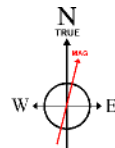


# CUB CREEK ENERGY, LLC

Location: COLORADO  
Field: WELD COUNTY (NAD83, TRUE NORTH)  
Facility: SEC.32-T04N-R68W

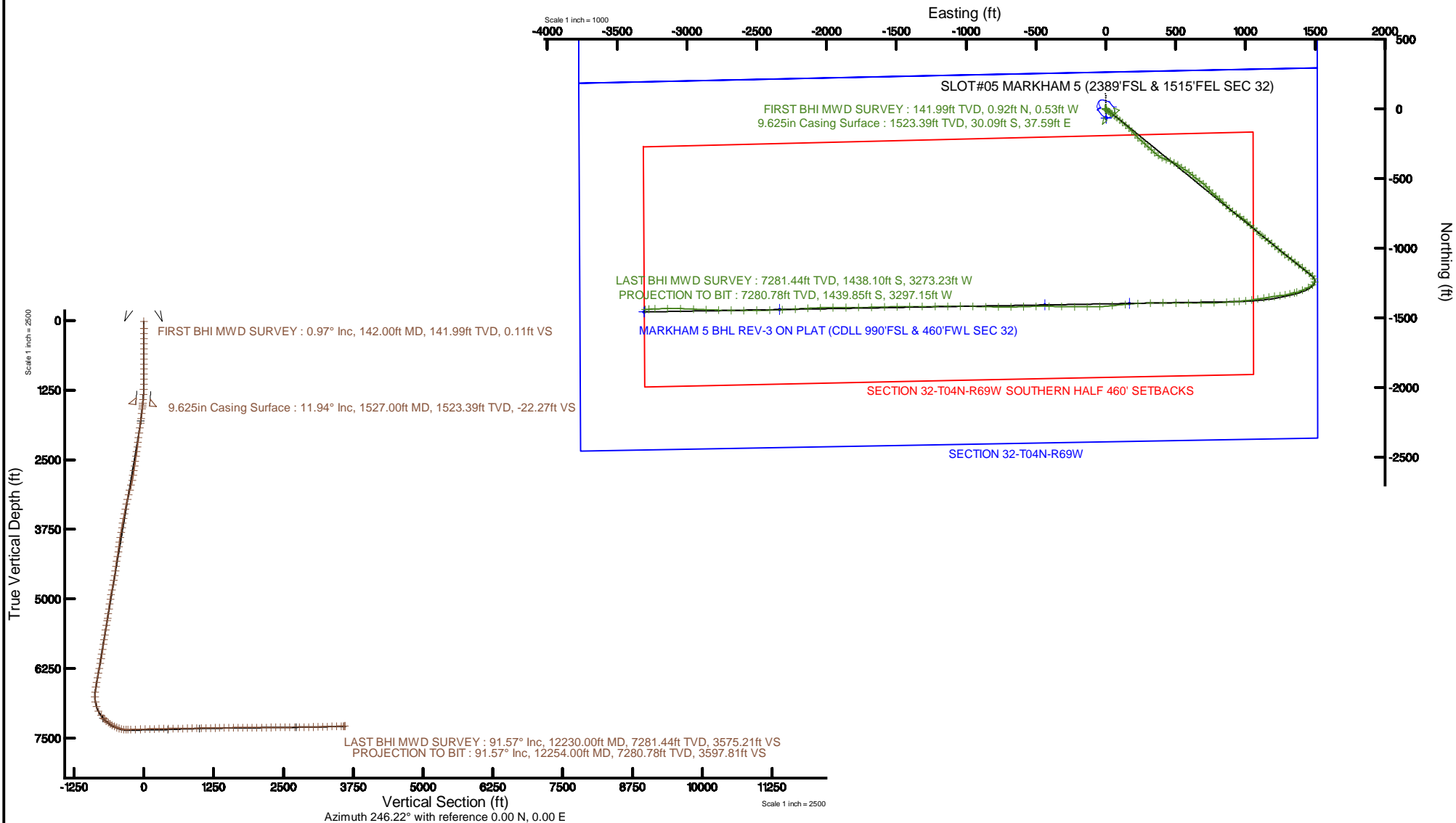
Slot: SLOT#05 MARKHAM 5 (2389'FSL & 1515'FEL SEC 32)  
Well: MARKHAM 5  
Wellbore: MARKHAM 5 PWB

