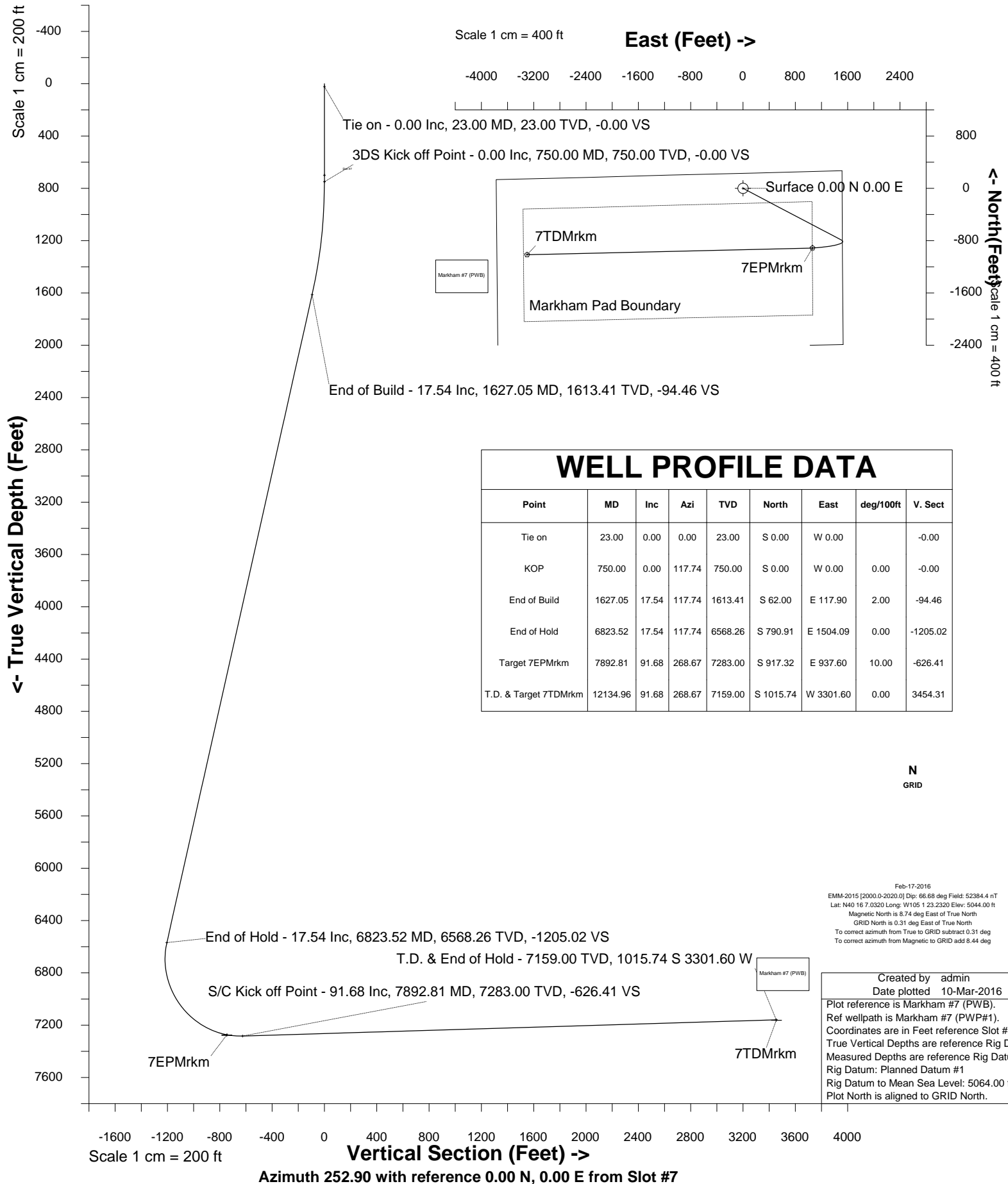


# Cub Creek Energy, LLC

Location Weld County, CO  
Field WATTENBERG  
Installation Markham Pad

Slot Slot #7  
Well Markham #7  
Wellbore Markham #7 (PWB)





