



REALTIME LOG

NATURAL FORMATION EVALUATION
GAMMA RAY

Scale:

1:240

MEASURED DEPTH

Company: Kerr-McGee Oil & Gas Onshore LP

Well: Rattler 13N-3HZ

Field: Weld County (Kerr McGee)

Region: Continental US Country: United States

Status:

Field Print

Surface Location:

Latitude: 40° 10' 30.698" N

Longitude: 104° 46' 12.040" W

Other Services:

Directional
VSS

API Number:
05-123-37075

Section: 34 TWN: 3N Range: 68W

Permanent Datum (P.D.): Ground Level Elevation: 4970.00 ft.

Log Measured From: Kelly Bushing 13.00 ft. Above P.D.

Depth Reference: Driller's Depth

Elevations:
KB: 4983.00 ft.
DF: N/A
GL: 4970.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 6727.0 ft. Date From: 04 Aug 13 Dip Angle: 67.02° Azi Reference North: True

Bottom: 12867.0 ft. Date To: 11 Aug 2013 Total Mag to Reference

Spud Date: 03 Aug 2013 Field Strength: 52800.0 nT North Correction: 8.51°

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
13.500 in.	Surface	824.0 ft.	9.625 in.	36.00 lb/ft	Surface	813.0 ft.
8.750 in.	824.0 ft.	7658.0 ft.	7.000 in.	26.00 lb/ft	Surface	7648.0 ft.
6.125 in.	7658.0 ft.	12867.0 ft.				

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based	Surface	12867.0 ft.	8.750 in.	Intermediate	1.5° / 39.6°	89.4° / 182.6°
			6.125 in.	Lateral	89.4° / 182.6°	90.5° / 179.8°
					/	/
					/	/
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Log Run Summary

LWD Run No.	BHA Run No.	Bit Run No.	Bit Size (in.)	Bit Type	Bit Gauge Length (in.)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Time (hrs.)
							Top (ft.)	Bottom (ft.)	From (ft.)	To (ft.)	Start	End	
1	1	2	8.750	PDC	2.000	Steerable	6727.0	7387.0	824.0	7437.0	04 Aug 2013 20:02	05 Aug 2013 14:01	35.9
2	2	3	8.750	PDC	1.000	Steerable	7388.0	7612.0	7437.0	7658.0	07 Aug 2013 04:44	07 Aug 2013 13:23	11
3	3	4	6.125	PDC	3.000	Steerable	7610.0	12819.0	7658.0	12867.0	09 Aug 2013 14:16	11 Aug 2013 08:08	37.8

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Ian McCarrell	02 Aug 2013	12 Aug 2013	Nathan Leopold	02 Aug 2013	06 Aug 2013	Ryan Wunderlich	06 Aug 2013	12 Aug 2013

Mud Properties Record

Date / Time		LWD Run No.	Measured Depth (ft.)	Mud Type	Density (ppg)	Viscosity (cp)	pH	Fluid Loss (cc)	Oil / Water	Source	Total Chlorides ppm	K+ %
04 Aug 2013	23:00	1	6961.0	Water Based	9.5	12	8.9	5.4	1 / 94	Flow line	800	N/A
05 Aug 2013	21:30	1	7437.0	Water Based	9.5	13	9.6	5.6	1 / 92	Flow line	700	N/A
06 Aug 2013	22:00	2	7437.0	Water Based	9.5	11	8.9	4.4	1 / 92	Flow line	700	N/A
07 Aug 2013	20:00	2	7658.0	Water Based	10.1	13	8.5	4.2	1 / 90	Flow line	700	N/A
08 Aug 2013	19:30	2	7658.0	Water Based	9.7	6	9.0	4.8	1 / 91	Flow line	900	N/A
09 Aug 2013	21:00	3	7858.0	Water Based	9.3	11	9.3	5.8	1 / 92	Flow line	800	N/A
10 Aug 2013	21:00	3	11556.0	Water Based	9.8	14	8.5	5.8	1 / 91	Flow line	800	N/A

Mnemonics

Curve	Description	Units
GRAX	Gamma Ray Apparent, 0.5 ft. Avg.	API
GRIX	Gamma Ray Density	points
GRSI	Gamma Ray Slide Indicator	Unitless
GRTX	Gamma Ray Time Since Drilled	min.
ROPA	Rate of Penetration, 3.0 ft. Avg	ft/hr
TCDX	Downhole Temperature	degF.
TVD	True Vertical Depth	ft.
WOBA	Surface Weight On Bit, 1.0 ft. Avg.	kLbs.