Plot reference wellpath is MARKHAM 5 REV-C.1 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: 5058 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#05 MARKHAM 5 (2389'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 5 AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#05 MARKHAM 5 (2389'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 5
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 5 AWB
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 12:45:03 PM
Convergence at slot	0.31° East	Database/Source file	WA_DEN_Denver_Defn/MARKHAM_5_AWP.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	65.58	-2.80	3133069.62	1341123.09	40°16'07.680"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	5058.00ft
Horizontal Reference Pt	Slot	XTREME 18 (17') (RKB) to Mean Sea Level	5058.00ft
Vertical Reference Pt	XTREME 18 (17') (RKB)	XTREME 18 (17') (RKB) to Mud Line at Slot (SLOT#05 MARKHAM 5 (2389'FSL & 1515'FEL SEC 32))	5058.00ft
MD Reference Pt	XTREME 18 (17') (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	246.22°

# Actual Wellpath Report

MARKHAM 5 AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#05 MARKHAM 5 (2389'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 5
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 5 AWP
Facility	SEC.32-T04N-R68W		

## WELLPATH DATA (145 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
17.00	0.000	330.130	17.00	0.00	0.00	0.00	40°16'07.680"N	105°01'23.268"W	0.00	
142.00	0.970	330.130	141.99	0.11	0.92	-0.53	40°16'07.689"N	105°01'23.275"W	0.78	FIRST BHI MWD SURVEY
234.00	0.400	329.170	233.99	0.23	1.87	-1.08	40°16'07.698"N	105°01'23.282"W	0.62	
326.00	0.680	331.840	325.98	0.32	2.63	-1.50	40°16'07.706"N	105°01'23.287"W	0.31	
418.00	0.320	218.540	417.98	0.58	2.91	-1.92	40°16'07.709"N	105°01'23.293"W	0.93	
510.00	0.550	246.620	509.98	1.25	2.53	-2.48	40°16'07.705"N	105°01'23.300"W	0.33	
603.00	0.530	113.140	602.98	1.41	2.18	-2.50	40°16'07.702"N	105°01'23.300"W	1.07	
693.00	0.600	90.280	692.97	0.69	2.02	-1.64	40°16'07.700"N	105°01'23.289"W	0.26	
783.00	0.430	65.520	782.97	-0.08	2.16	-0.87	40°16'07.701"N	105°01'23.279"W	0.31	
874.00	0.320	24.070	873.97	-0.61	2.53	-0.45	40°16'07.705"N	105°01'23.274"W	0.31	
964.00	0.410	306.590	963.97	-0.63	2.95	-0.61	40°16'07.709"N	105°01'23.276"W	0.51	
1056.00	1.100	191.560	1055.96	0.04	2.28	-1.05	40°16'07.703"N	105°01'23.282"W	1.44	
1148.00	3.040	155.660	1147.90	0.53	-0.81	-0.22	40°16'07.672"N	105°01'23.271"W	2.44	
1240.00	4.680	130.400	1239.69	-1.13	-5.46	3.64	40°16'07.626"N	105°01'23.221"W	2.53	
1329.00	6.810	126.560	1328.24	-5.33	-10.96	10.65	40°16'07.572"N	105°01'23.131"W	2.43	
