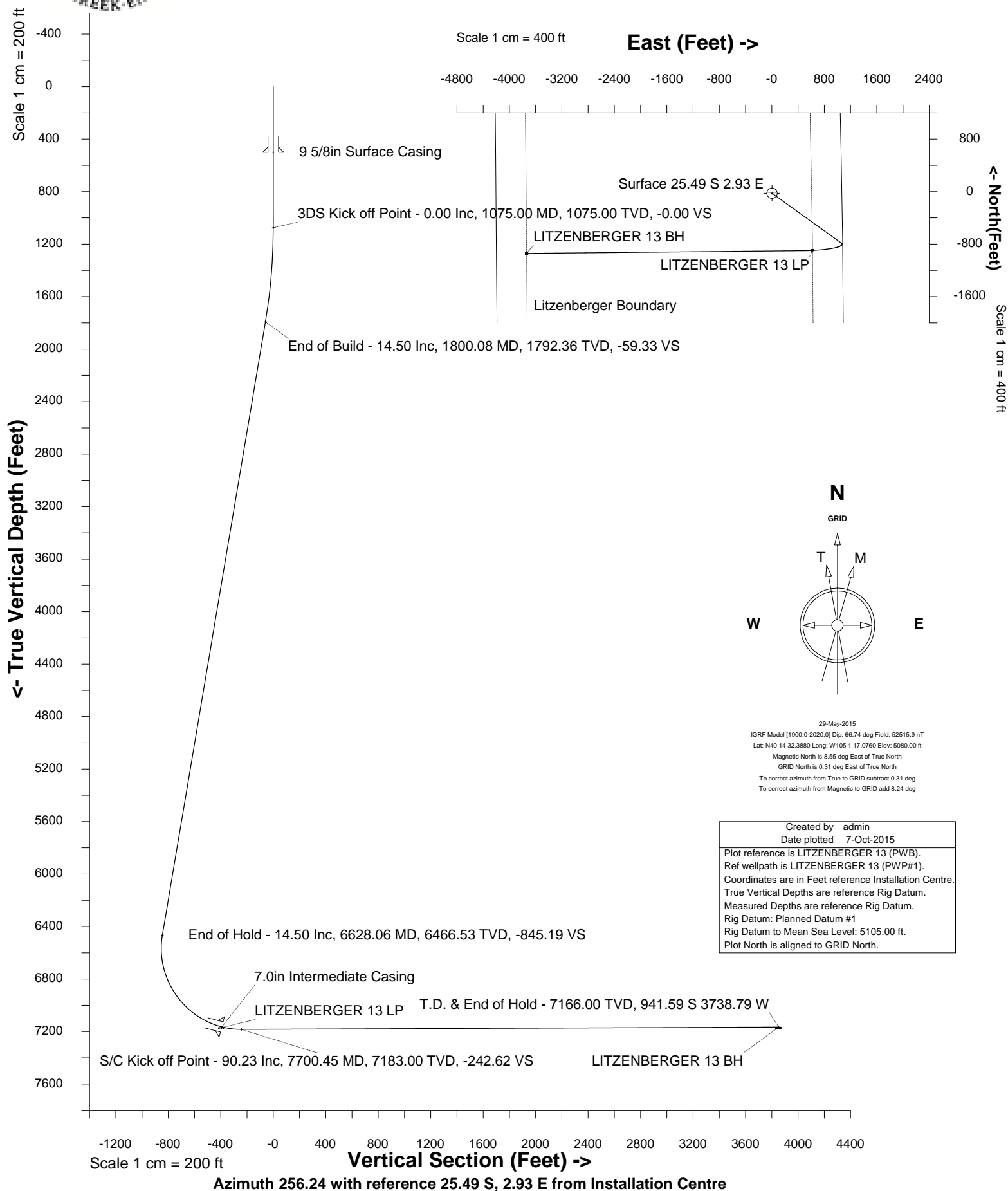




Cub Creek Energy, LLC

Location	Weld County, CO	Slot	LITZENBERGER 13
Field	WATTENBERG	Well	LITZENBERGER 13
Installation	Litzenberger Pad - Finalized	Wellbore	LITZENBERGER 13 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 13 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
LITZENBERGER 13	40.24226000	-105.02140000	1331457.6678	3133604.5515	25.49S	2.93E	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	1331457.67	3133604.55
11906.34	90.23	269.430	7166.00	916.11S	3741.72W	==>	3852.24	1330541.60	3129863.00

