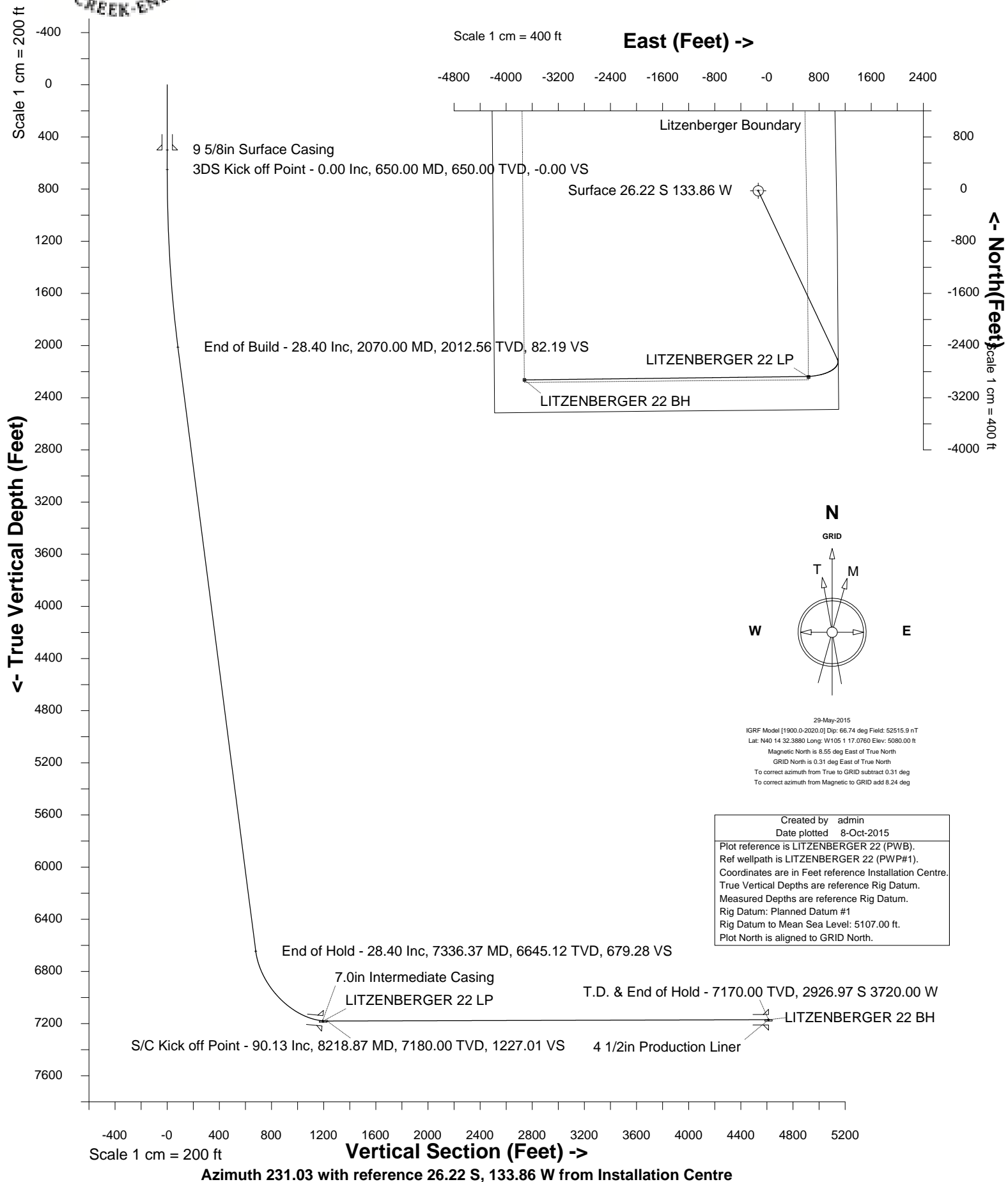




Cub Creek Energy, LLC

Location	Weld County, CO	Slot	LITZENBERGER 22
Field	WATTENBERG	Well	LITZENBERGER 22
Installation	Litzenberger Pad - Finalized	Wellbore	LITZENBERGER 22 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 22 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
LITZENBERGER 22	40.24226000	-105.02189000	1331456.9299	3133467.7658	26.22S	133.86W	0.00