1418.00	9.330	124.320	1416.35	-11.75	-18.17	20.85	40°16'07.500"N	105°01'22.999"W	2.85	
1487.00	11.460	125.460	1484.22	-18.21	-25.30	31.05	40°16'07.430"N	105°01'22.867"W	3.10	
1555.00	12.280	127.870	1550.76	-25.10	-33.66	42.26	40°16'07.347"N	105°01'22.723"W	1.41	
1589.00	11.670	128.360	1584.02	-28.43	-38.01	47.81	40°16'07.304"N	105°01'22.651"W	1.82	
1679.00	13.440	129.180	1671.87	-37.44	-50.27	63.06	40°16'07.183"N	105°01'22.455"W	1.98	
1770.00	15.190	129.440	1760.04	-47.62	-64.53	80.46	40°16'07.042"N	105°01'22.230"W	1.92	
1858.00	16.710	127.830	1844.65	-58.83	-79.61	99.36	40°16'06.893"N	105°01'21.986"W	1.80	
1950.00	19.060	129.910	1932.20	-71.78	-97.36	121.33	40°16'06.718"N	105°01'21.703"W	2.65	
2041.00	20.240	132.980	2017.90	-84.58	-117.63	144.25	40°16'06.518"N	105°01'21.407"W	1.72	
2129.00	19.850	133.090	2100.57	-96.46	-138.21	166.30	40°16'06.314"N	105°01'21.123"W	0.45	
2218.00	20.180	138.680	2184.20	-107.02	-160.07	187.47	40°16'06.098"N	105°01'20.850"W	2.18	
2308.00	20.820	138.200	2268.50	-116.65	-183.65	208.38	40°16'05.865"N	105°01'20.580"W	0.74	
2400.00	21.300	133.580	2354.36	-128.14	-207.36	231.38	40°16'05.631"N	105°01'20.283"W	1.88	
2492.00	20.510	129.540	2440.31	-141.81	-229.14	255.92	40°16'05.416"N	105°01'19.967"W	1.79	
2585.00	19.540	133.350	2527.69	-155.18	-250.19	279.79	40°16'05.208"N	105°01'19.659"W	1.75	
2675.00	20.430	132.740	2612.27	-167.29	-271.18	302.28	40°16'05.000"N	105°01'19.369"W	1.02	
2767.00	20.440	132.060	2698.48	-180.26	-292.84	326.00	40°16'04.786"N	105°01'19.063"W	0.26	
2857.00	20.730	132.470	2782.73	-193.11	-314.12	349.41	40°16'04.576"N	105°01'18.761"W	0.36	
2950.00	20.920	125.150	2869.67	-208.31	-334.80	375.13	40°16'04.372"N	105°01'18.429"W	2.80	
3042.00	20.940	115.270	2955.63	-227.57	-351.28	403.44	40°16'04.209"N	105°01'18.064"W	3.83	
3136.00	20.800	109.360	3043.47	-250.76	-363.98	434.38	40°16'04.083"N	105°01'17.664"W	2.24	
3226.00	19.860	112.360	3127.87	-273.02	-375.10	463.59	40°16'03.973"N	105°01'17.288"W	1.56	
3316.00	19.100	115.100	3212.71	-293.29	-387.16	491.07	40°16'03.854"N	105°01'16.933"W	1.32	
3408.00	19.180	124.240	3299.65	-311.20	-402.05	517.20	40°16'03.707"N	105°01'16.596"W	3.26	
3499.00	21.050	124.220	3385.09	-327.78	-419.66	543.07	40°16'03.533"N	105°01'16.262"W	2.05	
3587.00	20.900	123.420	3467.26	-344.66	-437.19	569.24	40°16'03.360"N	105°01'15.925"W	0.37	
3677.00	20.990	126.250	3551.32	-361.41	-455.56	595.64	40°16'03.178"N	105°01'15.584"W	1.13	
3770.00	20.910	131.290	3638.18	-376.73	-476.36	621.54	40°16'02.973"N	105°01'15.250"W	1.94	
3860.00	21.020	130.130	3722.22	-390.60	-497.37	645.95	40°16'02.765"N	105°01'14.935"W	0.48	
3952.00	20.750	124.360	3808.18	-406.46	-517.20	672.03	40°16'02.569"N	105°01'14.599"W	2.25	