SYSDRILL  
Well Design Combined Report  
Wellbore: Markham #7 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
Slot #7	N40 16 8.0040	W105 1 23.2680	1341155.8761	3133069.4456	98.35N	3.32W	0.00

Declination		
Date	Source	Time
Feb-17-2016	EMM-2015 [2000.0-2020.0]	11:55

Installation Details						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Northing	Easting	Coord System Name	North Alignment
Markham Pad	N40 16 7.0320	W105 1 23.2320	1341057.5349	3133072.7650	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid

Summary Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
23.00	0.00	0.000	23.00	0.00N	0.00E		0.00	1341155.88	3133069.45
750.00	0.00	117.740	750.00	0.00N	0.00E	==>	0.00	1341155.88	3133069.45
1627.05	17.54	117.740	1613.41	62.00S	117.90E	2.00	-94.46	1341093.88	3133187.34
6823.52	17.54	117.740	6568.26	790.91S	1504.09E	==>	-1205.02	1340365.00	3134573.46
7892.81	91.68	268.670	7283.00	917.32S	937.60E	10.00	-626.41	1340238.60	3134007.01
12134.96	91.68	268.670	7159.00	1015.74S	3301.60W	==>	3454.31	1340140.18	3129768.00

Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
0.00	0.00	0.000	0.00	0.00N	0.00E		0.00	Rig Datum
23.00	0.00	0.000	23.00	0.00N	0.00E	==>	0.00	Slot Datum
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	
800.00	1.00	117.740	800.00	0.20S	0.39E	2.00	-0.31	
900.00	3.00	117.740	899.93	1.83S	3.47E	2.00	-2.78	
1000.00	5.00	117.740	999.68	5.07S	9.65E	2.00	-7.73	
1100.00	7.00	117.740	1099.13	9.94S	18.90E	2.00	-15.14	
1200.00	9.00	117.740	1198.15	16.42S	31.22E	2.00	-25.01	
1300.00	11.00	117.740	1296.63	24.50S	46.59E	2.00	-37.32	
1400.00	13.00	117.740	1394.44	34.17S	64.99E	2.00	-52.07	
1500.00	15.00	117.740	1491.46	45.43S	86.40E	2.00	-69.22	
1600.00	17.00	117.740	1587.58	58.26S	110.79E	2.00	-88.76	
1700.00	17.54	117.740	1682.97	72.23S	137.36E	==>	-110.05	
1800.00	17.54	117.740	1778.32	86.26S	164.04E	==>	-131.42	
1900.00	17.54	117.740	1873.67	100.28S	190.71E	==>	-152.79	
2000.00	17.54	117.740	1969.02	114.31S	217.39E	==>	-174.16	
2100.00	17.54	117.740	2064.37	128.34S	244.06E	==>	-195.54	
2200.00	17.54	117.740	2159.72	142.37S	270.74E	==>	-216.91	
2300.00	17.54	117.740	2255.07	156.39S	297.41E	==>	-238.28	
2400.00	17.54	117.740	2350.42	170.42S	324.09E	==>	-259.65	
2500.00	17.54	117.740	2445.77	184.45S	350.77E	==>	-281.02	
2600.00	17.54	117.740	2541.12	198.47S	377.44E	==>	-302.39	
2700.00	17.54	117.740	2636.47	212.50S	404.12E	==>	-323.76	
2800.00	17.54	117.740	2731.82	226.53S	430.79E	==>	-345.14	
2900.00	17.54	117.740	2827.17	240.55S	457.47E	==>	-366.51	

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Coordinates are from Slot MD's are from Rig and TVD's are from Rig ( Planned Datum #1 5064.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 252.900 degrees  
Bottom hole distance is 3454.31 Feet on azimuth 252.90 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Integrated Petroleum Technologies, Inc.  
Date Printed: 14-Apr-2016



