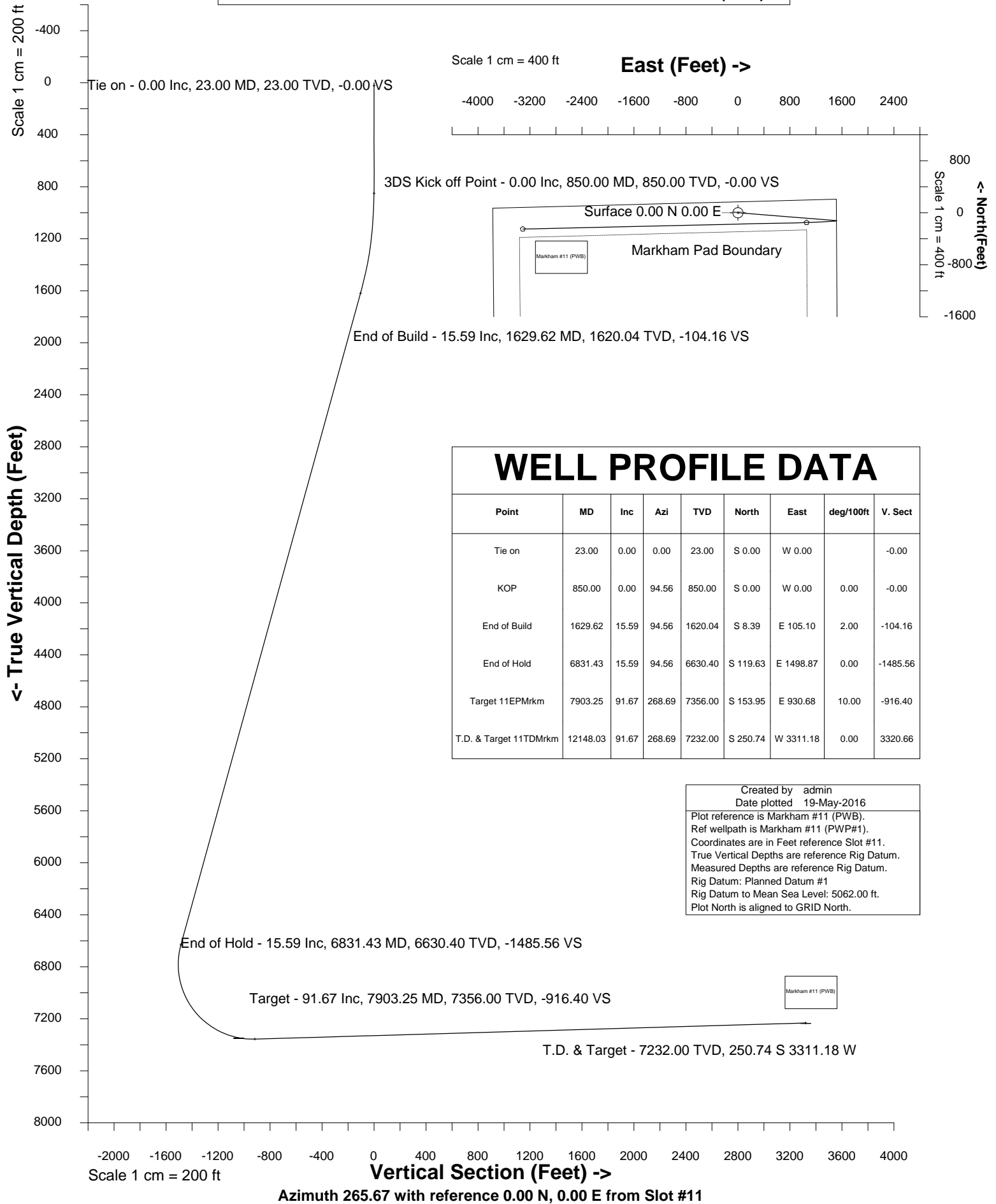


Cub Creek Energy, LLC

Location	Weld County, CO	Slot	Slot #11
Field	WATTENBERG	Well	Markham #11
Installation	Markham Pad	Wellbore	Markham #11 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: Markham #11 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
Slot #11	40.26906000	-105.02313000	1341217.8041	3133069.1125	160.28N	3.65W	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	40.26862000	-105.02312000	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	1341217.80	3133069.11
850.00	0.00	94.560	850.00	0.00N	0.00E	==>	0.00	1341217.80	3133069.11
1629.62	15.59	94.560	1620.04	8.39S	105.10E	2.00	-104.16	1341209.42	3133174.20
6831.43	15.59	94.560	6630.40	119.63S	1498.87E	==>	-1485.56	1341098.18	3134567.92
7903.25	91.67	268.690	7356.00	153.95S	930.68E	10.00	-916.40	1341063.86	3133999.75
12148.03	91.67	268.690	7232.00	250.74S	3311.18W	==>	3320.66	1340967.07	3129758.08