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 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	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	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	
1100.00	0.50	125.700	1100.00	0.06S	0.09E	2.00	-0.07	
1200.00	2.50	125.700	1199.96	1.59S	2.21E	2.00	-1.77	
1300.00	4.50	125.700	1299.77	5.15S	7.17E	2.00	-5.74	
1400.00	6.50	125.700	1399.30	10.75S	14.95E	2.00	-11.97	
1500.00	8.50	125.700	1498.44	18.36S	25.55E	2.00	-20.45	
1600.00	10.50	125.700	1597.07	27.99S	38.96E	2.00	-31.18	
1700.00	12.50	125.700	1695.05	39.63S	55.15E	2.00	-44.14	
1800.00	14.50	125.700	1792.29	53.25S	74.10E	2.00	-59.32	
1900.00	14.50	125.700	1889.10	67.86S	94.44E	==>	-75.59	
2000.00	14.50	125.700	1985.91	82.47S	114.78E	==>	-91.87	
2100.00	14.50	125.700	2082.73	97.08S	135.11E	==>	-108.15	
2200.00	14.50	125.700	2179.54	111.69S	155.45E	==>	-124.42	
2300.00	14.50	125.700	2276.36	126.31S	175.78E	==>	-140.70	
2400.00	14.50	125.700	2373.17	140.92S	196.12E	==>	-156.98	
2500.00	14.50	125.700	2469.98	155.53S	216.45E	==>	-173.26	
2600.00	14.50	125.700	2566.80	170.14S	236.79E	==>	-189.53	
2700.00	14.50	125.700	2663.61	184.75S	257.12E	==>	-205.81	
2800.00	14.50	125.700	2760.43	199.37S	277.46E	==>	-222.09	
2900.00	14.50	125.700	2857.24	213.98S	297.79E	==>	-238.36	
3000.00	14.50	125.700	2954.05	228.59S	318.13E	==>	-254.64	
3100.00	14.50	125.700	3050.87	243.20S	338.47E	==>	-270.92	
3200.00	14.50	125.700	3147.68	257.81S	358.80E	==>	-287.20	
3300.00	14.50	125.700	3244.50	272.42S	379.14E	==>	-303.47	
3400.00	14.50	125.700	3341.31	287.04S	399.47E	==>	-319.75	
3500.00	14.50	125.700	3438.12	301.65S	419.81E	==>	-336.03	
3600.00	14.50	125.700	3534.94	316.26S	440.14E	==>	-352.31	

