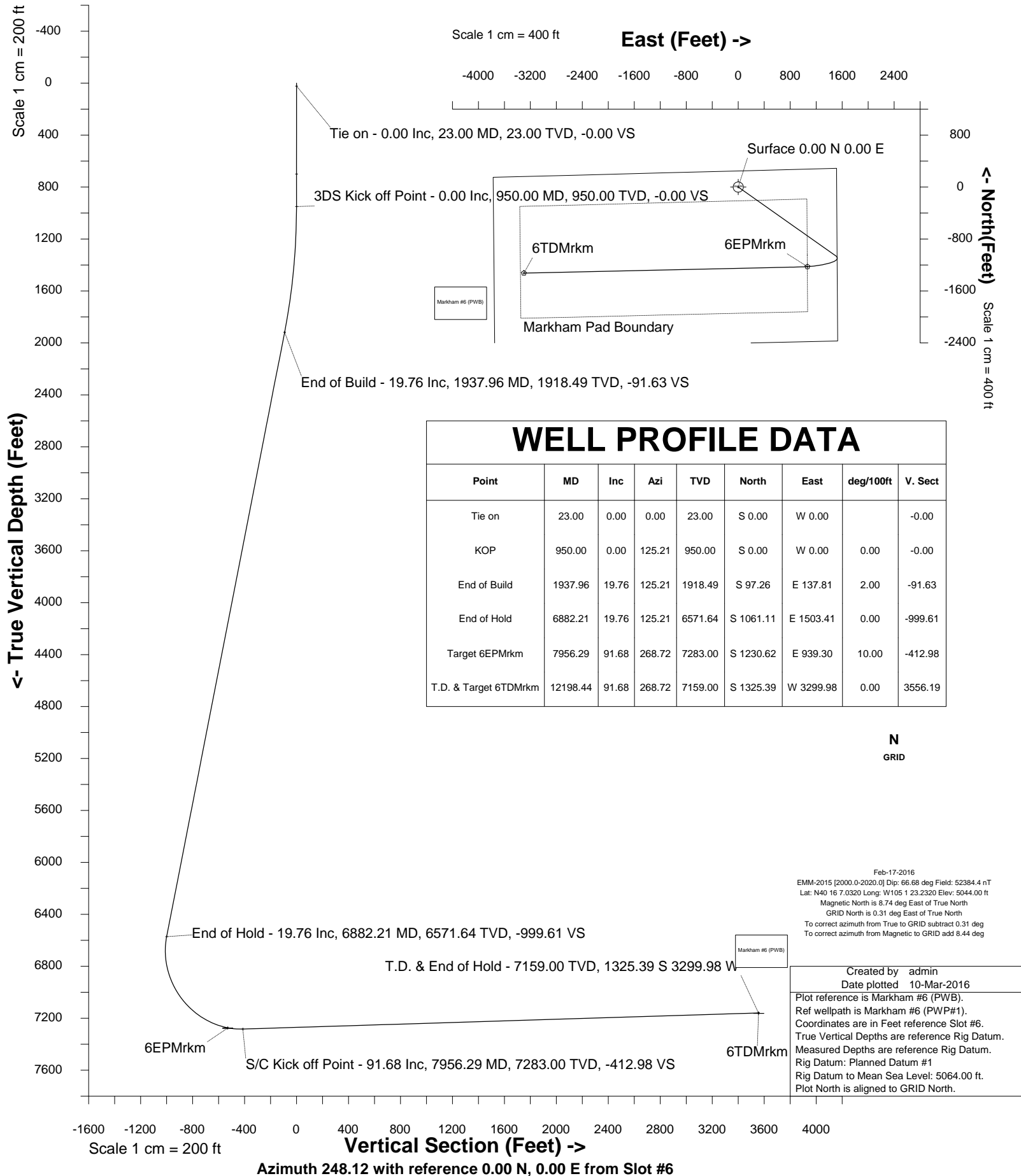


# Cub Creek Energy, LLC

Location Weld County, CO  
Field WATTENBERG  
Installation Markham Pad

Slot Slot #6  
Well Markham #6  
Wellbore Markham #6 (PWB)





SYSDRILL  
Well Design Combined Report  
Wellbore: Markham #6 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
Slot #6	N40 16 7.8240	W105 1 23.2680	1341137.6620	3133069.5435	80.13N	3.22W	0.00