Equipment and Service Data

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft.)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12479874	Directional	55.18	6.750	2.250
1	SRIG	10595781	Gamma	51.80	6.750	2.250
2	DIR	12479874	Directional	52.00	6.750	2.250
2	SRIG	10595781	Gamma	48.62	6.750	2.250
3	DIR	11941435	Directional	51.84	4.750	2.625
3	SRIG	11732967	Gamma	48.46	4.750	2.625

Service and Tool Mnemonics

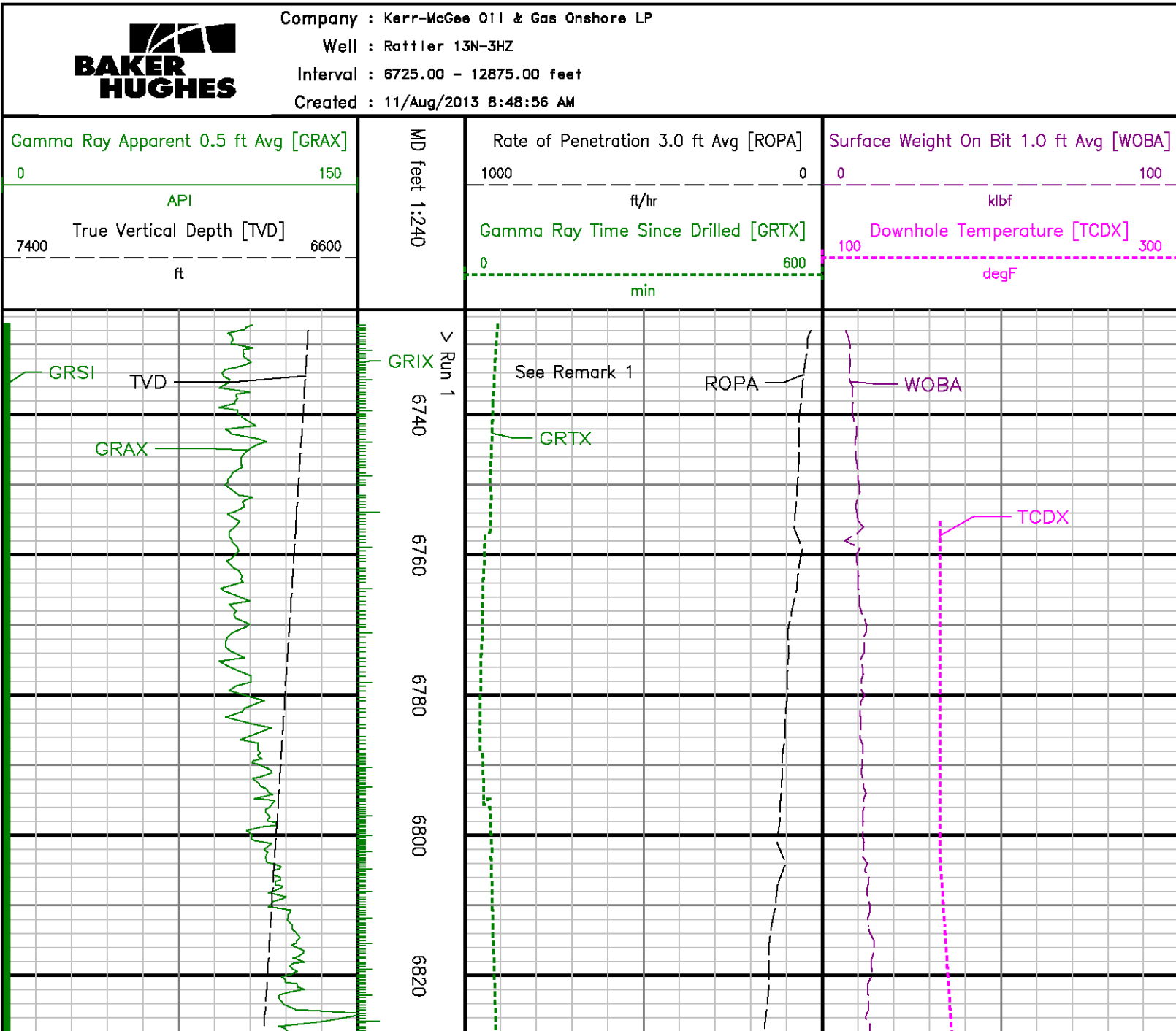
Mnemonic	Name	Description
DIR	Directional	Wellbore directional survey
SRIG	Inclination and Gamma	Probe based gamma ray and inclination module

