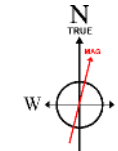


CUB CREEK ENERGY, LLC

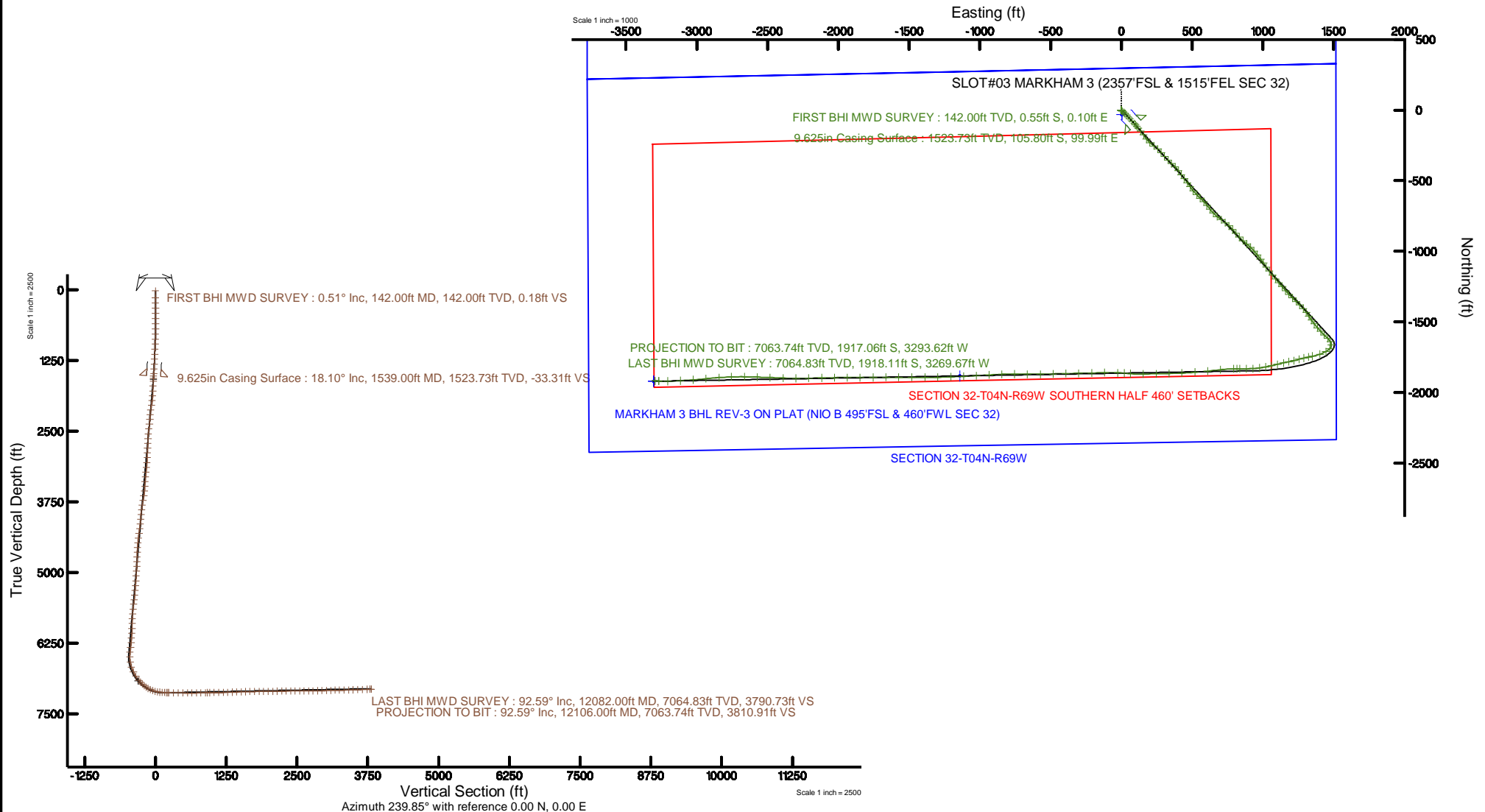
Location: COLORADO Slot: SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32)
Field: WELD COUNTY (NAD83, TRUE NORTH) Well: MARKHAM 3
Facility: SEC.32-T04N-R68W Wellbore: MARKHAM 3 PWB