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 5105.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 256.240 degrees
Bottom hole distance is 3852.24 Feet on azimuth 256.24 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 7-Oct-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 13 (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	14.50	125.700	3631.75	330.87S	460.48E	==>	-368.58	
3800.00	14.50	125.700	3728.57	345.48S	480.81E	==>	-384.86	
3900.00	14.50	125.700	3825.38	360.10S	501.15E	==>	-401.14	
4000.00	14.50	125.700	3922.20	374.71S	521.48E	==>	-417.41	
4100.00	14.50	125.700	4019.01	389.32S	541.82E	==>	-433.69	
4200.00	14.50	125.700	4115.82	403.93S	562.16E	==>	-449.97	
4300.00	14.50	125.700	4212.64	418.54S	582.49E	==>	-466.25	
4400.00	14.50	125.700	4309.45	433.15S	602.83E	==>	-482.52	
4500.00	14.50	125.700	4406.27	447.77S	623.16E	==>	-498.80	
4600.00	14.50	125.700	4503.08	462.38S	643.50E	==>	-515.08	
4700.00	14.50	125.700	4599.89	476.99S	663.83E	==>	-531.35	
4800.00	14.50	125.700	4696.71	491.60S	684.17E	==>	-547.63	
4900.00	14.50	125.700	4793.52	506.21S	704.50E	==>	-563.91	
5000.00	14.50	125.700	4890.34	520.83S	724.84E	==>	-580.19	
5100.00	14.50	125.700	4987.15	535.44S	745.18E	==>	-596.46	
5200.00	14.50	125.700	5083.96	550.05S	765.51E	==>	-612.74	
5300.00	14.50	125.700	5180.78	564.66S	785.85E	==>	-629.02	
5400.00	14.50	125.700	5277.59	579.27S	806.18E	==>	-645.30	
5500.00	14.50	125.700	5374.41	593.89S	826.52E	==>	-661.57	
5600.00	14.50	125.700	5471.22	608.50S	846.85E	==>	-677.85	
5700.00	14.50	125.700	5568.03	623.11S	867.19E	==>	-694.13	
5800.00	14.50	125.700	5664.85	637.72S	887.52E	==>	-710.40	
5900.00	14.50	125.700	5761.66	652.33S	907.86E	==>	-726.68	
6000.00	14.50	125.700	5858.48	666.94S	928.19E	==>	-742.96	
6100.00	14.50	125.700	5955.29	681.56S	948.53E	==>	-759.24	
6200.00	14.50	125.700	6052.10	696.17S	968.87E	==>	-775.51	
6300.00	14.50	125.700	6148.92	710.78S	989.20E	==>	-791.79	
6400.00	14.50	125.700	6245.73	725.39S	1009.54E	==>	-808.07	
6500.00	14.50	125.700	6342.55	740.00S	1029.87E	==>	-824.34	
6600.00	14.50	125.700	6439.36	754.62S	1050.21E	==>	-840.62	
6700.00	9.94	150.330	6536.86	769.38S	1066.31E	9.50	-852.75	
6800.00	9.88	207.870	6635.60	784.49S	1066.57E	9.50	-849.41	
6900.00	16.60	238.500	6733.00	799.58S	1050.35E	9.50	-830.06	
7000.00	25.15	250.370	6826.38	814.22S	1018.07E	9.50	-795.24	
7100.00	34.19	256.370	6913.20	828.01S	970.65E	9.50	-745.89	
7200.00	43.40	260.080	6991.07	840.57S	909.36E	9.50	-683.37	
7300.00	52.70	262.700	7057.85	851.57S	835.90E	9.50	-609.40	
7400.00	62.05	264.740	7111.71	860.69S	752.27E	9.50	-526.01	7.0in Intermediate Casing
7500.00	71.42	266.450	7151.17	867.70S	660.78E	9.50	-435.47	
7546.00	75.73	267.170	7164.18	870.15S	616.74E	9.50	-392.11	
7600.00	80.80	267.980	7175.15	872.38S	563.93E	9.50	-340.29	
7700.00	90.19	269.430	7183.00	874.63S	464.38E	9.50	-243.06	
7800.00	90.23	269.430	7182.60	875.61S	364.38E	==>	-145.70	
7900.00	90.23	269.430	7182.19	876.60S	264.39E	==>	-48.34	
8000.00	90.23	269.430	7181.79	877.59S	164.39E	==>	49.02	
8100.00	90.23	269.430	7181.39	878.57S	64.40E	==>	146.38	
8200.00	90.23	269.430	7180.98	879.56S	35.59W	==>	243.74	
8300.00	90.23	269.430	7180.58	880.54S	135.59W	==>	341.10	
8400.00	90.23	269.430	7180.17	881.53S	235.58W	==>	438.46	
8500.00	90.23	269.430	7179.77	882.52S	335.58W	==>	535.82	
8600.00	90.23	269.430	7179.36	883.50S	435.57W	==>	633.18	
8700.00	90.23	269.430	7178.96	884.49S	535.57W	==>	730.54	
8800.00	90.23	269.430	7178.56	885.48S	635.56W	==>	827.90	
8900.00	90.23	269.430	7178.15	886.46S	735.55W	==>	925.26	
9000.00	90.23	269.430	7177.75	887.45S	835.55W	==>	1022.62	
9100.00	90.23	269.430	7177.34	888.43S	935.54W	==>	1119.98	
9200.00	90.23	269.430	7176.94	889.42S	1035.54W	==>	1217.34	
9300.00	90.23	269.430	7176.53	890.41S	1135.53W	==>	1314.70	
9400.00	90.23	269.430	7176.13	891.39S	1235.53W	==>	1412.06	
9500.00	90.23	269.430	7175.73	892.38S	1335.52W	==>	1509.42	