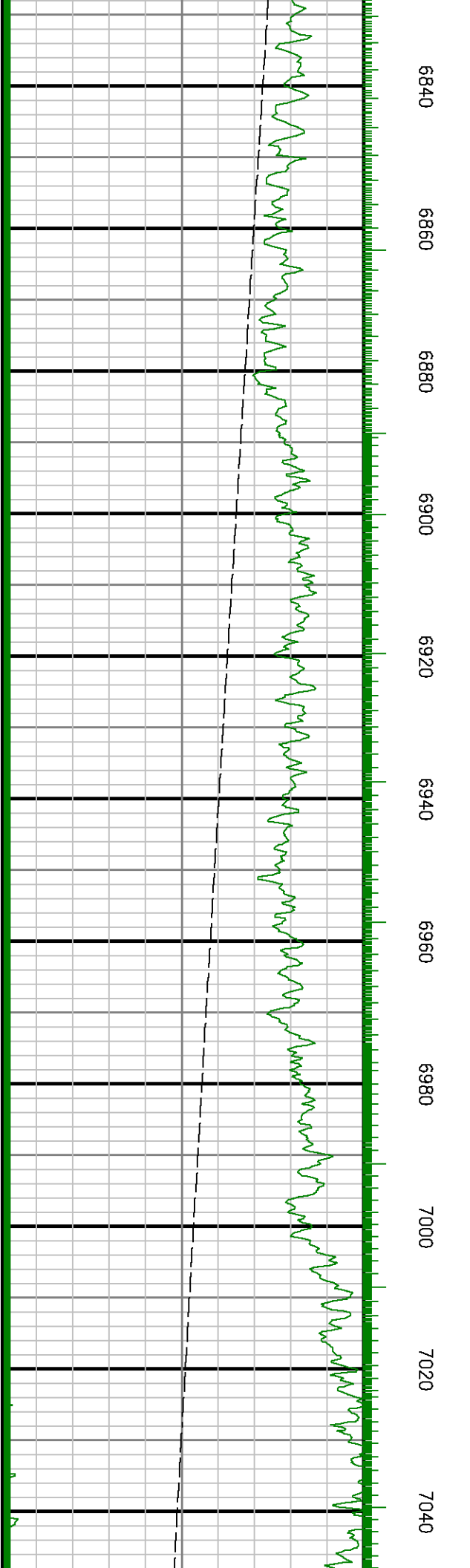
Comments

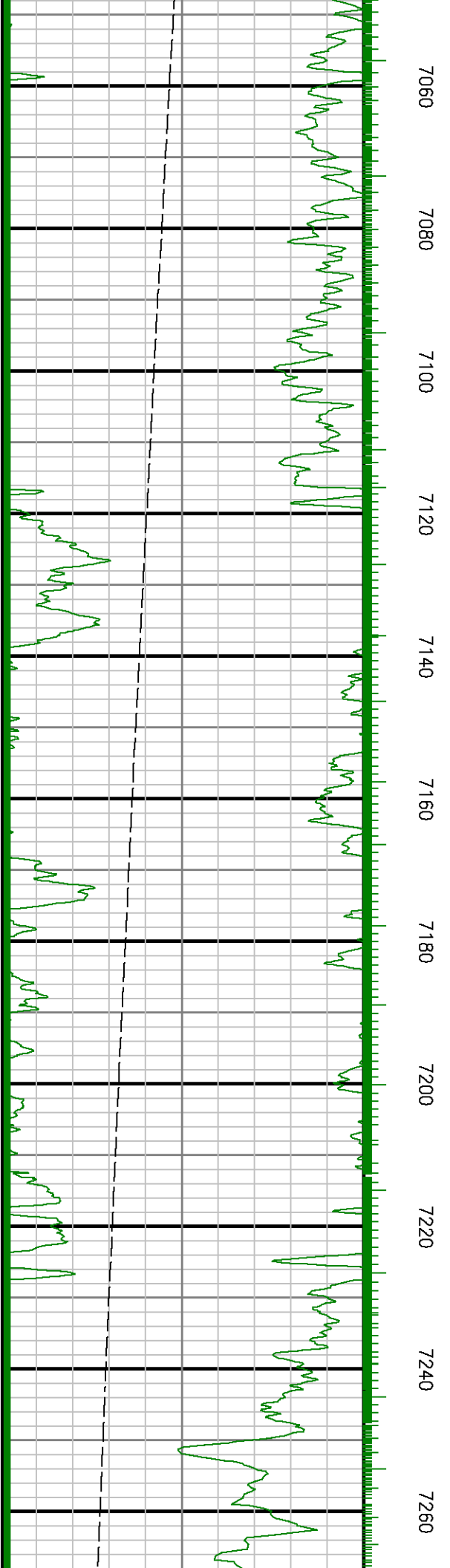
1) Baker Hughes INTEQ runs 1 and 2 utilized 6 3/4 inch NaviGamma services (Directional, Gamma Ray, and VSS) behind an 8 3/4 inch bit and steerable assembly from 824 to 7658 feet MD (824 to 7305 feet TVD).
2) Baker Hughes INTEQ run 3 utilized 4 3/4 inch NaviGamma services (Directional, Gamma Ray, and VSS) behind a 6 1/8 inch bit and steerable assembly from 7658 to 12867 feet MD (7305 to 7290 feet TVD).