Plot reference wellpath is MARKHAM 3 REV-C.0 PWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to XTREME 18 (17) (RKB)	* = Wellpath was transformed from a different geodetic datum
Measured depths are referenced to XTREME 18 (17) (RKB)	North Reference: True north
XTREME 18 (17) (RKB) to Mean Sea Level: 5059 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: bensjaj on 2016-10-13
	Database: WA_DEN_Denver_Defn



BGGM (1900.0 to 2018.0) Dip: 66.75° Field: 52401.7 nT
Magnetic North is 8.57 degrees East of True North (at 10/5/2016)

To correct azimuth from Magnetic to True add 8.57 degrees



Actual Wellpath Report

MARKHAM 3 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 3
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 3 AWP
Facility	SEC.32-T04N-R68W		

REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.0
North Reference	True	User	Bensjacj
Scale	0.999957	Report Generated	10/13/2016 at 12:51:20 PM
Convergence at slot	0.31° East	Database/Source file	WA_DEN_Denver_Defn/MARKHAM_3_AWP.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	32.79	-2.80	3133069.80	1341090.31	40°16'07.356"N	105°01'23.268"W
Facility Reference Pt			3133072.77	1341057.53	40°16'07.032"N	105°01'23.232"W
Field Reference Pt			3133072.77	1341057.53	40°16'07.032"N	105°01'23.232"W

WELLPATH DATUM

Calculation method	Minimum curvature	XTREME 18 (17') (RKB) to Facility Vertical Datum	5059.00ft
Horizontal Reference Pt	Slot	XTREME 18 (17') (RKB) to Mean Sea Level	5059.00ft
Vertical Reference Pt	XTREME 18 (17') (RKB)	XTREME 18 (17') (RKB) to Mud Line at Slot (SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32))	5059.00ft
MD Reference Pt	XTREME 18 (17') (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	239.85°

Actual Wellpath Report

MARKHAM 3 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 3
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 3 AWP
Facility	SEC.32-T04N-R68W		

