

<div><div><div></div><div>BAKER HUGHES</div></div></div>				<div>LWD Composite Log - Run 2</div> <div>Natural Formation Evaluation</div> <div>Azimuthal Gamma Ray</div> <div>Gamma Ray</div> <div>Drilling Dynamics</div> <div>Wellbore Survey</div> <div>Rotary Steerable</div>											
Scale: 1:1200 MD				Company: Cub Creek Energy											
Depth Reference: Driller's Depth				Well: Markham 3		Weld County		Weld County		State: Colorado					
Status: Field Print				Surface Location: Latitude: 040° 16' 7.356" N Longitude: 105° 01' 23.268" W				Other Services: Directional							
API No: 05-123-43249-00				SEC: 32		TWN: 4N		RGE: 68W		KB: N/A					
Job ID: 8071561				Elevation: 5042.00 ft		Above P.D. 17.00 ft		DF: 5059.00 ft		GL: 5042.00 ft					
Permanent Datum (P.D.): Ground Level				Rig Floor											
Log Measured From: Rig Floor															
Dates				Interval Logged				Magnetic Field Reference							
Date From: 2016-08-21				Top: (ft) 1538.00		Azi Reference North: True		Dip Angle: (deg) 66.75							
Date To: 2016-08-23				Bottom: (ft) 8224.00		Total Magnetic Field Strength: (nT) 52394									
Spud Date: 2016-07-26						Mag to Reference North Correction: (deg) 8.59 E									
Borehole Record				Casing Record											
Hole Size (in)				From (ft)		To (ft)		Size (in)		Weight (lb/ft)		From (ft)		To (ft)	
8.750				1550.00		8223.00		9.625		36.00		17.00		1540.00	
13.500				97.00		1550.00									

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Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours (h)
						Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	
2	2	8.750	PDC	3.00	AutoTrak Curve	1537.75	8217.03	1550.00	8223.66	2016-08-21 04:19	2016-08-23 05:02	45.50

Crew

Name			Arrive Wellsite	Depart Wellsite	Name			Arrive Wellsite	Depart Wellsite	Name			Arrive Wellsite	Depart Wellsite
Austin Small			2016-08-20	2016-08-23	Matthew Delmore			2016-08-20	2016-08-23	Robbie Opperude			2016-08-20	2016-08-23
Ryan Kielian			2016-08-20	2016-08-23										

Mud Properties Record

Date / Time	Run	Measured	Mud		Density	Viscosity	pH	Fluid	Oil /	Source	Total	K+
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	No.	Depth (ft)	Type	(ppg)	(cP)		Loss (cm3)	Water		Chlorides (ppm)	(%)
2016-08-21 15:30	2	3578.00	Fresh Water	8.5	27	8	16.0	0/99	Active Pit	1100	0.00
2016-08-23 17:04	2	6169.00	Water Based Mud	9.9	34	9.3	9.0	0.5/91	Active Pit	1500	0.00
2016-08-23 17:06	2	7098.00	Water Based Mud	10.1	41	10.3	6.2	0.5/90.3	Active Pit	1600	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)
2	ATC_SU	12142976	Near Bit VSS	5.93	6.63	7.000	4.330
2	ATC_SU	12142976	Near Bit Inclination	5.93	6.63	7.000	4.330
2	ATC_MWD	12480090	Gamma (single)	2.20	12.25	7.000	3.250
2	ATC_MWD	12480090	Directional (mag)	12.27	22.32	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	Baker Hughes Run 1 Utilized a 8 inch NaviTrak (Directional, VSS) assembly behind a 13.5 inch bit from 97 ft MD to 1550 ft MD (97 ft TVD to 1534.18 ft TVD). No Logging services provided for Run 1.
2	Baker Hughes LWD Run 2 Utilized a 6.75 inch AutoTrak Curve Rotary Steerable assembly behind a 8.75 inch bit from 1550 ft MD to 8223 ft MD (1534.18 ft TVD to 7127.80 ft TVD).
3	Depth Measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to a lack of control by Baker Hughes logging engineers depth calibrations and measurements could not be independently verified.

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	4159.22	8.750	2	The interval from 1538 ft MD to 1550 MD (1522.77 ft TVD to 1534.18 ft TVD) has no surface data due to Gamma Ray bit sensor offset.
2	7900.97	8.750	2	The interval from 8211 ft MD to 8223 ft MD (7127.65 ft TVD to 7127.80 ft TVD) was not logged to due gamma sensor offset at time of tool failure.

	Company	Cub Creek Energy	
	Well	Markham 3	
	Interval	Date From: 2016-08-21 04:19:56	Top: 1538.00
	Created	Date To: 2016-08-23 05:02:08	Bottom: 8224.00
		2016-08-23 17:27	

Source		Description										
F_ORIG.		ORIG.:R002										
Gamma Ray - Apparent 3 ft Average GRAM 0200		MD 1:1200 feet	Rate of Penetration 3 ft Average ROPA 10000ft/h					Surface Weight On Bit 1 ft Average WOBA 050klb				
API Azimuthal Gamma Ray - Apparent - Up Quadrant 3 ft Average GRAUM 0200								Downhole Temperature TCDM 0250degF				
API Azimuthal Gamma Ray - Apparent - Down Quadrant 3 ft Average GRADM 0200												
API True Vertical Depth TVD 75001500												
ft												
		1400										

