



Multiple Propagation Resistivity  
Gamma Ray

Scale:

Company: Kerr-McGee Oil & Gas Onshore LP

1:1200

Well: Bella Federal 25C-7HZ

Measured Depth

Field: Weld County (Kerr McGee)

Region: RMD Country: United States

Status:

Final Print

Surface Location:

Latitude: 40° 14' 16.602" N

Longitude: 104° 48' 7.301" W

Other Services:

2 Sector Gamma Ray  
Directional  
VSS

API Number:  
05123374380000

Section8

TWN: 3S

Range66W

Permanent Datum (P.D.): Ground Level Elevation: 4878.00 ft.

Drill Floor

13.00 ft.

Above P.D.

Elevations:

N/A

Log Measured From:

Driller's Depth

KB:  
DF:  
GL:

4878.00 ft.

4865.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 6683 ft. Date From: 16/Jul/13 Dip Angle: 66.89 ° Az Reference North: True

Bottom: 11902 ft. Date To: 20/Jul/13 Total Mag to Reference

Spud Date: 13/Jul/13 Field Strength: 52671.0 nT North Correction: 8.53 °

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
13.500 in.	Surface	923 ft.	9.625 in.	36.00 lb/ft	Surface	910 ft.
8.750 in.	923 ft.	7846 ft.	7.000 in.	26.00 lb/ft	Surface	7835 ft.
6.125 in.	7846 ft.	11957 ft.				

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based - Fresh	1720 ft.	11953 ft.	13.500 in.	923 ft.	0.0 ° / 359.6 °	0.2 ° / 303.6 °
			8.750 in.	6923 ft.	0.1 ° / 284.2 °	85.9 ° / 272.4 °
			6.125 in.	5034 ft.	90.3 ° / 271.1 °	90.5 ° / 268.4 °
					/	/
					/	/
					/	/

Acquisition System Software Version

Other

Advantage	2.20U4	Rig / Contractor:	Ensign 138	/ Ensign Drilling
PATS	6.4.1.34	Job No:	5569830	
		District / Unit:	RMD	/ D&E

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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	2	1	8.750	PDC	2.500	Steerable	6683	7785	928	7845	16/Jul/2013	12:11	17/Jul/2013	05:47	42.21
2	2	2	6.125	PDC	3.000	Steerable	7804	11902	7845	11953	19/Jul/2013	02:13	20/Jul/2013	05:06	27.82

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
David Campbell	July 13 2013	July 21 2013	Will Drake	July 18 2013	July 21 2013	Robert Bartlett	July 13 2013	July 21 2013
Tyler Wall	July 13 2013	July 21 2013						

Mud Properties Record												
Date / Time		LWD Run No.	Measured Depth (ft.)	Mud Type	Density (sg)	Viscosity (cp)	pH	Fluid Loss (cc)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
15/Jul/2013	15:17	1	1720	Water Based - Fresh	8.4	29	9.5	21.0	0 / 99	Active Mud Pit	1600	0.0
16/Jul/2013	07:11	1	5771	Water Based - Fresh	8.4	28	9.1	25.0	0 / 99	Active Mud Pit	1300	0.0
19/Jul/2013	06:21	2	8433	Water Based - Fresh	9.6	34	9.5	9.0	0 / 92	Active Mud Pit	2200	0.0

Mud Resistivity Record					Surface				Downhole		
Date / Time		LWD Run No.	Measured Depth (ft.)	Surface Temp (deg C)	Rm (ohm.m)	Rmf (ohm.m)	Rmc (ohm.m)	BHCT (deg F)	Rm @ BHCT (ohm.m)	Rmf @ BHCT (ohm.m)	Rmc @ BHCT (ohm.m)
18/Jul/2013	22:06	2	7845	67	1.67	N/A	N/A	141	0.82	N/A	N/A
19/Jul/2013	06:01	2	8422	67	1.69	N/A	N/A	201	0.58	N/A	N/A
19/Jul/2013	17:22	2	10234	77	0.93	N/A	N/A	223	0.33	N/A	N/A