# Actual Wellpath Report

MARKHAM 5 AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#05 MARKHAM 5 (2389'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 5
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 5 AWB
Facility	SEC.32-T04N-R68W		

## WELLPATH DATA (145 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4045.00	20.480	128.360	3895.23	-422.77	-536.60	698.38	40°16'02.377"N	105°01'14.259"W	1.54	
4135.00	19.480	138.100	3979.84	-434.80	-557.54	720.76	40°16'02.170"N	105°01'13.970"W	3.86	
4227.00	21.040	138.260	4066.15	-444.66	-581.29	742.00	40°16'01.936"N	105°01'13.696"W	1.70	
4319.00	20.920	131.880	4152.06	-456.53	-604.58	765.23	40°16'01.706"N	105°01'13.397"W	2.49	
4411.00	20.810	128.390	4238.03	-470.93	-625.69	790.27	40°16'01.497"N	105°01'13.074"W	1.36	
4502.00	21.130	132.270	4323.00	-485.13	-646.76	815.07	40°16'01.289"N	105°01'12.754"W	1.57	
4594.00	20.940	135.560	4408.88	-497.67	-669.66	838.86	40°16'01.062"N	105°01'12.447"W	1.30	
4684.00	20.580	135.800	4493.03	-508.86	-692.48	861.14	40°16'00.837"N	105°01'12.159"W	0.41	
4774.00	20.860	132.030	4577.22	-520.95	-714.55	884.08	40°16'00.619"N	105°01'11.863"W	1.51	
4866.00	20.820	128.030	4663.20	-535.39	-735.59	909.12	40°16'00.411"N	105°01'11.540"W	1.55	
4958.00	20.730	123.530	4749.23	-551.91	-754.66	935.58	40°16'00.222"N	105°01'11.199"W	1.74	
5050.00	20.900	125.470	4835.22	-569.10	-773.17	962.51	40°16'00.039"N	105°01'10.852"W	0.77	
5142.00	20.380	128.280	4921.32	-584.99	-792.62	988.45	40°15'59.847"N	105°01'10.517"W	1.22	
5234.00	20.300	131.880	5007.59	-599.08	-813.20	1012.91	40°15'59.644"N	105°01'10.201"W	1.36	
5324.00	20.170	133.370	5092.03	-611.54	-834.28	1035.82	40°15'59.436"N	105°01'09.906"W	0.59	
5416.00	20.910	133.790	5178.18	-623.97	-856.53	1059.20	40°15'59.216"N	105°01'09.604"W	0.82	
5505.00	20.930	132.510	5261.32	-636.42	-878.26	1082.38	40°15'59.001"N	105°01'09.305"W	0.51	
5597.00	20.660	131.640	5347.32	-649.78	-900.15	1106.62	40°15'58.785"N	105°01'08.993"W	0.45	
5640.00	19.010	129.830	5387.77	-656.05	-909.68	1117.67	40°15'58.690"N	105°01'08.850"W	4.09	
5730.00	18.990	127.360	5472.87	-669.63	-927.95	1140.57	40°15'58.510"N	105°01'08.555"W	0.89	
5820.00	19.560	128.660	5557.82	-683.67	-946.25	1163.97	40°15'58.329"N	105°01'08.253"W	0.79	
5912.00	19.790	129.780	5644.45	-697.74	-965.83	1187.97	40°15'58.135"N	105°01'07.943"W	0.48	
6004.00	19.910	131.370	5730.99	-711.25	-986.15	1211.69	40°15'57.935"N	105°01'07.637"W	0.60	
6096.00	20.000	131.020	5817.46	-724.54	-1006.83	1235.32	40°15'57.730"N	105°01'07.333"W	0.16	
6187.00	19.880	129.380	5903.01	-738.15	-1026.86	1259.02	40°15'57.532"N	105°01'07.027"W	0.63	
6278.00	19.910	127.350	5988.58	-752.62	-1046.08	1283.29	40°15'57.342"N	105°01'06.714"W	0.76	
6369.00	19.090	125.190	6074.36	-767.77	-1064.06	1307.77	40°15'57.165"N	105°01'06.398"W	1.20	
6459.00	19.320	126.660	6159.35	-782.71	-1081.43	1331.75	40°15'56.993"N	105°01'06.089"W	0.59	
6549.00	20.810	127.190	6243.89	-797.81	-1099.98	1356.43	40°15'56.810"N	105°01'05.770"W	1.67	
6640.00	20.920	127.290	6328.92	-813.52	-1119.59	1382.23	40°15'56.616"N	105°01'05.438"W	0.13	
6730.00	20.910	128.180	6412.99	-828.84	-1139.26	1407.64	40°15'56.422"N	105°01'05.110"W	0.35	
6821.00	20.890	128.660	6498.00	-843.98	-1159.43	1433.07	40°15'56.222"N	105°01'04.782"W	0.19	
6911.00	20.900	128.740	6582.08	-858.82	-1179.50	1458.12	40°15'56.024"N	105°01'04.459"W	0.03	
7003.00	16.880	135.200	6669.12	-871.19	-1199.26	1480.34	40°15'55.829"N	105°01'04.172"W	4.92	
7095.00	15.260	158.280	6757.61	-875.55	-1220.00	1494.25	40°15'55.624"N	105°01'03.993"W	7.11	
7187.00	15.530	195.990	6846.53	-867.22	-1243.15	1495.34	40°15'55.395"N	105°01'03.979"W	10.70	
7276.00	18.630	232.540	6931.83	-845.72	-1263.31	1480.73	40°15'55.196"N	105°01'04.167"W	12.33	
7367.00	26.980	241.920	7015.67	-810.94	-1281.91	1450.92	40°15'55.012"N	105°01'04.552"W	9.98	
7457.00	37.540	247.700	7091.69	-763.02	-1301.98	1407.40	40°15'54.814"N	105°01'05.113"W	12.21	
7522.00	43.040	252.880	7141.27	-721.15	-1316.04	1367.84	40°15'54.675"N	105°01'05.623"W	9.90	
7546.00	45.980	255.040	7158.38	-704.48	-1320.68	1351.67	40°15'54.629"N	105°01'05.832"W	13.78	
7591.00	49.850	257.780	7188.54	-671.63	-1328.50	1319.22	40°15'54.552"N	105°01'06.251"W	9.71	
7636.00	52.960	260.780	7216.61	-637.38	-1335.02	1284.67	40°15'54.487"N	105°01'06.696"W	8.65	
7682.00	57.080	262.290	7242.98	-601.04	-1340.56	1247.40	40°15'54.432"N	105°01'07.177"W	9.35	
7726.00	60.540	262.290	7265.76	-564.88	-1345.61	1210.10	40°15'54.383"N	105°01'07.658"W	7.86	