WELLPATH DATA (144 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
17.00	0.000	169.150	17.00	0.00	0.00	0.00	40°16'07.356"N	105°01'23.268"W	0.00	
142.00	0.510	169.150	142.00	0.18	-0.55	0.10	40°16'07.351"N	105°01'23.267"W	0.41	FIRST BHI MWD SURVEY
234.00	0.630	178.650	233.99	0.56	-1.45	0.19	40°16'07.342"N	105°01'23.266"W	0.17	
324.00	0.520	209.770	323.99	1.15	-2.30	0.00	40°16'07.333"N	105°01'23.268"W	0.36	
414.00	0.210	348.750	413.99	1.45	-2.50	-0.23	40°16'07.331"N	105°01'23.271"W	0.77	
505.00	0.690	317.150	504.99	1.52	-1.93	-0.64	40°16'07.337"N	105°01'23.276"W	0.57	
595.00	0.250	28.320	594.98	1.47	-1.36	-0.91	40°16'07.343"N	105°01'23.280"W	0.73	
687.00	1.150	128.820	686.98	0.97	-1.76	-0.10	40°16'07.339"N	105°01'23.269"W	1.33	
779.00	2.960	134.900	778.91	0.03	-4.02	2.30	40°16'07.316"N	105°01'23.238"W	1.98	
871.00	5.930	130.200	870.63	-2.18	-8.76	7.62	40°16'07.269"N	105°01'23.170"W	3.25	
961.00	7.910	132.000	959.97	-5.65	-15.91	15.77	40°16'07.199"N	105°01'23.065"W	2.21	
1050.00	8.720	134.600	1048.03	-9.30	-24.74	25.13	40°16'07.111"N	105°01'22.944"W	1.00	
1140.00	9.830	136.570	1136.85	-12.85	-35.11	35.27	40°16'07.009"N	105°01'22.813"W	1.28	
1230.00	11.500	138.010	1225.30	-16.46	-47.36	46.55	40°16'06.888"N	105°01'22.667"W	1.88	
1320.00	13.040	136.770	1313.24	-20.60	-61.43	59.51	40°16'06.749"N	105°01'22.500"W	1.74	
1411.00	15.090	136.830	1401.50	-25.59	-77.55	74.64	40°16'06.590"N	105°01'22.305"W	2.25	
1498.00	18.450	138.650	1484.79	-30.81	-96.15	91.49	40°16'06.406"N	105°01'22.088"W	3.91	
1578.00	17.760	138.630	1560.83	-35.64	-114.81	107.92	40°16'06.221"N	105°01'21.876"W	0.86	
1633.00	16.320	139.810	1613.42	-38.62	-127.01	118.45	40°16'06.101"N	105°01'21.740"W	2.69	
1724.00	20.220	141.740	1699.81	-43.07	-149.13	136.45	40°16'05.882"N	105°01'21.508"W	4.34	
1817.00	22.560	146.580	1786.41	-46.35	-176.65	156.23	40°16'05.610"N	105°01'21.253"W	3.15	
1909.00	23.100	141.450	1871.21	-49.99	-205.49	177.20	40°16'05.325"N	105°01'20.982"W	2.24	
1999.00	23.110	131.330	1954.02	-58.18	-230.98	201.47	40°16'05.074"N	105°01'20.669"W	4.41	
2091.00	22.950	126.770	2038.70	-70.95	-253.64	229.40	40°16'04.850"N	105°01'20.309"W	1.95	
2182.00	23.030	131.080	2122.47	-83.63	-275.96	257.03	40°16'04.629"N	105°01'19.952"W	1.85	
2273.00	22.460	139.280	2206.42	-92.54	-300.84	281.80	40°16'04.383"N	105°01'19.633"W	3.54	
2363.00	23.030	139.710	2289.42	-98.79	-327.29	304.40	40°16'04.122"N	105°01'19.341"W	0.66	
2456.00	23.010	135.440	2375.02	-106.52	-354.12	328.92	40°16'03.857"N	105°01'19.025"W	1.80	
2548.00	22.950	132.350	2459.72	-116.38	-379.02	354.79	40°16'03.611"N	105°01'18.691"W	1.31	
2640.00	21.040	133.770	2545.02	-126.35	-402.53	379.97	40°16'03.378"N	105°01'18.366"W	2.15	
2732.00	23.030	145.930	2630.34	-132.16	-428.88	401.99	40°16'03.118"N	105°01'18.082"W	5.40	
2822.00	23.090	143.960	2713.15	-135.17	-457.73	422.24	40°16'02.833"N	105°01'17.821"W	0.86	
2914.00	22.870	140.320	2797.86	-139.98	-486.08	444.27	40°16'02.553"N	105°01'17.537"W	1.56	
3006.00	22.270	145.040	2882.82	-144.40	-514.13	465.68	40°16'02.275"N	105°01'17.261"W	2.07	
3098.00	23.090	144.870	2967.70	-147.42	-543.17	486.05	40°16'01.988"N	105°01'16.998"W	0.89	
3191.00	22.900	139.510	3053.32	-152.25	-571.85	508.29	40°16'01.705"N	105°01'16.711"W	2.26	
3283.00	23.000	137.080	3138.04	-159.43	-598.62	532.15	40°16'01.440"N	105°01'16.403"W	1.04	
3373.00	22.950	134.020	3220.91	-168.10	-623.69	556.75	40°16'01.193"N	105°01'16.086"W	1.33	
3465.00	21.860	134.610	3305.96	-177.50	-648.19	581.84	40°16'00.951"N	105°01'15.762"W	1.21	
3556.00	22.550	142.400	3390.23	-184.21	-673.91	604.55	40°16'00.696"N	105°01'15.469"W	3.32	
3646.00	23.370	142.010	3473.10	-188.88	-701.66	626.07	40°16'00.422"N	105°01'15.192"W	0.93	
3738.00	23.360	136.040	3557.57	-195.72	-729.17	649.96	40°16'00.150"N	105°01'14.883"W	2.57	
3830.00	23.290	129.450	3642.06	-206.42	-753.86	676.67	40°15'59.906"N	105°01'14.539"W	2.84	
3922.00	23.260	125.790	3726.58	-220.16	-776.04	705.45	40°15'59.687"N	105°01'14.168"W	1.57	
4013.00	23.300	126.960	3810.17	-234.48	-797.37	734.41	40°15'59.476"N	105°01'13.794"W	0.51	