Mnemonics		
Curve	Description	Units
CACLM	Conductivity Attenuation - Corrected - 2MHz	mmho/m
GRAM	Gamma Ray Apparent, 0.5 ft. Avg.	API
GRAX	Gamma Ray Apparent, 0.5 ft. Avg.	API
RACHM	Resistivity Attenuation - Corrected - 2MHz	ohm.m
RACLM	Resistivity Attenuation - Corrected - 400kHz	ohm.m
ROPA	Rate of Penetration, 3.0 ft. Avg.	ft/hr
RPCLM	Resistivity Phase - Corrected - 400kHz	ohm.m
RPCHM	Resistivity Phase - Corrected - 2MHz	ohm.m
TCDM	Downhole Temperature	degF
TCDX	Downhole Temperature	degF

Equipment and Service Data						
LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (m.)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12373463	Directional	62.67	6.750	0.000
1	SRIG	12023992	Gamma	59.29	6.750	0.000
2	CS	12187052	-	82.78	4.950	0.000
2	BCPM	11763756	Telemetry	71.83	5.040	0.000
2	STAB	11883702	-	68.94	5.625	0.000
2	OTK	11827144	Directional	64.46	4.950	2.569
2	OTK	11827144	Resistivity	58.49	4.950	2.569
2	OTK	11827144	Gamma	51.30	4.950	2.569
2	OTK	11827144	Pressure	53.93	4.950	2.569
2	CS	12202693	-	46.43	5.050	0.000

# Service and Tool Mnemonics

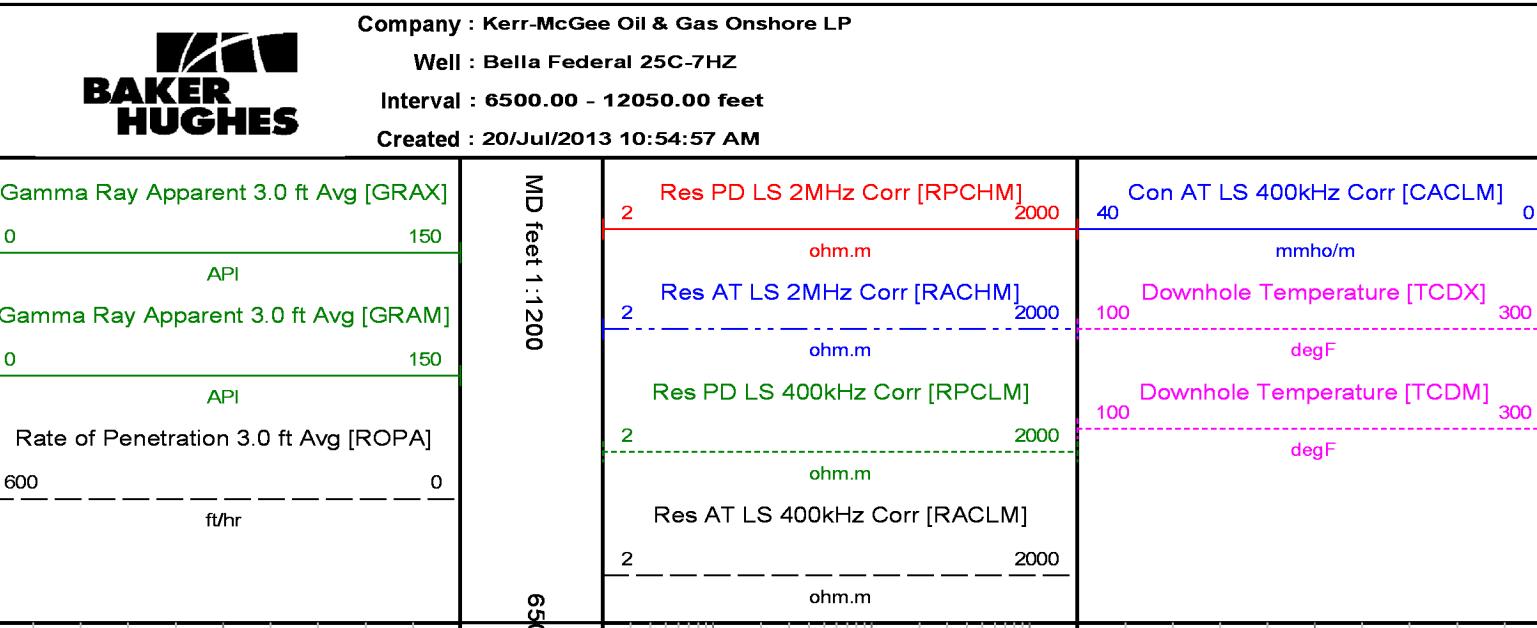
Mnemonic	Name	Description
BCPM	BCPM	Mud pulse telemetry and downhole tool power module
DIR	Directional	Wellbore directional survey
OTK	OnTrak	Propagation resistivity, propagation conductivity, gamma ray, directional, annular pressure, system memory and VSS
SRIG	Inclination and Gamma	Probe based gamma ray and inclination module
STAB	Stabilizer	Stabilizer assembly
CS	Closure Sub	BHA power ring isolator allowing insertion of inert sub into electrically powered BHA

