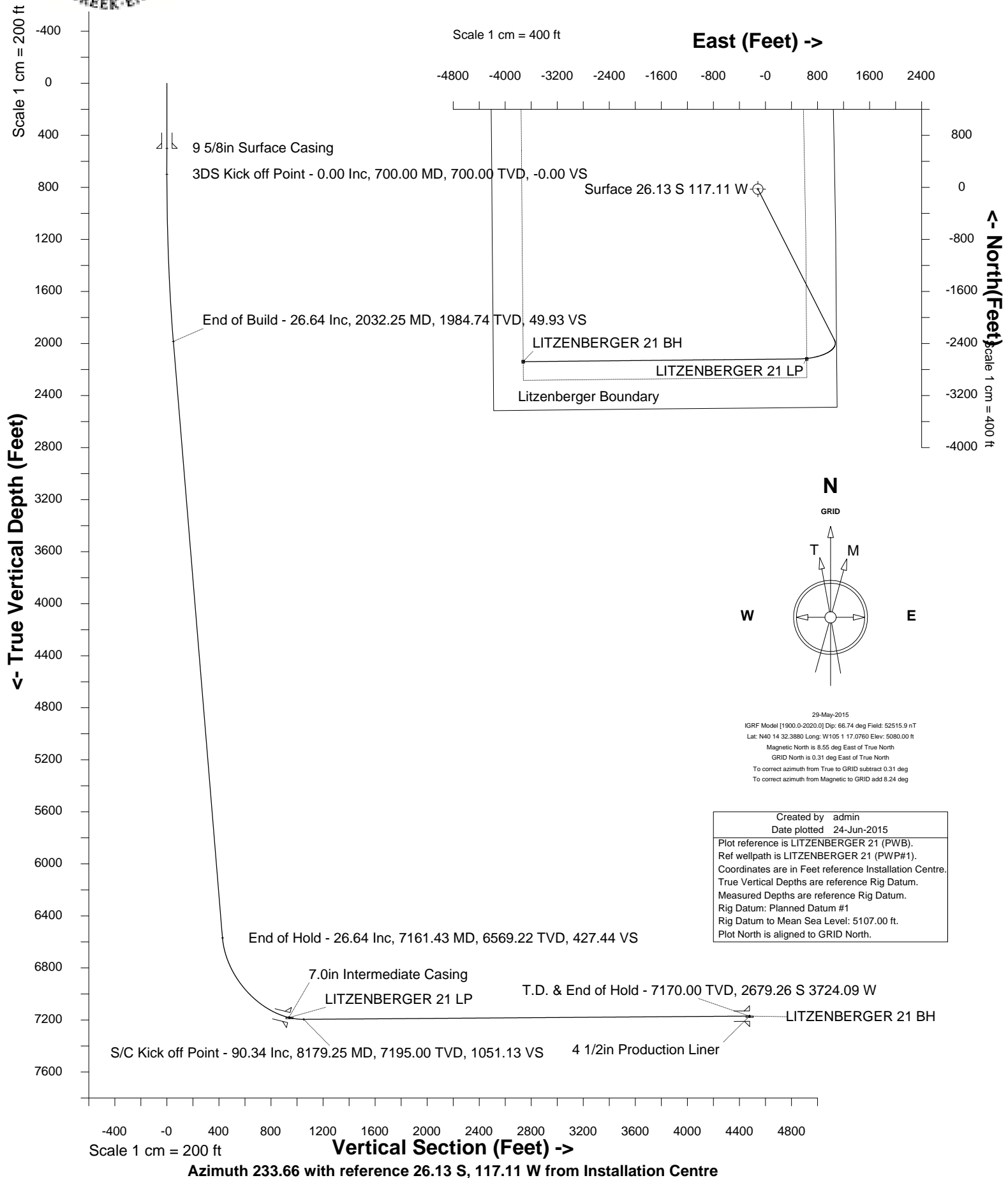




Cub Creek Energy, LLC

Location	Weld County, CO	Slot	LITZENBERGER 21
Field	WATTENBERG	Well	LITZENBERGER 21
Installation	Litzenberger Pad - Finalized	Wellbore	LITZENBERGER 21 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 21 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
LITZENBERGER 21	40.24226000	-105.02183000	1331457.0202	3133484.5151	26.13S	117.11W	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	1331457.02	3133484.52
700.00	0.00	153.110	700.00	0.00N	0.00E	==>	0.00	1331457.02	3133484.52
12402.69	90.34	269.440	7170.00	2653.13S	3606.98W	==>	4477.65	1328804.01	3129877.70