Actual Wellpath Report

MARKHAM 3 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 3
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 3 AWB
Facility	SEC.32-T04N-R68W		

WELLPATH DATA (144 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4103.00	22.620	134.040	3893.06	-246.12	-820.11	761.08	40°15'59.252"N	105°01'13.450"W	3.16	
4192.00	23.760	139.070	3974.87	-254.14	-845.55	785.13	40°15'59.000"N	105°01'13.140"W	2.57	
4282.00	23.850	140.510	4057.22	-260.48	-873.30	808.58	40°15'58.726"N	105°01'12.837"W	0.65	
4371.00	23.600	136.070	4138.70	-267.64	-900.01	832.39	40°15'58.462"N	105°01'12.530"W	2.03	
4460.00	23.780	131.510	4220.21	-277.53	-924.74	858.19	40°15'58.218"N	105°01'12.198"W	2.07	
4552.00	23.250	129.790	4304.57	-289.59	-948.65	886.03	40°15'57.981"N	105°01'11.838"W	0.94	
4642.00	23.240	133.190	4387.27	-300.77	-972.17	912.63	40°15'57.749"N	105°01'11.495"W	1.49	
4734.00	23.220	138.590	4471.82	-309.51	-998.20	937.86	40°15'57.492"N	105°01'11.170"W	2.31	
4824.00	23.260	141.400	4554.52	-315.59	-1025.40	960.68	40°15'57.223"N	105°01'10.875"W	1.23	
4916.00	23.340	143.090	4639.02	-320.40	-1054.17	982.96	40°15'56.939"N	105°01'10.588"W	0.73	
5008.00	23.230	145.230	4723.52	-324.00	-1083.64	1004.25	40°15'56.647"N	105°01'10.313"W	0.93	
5099.00	22.330	145.160	4807.43	-326.86	-1112.57	1024.36	40°15'56.361"N	105°01'10.054"W	0.99	
5190.00	22.350	141.420	4891.60	-330.81	-1140.29	1045.03	40°15'56.088"N	105°01'09.787"W	1.56	
5282.00	22.400	140.450	4976.67	-336.23	-1167.48	1067.10	40°15'55.819"N	105°01'09.503"W	0.41	
5374.00	22.460	141.880	5061.71	-341.53	-1194.82	1089.11	40°15'55.549"N	105°01'09.219"W	0.60	
5466.00	23.320	139.250	5146.47	-347.31	-1222.44	1111.85	40°15'55.276"N	105°01'08.926"W	1.45	
5558.00	23.470	139.030	5230.91	-354.10	-1250.07	1135.74	40°15'55.003"N	105°01'08.617"W	0.19	
5650.00	23.590	138.330	5315.26	-361.21	-1277.66	1160.00	40°15'54.730"N	105°01'08.304"W	0.33	
5740.00	23.490	136.890	5397.77	-368.83	-1304.20	1184.23	40°15'54.468"N	105°01'07.992"W	0.65	
5829.00	23.450	135.190	5479.41	-377.29	-1329.72	1208.83	40°15'54.216"N	105°01'07.675"W	0.76	
5919.00	23.430	133.690	5561.98	-386.79	-1354.78	1234.39	40°15'53.968"N	105°01'07.345"W	0.66	
6011.00	22.560	135.050	5646.67	-396.39	-1379.91	1260.08	40°15'53.720"N	105°01'07.013"W	1.11	
6103.00	22.600	138.410	5731.62	-404.40	-1405.62	1284.29	40°15'53.466"N	105°01'06.701"W	1.40	
6196.00	21.760	142.630	5817.74	-410.11	-1432.69	1306.61	40°15'53.198"N	105°01'06.413"W	1.94	
6288.00	20.130	148.340	5903.67	-412.67	-1459.72	1325.28	40°15'52.931"N	105°01'06.172"W	2.84	
6380.00	21.370	145.790	5989.70	-414.27	-1487.06	1343.01	40°15'52.661"N	105°01'05.944"W	1.67	
6470.00	22.420	139.890	6073.22	-418.40	-1513.75	1363.29	40°15'52.397"N	105°01'05.682"W	2.71	
6562.00	22.410	140.510	6158.27	-424.28	-1540.70	1385.74	40°15'52.131"N	105°01'05.393"W	0.26	
6652.00	22.580	137.450	6241.42	-430.77	-1566.67	1408.34	40°15'51.874"N	105°01'05.101"W	1.31	
6743.00	22.990	132.840	6325.33	-439.72	-1591.62	1433.19	40°15'51.627"N	105°01'04.781"W	2.01	
6833.00	22.350	136.440	6408.38	-448.83	-1615.98	1457.87	40°15'51.387"N	105°01'04.462"W	1.70	
6925.00	16.540	146.800	6495.12	-453.58	-1639.64	1477.11	40°15'51.153"N	105°01'04.214"W	7.32	
7017.00	16.680	184.940	6583.54	-446.67	-1663.82	1483.17	40°15'50.914"N	105°01'04.136"W	11.65	
7109.00	19.250	220.050	6671.30	-424.74	-1688.66	1472.24	40°15'50.668"N	105°01'04.277"W	11.91	
7201.00	25.920	241.440	6756.34	-390.27	-1709.94	1444.74	40°15'50.458"N	105°01'04.632"W	11.40	
7291.00	34.330	250.880	6834.16	-345.60	-1727.70	1403.39	40°15'50.283"N	105°01'05.165"W	10.70	
7382.00	39.730	257.800	6906.81	-292.68	-1742.27	1350.66	40°15'50.139"N	105°01'05.845"W	7.49	
7428.00	43.450	258.330	6941.21	-263.69	-1748.57	1320.79	40°15'50.076"N	105°01'06.231"W	8.12	
7473.00	47.800	256.710	6972.67	-233.04	-1755.54	1289.40	40°15'50.008"N	105°01'06.636"W	10.00	
7518.00	52.680	255.470	7001.44	-199.84	-1763.87	1255.83	40°15'49.925"N	105°01'07.068"W	11.05	
7563.00	56.860	256.840	7027.40	-164.57	-1772.65	1220.15	40°15'49.839"N	105°01'07.529"W	9.62	
7607.00	60.600	257.850	7050.23	-128.72	-1780.88	1183.46	40°15'49.757"N	105°01'08.002"W	8.72	
7652.00	65.160	257.170	7070.74	-90.56	-1789.54	1144.37	40°15'49.672"N	105°01'08.506"W	10.22	
7698.00	70.680	256.260	7088.03	-49.78	-1799.34	1102.90	40°15'49.575"N	105°01'09.041"W	12.14	
7744.00	75.470	256.410	7101.41	-7.60	-1809.73	1060.15	40°15'49.472"N	105°01'09.593"W	10.42	