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

Installation Details						
Name	Installatio n Position (Latitude)	Installatio n Position (Longitud e)	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	1341137.66	3133069.54
950.00	0.00	125.210	950.00	0.00N	0.00E	==>	0.00	1341137.66	3133069.54
1937.96	19.76	125.210	1918.49	97.26S	137.81E	2.00	-91.63	1341040.40	3133207.34
6882.21	19.76	125.210	6571.64	1061.11S	1503.41E	==>	-999.61	1340076.59	3134572.88
7956.29	91.68	268.720	7283.00	1230.62S	939.30E	10.00	-412.98	1339907.10	3134008.80
12198.44	91.68	268.720	7159.00	1325.39S	3299.98W	==>	3556.19	1339812.33	3129769.72

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	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	
1000.00	1.00	125.210	1000.00	0.25S	0.36E	2.00	-0.24	
1100.00	3.00	125.210	1099.93	2.26S	3.21E	2.00	-2.13	
1200.00	5.00	125.210	1199.68	6.29S	8.91E	2.00	-5.92	
1300.00	7.00	125.210	1299.13	12.31S	17.45E	2.00	-11.60	
1400.00	9.00	125.210	1398.15	20.34S	28.82E	2.00	-19.16	
1500.00	11.00	125.210	1496.63	30.35S	43.00E	2.00	-28.59	
1600.00	13.00	125.210	1594.44	42.34S	59.99E	2.00	-39.89	
1700.00	15.00	125.210	1691.46	56.29S	79.75E	2.00	-53.03	
1800.00	17.00	125.210	1787.58	72.18S	102.27E	2.00	-68.00	
1900.00	19.00	125.210	1882.68	90.00S	127.52E	2.00	-84.78	
2000.00	19.76	125.210	1976.88	109.36S	154.94E	==>	-103.02	
2100.00	19.76	125.210	2070.99	128.85S	182.56E	==>	-121.38	
2200.00	19.76	125.210	2165.10	148.35S	210.18E	==>	-139.75	
2300.00	19.76	125.210	2259.22	167.84S	237.80E	==>	-158.11	
2400.00	19.76	125.210	2353.33	187.34S	265.42E	==>	-176.48	
2500.00	19.76	125.210	2447.44	206.83S	293.04E	==>	-194.84	
2600.00	19.76	125.210	2541.55	226.32S	320.66E	==>	-213.21	
2700.00	19.76	125.210	2635.67	245.82S	348.28E	==>	-231.57	
2800.00	19.76	125.210	2729.78	265.31S	375.90E	==>	-249.94	
2900.00	19.76	125.210	2823.89	284.81S	403.52E	==>	-268.30	