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	1.00	94.560	900.00	0.03S	0.43E	2.00	-0.43	
1000.00	3.00	94.560	999.93	0.31S	3.91E	2.00	-3.88	
1100.00	5.00	94.560	1099.68	0.87S	10.87E	2.00	-10.77	
1200.00	7.00	94.560	1199.13	1.70S	21.29E	2.00	-21.10	
1300.00	9.00	94.560	1298.15	2.81S	35.16E	2.00	-34.85	
1400.00	11.00	94.560	1396.63	4.19S	52.47E	2.00	-52.00	
1500.00	13.00	94.560	1494.44	5.84S	73.19E	2.00	-72.54	
1600.00	15.00	94.560	1591.46	7.77S	97.31E	2.00	-96.44	
1700.00	15.59	94.560	1687.82	9.89S	123.95E	==>	-122.85	
1800.00	15.59	94.560	1784.14	12.03S	150.75E	==>	-149.41	
1900.00	15.59	94.560	1880.46	14.17S	177.54E	==>	-175.96	
2000.00	15.59	94.560	1976.78	16.31S	204.34E	==>	-202.52	
2100.00	15.59	94.560	2073.10	18.45S	231.13E	==>	-229.08	
2200.00	15.59	94.560	2169.42	20.58S	257.92E	==>	-255.63	
2300.00	15.59	94.560	2265.74	22.72S	284.72E	==>	-282.19	
2400.00	15.59	94.560	2362.06	24.86S	311.51E	==>	-308.75	
2500.00	15.59	94.560	2458.38	27.00S	338.31E	==>	-335.30	
2600.00	15.59	94.560	2554.70	29.14S	365.10E	==>	-361.86	
2700.00	15.59	94.560	2651.02	31.28S	391.89E	==>	-388.41	
2800.00	15.59	94.560	2747.34	33.42S	418.69E	==>	-414.97	
2900.00	15.59	94.560	2843.66	35.55S	445.48E	==>	-441.53	
3000.00	15.59	94.560	2939.98	37.69S	472.28E	==>	-468.08	
3100.00	15.59	94.560	3036.30	39.83S	499.07E	==>	-494.64	

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Vertical Section is from 0.00N 0.00E on azimuth 265.670 degrees
Bottom hole distance is 3320.66 Feet on azimuth 265.67 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 19-May-2016

Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3200.00	15.59	94.560	3132.62	41.97S	525.86E	==>	-521.19	
3300.00	15.59	94.560	3228.94	44.11S	552.66E	==>	-547.75	
3400.00	15.59	94.560	3325.26	46.25S	579.45E	==>	-574.31	
3500.00	15.59	94.560	3421.58	48.38S	606.25E	==>	-600.86	
3600.00	15.59	94.560	3517.90	50.52S	633.04E	==>	-627.42	
3700.00	15.59	94.560	3614.22	52.66S	659.84E	==>	-653.98	
3800.00	15.59	94.560	3710.54	54.80S	686.63E	==>	-680.53	
3900.00	15.59	94.560	3806.86	56.94S	713.42E	==>	-707.09	
4000.00	15.59	94.560	3903.18	59.08S	740.22E	==>	-733.64	
4100.00	15.59	94.560	3999.50	61.22S	767.01E	==>	-760.20	
4200.00	15.59	94.560	4095.82	63.35S	793.81E	==>	-786.76	
4300.00	15.59	94.560	4192.14	65.49S	820.60E	==>	-813.31	
4400.00	15.59	94.560	4288.46	67.63S	847.39E	==>	-839.87	
4500.00	15.59	94.560	4384.78	69.77S	874.19E	==>	-866.42	
4600.00	15.59	94.560	4481.10	71.91S	900.98E	==>	-892.98	
4700.00	15.59	94.560	4577.42	74.05S	927.78E	==>	-919.54	
4800.00	15.59	94.560	4673.74	76.18S	954.57E	==>	-946.09	
4900.00	15.59	94.560	4770.06	78.32S	981.37E	==>	-972.65	
5000.00	15.59	94.560	4866.38	80.46S	1008.16E	==>	-999.21	
5100.00	15.59	94.560	4962.70	82.60S	1034.95E	==>	-1025.76	
5200.00	15.59	94.560	5059.01	84.74S	1061.75E	==>	-1052.32	
5300.00	15.59	94.560	5155.33	86.88S	1088.54E	==>	-1078.87	
5400.00	15.59	94.560	5251.65	89.02S	1115.34E	==>	-1105.43	
5500.00	15.59	94.560	5347.97	91.15S	1142.13E	==>	-1131.99	
5600.00	15.59	94.560	5444.29	93.29S	1168.92E	==>	-1158.54	
5700.00	15.59	94.560	5540.61	95.43S	1195.72E	==>	-1185.10	
5800.00	15.59	94.560	5636.93	97.57S	1222.51E	==>	-1211.65	
5900.00	15.59	94.560	5733.25	99.71S	1249.31E	==>	-1238.21	
6000.00	15.59	94.560	5829.57	101.85S	1276.10E	==>	-1264.77	
6100.00	15.59	94.560	5925.89	103.98S	1302.89E	==>	-1291.32	
6200.00	15.59	94.560	6022.21	106.12S	1329.69E	==>	-1317.88	
6300.00	15.59	94.560	6118.53	108.26S	1356.48E	==>	-1344.44	
6400.00	15.59	94.560	6214.85	110.40S	1383.28E	==>	-1370.99	
6500.00	15.59	94.560	6311.17	112.54S	1410.07E	==>	-1397.55	
6600.00	15.59	94.560	6407.49	114.68S	1436.87E	==>	-1424.10	
6700.00	15.59	94.560	6503.81	116.81S	1463.66E	==>	-1450.66	
6800.00	15.59	94.560	6600.13	118.95S	1490.45E	==>	-1477.22	
6900.00	8.80	99.350	6697.39	121.21S	1513.26E	10.00	-1499.78	
7000.00	2.13	217.980	6797.02	123.93S	1519.68E	10.00	-1505.98	
7100.00	11.47	260.490	6896.24	127.04S	1508.70E	10.00	-1494.80	
7200.00	21.41	264.440	6992.03	130.47S	1480.66E	10.00	-1466.58	
7300.00	31.39	265.940	7081.49	134.09S	1436.41E	10.00	-1422.18	
7400.00	41.38	266.770	7161.90	137.80S	1377.28E	10.00	-1362.94	
7500.00	51.37	267.330	7230.81	141.49S	1305.08E	10.00	-1290.67	
7600.00	61.36	267.740	7286.12	145.05S	1222.01E	10.00	-1207.56	
7700.00	71.36	268.090	7326.17	148.37S	1130.57E	10.00	-1116.14	
7800.00	81.35	268.390	7349.73	151.34S	1033.56E	10.00	-1019.19	
7900.00	91.35	268.680	7356.09	153.88S	933.93E	10.00	-919.64	
8000.00	91.67	268.690	7353.17	156.16S	833.99E	==>	-819.82	
8100.00	91.67	268.690	7350.25	158.44S	734.06E	==>	-720.00	
8200.00	91.67	268.690	7347.33	160.72S	634.13E	==>	-620.19	
8300.00	91.67	268.690	7344.41	163.00S	534.20E	==>	-520.37	
8400.00	91.67	268.690	7341.49	165.28S	434.27E	==>	-420.55	
8500.00	91.67	268.690	7338.57	167.56S	334.34E	==>	-320.73	
8600.00	91.67	268.690	7335.65	169.84S	234.41E	==>	-220.91	
8700.00	91.67	268.690	7332.72	172.12S	134.48E	==>	-121.09	
8800.00	91.67	268.690	7329.80	174.40S	34.54E	==>	-21.28	
8900.00	91.67	268.690	7326.88	176.68S	65.39W	==>	78.54	
9000.00	91.67	268.690	7323.96	178.96S	165.32W	==>	178.36	

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Bottom hole distance is 3320.66 Feet on azimuth 265.67 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 19-May-2016