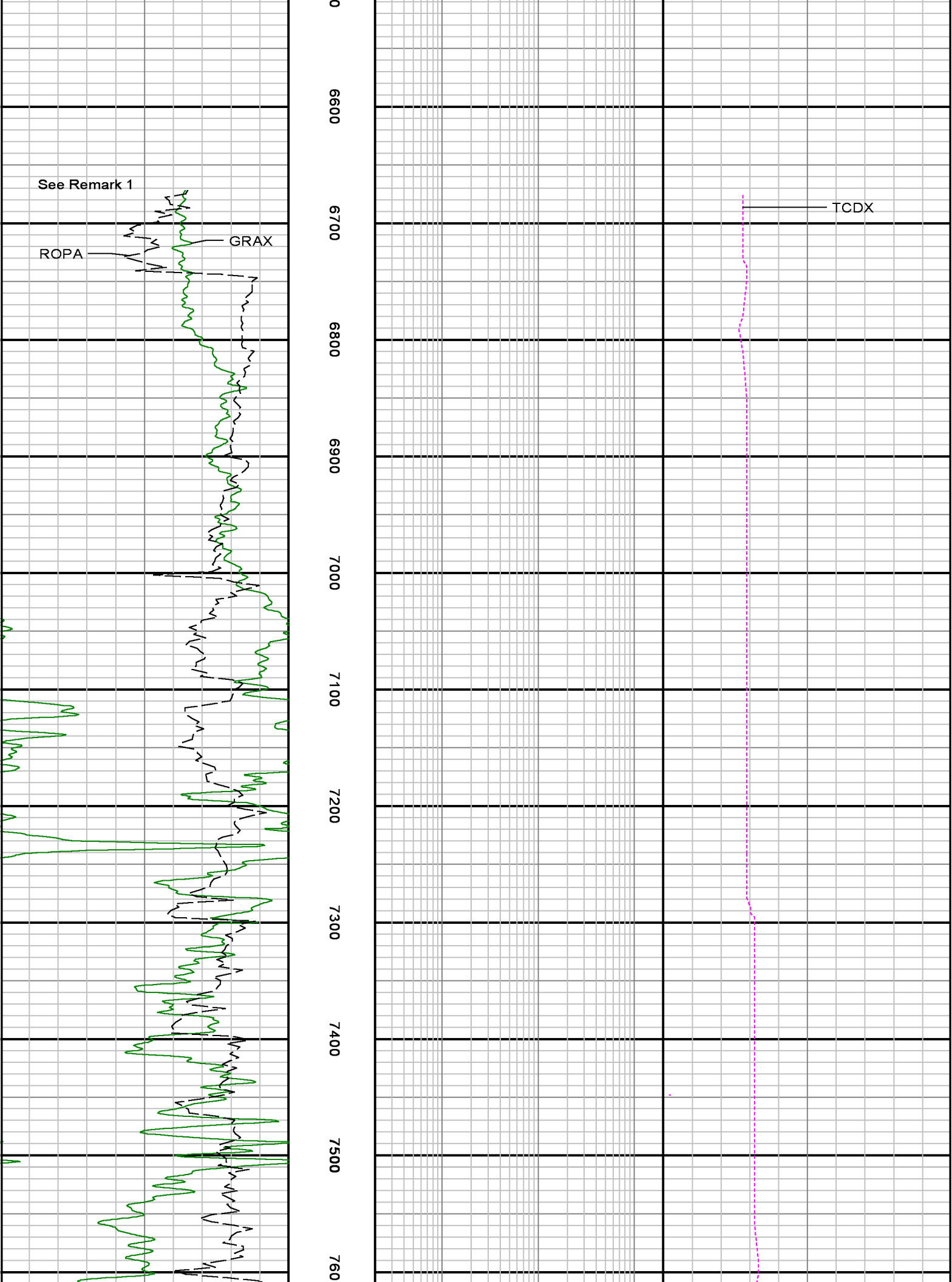
## Comments

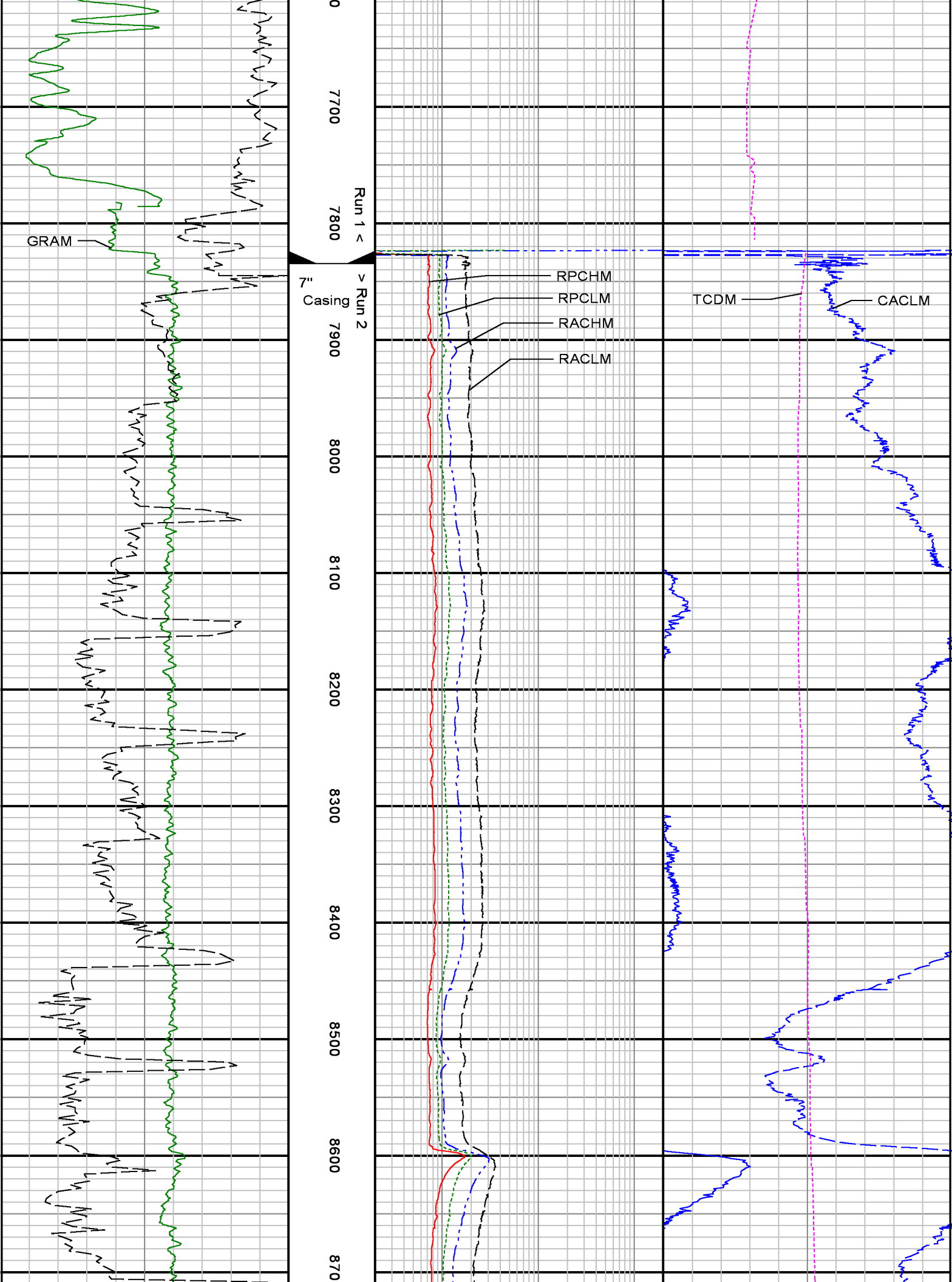
- 1.) Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- 2.) Baker Hughes run 1 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and steerable assembly from 923 to 7845 feet MD (923 to 7374 feet TVD).
- 3.) Baker Hughes run 2 utilized 4 3/4 inch OnTrak services (Multiple Propagation Resistivity, 2 Sector Azimuthal Gamma Ray, Gamma Ray, and Directional) behind a 6 1/8 inch bit and steerable assembly from 7845 to 11957 feet MD (7374 to feet 7382 TVD).
- 4.) The interval from 923 to 6683 feet MD (923 to 6643 feet TVD) was not logged due to directional only services being provided through the surface and vertical-hole sections for Baker Hughes run 1.
- 7.) A sliding indicator is shown on the right side of track 2 as a heavy line. This indicator has been depth shifted to the resistivity sensor offset to correspond with resistivity data acquired while sliding.