Declination		
Date	Source	Time
29-May-2015	IGRF Model [1900.0-2020.0]	11:25

Installation Details						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Northing	Easting	Coord System Name	North Alignment
Litzenberger Pad - Finalized	40.24233000	-105.02141000	1331483.1524	3133601.6223	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
25.00	0.00	0.000	25.00	0.00N	0.00E		0.00	1331456.93	3133467.77
12531.39	90.13	269.310	7170.00	2900.74S	3586.14W	==>	4612.45	1328556.32	3129881.79

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 Slot Datum
25.00	0.00	0.000	25.00	0.00N	0.00E	==>	0.00	
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	9 5/8in Surface Casing
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	1.00	154.820	700.00	0.39S	0.19E	2.00	0.10	
800.00	3.00	154.820	799.93	3.55S	1.67E	2.00	0.94	
900.00	5.00	154.820	899.68	9.87S	4.64E	2.00	2.60	
1000.00	7.00	154.820	999.13	19.32S	9.08E	2.00	5.09	
1100.00	9.00	154.820	1098.15	31.92S	15.01E	2.00	8.41	
1200.00	11.00	154.820	1196.63	47.63S	22.39E	2.00	12.55	
1300.00	13.00	154.820	1294.44	66.45S	31.24E	2.00	17.50	
1400.00	15.00	154.820	1391.46	88.34S	41.53E	2.00	23.27	
1500.00	17.00	154.820	1487.58	113.28S	53.25E	2.00	29.84	
1600.00	19.00	154.820	1582.68	141.25S	66.40E	2.00	37.20	
1700.00	21.00	154.820	1676.65	172.20S	80.95E	2.00	45.36	
1800.00	23.00	154.820	1769.36	206.10S	96.89E	2.00	54.29	
1900.00	25.00	154.820	1860.71	242.91S	114.19E	2.00	63.98	
2000.00	27.00	154.820	1950.59	282.58S	132.84E	2.00	74.43	
2100.00	28.40	154.820	2038.95	324.94S	152.75E	==>	85.59	
2200.00	28.40	154.820	2126.92	367.98S	172.99E	==>	96.93	
2300.00	28.40	154.820	2214.88	411.02S	193.22E	==>	108.26	
2400.00	28.40	154.820	2302.85	454.07S	213.46E	==>	119.60	
2500.00	28.40	154.820	2390.81	497.11S	233.69E	==>	130.94	
2600.00	28.40	154.820	2478.78	540.15S	253.92E	==>	142.28	
2700.00	28.40	154.820	2566.74	583.20S	274.16E	==>	153.61	
2800.00	28.40	154.820	2654.71	626.24S	294.39E	==>	164.95	
2900.00	28.40	154.820	2742.67	669.28S	314.63E	==>	176.29	
3000.00	28.40	154.820	2830.64	712.33S	334.86E	==>	187.63	
3100.00	28.40	154.820	2918.60	755.37S	355.10E	==>	198.96	
3200.00	28.40	154.820	3006.57	798.41S	375.33E	==>	210.30	
3300.00	28.40	154.820	3094.53	841.46S	395.57E	==>	221.64	
3400.00	28.40	154.820	3182.50	884.50S	415.80E	==>	232.98	
3500.00	28.40	154.820	3270.46	927.54S	436.04E	==>	244.31	
3600.00	28.40	154.820	3358.43	970.59S	456.27E	==>	255.65	