Actual Wellpath Report

MARKHAM 3 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 3
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 3 AWB
Facility	SEC.32-T04N-R68W		

WELLPATH DATA (144 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7788.00	79.980	258.830	7110.77	33.33	-1818.94	1018.17	40°15'49.381"N	105°01'10.134"W	11.57	
7832.00	83.150	263.190	7117.22	73.90	-1825.73	975.19	40°15'49.314"N	105°01'10.689"W	12.16	
7878.00	86.240	267.320	7121.48	115.25	-1829.52	929.56	40°15'49.277"N	105°01'11.277"W	11.18	
7924.00	87.100	269.040	7124.15	155.67	-1830.98	883.67	40°15'49.262"N	105°01'11.869"W	4.17	
7970.00	90.030	269.510	7125.30	195.72	-1831.56	837.69	40°15'49.257"N	105°01'12.462"W	6.45	
7991.00	90.090	269.500	7125.28	213.97	-1831.74	816.69	40°15'49.255"N	105°01'12.733"W	0.29	
8015.00	89.480	268.440	7125.37	234.93	-1832.17	792.69	40°15'49.251"N	105°01'13.043"W	5.10	
8107.00	89.290	263.860	7126.36	317.38	-1838.35	700.93	40°15'49.190"N	105°01'14.226"W	4.98	
8199.00	89.450	264.480	7127.37	401.21	-1847.69	609.41	40°15'49.097"N	105°01'15.407"W	0.70	
8289.00	88.610	265.600	7128.89	482.63	-1855.47	519.77	40°15'49.020"N	105°01'16.563"W	1.56	
8382.00	89.170	267.100	7130.70	565.84	-1861.39	426.97	40°15'48.962"N	105°01'17.760"W	1.72	
8471.00	90.490	269.380	7130.96	644.13	-1864.12	338.02	40°15'48.935"N	105°01'18.908"W	2.96	
8563.00	91.200	267.970	7129.60	724.71	-1866.25	246.06	40°15'48.914"N	105°01'20.094"W	1.72	
8654.00	91.320	269.290	7127.60	804.45	-1868.42	155.11	40°15'48.892"N	105°01'21.267"W	1.46	
8744.00	90.680	273.810	7126.03	880.98	-1865.99	65.18	40°15'48.917"N	105°01'22.427"W	5.07	
8789.00	90.490	274.720	7125.57	918.10	-1862.64	20.31	40°15'48.950"N	105°01'23.006"W	2.07	
8834.00	90.620	273.260	7125.13	955.34	-1859.51	-24.58	40°15'48.981"N	105°01'23.585"W	3.26	
8927.00	90.520	267.720	7124.21	1035.32	-1858.72	-117.53	40°15'48.988"N	105°01'24.784"W	5.96	
9019.00	90.860	268.110	7123.10	1116.49	-1862.06	-209.47	40°15'48.955"N	105°01'25.970"W	0.56	
9111.00	91.510	269.650	7121.20	1196.91	-1863.86	-301.42	40°15'48.938"N	105°01'27.156"W	1.82	
9203.00	91.320	268.970	7118.93	1276.99	-1864.97	-393.39	40°15'48.927"N	105°01'28.342"W	0.77	
9293.00	91.720	267.750	7116.54	1356.04	-1867.55	-483.32	40°15'48.901"N	105°01'29.503"W	1.43	