SYS DRILL
Well Design Combined Report
Wellbore: Markham #11 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
9100.00	91.67	268.690	7321.04	181.24S	265.25W	==>	278.18	
9200.00	91.67	268.690	7318.12	183.52S	365.18W	==>	378.00	
9300.00	91.67	268.690	7315.20	185.80S	465.11W	==>	477.81	
9400.00	91.67	268.690	7312.28	188.08S	565.04W	==>	577.63	
9500.00	91.67	268.690	7309.36	190.36S	664.98W	==>	677.45	
9600.00	91.67	268.690	7306.43	192.64S	764.91W	==>	777.27	
9700.00	91.67	268.690	7303.51	194.92S	864.84W	==>	877.09	
9800.00	91.67	268.690	7300.59	197.20S	964.77W	==>	976.91	
9900.00	91.67	268.690	7297.67	199.48S	1064.70W	==>	1076.72	
10000.00	91.67	268.690	7294.75	201.76S	1164.63W	==>	1176.54	
10100.00	91.67	268.690	7291.83	204.04S	1264.56W	==>	1276.36	
10200.00	91.67	268.690	7288.91	206.32S	1364.49W	==>	1376.18	
10300.00	91.67	268.690	7285.99	208.60S	1464.43W	==>	1476.00	
10400.00	91.67	268.690	7283.06	210.88S	1564.36W	==>	1575.81	
10500.00	91.67	268.690	7280.14	213.16S	1664.29W	==>	1675.63	
10600.00	91.67	268.690	7277.22	215.44S	1764.22W	==>	1775.45	
10700.00	91.67	268.690	7274.30	217.72S	1864.15W	==>	1875.27	
10800.00	91.67	268.690	7271.38	220.01S	1964.08W	==>	1975.09	
10900.00	91.67	268.690	7268.46	222.29S	2064.01W	==>	2074.91	
11000.00	91.67	268.690	7265.54	224.57S	2163.94W	==>	2174.72	
11100.00	91.67	268.690	7262.62	226.85S	2263.88W	==>	2274.54	
11200.00	91.67	268.690	7259.69	229.13S	2363.81W	==>	2374.36	
11300.00	91.67	268.690	7256.77	231.41S	2463.74W	==>	2474.18	
11400.00	91.67	268.690	7253.85	233.69S	2563.67W	==>	2574.00	
11500.00	91.67	268.690	7250.93	235.97S	2663.60W	==>	2673.81	
11600.00	91.67	268.690	7248.01	238.25S	2763.53W	==>	2773.63	
11700.00	91.67	268.690	7245.09	240.53S	2863.46W	==>	2873.45	
11800.00	91.67	268.690	7242.17	242.81S	2963.40W	==>	2973.27	
11900.00	91.67	268.690	7239.25	245.09S	3063.33W	==>	3073.09	
12000.00	91.67	268.690	7236.32	247.37S	3163.26W	==>	3172.91	
12100.00	91.67	268.690	7233.40	249.65S	3263.19W	==>	3272.72	
12148.03	91.67	268.690	7232.00	250.74S	3311.18W	==>	3320.66	

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Bottom hole distance is 3320.66 Feet on azimuth 265.67 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 19-May-2016



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SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: Markham #11 (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 #11 (PWB)	Feb-22-2016	May-19-2016

Well		
Name	Government ID	Last Revised
Markham #11		Feb-22-2016

Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
Slot #11	40.26906000	-105.02313000	1341217.8041	3133069.1125	160.28N	3.65W

Installation						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Easting	Northing	Coord System Name	North Alignment
Markham Pad	40.26862000	-105.02312000	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 #10	14.57	749.00	12148.03	-145.15	12148.03	0.55	12148.03
Markham #12	14.84	850.00	12148.03	-145.84	12148.03	0.55	12148.03
Markham #9	32.69	949.06	12148.03	22.39	1040.06	1.42	12148.03
Markham #8	47.36	848.00	12148.03	38.11	925.23	1.85	12148.03
Markham #7	61.93	748.00	748.00	53.80	823.00	2.34	12148.03
Markham #6	80.02	948.20	12148.03	69.84	1023.66	3.25	12148.03
Markham #5	94.72	848.00	12148.03	85.64	892.42	3.70	12148.03
Markham #4	112.93	747.00	747.00	104.89	794.00	4.19	12148.03
Markham #3	127.05	1105.68	12148.03	115.13	1204.10	5.09	12148.03
Markham #2	141.33	1141.70	1141.70	129.05	1236.91	5.56	12148.03
Markham #1	160.32	170.64	12148.03	157.79	223.00	6.10	12148.03
Markham #33-32D	328.90	9332.81	9332.81	184.93	9332.81	2.28	9332.81
Markham #44-32D	1482.49	3347.72	8028.08	1442.96	3467.88	17.12	8500.00