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Vertical Section is from 0.00N 0.00E on azimuth 231.030 degrees
Bottom hole distance is 4612.45 Feet on azimuth 231.03 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 8-Oct-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 22 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3700.00	28.40	154.820	3446.39	1013.63S	476.50E	==>	266.99	
3800.00	28.40	154.820	3534.36	1056.67S	496.74E	==>	278.33	
3900.00	28.40	154.820	3622.32	1099.72S	516.97E	==>	289.66	
4000.00	28.40	154.820	3710.29	1142.76S	537.21E	==>	301.00	
4100.00	28.40	154.820	3798.25	1185.81S	557.44E	==>	312.34	
4200.00	28.40	154.820	3886.22	1228.85S	577.68E	==>	323.68	
4300.00	28.40	154.820	3974.18	1271.89S	597.91E	==>	335.01	
4400.00	28.40	154.820	4062.15	1314.94S	618.15E	==>	346.35	
4500.00	28.40	154.820	4150.11	1357.98S	638.38E	==>	357.69	
4600.00	28.40	154.820	4238.08	1401.02S	658.62E	==>	369.03	
4700.00	28.40	154.820	4326.04	1444.07S	678.85E	==>	380.36	
4800.00	28.40	154.820	4414.01	1487.11S	699.09E	==>	391.70	
4900.00	28.40	154.820	4501.97	1530.15S	719.32E	==>	403.04	
5000.00	28.40	154.820	4589.94	1573.20S	739.55E	==>	414.38	
5100.00	28.40	154.820	4677.90	1616.24S	759.79E	==>	425.72	
5200.00	28.40	154.820	4765.86	1659.28S	780.02E	==>	437.05	
5300.00	28.40	154.820	4853.83	1702.33S	800.26E	==>	448.39	
5400.00	28.40	154.820	4941.79	1745.37S	820.49E	==>	459.73	
5500.00	28.40	154.820	5029.76	1788.41S	840.73E	==>	471.07	
5600.00	28.40	154.820	5117.72	1831.46S	860.96E	==>	482.40	
5700.00	28.40	154.820	5205.69	1874.50S	881.20E	==>	493.74	
5800.00	28.40	154.820	5293.65	1917.54S	901.43E	==>	505.08	
5900.00	28.40	154.820	5381.62	1960.59S	921.67E	==>	516.42	
6000.00	28.40	154.820	5469.58	2003.63S	941.90E	==>	527.75	
6100.00	28.40	154.820	5557.55	2046.67S	962.13E	==>	539.09	
6200.00	28.40	154.820	5645.51	2089.72S	982.37E	==>	550.43	
6300.00	28.40	154.820	5733.48	2132.76S	1002.60E	==>	561.77	
6400.00	28.40	154.820	5821.44	2175.80S	1022.84E	==>	573.10	
6500.00	28.40	154.820	5909.41	2218.85S	1043.07E	==>	584.44	
6600.00	28.40	154.820	5997.37	2261.89S	1063.31E	==>	595.78	
6700.00	28.40	154.820	6085.34	2304.93S	1083.54E	==>	607.12	
6800.00	28.40	154.820	6173.30	2347.98S	1103.78E	==>	618.45	
6900.00	28.40	154.820	6261.27	2391.02S	1124.01E	==>	629.79	
7000.00	28.40	154.820	6349.23	2434.06S	1144.25E	==>	641.13	
7100.00	28.40	154.820	6437.20	2477.11S	1164.48E	==>	652.47	
7200.00	28.40	154.820	6525.16	2520.15S	1184.71E	==>	663.80	
7300.00	28.40	154.820	6613.13	2563.19S	1204.95E	==>	675.14	
7400.00	26.50	170.200	6701.66	2606.57S	1221.17E	11.50	689.80	
7500.00	27.19	195.790	6791.18	2650.68S	1218.75E	11.50	719.43	
7600.00	31.96	217.150	6878.37	2693.90S	1196.47E	11.50	763.93	
7700.00	39.36	232.350	6959.73	2734.50S	1155.25E	11.50	821.52	
7800.00	48.17	243.090	7031.98	2770.85S	1096.72E	11.50	889.88	
7900.00	57.73	251.130	7092.22	2801.49S	1023.25E	11.50	966.27	
8000.00	67.70	257.590	7138.05	2825.18S	937.78E	11.50	1047.63	
8100.00	77.89	263.180	7167.61	2840.98S	843.74E	11.50	1130.67	
8174.00	85.50	267.020	7178.29	2847.20S	770.85E	11.50	1191.26	7.0in Intermediate Casing
8200.00	88.19	268.350	7179.72	2848.25S	744.92E	11.50	1212.08	
8300.00	90.13	269.310	7179.81	2849.62S	644.93E	==>	1290.68	
8400.00	90.13	269.310	7179.58	2850.83S	544.94E	==>	1369.18	
8500.00	90.13	269.310	7179.35	2852.03S	444.94E	==>	1447.69	
8600.00	90.13	269.310	7179.12	2853.24S	344.95E	==>	1526.19	
8700.00	90.13	269.310	7178.88	2854.45S	244.96E	==>	1604.69	
8800.00	90.13	269.310	7178.65	2855.66S	144.97E	==>	1683.20	
8900.00	90.13	269.310	7178.42	2856.87S	44.97E	==>	1761.70	
9000.00	90.13	269.310	7178.19	2858.08S	55.02W	==>	1840.20	
9100.00	90.13	269.310	7177.96	2859.28S	155.01W	==>	1918.71	
9200.00	90.13	269.310	7177.72	2860.49S	255.00W	==>	1997.21	
9300.00	90.13	269.310	7177.49	2861.70S	355.00W	==>	2075.71	
9400.00	90.13	269.310	7177.26	2862.91S	454.99W	==>	2154.22	
9500.00	90.13	269.310	7177.03	2864.12S	554.98W	==>	2232.72	

