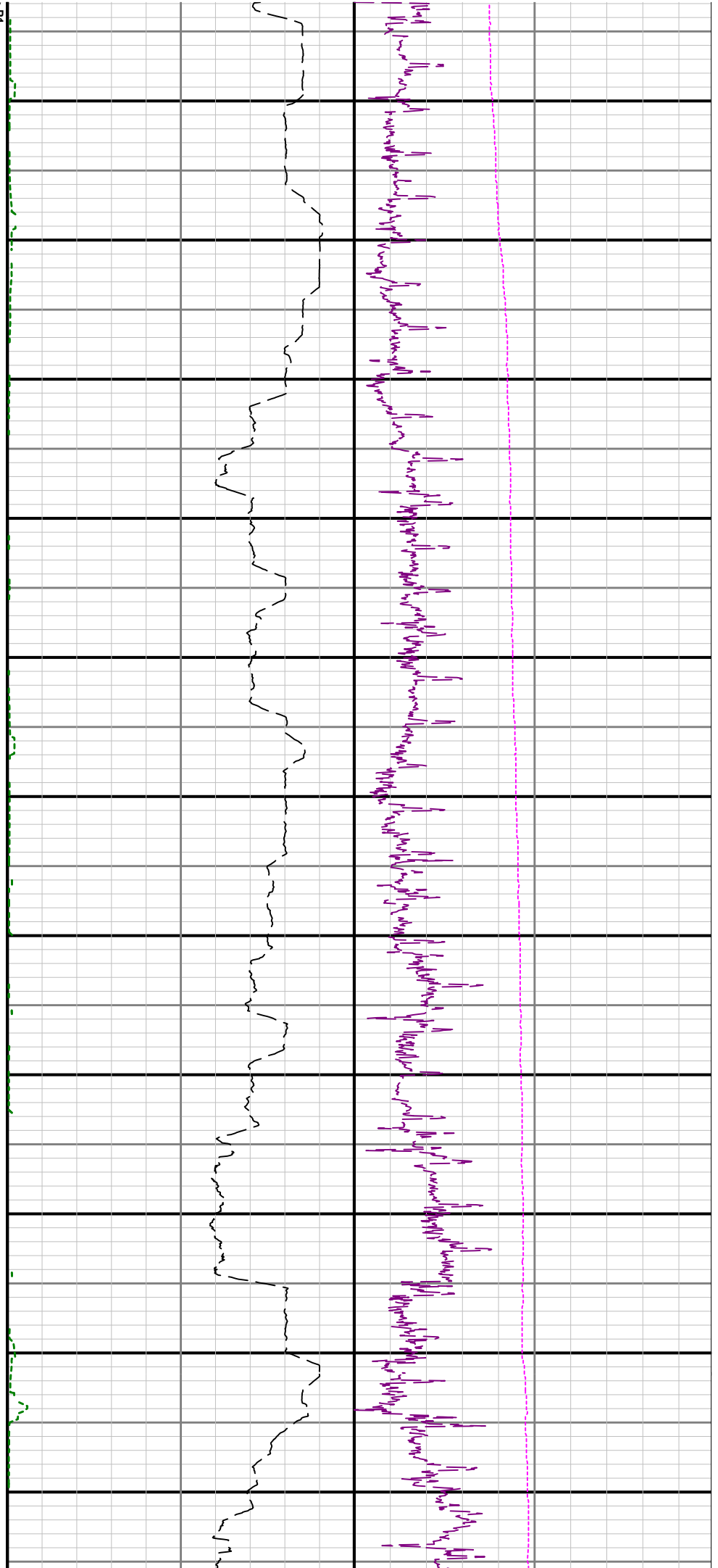
Date To: 2017-10-09 04:23:31

2017-10-12 09:33:17

Top: 2015.00

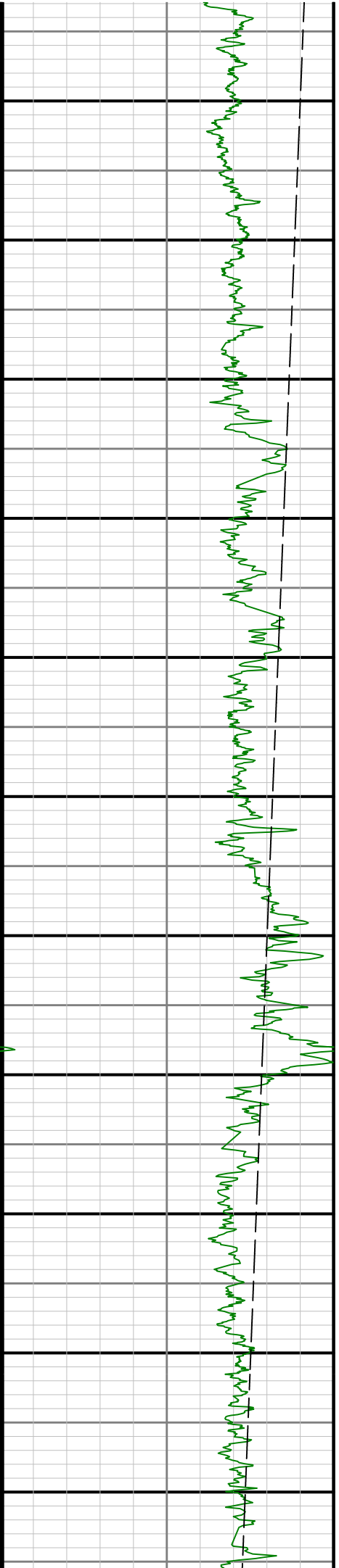
Bottom: 7134.00