SYSDRILL  
Well Design Combined Report  
Wellbore: Markham #7 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3000.00	17.54	117.740	2922.52	254.58S	484.14E	==>	-387.88	
3100.00	17.54	117.740	3017.87	268.61S	510.82E	==>	-409.25	
3200.00	17.54	117.740	3113.22	282.64S	537.49E	==>	-430.62	
3300.00	17.54	117.740	3208.57	296.66S	564.17E	==>	-451.99	
3400.00	17.54	117.740	3303.92	310.69S	590.85E	==>	-473.37	
3500.00	17.54	117.740	3399.27	324.72S	617.52E	==>	-494.74	
3600.00	17.54	117.740	3494.63	338.74S	644.20E	==>	-516.11	
3700.00	17.54	117.740	3589.98	352.77S	670.87E	==>	-537.48	
3800.00	17.54	117.740	3685.33	366.80S	697.55E	==>	-558.85	
3900.00	17.54	117.740	3780.68	380.83S	724.22E	==>	-580.22	
4000.00	17.54	117.740	3876.03	394.85S	750.90E	==>	-601.59	
4100.00	17.54	117.740	3971.38	408.88S	777.57E	==>	-622.97	
4200.00	17.54	117.740	4066.73	422.91S	804.25E	==>	-644.34	
4300.00	17.54	117.740	4162.08	436.93S	830.92E	==>	-665.71	
4400.00	17.54	117.740	4257.43	450.96S	857.60E	==>	-687.08	
4500.00	17.54	117.740	4352.78	464.99S	884.28E	==>	-708.45	
4600.00	17.54	117.740	4448.13	479.01S	910.95E	==>	-729.82	
4700.00	17.54	117.740	4543.48	493.04S	937.63E	==>	-751.20	
4800.00	17.54	117.740	4638.83	507.07S	964.30E	==>	-772.57	
4900.00	17.54	117.740	4734.18	521.10S	990.98E	==>	-793.94	
5000.00	17.54	117.740	4829.53	535.12S	1017.65E	==>	-815.31	
5100.00	17.54	117.740	4924.88	549.15S	1044.33E	==>	-836.68	
5200.00	17.54	117.740	5020.23	563.18S	1071.00E	==>	-858.05	
5300.00	17.54	117.740	5115.58	577.20S	1097.68E	==>	-879.42	
5400.00	17.54	117.740	5210.93	591.23S	1124.36E	==>	-900.80	
5500.00	17.54	117.740	5306.28	605.26S	1151.03E	==>	-922.17	
5600.00	17.54	117.740	5401.63	619.29S	1177.71E	==>	-943.54	
5700.00	17.54	117.740	5496.98	633.31S	1204.38E	==>	-964.91	
5800.00	17.54	117.740	5592.33	647.34S	1231.06E	==>	-986.28	
5900.00	17.54	117.740	5687.68	661.37S	1257.73E	==>	-1007.65	
6000.00	17.54	117.740	5783.03	675.39S	1284.41E	==>	-1029.03	
6100.00	17.54	117.740	5878.38	689.42S	1311.08E	==>	-1050.40	
6200.00	17.54	117.740	5973.73	703.45S	1337.76E	==>	-1071.77	
6300.00	17.54	117.740	6069.08	717.47S	1364.44E	==>	-1093.14	
6400.00	17.54	117.740	6164.43	731.50S	1391.11E	==>	-1114.51	
6500.00	17.54	117.740	6259.78	745.53S	1417.79E	==>	-1135.88	
6600.00	17.54	117.740	6355.13	759.56S	1444.46E	==>	-1157.25	
6700.00	17.54	117.740	6450.48	773.58S	1471.14E	==>	-1178.63	
6800.00	17.54	117.740	6545.83	787.61S	1497.81E	==>	-1200.00	
6900.00	11.60	137.370	6642.29	801.95S	1519.52E	10.00	-1216.53	
7000.00	9.12	193.820	6740.89	817.08S	1524.44E	10.00	-1216.79	
7100.00	15.18	233.610	6838.76	832.58S	1511.98E	10.00	-1200.32	
7200.00	24.00	248.060	6932.93	847.99S	1482.51E	10.00	-1167.62	
7300.00	33.46	254.860	7020.55	862.82S	1436.92E	10.00	-1119.68	
7400.00	43.15	258.900	7098.94	876.63S	1376.60E	10.00	-1057.97	
7500.00	52.93	261.690	7165.72	889.01S	1303.38E	10.00	-984.35	
7600.00	62.77	263.840	7218.88	899.57S	1219.49E	10.00	-901.06	
7700.00	72.63	265.630	7256.79	907.99S	1127.47E	10.00	-810.63	
7800.00	82.50	267.240	7278.29	914.03S	1030.13E	10.00	-715.82	
7900.00	91.68	268.670	7282.79	917.49S	930.42E	==>	-619.49	
8000.00	91.68	268.670	7279.87	919.81S	830.49E	==>	-523.30	
8100.00	91.68	268.670	7276.94	922.13S	730.56E	==>	-427.11	
8200.00	91.68	268.670	7274.02	924.45S	630.63E	==>	-330.91	
8300.00	91.68	268.670	7271.10	926.77S	530.69E	==>	-234.72	
8400.00	91.68	268.670	7268.17	929.09S	430.76E	==>	-138.52	
8500.00	91.68	268.670	7265.25	931.41S	330.83E	==>	-42.33	
8600.00	91.68	268.670	7262.33	933.73S	230.90E	==>	53.87	

