


LWD MEMORY LOG COMPOSITE											
<div><div><div>BAKER HUGHES</div><div>a GE company</div></div><div></div></div>				Gamma Ray							
Scale:				Company: VERDAD OIL & GAS							
1:1200 MD				Well: BRNAK 01N-64W-10-2H							
Depth Reference:				Field: Weld County							
Driller's Depth				County: Weld Country							
State:				Country: United States							
Status:				Surface Location:				Other Services:			
Final Print				Latitude: 040° 04' 21.166" N				Directional			
API No: 05-123-44996				Longitude: 104° 32' 30.519" W							
Job ID: 8704499											
Permanent Datum (P.D.): Ground Level				Elevation: 5104.00 ft				Elev. KB: N/A			
Log Measured From: Rig Floor				Above P.D. 16.00 ft				Elev. DF: 5120.00 ft			
								Elev. GL: 5104.00 ft			
Interval Logged											
Dates				Interval Logged				Magnetic Field Reference			
Date From: 2017-08-13				Top: (ft) 1747.00				Azi Reference North: True			
Date To: 2017-08-25				Bottom: (ft) 17175.00				Dip Angle: (deg) 66.64			
Spud Date: 2017-08-12								Total Magnetic Field Strength: (nT) 52213			
								Mag to Reference North Correction: (deg) 8.22 E			
Borehole Record											
Casing Record											
Hole Size (in)				From (ft)		To (ft)		Size (in)		Weight (lb/ft)	
										From (ft)	
13.500				80.00		1759.00		9.625		36.00	
8.500				1759.00		17175.00				16.00	
										1747.00	

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+ (%)
2017-08-23 13:22	2	1759.06	Oil Based Mud	9.8	69	N/A	8.0	68/32	Active Pit	31853	0.00
2017-08-24 09:07	2	6431.88	Oil Based Mud	9.5	68	N/A	8.0	68/32	Active Pit	30888	0.00
2017-08-25 15:30	2	12724.30	Oil Based Mud	9.8	67	N/A	8.0	68/32	Active Pit	31853	0.00
2017-08-26 11:00	2	17131.63	Oil Based Mud	10.1	56	N/A	8.5	68/32	Active Pit	30405	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	NaviTrak	13225696	Directional (mag)	15.02	58.40	8.000	0.000
1	NaviTrak	13225696	VSS	15.02	58.40	8.000	0.000
2	ATC_SU	14262244	Near Bit VSS	5.93	6.69	6.750	4.330
2	ATC_SU	14262244	Near Bit Inclination	5.93	6.69	6.750	4.330
2	ATC_MWD	12603327	Gamma (single)	2.73	12.86	6.750	3.250
2	ATC_MWD	12603327	Directional (mag)	12.26	22.39	6.750	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
NTK	NaviTrak	Probe Based Directional Module, NaviTrak Platform
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 logging engineers, depth calibrations and measurements could not be independently verified.
- 2
- Baker Hughes LWD Run 2 utilized 6 3/4 inch Navigamma services (Gamma Ray and Directional) behind an 8 1/2 inch bit and rotary steerable assembly from 1759 to 17175 feet MD (1743 to 7071 feet TVD).

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1750.00	8.500	2	Baker Hughes LWD began logging services at 1747 feet MD (1731 feet TVD) per client request.
2	17165.00	8.500	2	The interval from 17162 to 17175 feet MD (7071 feet TVD) was not logged due to sensor to bit offset at well TD.

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	OnTrak - Gamma Ray - Apparent - Memory 3 ft Average	API
TCDM	Downhole Temperature	degF



Company

Well

Interval

Created

VERDAD OIL & GAS
BRNAK 01N-64W-10-2H
Date From: 2017-08-13 05:23:33
Date To: 2017-08-25 12:29:04
2017-08-27 04:37:17
Top: 1700.00
Bottom: 7076.00

Gamma Ray Apparent 3 ft Average [GRAM]	MD	Depth Averaged ROP 3 ft Average [ROPA]	Weight On Bit 1 ft Average [WOBA]
0250		12000	50