# Actual Wellpath Report

MARKHAM 5 AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#05 MARKHAM 5 (2389'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 5
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 5 AWB
Facility	SEC.32-T04N-R68W		

## WELLPATH DATA (145 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7772.00	63.480	261.170	7287.35	-525.74	-1351.45	1169.91	40°15'54.325"N	105°01'08.177"W	6.74	
7816.00	65.400	260.230	7306.33	-487.31	-1357.87	1130.74	40°15'54.261"N	105°01'08.682"W	4.77	
7862.00	72.890	260.850	7322.70	-445.69	-1364.92	1088.37	40°15'54.192"N	105°01'09.228"W	16.33	
7907.00	77.760	262.120	7334.09	-403.71	-1371.36	1045.33	40°15'54.128"N	105°01'09.784"W	11.16	
7951.00	83.000	263.610	7341.44	-362.16	-1376.74	1002.30	40°15'54.075"N	105°01'10.339"W	12.37	
7997.00	89.230	265.130	7344.56	-318.57	-1381.24	956.65	40°15'54.031"N	105°01'10.928"W	13.94	
8036.00	91.380	266.400	7344.35	-281.82	-1384.12	917.76	40°15'54.002"N	105°01'11.429"W	6.40	
8089.00	91.200	266.380	7343.16	-232.09	-1387.46	864.88	40°15'53.969"N	105°01'12.111"W	0.34	
8179.00	91.480	267.940	7341.05	-148.05	-1391.92	775.02	40°15'53.925"N	105°01'13.271"W	1.76	
8271.00	91.450	269.640	7338.70	-63.13	-1393.86	683.07	40°15'53.906"N	105°01'14.457"W	1.85	
8363.00	91.510	270.570	7336.32	20.97	-1393.69	591.11	40°15'53.908"N	105°01'15.643"W	1.01	
8453.00	91.540	270.890	7333.93	102.83	-1392.54	501.14	40°15'53.919"N	105°01'16.803"W	0.36	
8544.00	91.510	270.180	7331.51	185.73	-1391.69	410.18	40°15'53.927"N	105°01'17.977"W	0.78	
8636.00	90.920	268.320	7329.56	270.37	-1392.90	318.21	40°15'53.916"N	105°01'19.163"W	2.12	
8726.00	90.950	267.330	7328.09	354.04	-1396.31	228.29	40°15'53.882"N	105°01'20.323"W	1.10	
8816.00	90.650	264.320	7326.83	438.81	-1402.86	138.55	40°15'53.817"N	105°01'21.481"W	3.36	
8907.00	90.520	264.040	7325.90	525.37	-1412.09	48.02	40°15'53.726"N	105°01'22.649"W	0.34	
8999.00	90.740	267.620	7324.89	612.02	-1418.78	-43.71	40°15'53.660"N	105°01'23.832"W	3.90	
9089.00	90.890	270.560	7323.61	694.93	-1420.21	-133.68	40°15'53.646"N	105°01'24.992"W	3.27	
9179.00	90.950	269.670	7322.16	777.20	-1420.03	-223.67	40°15'53.647"N	105°01'26.153"W	0.99	
9270.00	90.920	271.770	7320.68	860.00	-1418.88	-314.64	40°15'53.659"N	105°01'27.327"W	2.31	