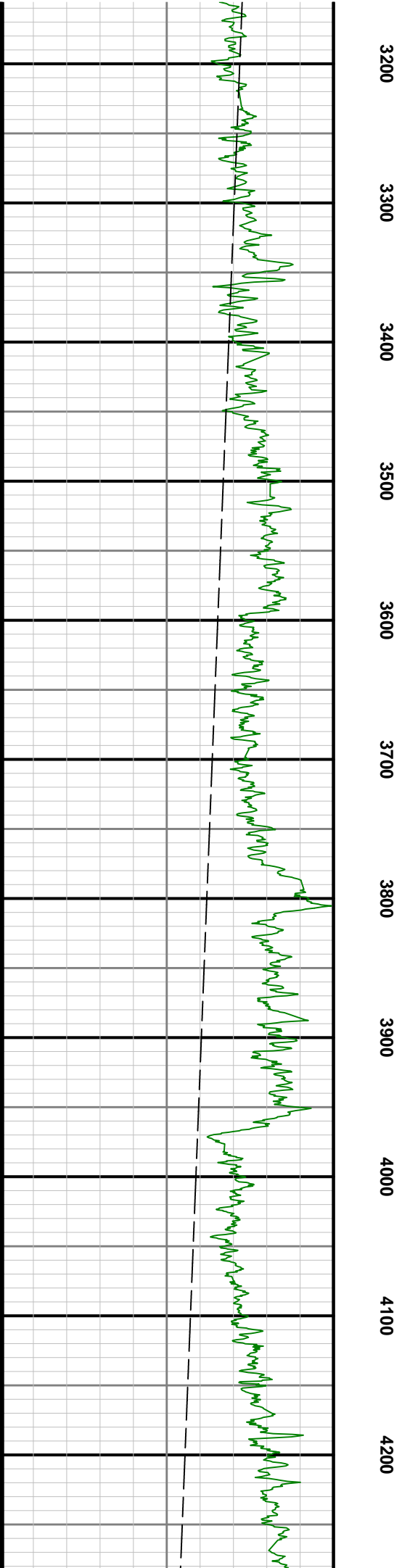
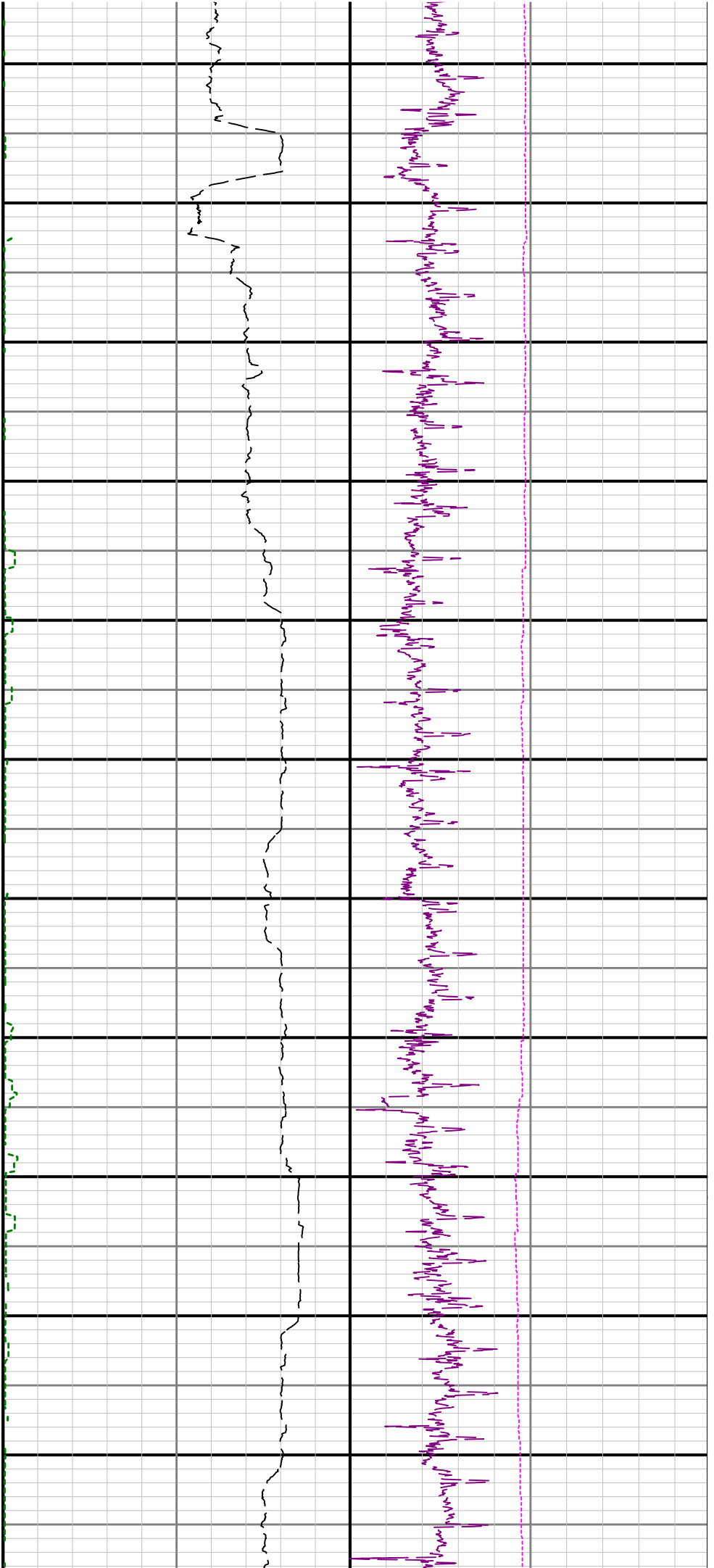
Gamma Ray - Apparent 3 ft Average GRAM 0150	MD 1:1200 feet	Depth Averaged