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Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 8-Oct-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 22 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
9600.00	90.13	269.310	7176.80	2865.32S	654.97W	==>	2311.22	
9700.00	90.13	269.310	7176.57	2866.53S	754.97W	==>	2389.72	
9800.00	90.13	269.310	7176.33	2867.74S	854.96W	==>	2468.23	
9900.00	90.13	269.310	7176.10	2868.95S	954.95W	==>	2546.73	
10000.00	90.13	269.310	7175.87	2870.16S	1054.94W	==>	2625.23	
10100.00	90.13	269.310	7175.64	2871.37S	1154.93W	==>	2703.74	
10200.00	90.13	269.310	7175.41	2872.57S	1254.93W	==>	2782.24	
10300.00	90.13	269.310	7175.17	2873.78S	1354.92W	==>	2860.74	
10400.00	90.13	269.310	7174.94	2874.99S	1454.91W	==>	2939.25	
10500.00	90.13	269.310	7174.71	2876.20S	1554.90W	==>	3017.75	
10600.00	90.13	269.310	7174.48	2877.41S	1654.90W	==>	3096.25	
10700.00	90.13	269.310	7174.25	2878.62S	1754.89W	==>	3174.76	
10800.00	90.13	269.310	7174.01	2879.82S	1854.88W	==>	3253.26	
10900.00	90.13	269.310	7173.78	2881.03S	1954.87W	==>	3331.76	
11000.00	90.13	269.310	7173.55	2882.24S	2054.87W	==>	3410.26	
11100.00	90.13	269.310	7173.32	2883.45S	2154.86W	==>	3488.77	
11200.00	90.13	269.310	7173.09	2884.66S	2254.85W	==>	3567.27	
11300.00	90.13	269.310	7172.86	2885.87S	2354.84W	==>	3645.77	
11400.00	90.13	269.310	7172.62	2887.07S	2454.84W	==>	3724.28	
11500.00	90.13	269.310	7172.39	2888.28S	2554.83W	==>	3802.78	
11600.00	90.13	269.310	7172.16	2889.49S	2654.82W	==>	3881.28	
11700.00	90.13	269.310	7171.93	2890.70S	2754.81W	==>	3959.79	
11800.00	90.13	269.310	7171.70	2891.91S	2854.81W	==>	4038.29	
11900.00	90.13	269.310	7171.46	2893.11S	2954.80W	==>	4116.79	
12000.00	90.13	269.310	7171.23	2894.32S	3054.79W	==>	4195.30	
12100.00	90.13	269.310	7171.00	2895.53S	3154.78W	==>	4273.80	
12200.00	90.13	269.310	7170.77	2896.74S	3254.78W	==>	4352.30	
12300.00	90.13	269.310	7170.54	2897.95S	3354.77W	==>	4430.80	
12400.00	90.13	269.310	7170.30	2899.16S	3454.76W	==>	4509.31	
12500.00	90.13	269.310	7170.07	2900.36S	3554.75W	==>	4587.81	
12531.39	90.13	269.310	7170.00	2900.74S	3586.14W	==>	4612.45	4 1/2in Production Liner

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Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 8-Oct-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 22 (PWB)



