

COMPOSITE LOG										
<div><div><div><div>BAKER HUGHES</div></div><div><div></div></div></div></div>			Gamma Ray							
Scale: 1:1200 MD			Company: Noble Energy							
Depth Reference: Driller's Depth			Well: Minutemen Federal LC21-615							
			Field: Weld County							
			County: Weld County Country: United States							
			State: Colorado							
Status: Final Print			Surface Location: Latitude: 40° 41' 30" N Longitude: 105° 41' 00" W				Other Services: N/A			
API No: 0512342787			SEC: 22 TWN: 9N RGE: 59W				Elev. KB: N/A			
Job ID: 8597139			Permanent Datum (P.D.): Ground Level				Elev. DF: 4907.00 ft			
			Log Measured From: Rig Floor				Elev. GL: 4877.00 ft			
Dates			Interval Logged				Magnetic Field Reference			
Date From: 2017-07-27			Top: (ft) 1939.00		Azi Reference North: 1939.00		Grid Dip Angle: (deg) 67.06			
Date To: 2017-07-29			Bottom: (ft) 11100.00		Total Magnetic Field Strength: (nT) 52590					
Spud Date: 2017-07-27					Mag to Reference North Correction: (deg) 6.74 E					
Borehole Record										
Casing Record										
Hole Size (in)			From (ft)		To (ft)		Size (in)		Weight (lb/ft)	
8.500			1958.00		11100.00		9.625		36.00	
Mud Record										
Deviation Record										
Type			From (ft)		To (ft)		Hole Size (in)		Interval (ft)	
Oil Based Mud			1951.00		11100.00		8.500		9142.00	
									0.19 285.15	
									90.31 266.26	

2	ATC_SU	14236901	Near Bit VSS	5.93	6.76	7.000	4.330
2	ATC_MWD	14179564	Gamma (single)	2.20	12.38	7.000	3.250
2	ATC_MWD	14179564	Directional (mag)	12.27	22.45	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 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 1 and 2 utilized a 6 3/4 inch Navigamma service (Gamma Ray and Directional) behind a 8 1/2 inch bit and rotary steerable from 1951 to 11100 feet MD (1950 to 6085 feet TVD).
- 3
- Realtime Gamma data is displayed for Run 1 due to issue obtaining memory data on the field. Gaps in gamma data are as a result of downlinking while drilling.

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	11088.00	8.500	2	The interval from 11088 to 11100 feet MD (6085 feet TVD) was not logged due to sensor offset at well TD.