ROP 10 ft Average ROPA 10000	Weight On Bit, Average 1 ft Average WOBA 050
API True Vertical Depth TVD 75001500 ft		ft/h Gamma Time Since Drilled GRTX 0600 min	klb Downhole Temperature TCDM 0300 degF
	1900		
	2000		

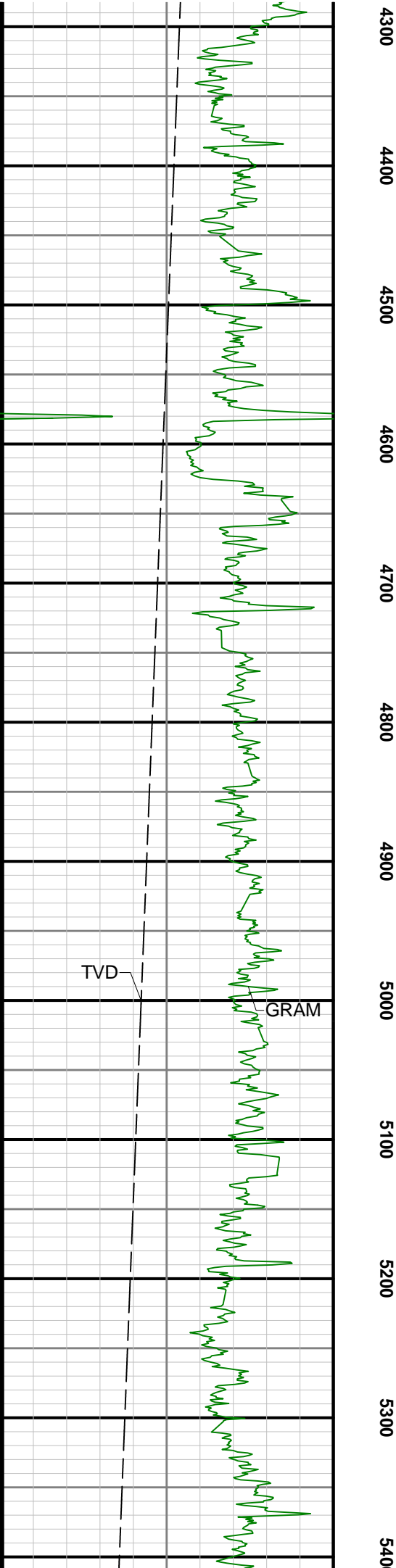
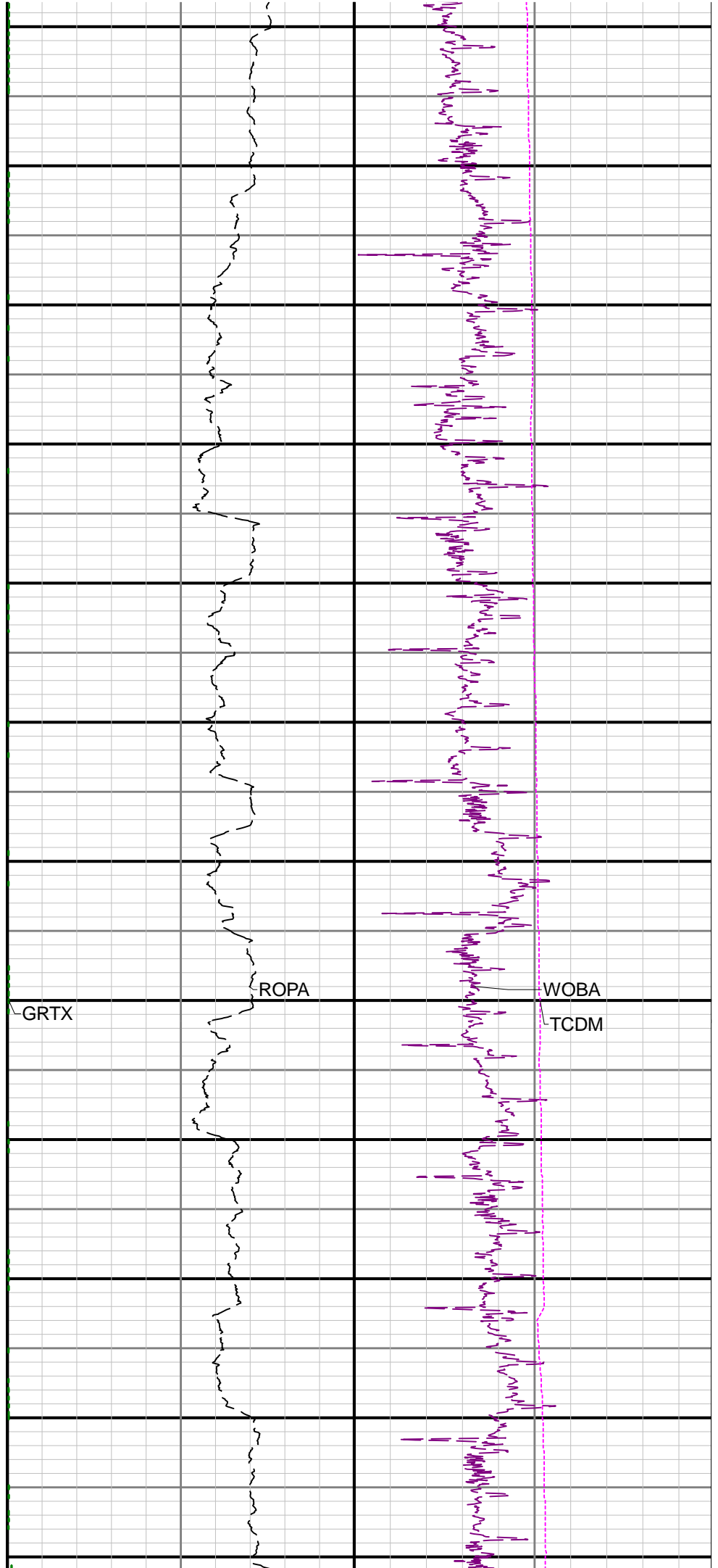