9383.00	92.030	268.940	7113.59	1435.09	-1870.14	-573.23	40°15'48.875"N	105°01'30.662"W	1.37	
9475.00	91.380	271.130	7110.86	1514.57	-1870.09	-665.18	40°15'48.876"N	105°01'31.848"W	2.48	
9564.00	91.020	270.360	7108.99	1590.92	-1868.93	-754.16	40°15'48.887"N	105°01'32.996"W	0.95	
9654.00	91.970	267.350	7106.64	1669.59	-1870.73	-844.10	40°15'48.870"N	105°01'34.156"W	3.51	
9744.00	90.650	266.890	7104.59	1749.57	-1875.25	-933.96	40°15'48.825"N	105°01'35.315"W	1.55	
9835.00	90.490	266.610	7103.68	1830.71	-1880.41	-1024.81	40°15'48.774"N	105°01'36.487"W	0.35	
9925.00	89.850	267.340	7103.41	1910.81	-1885.16	-1114.68	40°15'48.727"N	105°01'37.647"W	1.08	
10016.00	90.120	268.160	7103.44	1991.23	-1888.73	-1205.61	40°15'48.692"N	105°01'38.820"W	0.95	
10107.00	91.540	268.980	7102.12	2071.02	-1891.00	-1296.57	40°15'48.669"N	105°01'39.993"W	1.80	
10199.00	91.420	270.000	7099.74	2150.95	-1891.82	-1388.53	40°15'48.661"N	105°01'41.179"W	1.12	
10291.00	90.920	270.190	7097.86	2230.41	-1891.67	-1480.51	40°15'48.662"N	105°01'42.366"W	0.58	
10383.00	91.050	269.880	7096.28	2309.92	-1891.61	-1572.50	40°15'48.663"N	105°01'43.552"W	0.37	
10473.00	90.150	269.860	7095.34	2387.83	-1891.81	-1662.49	40°15'48.661"N	105°01'44.713"W	1.00	
10564.00	89.970	269.460	7095.25	2466.79	-1892.35	-1753.49	40°15'48.655"N	105°01'45.887"W	0.48	
10656.00	90.150	269.620	7095.15	2546.71	-1893.09	-1845.49	40°15'48.648"N	105°01'47.074"W	0.26	
10746.00	90.000	269.720	7095.03	2624.79	-1893.61	-1935.49	40°15'48.643"N	105°01'48.235"W	0.20	
10837.00	89.850	269.470	7095.15	2703.79	-1894.25	-2026.48	40°15'48.636"N	105°01'49.408"W	0.32	
10927.00	91.080	268.430	7094.42	2782.42	-1895.90	-2116.46	40°15'48.620"N	105°01'50.569"W	1.79	
11019.00	91.540	268.450	7092.32	2863.18	-1898.41	-2208.40	40°15'48.595"N	105°01'51.755"W	0.50	
11110.00	91.570	270.460	7089.85	2942.26	-1899.27	-2299.36	40°15'48.587"N	105°01'52.928"W	2.21	
11200.00	91.480	272.960	7087.45	3018.67	-1896.59	-2389.28	40°15'48.613"N	105°01'54.088"W	2.78	
11292.00	91.540	271.180	7085.03	3096.47	-1893.27	-2481.19	40°15'48.646"N	105°01'55.274"W	1.94	
11384.00	91.080	272.750	7082.92	3174.36	-1890.11	-2573.11	40°15'48.677"N	105°01'56.459"W	1.78	