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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 248.120 degrees  
Bottom hole distance is 3556.19 Feet on azimuth 248.12 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 #6 (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	19.76	125.210	2918.00	304.30S	431.14E	==>	-286.66	
3100.00	19.76	125.210	3012.11	323.80S	458.76E	==>	-305.03	
3200.00	19.76	125.210	3106.23	343.29S	486.38E	==>	-323.39	
3300.00	19.76	125.210	3200.34	362.79S	514.00E	==>	-341.76	
3400.00	19.76	125.210	3294.45	382.28S	541.62E	==>	-360.12	
3500.00	19.76	125.210	3388.56	401.77S	569.24E	==>	-378.49	
3600.00	19.76	125.210	3482.68	421.27S	596.86E	==>	-396.85	
3700.00	19.76	125.210	3576.79	440.76S	624.48E	==>	-415.22	
3800.00	19.76	125.210	3670.90	460.26S	652.10E	==>	-433.58	
3900.00	19.76	125.210	3765.01	479.75S	679.72E	==>	-451.94	
4000.00	19.76	125.210	3859.12	499.25S	707.34E	==>	-470.31	
4100.00	19.76	125.210	3953.24	518.74S	734.96E	==>	-488.67	
4200.00	19.76	125.210	4047.35	538.23S	762.58E	==>	-507.04	
4300.00	19.76	125.210	4141.46	557.73S	790.20E	==>	-525.40	
4400.00	19.76	125.210	4235.57	577.22S	817.82E	==>	-543.77	
4500.00	19.76	125.210	4329.69	596.72S	845.44E	==>	-562.13	
4600.00	19.76	125.210	4423.80	616.21S	873.06E	==>	-580.50	
4700.00	19.76	125.210	4517.91	635.71S	900.68E	==>	-598.86	
4800.00	19.76	125.210	4612.02	655.20S	928.30E	==>	-617.22	
4900.00	19.76	125.210	4706.13	674.70S	955.92E	==>	-635.59	
5000.00	19.76	125.210	4800.25	694.19S	983.54E	==>	-653.95	
5100.00	19.76	125.210	4894.36	713.68S	1011.16E	==>	-672.32	
5200.00	19.76	125.210	4988.47	733.18S	1038.78E	==>	-690.68	
5300.00	19.76	125.210	5082.58	752.67S	1066.40E	==>	-709.05	
5400.00	19.76	125.210	5176.70	772.17S	1094.02E	==>	-727.41	
5500.00	19.76	125.210	5270.81	791.66S	1121.64E	==>	-745.78	
5600.00	19.76	125.210	5364.92	811.16S	1149.26E	==>	-764.14	
5700.00	19.76	125.210	5459.03	830.65S	1176.88E	==>	-782.50	
5800.00	19.76	125.210	5553.14	850.14S	1204.50E	==>	-800.87	
5900.00	19.76	125.210	5647.26	869.64S	1232.12E	==>	-819.23	
6000.00	19.76	125.210	5741.37	889.13S	1259.74E	==>	-837.60	
6100.00	19.76	125.210	5835.48	908.63S	1287.36E	==>	-855.96	
6200.00	19.76	125.210	5929.59	928.12S	1314.98E	==>	-874.33	
6300.00	19.76	125.210	6023.70	947.62S	1342.60E	==>	-892.69	
6400.00	19.76	125.210	6117.82	967.11S	1370.22E	==>	-911.06	
6500.00	19.76	125.210	6211.93	986.61S	1397.84E	==>	-929.42	
6600.00	19.76	125.210	6306.04	1006.10S	1425.46E	==>	-947.78	
6700.00	19.76	125.210	6400.15	1025.59S	1453.08E	==>	-966.15	
6800.00	19.76	125.210	6494.27	1045.09S	1480.70E	==>	-984.51	
6900.00	18.40	128.730	6588.45	1064.61S	1508.05E	10.00	-1002.62	
7000.00	12.77	160.360	6684.90	1084.94S	1524.12E	10.00	-1009.95	
7100.00	13.58	205.200	6782.52	1106.01S	1522.83E	10.00	-1000.90	
7200.00	20.07	232.210	6878.33	1127.20S	1504.23E	10.00	-975.75	
7300.00	28.60	245.080	6969.42	1147.85S	1468.88E	10.00	-935.25	
7400.00	37.81	252.240	7053.04	1167.33S	1417.85E	10.00	-880.63	
7500.00	47.31	256.890	7126.63	1185.06S	1352.70E	10.00	-813.57	
7600.00	56.94	260.300	7187.96	1200.50S	1275.40E	10.00	-736.08	
7700.00	66.65	263.020	7235.16	1213.17S	1188.31E	10.00	-650.54	
7800.00	76.40	265.370	7266.81	1222.69S	1094.06E	10.00	-559.54	
7900.00	86.17	267.530	7281.94	1228.78S	995.53E	10.00	-465.83	
8000.00	91.68	268.720	7281.72	1231.59S	895.62E	==>	-372.08	
8100.00	91.68	268.720	7278.80	1233.83S	795.69E	==>	-278.51	
8200.00	91.68	268.720	7275.88	1236.06S	695.75E	==>	-184.95	
8300.00	91.68	268.720	7272.95	1238.30S	595.82E	==>	-91.38	
8400.00	91.68	268.720	7270.03	1240.53S	495.89E	==>	2.18	
8500.00	91.68	268.720	7267.11	1242.77S	395.96E	==>	95.75	
8600.00	91.68	268.720	7264.18	1245.00S	296.03E	==>	189.31	