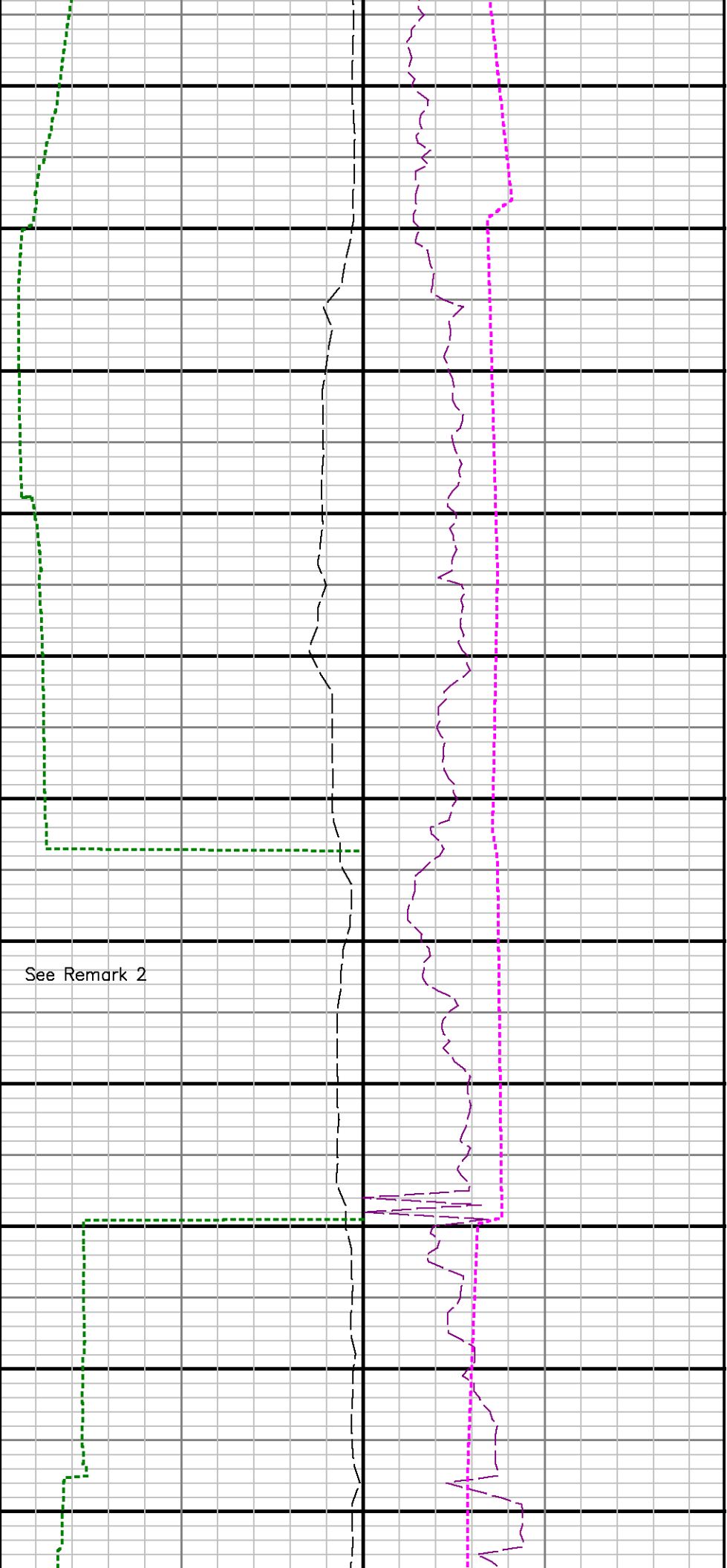
Remarks

Number	Measured Depth ft)	Hole Section (in.)	LWD Run No.	Remark
1	6735	8.750	1	The interval from surface to 6727 feet MD (6709 feet TVD) was not logged since logging services began at the curve kick off point.
2	7400	8.750	2	The interval from 7387 to 7437 feet MD (7252 to 7275 feet TVD) was logged up to 41.1 hours after being drilled due to a trip out of hole to change out motor and bit because of low build rates.
3	7625	6.125	3	The interval from 7612 to 7658 feet MD (7304 to 7305 feet TVD) was logged up to 51.1 hours after being drilled due to a trip out of hole to run casing, cement, and pick up lateral tools.
4	12840	6.125	3	The interval from 12819 to 12867 feet MD (7291 to 7290 feet TVD) was not logged due to sensor to bit offset at well TD.









See Remark 2

Run 1 ◇ Run 2