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 5105.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 256.240 degrees
Bottom hole distance is 3852.24 Feet on azimuth 256.24 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 7-Oct-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 13 (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	90.23	269.430	7175.32	893.36S	1435.51W	==>	1606.78	
9700.00	90.23	269.430	7174.92	894.35S	1535.51W	==>	1704.14	
9800.00	90.23	269.430	7174.51	895.34S	1635.50W	==>	1801.50	
9900.00	90.23	269.430	7174.11	896.32S	1735.50W	==>	1898.86	
10000.00	90.23	269.430	7173.71	897.31S	1835.49W	==>	1996.22	
10100.00	90.23	269.430	7173.30	898.30S	1935.49W	==>	2093.58	
10200.00	90.23	269.430	7172.90	899.28S	2035.48W	==>	2190.94	
10300.00	90.23	269.430	7172.49	900.27S	2135.47W	==>	2288.30	
10400.00	90.23	269.430	7172.09	901.25S	2235.47W	==>	2385.66	
10500.00	90.23	269.430	7171.68	902.24S	2335.46W	==>	2483.02	
10600.00	90.23	269.430	7171.28	903.23S	2435.46W	==>	2580.39	
10700.00	90.23	269.430	7170.88	904.21S	2535.45W	==>	2677.75	
10800.00	90.23	269.430	7170.47	905.20S	2635.45W	==>	2775.11	
10900.00	90.23	269.430	7170.07	906.18S	2735.44W	==>	2872.47	
11000.00	90.23	269.430	7169.66	907.17S	2835.43W	==>	2969.83	
11100.00	90.23	269.430	7169.26	908.16S	2935.43W	==>	3067.19	
11200.00	90.23	269.430	7168.85	909.14S	3035.42W	==>	3164.55	
11300.00	90.23	269.430	7168.45	910.13S	3135.42W	==>	3261.91	
11400.00	90.23	269.430	7168.05	911.11S	3235.41W	==>	3359.27	
11500.00	90.23	269.430	7167.64	912.10S	3335.41W	==>	3456.63	
11600.00	90.23	269.430	7167.24	913.09S	3435.40W	==>	3553.99	
11700.00	90.23	269.430	7166.83	914.07S	3535.40W	==>	3651.35	
11800.00	90.23	269.430	7166.43	915.06S	3635.39W	==>	3748.71	
11900.00	90.23	269.430	7166.03	916.05S	3735.38W	==>	3846.07	
11906.34	90.23	269.430	7166.00	916.11S	3741.72W	==>	3852.24	4 1/2in Production Liner

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 5105.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 256.240 degrees
Bottom hole distance is 3852.24 Feet on azimuth 256.24 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 7-Oct-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 13 (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	7546.00	7164.18	870.15S	616.74E
6 1/8	7546.00	7164.18	870.15S	616.74E	11906.34	7166.00	916.11S	3741.72W

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	7546.00	7164.18	870.15S	616.74E
4 1/2in Production Liner	6745.00	6581.29	776.16S	1068.48E	11906.34	7166.00	916.11S	3741.72W

Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
LITZENBERGER 13 LP	874.63S	618.93E	7170.00	40.23985000	-105.01920000	1330583.07	3134223.45
LITZENBERGER 13 BH	916.11S	3741.72W	7166.00	40.23980000	-105.03482000	1330541.60	3129863.00

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
391521	Planned	11906.34	7166.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating	

Notes

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 5105.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 256.240 degrees
Bottom hole distance is 3852.24 Feet on azimuth 256.24 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 7-Oct-2015



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 13 (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 13 (PWB)	16-Jun-2015	6-Oct-2015

Well		
Name	Government ID	Last Revised
LITZENBERGER 13		16-Jun-2015

Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
LITZENBERGER 13	40.24226000	-105.02140000	1331457.6678	3133604.5515	25.49S	2.93E

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 12	10.43	1067.00	8634.30	-3.99	11906.34	0.99	11906.34	
LITZENBERGER 14	15.51	1370.14	7700.45	-27.40	11906.34	0.89	11906.34	
LITZENBERGER 11	18.97	918.08	7700.45	12.94	927.23	1.56	11906.34	
LITZENBERGER 10	24.63	701.88	701.88	19.88	730.38	1.98	11906.34	
LITZENBERGER 15	30.04	1238.91	11906.34	-8.70	11906.34	0.98	11906.34	
LITZENBERGER 9	31.56	1136.04	1136.04	24.16	1140.49	2.96	11906.34	
LITZENBERGER 16	45.07	1271.72	11906.34	36.85	1337.34	1.96	11906.34	
LITZENBERGER 17	52.51	1271.72	11906.34	44.36	1304.53	2.41	11906.34	
LITZENBERGER 8	55.01	1304.53	1304.53	46.69	1325.00	3.39	11906.34	
Kintz #2	62.35	1665.42	9113.29	51.06	1665.42	4.64	9260.56	
LITZENBERGER 18	68.24	1271.72	11906.34	60.08	1304.53	2.93	11906.34	
LITZENBERGER 7	71.33	1290.71	1290.71	63.11	1304.53	3.95	11906.34	
LITZENBERGER 6	82.29	1238.91	1238.91	74.35	1255.31	4.97	11906.34	
LITZENBERGER 19	85.34	1238.91	1238.91	77.38	1271.72	3.93	11906.34	
LITZENBERGER 5	94.05	1222.51	11902.77	86.17	1238.91	5.27	11906.34	
LITZENBERGER 20	95.65	1206.54	11906.34	87.76	1238.91	4.25	11906.34	
LITZENBERGER 4	106.37	1206.10	1206.10	98.56	1206.10	5.93	11906.34	
LITZENBERGER 21	109.19	1189.70	11906.34	101.45	1206.10	4.89	11906.34	
LITZENBERGER 3	124.75	1158.03	1158.03	117.12	1173.29	6.94	11906.34	
LITZENBERGER 22	125.33	1159.82	1159.82	117.68	1189.70	5.57	11906.34	
LITZENBERGER 2	132.47	1143.48	11906.34	124.75	1156.89	7.10	11906.34	