9362.00	90.740	271.020	7319.35	943.25	-1416.65	-406.61	40°15'53.681"N	105°01'28.513"W	0.84	
9454.00	90.830	268.980	7318.09	1027.43	-1416.65	-498.59	40°15'53.681"N	105°01'29.700"W	2.22	
9544.00	90.800	267.770	7316.81	1110.78	-1419.20	-588.55	40°15'53.656"N	105°01'30.860"W	1.34	
9634.00	90.890	268.650	7315.48	1194.22	-1422.01	-678.49	40°15'53.628"N	105°01'32.020"W	0.98	
9725.00	90.950	271.210	7314.02	1277.52	-1422.12	-769.47	40°15'53.627"N	105°01'33.194"W	2.81	
9815.00	91.050	271.830	7312.45	1358.88	-1419.73	-859.43	40°15'53.650"N	105°01'34.354"W	0.70	
9906.00	90.740	271.510	7311.03	1441.04	-1417.08	-950.38	40°15'53.676"N	105°01'35.527"W	0.49	
9998.00	90.180	270.120	7310.29	1524.69	-1415.77	-1042.36	40°15'53.689"N	105°01'36.714"W	1.63	
10088.00	90.250	269.050	7309.95	1607.31	-1416.42	-1132.36	40°15'53.683"N	105°01'37.875"W	1.19	
10178.00	90.250	269.390	7309.56	1690.16	-1417.65	-1222.35	40°15'53.671"N	105°01'39.036"W	0.38	
10269.00	90.180	269.970	7309.21	1773.64	-1418.16	-1313.35	40°15'53.666"N	105°01'40.210"W	0.64	
10361.00	90.310	269.530	7308.82	1857.99	-1418.56	-1405.34	40°15'53.662"N	105°01'41.396"W	0.50	
10451.00	90.250	269.060	7308.38	1940.79	-1419.67	-1495.34	40°15'53.651"N	105°01'42.557"W	0.53	
10541.00	90.310	268.470	7307.94	2023.91	-1421.61	-1585.31	40°15'53.631"N	105°01'43.718"W	0.66	
10633.00	90.430	268.610	7307.35	2109.02	-1423.95	-1677.28	40°15'53.608"N	105°01'44.904"W	0.20	
10725.00	90.430	269.500	7306.66	2193.81	-1425.47	-1769.26	40°15'53.593"N	105°01'46.091"W	0.97	
10817.00	90.370	270.230	7306.02	2278.08	-1425.68	-1861.26	40°15'53.591"N	105°01'47.278"W	0.80	
10909.00	90.680	269.750	7305.17	2362.28	-1425.70	-1953.26	40°15'53.591"N	105°01'48.464"W	0.62	
10999.00	90.620	268.070	7304.15	2445.30	-1427.41	-2043.23	40°15'53.574"N	105°01'49.625"W	1.87	
11089.00	90.520	266.740	7303.26	2529.22	-1431.49	-2133.13	40°15'53.533"N	105°01'50.785"W	1.48	
11180.00	90.580	266.880	7302.38	2614.40	-1436.55	-2223.99	40°15'53.483"N	105°01'51.957"W	0.17	
11272.00	90.620	267.690	7301.42	2700.25	-1440.91	-2315.88	40°15'53.440"N	105°01'53.142"W	0.88	
11364.00	90.580	268.320	7300.46	2785.68	-1444.11	-2407.82	40°15'53.408"N	105°01'54.328"W	0.69	
11456.00	90.740	269.340	7299.40	2870.60	-1445.99	-2499.79	40°15'53.390"N	105°01'55.514"W	1.12	