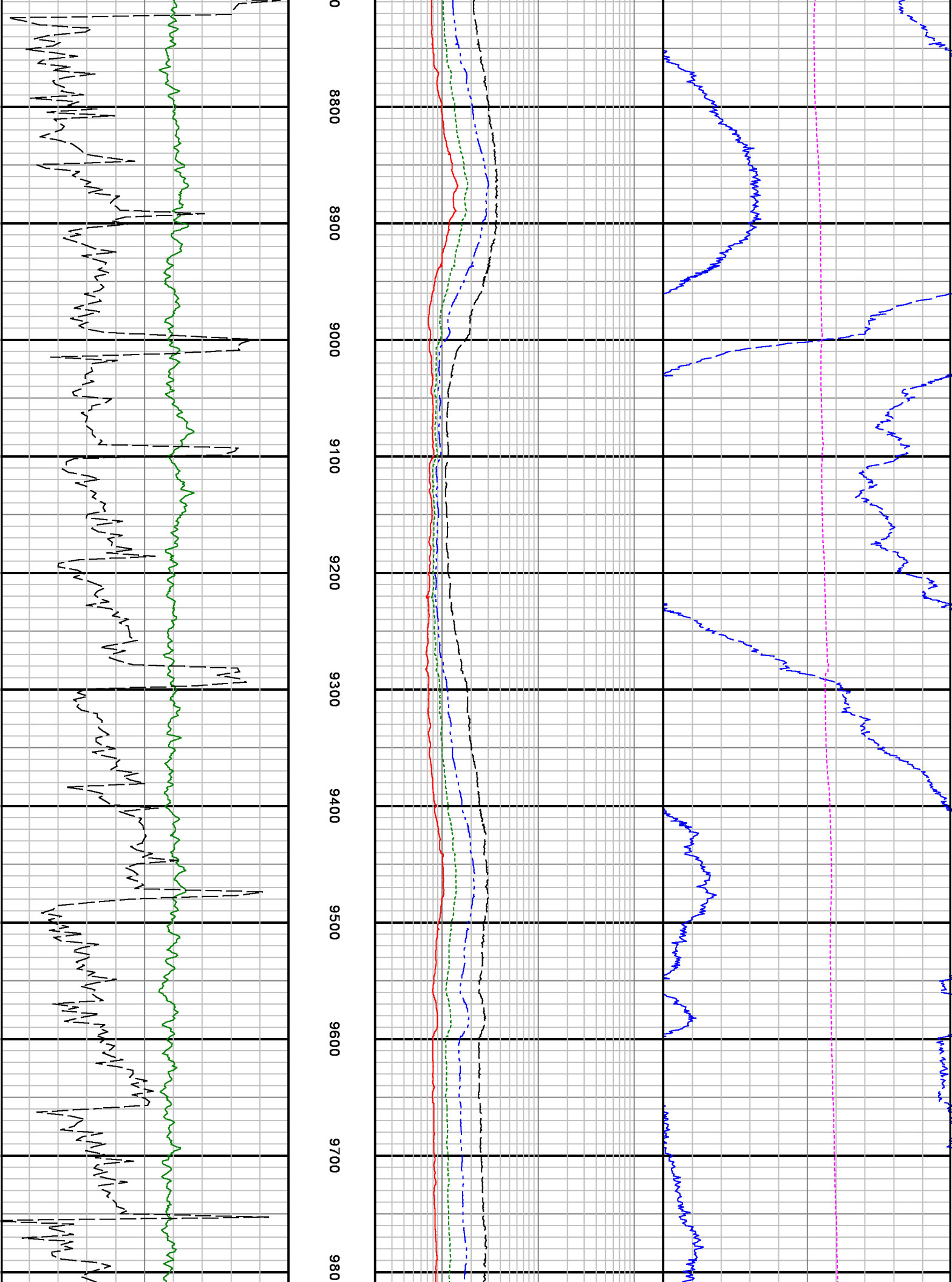
## Remarks

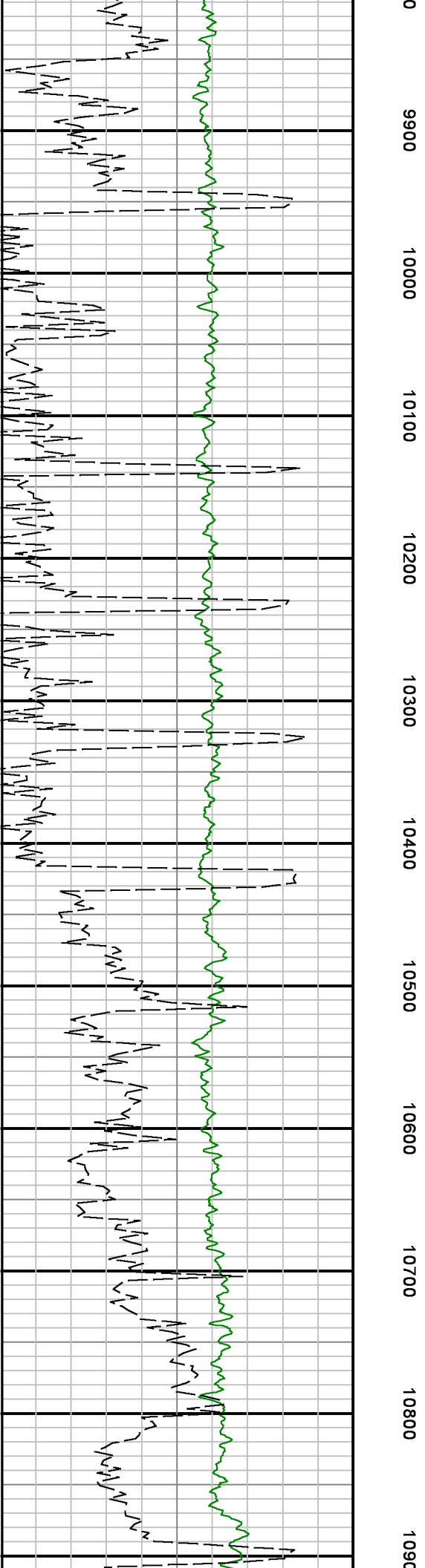
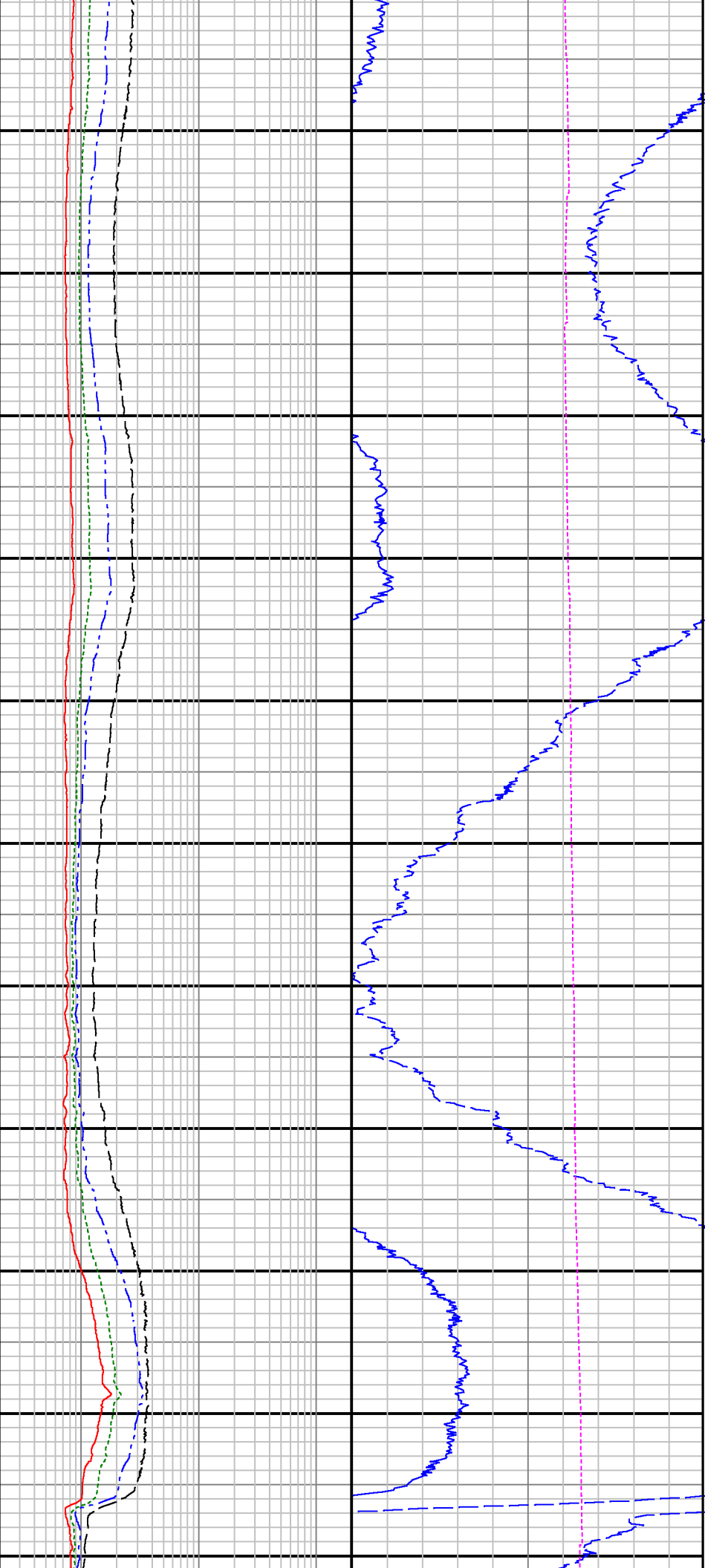
Number	Measured Depth (m.)	Hole Section (in.)	LWD Run No.	Remark
1	6683	8.750	1	Begin logging due to directional only service being provided thru vertical section.
2	11896	6.125	2	No sensor data due to sensor to bit offsets.