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Vertical Section is from 0.00N 0.00E on azimuth 252.900 degrees  
Bottom hole distance is 3454.31 Feet on azimuth 252.90 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Integrated Petroleum Technologies, Inc.  
Date Printed: 14-Apr-2016



SYSDRILL  
Well Design Combined Report  
Wellbore: Markham #7 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
8700.00	91.68	268.670	7259.41	936.05S	130.97E	==>	150.06	
8800.00	91.68	268.670	7256.48	938.37S	31.04E	==>	246.26	
8900.00	91.68	268.670	7253.56	940.69S	68.89W	==>	342.45	
9000.00	91.68	268.670	7250.64	943.01S	168.82W	==>	438.65	
9100.00	91.68	268.670	7247.71	945.33S	268.75W	==>	534.84	
9200.00	91.68	268.670	7244.79	947.65S	368.68W	==>	631.04	
9300.00	91.68	268.670	7241.87	949.97S	468.61W	==>	727.23	
9400.00	91.68	268.670	7238.94	952.29S	568.54W	==>	823.42	
9500.00	91.68	268.670	7236.02	954.61S	668.47W	==>	919.62	
9600.00	91.68	268.670	7233.10	956.93S	768.40W	==>	1015.81	
9700.00	91.68	268.670	7230.18	959.25S	868.33W	==>	1112.01	
9800.00	91.68	268.670	7227.25	961.57S	968.26W	==>	1208.20	
9900.00	91.68	268.670	7224.33	963.89S	1068.19W	==>	1304.40	
10000.00	91.68	268.670	7221.41	966.21S	1168.12W	==>	1400.59	
10100.00	91.68	268.670	7218.48	968.53S	1268.05W	==>	1496.79	
10200.00	91.68	268.670	7215.56	970.85S	1367.98W	==>	1592.98	
10300.00	91.68	268.670	7212.64	973.17S	1467.91W	==>	1689.18	
10400.00	91.68	268.670	7209.71	975.49S	1567.84W	==>	1785.37	
10500.00	91.68	268.670	7206.79	977.81S	1667.77W	==>	1881.57	
10600.00	91.68	268.670	7203.87	980.13S	1767.70W	==>	1977.76	
10700.00	91.68	268.670	7200.94	982.45S	1867.63W	==>	2073.95	
10800.00	91.68	268.670	7198.02	984.77S	1967.56W	==>	2170.15	
10900.00	91.68	268.670	7195.10	987.09S	2067.49W	==>	2266.34	
11000.00	91.68	268.670	7192.18	989.41S	2167.42W	==>	2362.54	
11100.00	91.68	268.670	7189.25	991.73S	2267.35W	==>	2458.73	
11200.00	91.68	268.670	7186.33	994.05S	2367.29W	==>	2554.93	
11300.00	91.68	268.670	7183.41	996.37S	2467.22W	==>	2651.12	
11400.00	91.68	268.670	7180.48	998.69S	2567.15W	==>	2747.32	
11500.00	91.68	268.670	7177.56	1001.01S	2667.08W	==>	2843.51	
11600.00	91.68	268.670	7174.64	1003.33S	2767.01W	==>	2939.71	
11700.00	91.68	268.670	7171.71	1005.65S	2866.94W	==>	3035.90	
11800.00	91.68	268.670	7168.79	1007.97S	2966.87W	==>	3132.10	
11900.00	91.68	268.670	7165.87	1010.29S	3066.80W	==>	3228.29	
12000.00	91.68	268.670	7162.95	1012.61S	3166.73W	==>	3324.48	
12100.00	91.68	268.670	7160.02	1014.93S	3266.66W	==>	3420.68	
12134.96	91.68	268.670	7159.00	1015.74S	3301.60W	==>	3454.31	