Hole Sections								
Diameter [in]	Start MD[ft]	Start TVD[ft]	Start North[ft]	Start East[ft]	End MD[ft]	End TVD[ft]	End North[ft]	End East[ft]
12 1/4	25.00	25.00	0.00N	0.00E	500.00	500.00	0.00N	0.00E
8 3/4	500.00	500.00	0.00N	0.00E	8174.00	7178.29	2847.20S	770.85E
6 1/8	8174.00	7178.29	2847.20S	770.85E	12531.39	7170.00	2900.74S	3586.14W

Casings								
Name	Top MD[ft]	Top TVD[ft]	Top North[ft]	Top East[ft]	Shoe MD[ft]	Shoe TVD[ft]	Shoe North[ft]	Shoe East[ft]
9 5/8in Surface Casing	25.00	25.00	0.00N	0.00E	500.00	500.00	0.00N	0.00E
7.0in Intermediate Casing	25.00	25.00	0.00N	0.00E	8174.00	7178.29	2847.20S	770.85E
4 1/2in Production Liner	7438.00	6735.72	2623.32S	1222.61E	12531.39	7170.00	2900.74S	3586.14W

Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
LITZENBERGER 22 LP	2855.64S	772.05E	7180.00	40.23441000	-105.01918000	1328601.42	3134239.78
LITZENBERGER 22 BH	2900.74S	3586.14W	7170.00	40.23435000	-105.03479000	1328556.32	3129881.79

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
391532	Planned	12531.39	7170.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating	

Notes

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Bottom hole distance is 4612.45 Feet on azimuth 231.03 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 8-Oct-2015



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 22 (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
LITZENBERGER 22 (PWB)	19-Jun-2015	7-Oct-2015

Well		
Name	Government ID	Last Revised
LITZENBERGER 22		16-Jun-2015

Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
LITZENBERGER 22	40.24226000	-105.02189000	1331456.9299	3133467.7658	26.22S	133.86W

Installation						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Easting	Northing	Coord System Name	North Alignment
Litzenberger Pad - Finalized	40.24233000	-105.02141000	3133601.6223	1331483.1524	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]
LITZENBERGER 23	12.46	734.97	12531.39	-31.23	12531.39	0.88	12531.39
LITZENBERGER 21	15.68	960.04	8309.12	-109.83	12531.39	0.69	12531.39
LITZENBERGER 3	25.50	650.00	650.00	21.14	650.00	5.64	697.57
LITZENBERGER 24	28.35	796.00	12531.39	-8.79	12531.39	0.98	12531.39
LITZENBERGER 20	28.65	960.04	8267.33	22.14	1058.46	1.50	12531.39
LITZENBERGER 2	29.07	550.00	12517.05	25.17	599.15	6.67	697.57
LITZENBERGER 4	30.51	650.00	650.00	26.05	681.17	6.44	763.19
LITZENBERGER 5	39.92	650.00	12518.82	35.37	713.98	7.90	825.00
LITZENBERGER 1	39.92	500.72	500.72	36.02	625.00	8.84	746.78
LITZENBERGER 19	40.83	992.85	12530.12	34.30	1042.06	1.67	12530.12
LITZENBERGER 6	51.44	664.76	664.76	46.64	779.59	9.44	894.42
LITZENBERGER 18	56.52	1027.68	8304.45	49.78	1058.46	2.64	12531.39
LITZENBERGER 7	66.45	779.59	779.59	61.03	861.61	9.52	12531.39
LITZENBERGER 17	70.53	1028.60	8342.02	63.75	1074.87	3.30	12531.39
LITZENBERGER 8	79.11	878.02	878.02	73.32	910.83	8.92	12531.39
LITZENBERGER 16	81.54	1095.15	9883.92	74.42	1125.00	3.62	12531.39
LITZENBERGER 9	92.90	651.04	651.04	88.53	681.17	8.54	12531.39
LITZENBERGER 15	96.75	1129.17	8302.61	89.39	1156.89	4.60	12531.39
LITZENBERGER 12	109.11	601.00	8292.72	104.98	625.00	6.57	12531.39
LITZENBERGER 14	109.91	1140.49	8276.31	102.44	1156.89	5.15	12531.39
LITZENBERGER 11	122.72	551.00	551.00	118.93	582.74	7.02	12531.39
LITZENBERGER 13	125.33	1165.34	8320.32	117.69	1189.70	5.57	12531.39