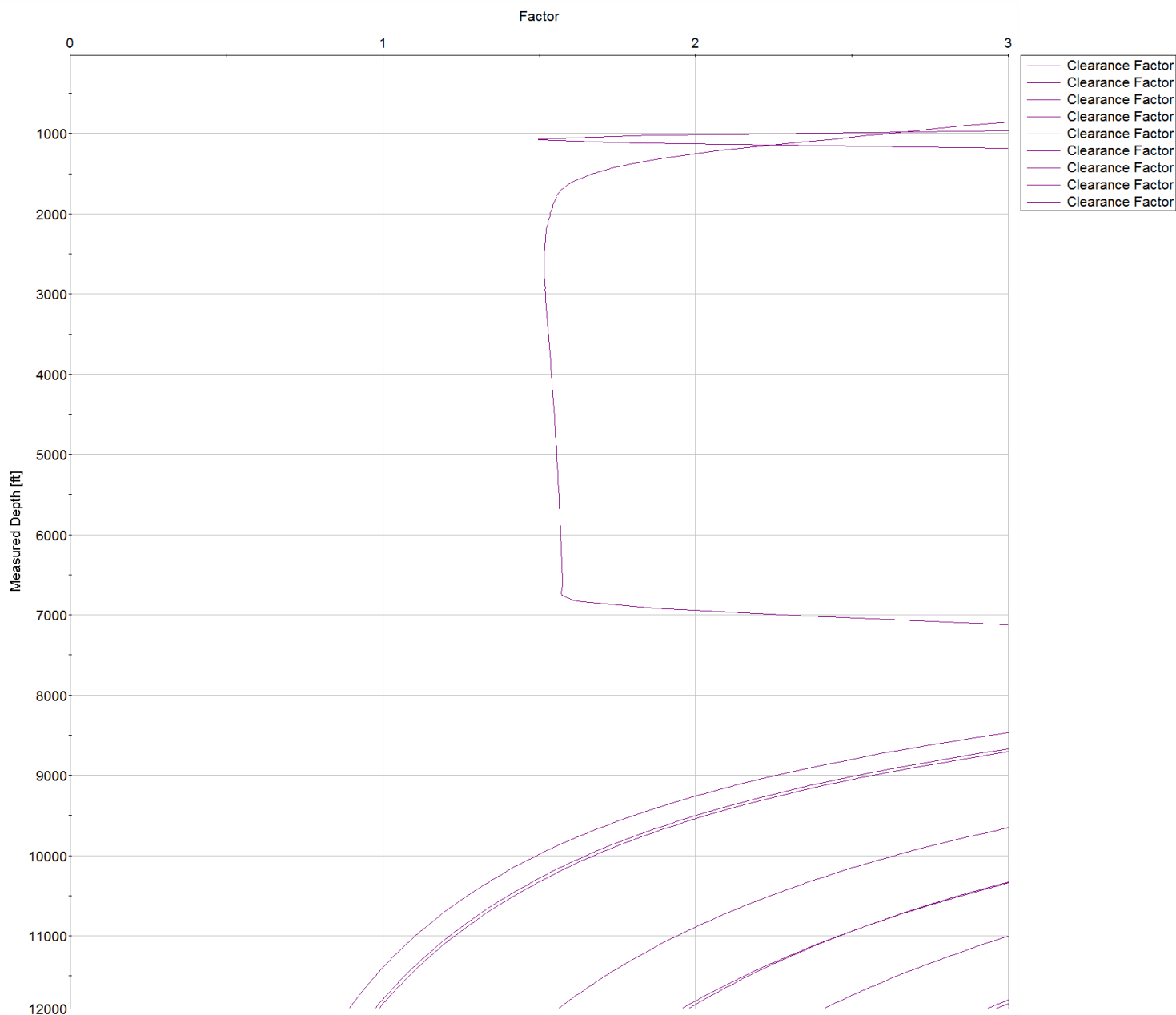
All data is in Feet unless otherwise stated
Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5105.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 256.240 degrees
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 7-Oct-2015



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 13 (PWB)