# Actual Wellpath Report

MARKHAM 5 AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#05 MARKHAM 5 (2389'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 5
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 5 AWB
Facility	SEC.32-T04N-R68W		

## WELLPATH DATA (145 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11548.00	90.680	270.480	7298.26	2954.84	-1446.13	-2591.78	40°15'53.388"N	105°01'56.701"W	1.24	
11639.00	90.680	270.070	7297.18	3037.94	-1445.70	-2682.78	40°15'53.392"N	105°01'57.875"W	0.45	
11730.00	91.480	271.780	7295.46	3120.59	-1444.23	-2773.74	40°15'53.407"N	105°01'59.048"W	2.07	
11820.00	91.570	272.400	7293.06	3201.55	-1440.95	-2863.65	40°15'53.439"N	105°02'00.208"W	0.70	
11910.00	91.630	272.470	7290.55	3282.26	-1437.12	-2953.53	40°15'53.477"N	105°02'01.367"W	0.10	
12002.00	91.660	271.330	7287.91	3365.14	-1434.08	-3045.44	40°15'53.507"N	105°02'02.553"W	1.24	
12094.00	91.600	269.840	7285.29	3448.91	-1433.14	-3137.40	40°15'53.516"N	105°02'03.739"W	1.62	
12185.00	91.660	267.310	7282.70	3533.03	-1435.40	-3228.33	40°15'53.494"N	105°02'04.912"W	2.78	
12230.00	91.570	265.810	7281.44	3575.21	-1438.10	-3273.23	40°15'53.467"N	105°02'05.491"W	3.34	LAST BHI MWD SURVEY
12254.00	91.570	265.810	7280.78	3597.81	-1439.85	-3297.15	40°15'53.449"N	105°02'05.800"W	0.00	PROJECTION TO BIT

