



Gamma Ray  
Propagation Resistivity

LWD MEMORY LOG

Scale: Company: ConocoPhillips

1:1200 MD Well: STATE\_BIERSTADT\_4-65\_35-34\_1DH

Depth Reference: Field: Arapahoe County (NAD83/TN)

Driller's Depth County: Arapahoe State: Colorado Country: United States

Status: Surface Location: Other Services:

Final Print Latitude: Longitude: Directional

API No: 05005072950000 SEC: 35 TWN: 4S RGE: 6SW

Job ID: 8692124 Elevation: 5872.30 ft Elev. KB: 5896.30 ft

Permanent Datum (P.D.): Ground Level Above P.D. Elev. DF: 5872.30 ft

Log Measured From: Rig Floor

Dates Interval Logged Magnetic Field Reference

Date From: 2017-08-19 Top: (ft) 2286.00 Azi Reference North: True Dip Angle: (deg) 66.54

Date To: 2017-08-20 Bottom: (ft) 7331.01 Total Magnetic Field Strength: (nT) 51833

Spud Date: N/A Mag to Reference North Correction: (deg) 8.69E

Borehole Record Casing Record

Hole Size (in) From (ft) To (ft) Size (in) Weight (lb/ft) From (ft) To (ft)

12.500 24.00 2286.00 9.625 36.00 24.00 2278.00

8.500 2286.00 7331.00

Mud Record

Deviation Record

Type From (ft) To (ft) Hole Size (in) Interval (ft) Inc | Az (Start) Inc | Az (End)

Oil Based Mud 2286.00 7331.00 8.500 5045.00 0.33 | 235.54 5.91 | 53.20

Acquisition System Software Version

Other

Baker Hughes Cadence

RT4.1

Rig: H&P 448

Prior Studio

4.1.7763.3

Contractor: Helmerich & Payne Drilling Co

District: RMA

Unit: D&E

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Log Run Summary

Run No	Bit Run No.	Bit Size	Bit Type	Bit Gauge Length	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours
						Top	Bottom	From	To	Start Logging	End Logging	

		(in)		(in)		(ft)	(ft)	(ft)	(ft)			(h)
1	1	8.500	PDC	6.00	Steerable	2286.00	7291.00	2286.00	7331.00	2017-08-19 09:31	2017-08-20 03:02	17.98

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
Brent Cass		2017-08-17	2017-08-20								

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+ (%)
2017-08-19 02:46	1	2286.00	Oil Based Mud	9.7	22	N/A	4.6	60.8/39.2	Active Pit	73000	0.00

Mud Resistivity Record

				Surface				Downhole		
Date / Time	Run No.	Measured Depth (ft)	Surface Temp (degF)	Rm (ohm.m)	Rmf (ohm.m)	Rmc (ohm.m)	BHCT (degF)	Rm @ BHCT (ohm.m)	Rmf @ BHCT (ohm.m)	Rmc @ BHCT (ohm.m)
2017-08-19 02:48	1	2286.00	72.0	100.000	N/A	N/A	72.0	100.000	N/A	N/A

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	OnTrak	11735984	Pressure	1.10	38.94	6.750	0.000
1	OnTrak	11735984	Gamma (double)	1.99	39.83	6.750	0.000
1	OnTrak	11735984	Resistivity (4tx)	6.03	43.87	6.750	0.000
1	OnTrak	11735984	Directional (mag)	11.82	49.66	6.750	0.000

Service and Tool Mnemonics

Mnemonic	Name	Description
OTK	OnTrak	Sensor Sub (Inc, Azi, Temp, Azimuthal GR, Res, AP, VSS), OnTrak Platform
BCPM	BCPM	Bi-Directional Communication and Power Module, OnTrak Platform

Comments

1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes Drilling Services. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to present logging data.
2	Baker Hughes LWD run 1 utilized 6.750 inch OnTrak services (Multiple Propagation Resistivity, Gamma Ray and Directional) behind an 8.500 inch bit and steerable assembly from 2286 to 7331 feet MD ( 2286 to 7309 feet TVD).

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	7300.00	8.500	1	The interval from 7291 to 7331 feet MD (7269 to 7309 feet TVD) was not logged due to the sensor to bit offset at well TD.

Curve Mnemonics

Presented Curves	Description	Units
CACLM	Conductivity Attenuation - Corrected - 400kHz	mmho/m
RACLM	Resistivity Attenuation - Corrected - 400kHz	ohm.m
RPCHM	Resistivity Phase - Corrected - 2MHz	ohm.m
ROPA	Depth Averaged ROP 3 ft Average	ft/h
GRAM	OnTrak - Gamma Ray - Apparent - Memory 3 ft Average	API
TCDM	Downhole Temperature	degF