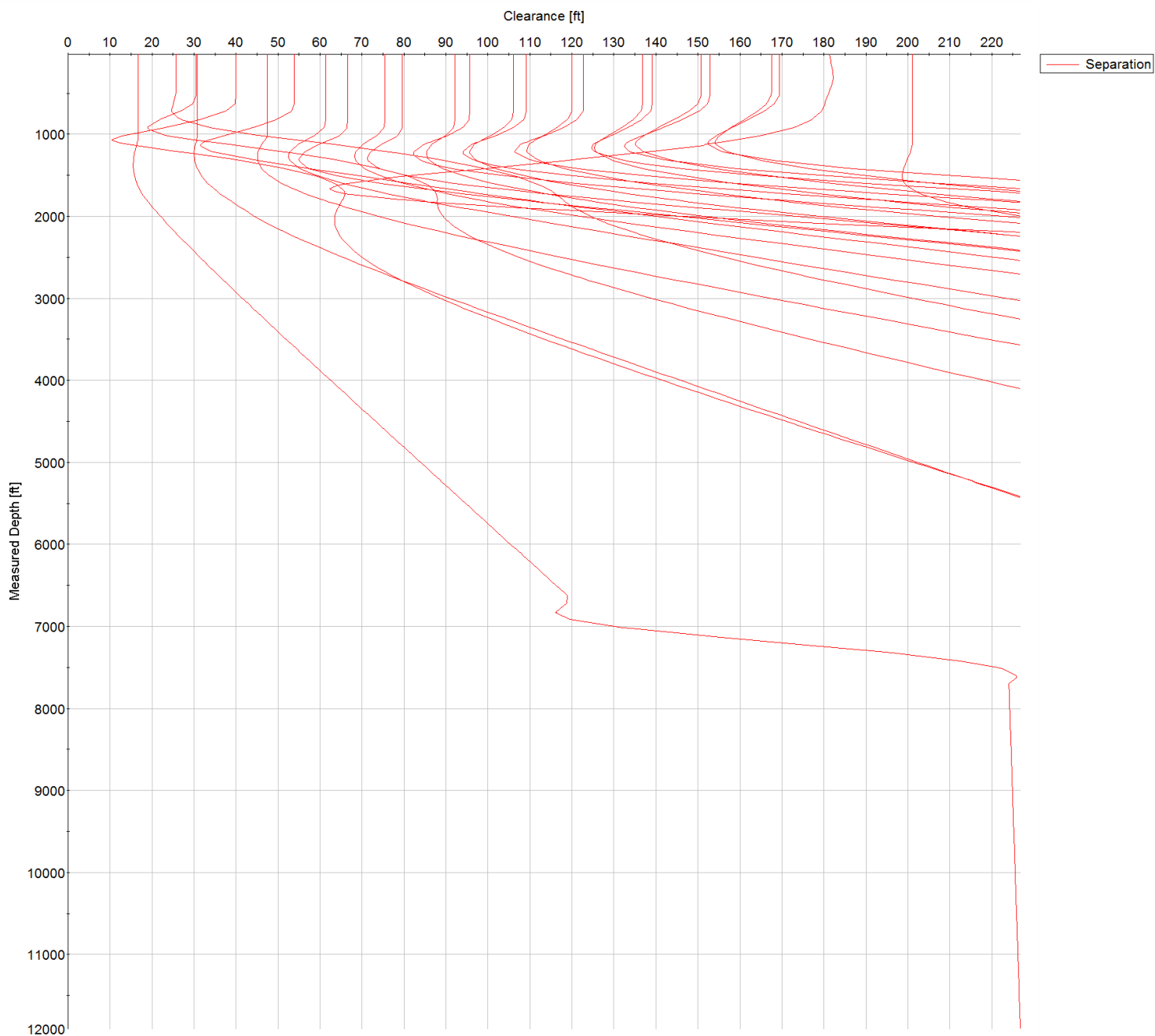
Clearance Summary							
Offset WellName	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
LITZENBERGER 23	135.15	1125.00	11906.34	127.59	1140.49	6.02	11906.34
LITZENBERGER 1	152.36	1107.68	1107.68	144.84	1125.00	7.91	11906.34
LITZENBERGER 24	154.10	1092.86	1092.86	146.67	1107.68	6.55	11906.34
Kintz #1	198.63	1501.38	8013.85	182.73	1550.59	11.50	1878.67
Billings #2A-18H	2533.07	10146.39	10146.39	2137.72	10162.80	6.41	10162.80
Billings #2B-18H	2877.55	11906.34	11906.34	2484.82	11906.34	7.31	10141.06



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 5105.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 256.240 degrees
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 7-Oct-2015



SYS DRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 13 (PWB)



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 5105.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 256.240 degrees
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 7-Oct-2015



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 13 (PWB)