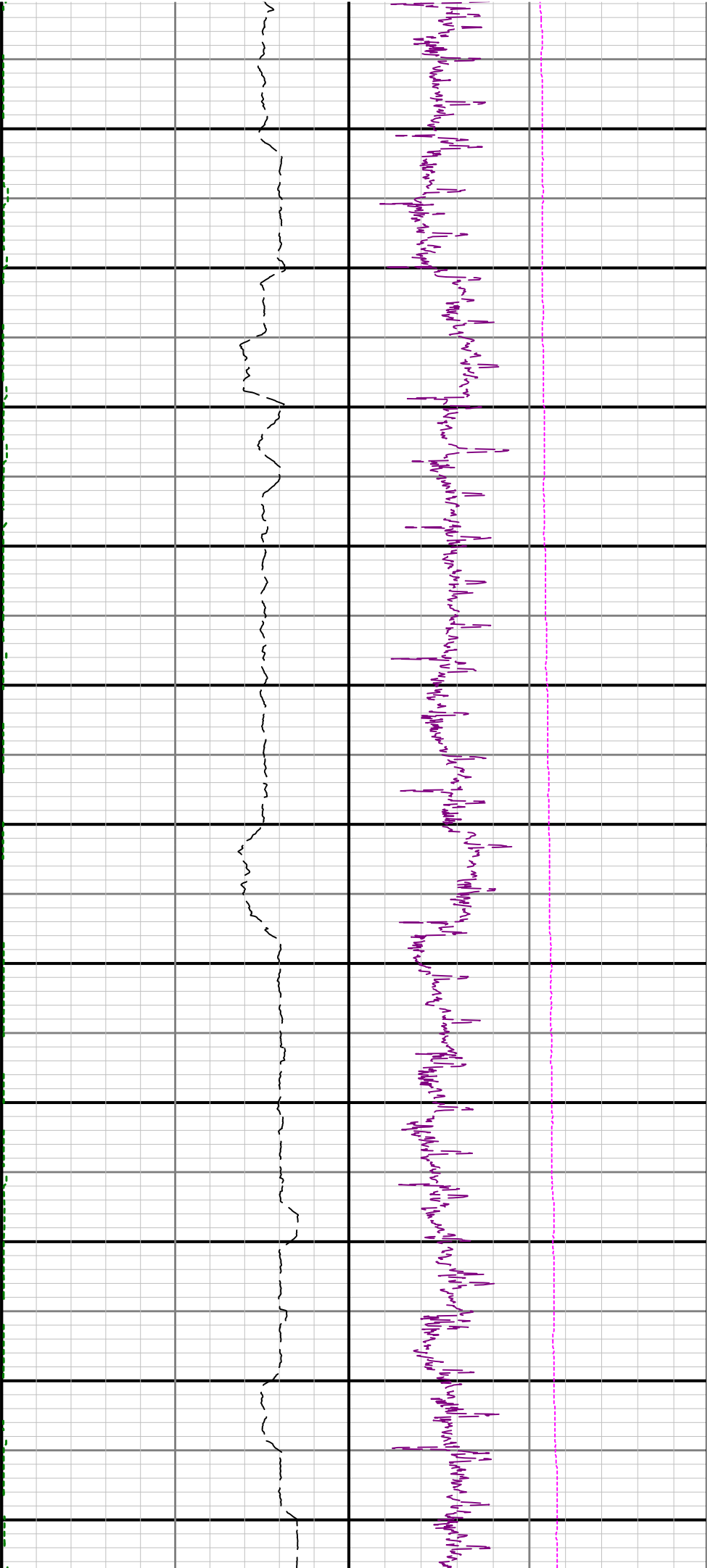
> R1

2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100









0 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500