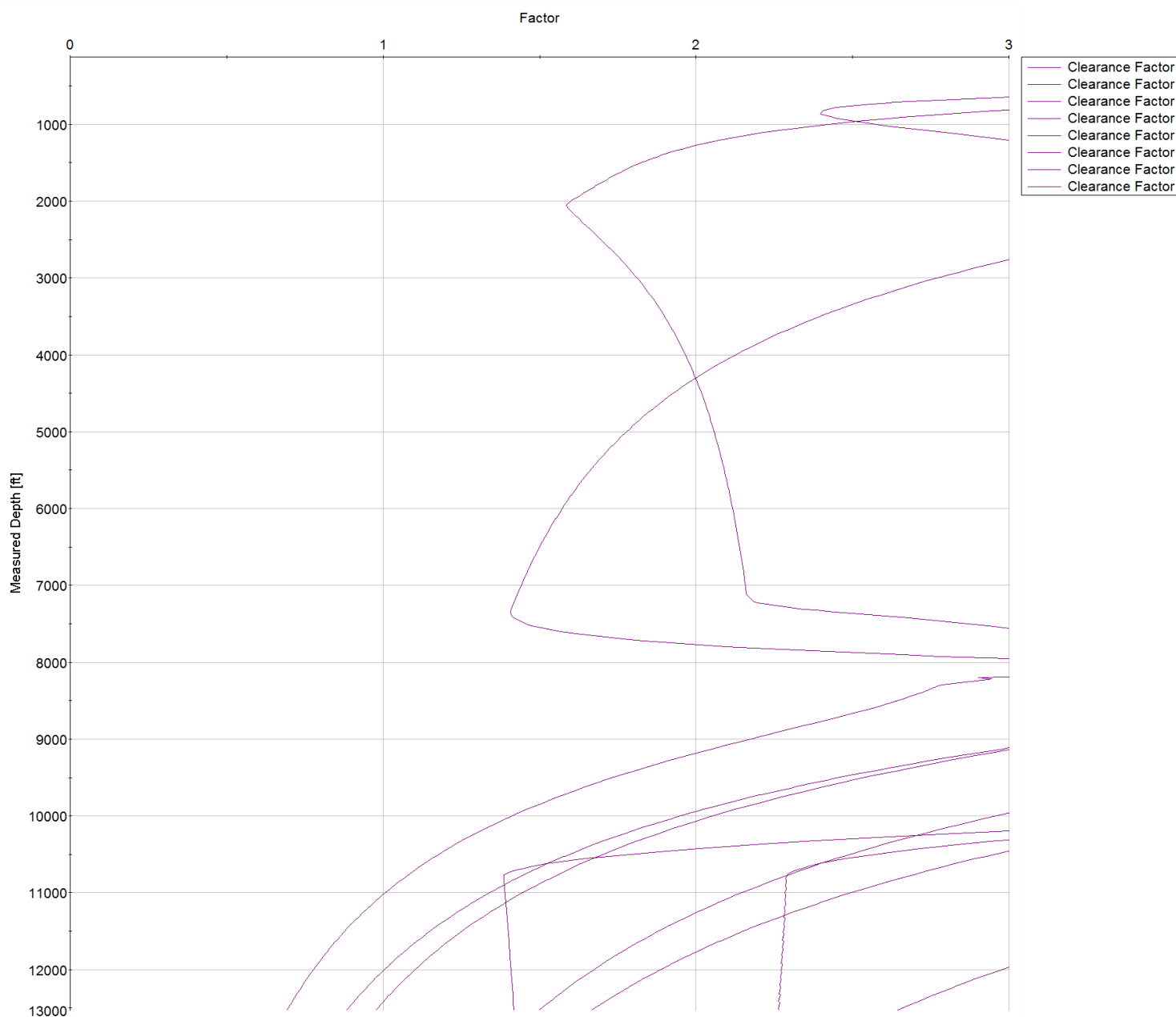
All data is in Feet unless otherwise stated
Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5107.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 231.030 degrees
Prepared by Integrated Petroleum Technologies, Inc.
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Wellbore: LITZENBERGER 22 (PWB)