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Bottom hole distance is 3556.19 Feet on azimuth 248.12 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 #6 (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	268.720	7261.26	1247.23S	196.09E	==>	282.88	
8800.00	91.68	268.720	7258.34	1249.47S	96.16E	==>	376.44	
8900.00	91.68	268.720	7255.41	1251.70S	3.77W	==>	470.01	
9000.00	91.68	268.720	7252.49	1253.94S	103.70W	==>	563.57	
9100.00	91.68	268.720	7249.57	1256.17S	203.64W	==>	657.14	
9200.00	91.68	268.720	7246.65	1258.40S	303.57W	==>	750.70	
9300.00	91.68	268.720	7243.72	1260.64S	403.50W	==>	844.27	
9400.00	91.68	268.720	7240.80	1262.87S	503.43W	==>	937.83	
9500.00	91.68	268.720	7237.88	1265.11S	603.37W	==>	1031.40	
9600.00	91.68	268.720	7234.95	1267.34S	703.30W	==>	1124.96	
9700.00	91.68	268.720	7232.03	1269.58S	803.23W	==>	1218.53	
9800.00	91.68	268.720	7229.11	1271.81S	903.16W	==>	1312.09	
9900.00	91.68	268.720	7226.18	1274.04S	1003.09W	==>	1405.66	
10000.00	91.68	268.720	7223.26	1276.28S	1103.03W	==>	1499.22	
10100.00	91.68	268.720	7220.34	1278.51S	1202.96W	==>	1592.79	
10200.00	91.68	268.720	7217.42	1280.75S	1302.89W	==>	1686.35	
10300.00	91.68	268.720	7214.49	1282.98S	1402.82W	==>	1779.92	
10400.00	91.68	268.720	7211.57	1285.21S	1502.76W	==>	1873.48	
10500.00	91.68	268.720	7208.65	1287.45S	1602.69W	==>	1967.05	
10600.00	91.68	268.720	7205.72	1289.68S	1702.62W	==>	2060.61	
10700.00	91.68	268.720	7202.80	1291.92S	1802.55W	==>	2154.18	
10800.00	91.68	268.720	7199.88	1294.15S	1902.49W	==>	2247.75	
10900.00	91.68	268.720	7196.95	1296.39S	2002.42W	==>	2341.31	
11000.00	91.68	268.720	7194.03	1298.62S	2102.35W	==>	2434.88	
11100.00	91.68	268.720	7191.11	1300.85S	2202.28W	==>	2528.44	
11200.00	91.68	268.720	7188.18	1303.09S	2302.21W	==>	2622.01	
11300.00	91.68	268.720	7185.26	1305.32S	2402.15W	==>	2715.57	
11400.00	91.68	268.720	7182.34	1307.56S	2502.08W	==>	2809.14	
11500.00	91.68	268.720	7179.42	1309.79S	2602.01W	==>	2902.70	
11600.00	91.68	268.720	7176.49	1312.02S	2701.94W	==>	2996.27	
11700.00	91.68	268.720	7173.57	1314.26S	2801.88W	==>	3089.83	
11800.00	91.68	268.720	7170.65	1316.49S	2901.81W	==>	3183.40	
11900.00	91.68	268.720	7167.72	1318.73S	3001.74W	==>	3276.96	
12000.00	91.68	268.720	7164.80	1320.96S	3101.67W	==>	3370.53	
12100.00	91.68	268.720	7161.88	1323.20S	3201.60W	==>	3464.09	
12198.44	91.68	268.720	7159.00	1325.39S	3299.98W	==>	3556.19	

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Bottom hole distance is 3556.19 Feet on azimuth 248.12 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
445495	Planned	12198.44	7159.00	ISCWSA MWD	Rev 4 + SAG + FLT



SYSDRILL  
Closest Approach + Clearance Factor Summary Report  
Wellbore: Markham #6 (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 #6 (PWB)	Feb-22-2016	Mar-10-2016

Well		
Name	Government ID	Last Revised
Markham #6		Feb-22-2016

Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
Slot #6	N40 16 7.8240	W105 1 23.2680	1341137.6620	3133069.5435	80.13N	3.22W

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 #5	14.57	850.00	12198.44	-144.46	12198.44	0.56	12198.44
Markham #7	16.09	969.59	12192.83	-28.88	12194.92	0.92	12194.92
Markham #8	31.31	1072.87	12190.56	19.80	1171.29	1.42	12198.44
Markham #4	32.79	749.00	749.00	-25.27	12198.44	0.93	12198.44
Markham #3	38.55	1347.32	12198.44	24.62	1368.14	1.84	12198.44
Markham #9	47.35	958.04	12189.95	36.89	1072.87	1.85	12198.44
Markham #2	50.18	1408.21	1408.21	35.62	1450.17	2.33	12198.44
Markham #10	64.71	974.44	12184.28	54.41	1007.25	2.78	12198.44
Markham #11	80.01	958.04	12182.08	69.75	1007.25	3.25	12198.44
Markham #1	80.20	172.00	12198.44	77.54	223.00	2.80	12198.44
Markham #12	94.76	950.00	12181.46	84.61	1000.00	3.69	12198.44
Markham #33-32D	324.52	3512.32	9367.69	269.38	3523.00	5.62	9504.63
Markham #44-32D	496.75	8063.11	8063.11	404.01	8061.06	5.35	8028.25