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Vertical Section is from 0.00N 0.00E on azimuth 252.900 degrees  
Bottom hole distance is 3454.31 Feet on azimuth 252.90 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Integrated Petroleum Technologies, Inc.  
Date Printed: 14-Apr-2016

Survey Tool Program					
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
445534	Planned	12134.96	7159.00	ISCWSA MWD	Rev 4 + SAG + FLT



SYSDRILL  
Closest Approach + Clearance Factor Summary Report  
Wellbore: Markham #7 (PWB)



Ellipse separations are reported ONLY if BOTH wells have uncertainty data
Only Depth and Magnetic Reference Field error terms are correlated across tie points
Scan limit is calculated on CENTRE to CENTRE distance
Summary data uses Closest Approach clearance calculation for all minima
Hole size/Casings ARE included
Hole size/Casings are NOT subtracted from Centre-Centre distance
Confidence limit of 95.00% / 2.80 SD.

Wellbore		
Name	Created	Last Revised
Markham #7 (PWB)	Feb-22-2016	Mar-10-2016

Well		
Name	Government ID	Last Revised
Markham #7		Feb-22-2016

Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
Slot #7	N40 16 8.0040	W105 1 23.2680	1341155.8761	3133069.4456	98.35N	3.32W

Installation						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Easting	Northing	Coord System Name	North Alignment
Markham Pad	N40 16 7.0320	W105 1 23.2320	3133072.7650	1341057.5349	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid

Clearance Summary							
Offset WellName	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
Markham #8	14.57	750.00	750.00	-144.21	12134.96	0.56	12134.96
Markham #6	16.10	974.44	12134.96	-28.85	12134.96	0.92	12134.96
Markham #9	29.14	750.00	750.00	-25.16	12134.96	0.93	12134.96
Markham #5	30.83	990.85	12134.96	19.99	1089.27	1.41	12134.96
Markham #10	47.36	761.19	761.19	38.99	843.21	1.86	12134.96
Markham #4	51.00	749.00	749.00	42.38	892.42	1.85	12134.96
Markham #3	57.87	1171.29	12134.96	45.62	1200.00	2.76	12134.96
Markham #11	61.93	750.00	750.00	53.71	810.40	2.34	12134.96
Markham #2	69.42	1230.11	1230.11	56.57	1253.31	3.25	12134.96
Markham #12	76.55	750.00	12123.00	68.36	800.00	2.78	12134.96
Markham #1	98.40	172.00	12134.96	95.75	223.00	3.74	12134.96
Markham #33-32D	430.84	3460.99	9309.39	352.74	9340.59	3.42	9373.39
Markham #44-32D	828.12	8005.93	8005.93	735.54	8005.93	8.94	8011.85