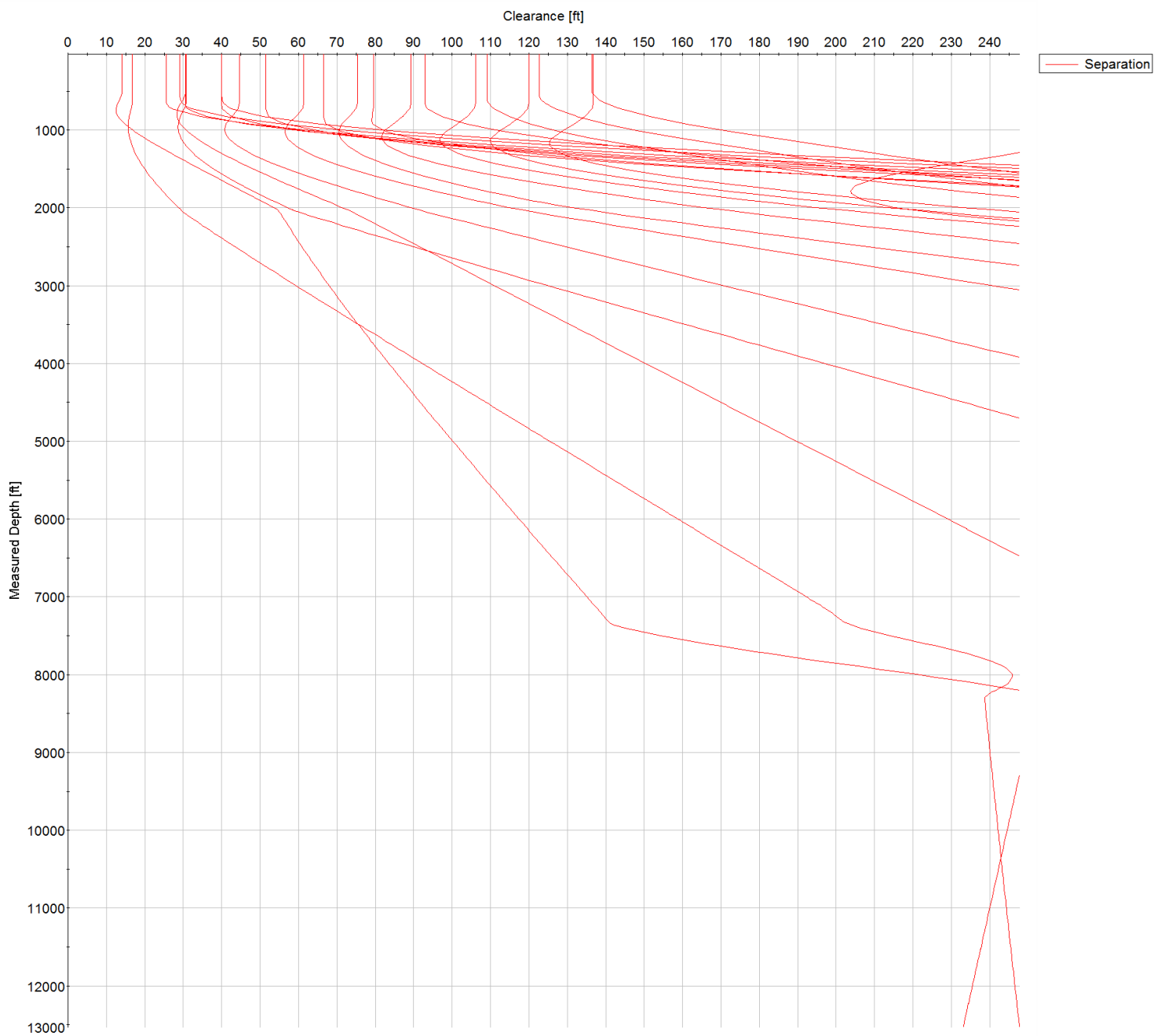
Clearance Summary							
Offset WellName	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
LITZENBERGER 10	136.41	502.00	8247.68	132.76	484.32	7.56	12531.39
Kintz #2	203.83	1781.24	9734.51	190.95	1813.06	12.39	9883.92
Kintz #1	313.25	664.76	8630.34	302.41	943.64	20.32	1681.82
Billings #2A-18H	551.63	10769.75	10769.75	153.47	10769.75	1.39	10769.75
Billings #2B-18H	892.82	12531.39	12531.39	498.26	12516.01	2.26	12516.01



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