Actual Wellpath Report

MARKHAM 3 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 3
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 3 AWB
Facility	SEC.32-T04N-R68W		

WELLPATH DATA (144 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11474.00	91.080	270.590	7081.23	3250.82	-1887.49	-2663.05	40°15'48.703"N	105°01'57.620"W	2.40	
11565.00	90.950	268.110	7079.61	3330.00	-1888.52	-2754.02	40°15'48.692"N	105°01'58.793"W	2.73	
11655.00	91.600	265.340	7077.61	3410.24	-1893.66	-2843.84	40°15'48.641"N	105°01'59.952"W	3.16	
11746.00	91.510	264.790	7075.14	3492.54	-1901.49	-2934.47	40°15'48.564"N	105°02'01.121"W	0.61	
11836.00	91.420	265.300	7072.84	3573.95	-1909.26	-3024.10	40°15'48.487"N	105°02'02.277"W	0.58	
11928.00	91.880	266.830	7070.19	3656.44	-1915.57	-3115.85	40°15'48.425"N	105°02'03.460"W	1.74	
12019.00	91.820	268.950	7067.25	3736.71	-1918.92	-3206.73	40°15'48.391"N	105°02'04.633"W	2.33	
12082.00	92.590	272.520	7064.83	3790.73	-1918.11	-3269.67	40°15'48.399"N	105°02'05.445"W	5.79	LAST BHI MWD SURVEY
12106.00	92.590	272.520	7063.74	3810.91	-1917.06	-3293.62	40°15'48.410"N	105°02'05.754"W	0.00	PROJECTION TO BIT