## HOLE & CASING SECTIONS - Ref Wellbore: MARKHAM 5 AWB Ref Wellpath: MARKHAM 5 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	1539.00	1522.00	17.00	1535.12	0.00	0.00	-31.60	39.59
9.625in Casing Surface	17.00	1527.00	1510.00	17.00	1523.39	0.00	0.00	-30.09	37.59
8.75in Open Hole	1539.00	12254.00	10715.00	1535.12	7280.78	-31.60	39.59	-1439.85	-3297.15

## TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SECTION 32-T04N-R69W	-9.00	-65.57	2.79	3133072.76	1341057.53	40°16'07.032"N	105°01'23.232"W	polygon
SECTION 32-T04N-R69W SOUTHERN HALF 460' SETBACKS	7059.30	-65.57	2.79	3133072.76	1341057.53	40°16'07.032"N	105°01'23.232"W	polygon
MARKHAM 5 BHL REV-2 ON PLAT (CDLL 990'FSL & 460'FWL SEC 32)	7281.00	-1456.99	-3307.08	3129770.57	1339648.40	40°15'53.280"N	105°02'05.928"W	point
MARKHAM 5 BHL REV-1 ON PLAT (CDLL 990'FSL & 460'FWL SEC 32)	7287.00	-1456.99	-3307.08	3129770.57	1339648.40	40°15'53.280"N	105°02'05.928"W	point
MARKHAM 5 BHL REV-3 ON PLAT (CDLL 990'FSL & 460'FWL SEC 32)	7288.38	-1456.99	-3307.08	3129770.57	1339648.40	40°15'53.280"N	105°02'05.928"W	point
MARKHAM 5 WP 3	7296.00	-1440.00	-2335.50	3130742.00	1339670.62	40°15'53.449"N	105°01'53.395"W	point
MARKHAM 5 WP 2	7317.10	-1406.80	-436.90	3132640.31	1339714.03	40°15'53.778"N	105°01'28.904"W	point
MARKHAM 5 WP 1	7336.00	-1396.20	168.40	3133245.52	1339727.88	40°15'53.883"N	105°01'21.096"W	point

# Actual Wellpath Report

MARKHAM 5 AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#05 MARKHAM 5 (2389'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 5
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 5 AWB
Facility	SEC.32-T04N-R68W		

## WELLPATH COMPOSITION - Ref Wellbore: MARKHAM 5 AWB Ref Wellpath: MARKHAM 5 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	1487.00	Custom BHI NaviTrak (Standard Rotating+Axial Corr) (Rockies 0.03Gt model)	BHI NAVITRAK MWD AXIAL ROCKIES GT <142-1487>	MARKHAM 5 AWB
1487.00	12230.00	Custom BHI AutoTrak Curve (Short) (Rockies 0.03Gt model)	BHI AUTOTRAK CURVE MWD, SHORT, ROCKIES GT <1555-12230>	MARKHAM 5 AWB
12230.00	12254.00	Blind Drilling (std)	Projection to bit	MARKHAM 5 AWB

# Actual Wellpath Report

MARKHAM 5 AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	CUB CREEK ENERGY, LLC	Slot	SLOT#05 MARKHAM 5 (2389'FSL & 1515'FEL SEC 32)
Area	COLORADO	Well	MARKHAM 5
Field	WELD COUNTY (NAD83, TRUE NORTH)	Wellbore	MARKHAM 5 AWB
Facility	SEC.32-T04N-R68W		

## WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
142.00	0.970	330.130	141.99	FIRST BHI MWD SURVEY
12230.00	91.570	265.810	7281.44	LAST BHI MWD SURVEY
12254.00	91.570	265.810	7280.78	PROJECTION TO BIT