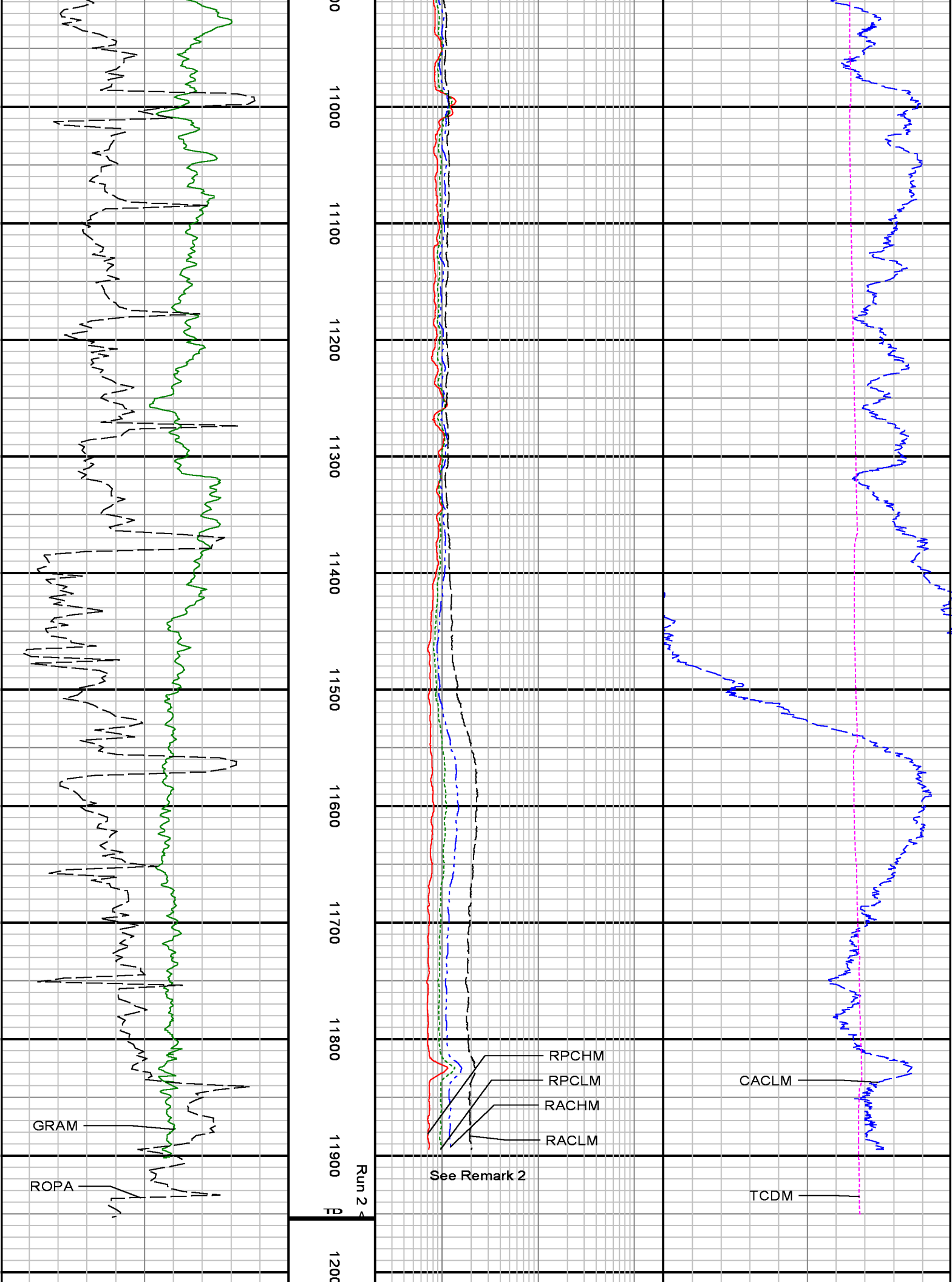














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