HOLE & CASING SECTIONS - Ref Wellbore: MARKHAM 3 AWB Ref Wellpath: MARKHAM 3 AWP

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
13.5in Open Hole	17.00	1550.00	1533.00	17.00	1534.18	0.00	0.00	-108.36	102.24
9.625in Casing Surface	17.00	1539.00	1522.00	17.00	1523.73	0.00	0.00	-105.80	99.99
8.75in Open Hole	1533.00	12106.00	10573.00	1518.02	7063.74	-104.40	98.75	-1917.06	-3293.62

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SECTION 32-T04N-R69W	-8.00	-32.79	2.79	3133072.76	1341057.53	40°16'07.032"N	105°01'23.232"W	polygon
MARKHAM 3 BHL REV-2 ON PLAT (NIO B 495'FSL & 460'FWL SEC 32)	7054.00	-1919.66	-3304.35	3129775.96	1339152.99	40°15'48.384"N	105°02'05.892"W	point
MARKHAM 3 BHL REV-3 ON PLAT (NIO B 495'FSL & 460'FWL SEC 32)	7054.80	-1919.66	-3304.35	3129775.96	1339152.99	40°15'48.384"N	105°02'05.892"W	point
MARKHAM 3 BHL REV-1 ON PLAT (NIO B 495'FSL & 460'FWL SEC 32)	7060.00	-1919.66	-3304.35	3129775.96	1339152.99	40°15'48.384"N	105°02'05.892"W	point
SECTION 32-T04N-R69W SOUTHERN HALF 460' SETBACKS	7060.30	-32.79	2.79	3133072.76	1341057.53	40°16'07.032"N	105°01'23.232"W	polygon
MARKHAM 3 WP 3	7071.80	-1907.50	-2612.20	3130468.01	1339168.87	40°15'48.505"N	105°01'56.964"W	point
MARKHAM 3 WP 2	7088.10	-1881.80	-1142.70	3131937.29	1339202.47	40°15'48.760"N	105°01'38.008"W	point
MARKHAM 3 WP 1	7119.00	-1862.60	-43.10	3133036.72	1339227.58	40°15'48.950"N	105°01'23.824"W	point

Actual Wellpath Report

MARKHAM 3 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 3
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 3 AWB
Facility	SEC.32-T04N-R68W		

WELLPATH COMPOSITION - Ref Wellbore: MARKHAM 3 AWB Ref Wellpath: MARKHAM 3 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	1498.00	Custom BHI NaviTrak (Standard Rotating+Axial Corr) (Rockies 0.03Gt model)	BHI NAVITRAK MWD STD ROTATING, ROCKIES GT <142-1498>	MARKHAM 3 AWB
1498.00	12082.00	Custom BHI AutoTrak Curve (Short) (Rockies 0.03Gt model)	BHI AUTOTRAK CURVE MWD, SHORT, ROCKIES GT <1578-12082>	MARKHAM 3 AWB
12082.00	12106.00	Blind Drilling (std)	Projection to bit	MARKHAM 3 AWB

Actual Wellpath Report

MARKHAM 3 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#03 MARKHAM 3 (2357'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 3
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 3 AWB
Facility	SEC.32-T04N-R68W		

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
142.00	0.510	169.150	142.00	FIRST BHI MWD SURVEY
12082.00	92.590	272.520	7064.83	LAST BHI MWD SURVEY
12106.00	92.590	272.520	7063.74	PROJECTION TO BIT