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	153.110	700.00	0.00N	0.00E	==>	0.00	
800.00	2.00	153.110	799.98	1.56S	0.79E	2.00	0.29	
900.00	4.00	153.110	899.84	6.22S	3.16E	2.00	1.15	
1000.00	6.00	153.110	999.45	14.00S	7.10E	2.00	2.58	
1100.00	8.00	153.110	1098.70	24.87S	12.61E	2.00	4.58	
1200.00	10.00	153.110	1197.47	38.82S	19.68E	2.00	7.14	
1300.00	12.00	153.110	1295.62	55.83S	28.31E	2.00	10.27	
1400.00	14.00	153.110	1393.06	75.90S	38.49E	2.00	13.97	
1500.00	16.00	153.110	1489.64	98.98S	50.19E	2.00	18.21	
1600.00	18.00	153.110	1585.27	125.05S	63.42E	2.00	23.01	
1700.00	20.00	153.110	1679.82	154.09S	78.14E	2.00	28.35	
1800.00	22.00	153.110	1773.17	186.05S	94.35E	2.00	34.23	
1900.00	24.00	153.110	1865.21	220.89S	112.02E	2.00	40.65	
2000.00	26.00	153.110	1955.84	258.58S	131.13E	2.00	47.58	
2100.00	26.64	153.110	2045.30	298.44S	151.34E	==>	54.92	
2200.00	26.64	153.110	2134.68	338.43S	171.63E	==>	62.28	
2300.00	26.64	153.110	2224.06	378.43S	191.91E	==>	69.64	
2400.00	26.64	153.110	2313.44	418.43S	212.19E	==>	77.00	
2500.00	26.64	153.110	2402.82	458.42S	232.48E	==>	84.35	
2600.00	26.64	153.110	2492.20	498.42S	252.76E	==>	91.71	
2700.00	26.64	153.110	2581.58	538.42S	273.04E	==>	99.07	
2800.00	26.64	153.110	2670.96	578.41S	293.33E	==>	106.43	
2900.00	26.64	153.110	2760.34	618.41S	313.61E	==>	113.79	
3000.00	26.64	153.110	2849.72	658.41S	333.89E	==>	121.15	
3100.00	26.64	153.110	2939.10	698.40S	354.18E	==>	128.51	
3200.00	26.64	153.110	3028.49	738.40S	374.46E	==>	135.87	
3300.00	26.64	153.110	3117.87	778.40S	394.74E	==>	143.23	
3400.00	26.64	153.110	3207.25	818.39S	415.03E	==>	150.59	

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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 233.660 degrees
Bottom hole distance is 4477.65 Feet on azimuth 233.66 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 24-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 21 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3500.00	26.64	153.110	3296.63	858.39S	435.31E	==>	157.95	
3600.00	26.64	153.110	3386.01	898.39S	455.60E	==>	165.31	
3700.00	26.64	153.110	3475.39	938.39S	475.88E	==>	172.67	
3800.00	26.64	153.110	3564.77	978.38S	496.16E	==>	180.03	
3900.00	26.64	153.110	3654.15	1018.38S	516.45E	==>	187.39	
4000.00	26.64	153.110	3743.53	1058.38S	536.73E	==>	194.75	
4100.00	26.64	153.110	3832.91	1098.37S	557.01E	==>	202.11	
4200.00	26.64	153.110	3922.29	1138.37S	577.30E	==>	209.47	
4300.00	26.64	153.110	4011.67	1178.37S	597.58E	==>	216.83	
4400.00	26.64	153.110	4101.05	1218.36S	617.86E	==>	224.19	
4500.00	26.64	153.110	4190.43	1258.36S	638.15E	==>	231.55	
4600.00	26.64	153.110	4279.81	1298.36S	658.43E	==>	238.91	
4700.00	26.64	153.110	4369.19	1338.35S	678.71E	==>	246.27	
4800.00	26.64	153.110	4458.57	1378.35S	699.00E	==>	253.63	
4900.00	26.64	153.110	4547.95	1418.35S	719.28E	==>	260.99	
5000.00	26.64	153.110	4637.33	1458.34S	739.56E	==>	268.35	
5100.00	26.64	153.110	4726.71	1498.34S	759.85E	==>	275.71	
5200.00	26.64	153.110	4816.09	1538.34S	780.13E	==>	283.07	
5300.00	26.64	153.110	4905.47	1578.33S	800.41E	==>	290.43	
5400.00	26.64	153.110	4994.85	1618.33S	820.70E	==>	297.79	
5500.00	26.64	153.110	5084.23	1658.33S	840.98E	==>	305.15	
5600.00	26.64	153.110	5173.61	1698.33S	861.26E	==>	312.51	
5700.00	26.64	153.110	5262.99	1738.32S	881.55E	==>	319.87	
5800.00	26.64	153.110	5352.37	1778.32S	901.83E	==>	327.23	
5900.00	26.64	153.110	5441.75	1818.32S	922.11E	==>	334.59	
6000.00	26.64	153.110	5531.13	1858.31S	942.40E	==>	341.95	
6100.00	26.64	153.110	5620.51	1898.31S	962.68E	==>	349.31	
6200.00	26.64	153.110	5709.89	1938.31S	982.96E	==>	356.67	
6300.00	26.64	153.110	5799.27	1978.30S	1003.25E	==>	364.03	
6400.00	26.64	153.110	5888.65	2018.30S	1023.53E	==>	371.39	
6500.00	26.64	153.110	5978.03	2058.30S	1043.81E	==>	378.75	
6600.00	26.64	153.110	6067.41	2098.29S	1064.10E	==>	386.11	
6700.00	26.64	153.110	6156.79	2138.29S	1084.38E	==>	393.47	
6800.00	26.64	153.110	6246.18	2178.29S	1104.66E	==>	400.83	
6900.00	26.64	153.110	6335.56	2218.28S	1124.95E	==>	408.19	
7000.00	26.64	153.110	6424.94	2258.28S	1145.23E	==>	415.55	
7100.00	26.64	153.110	6514.32	2298.28S	1165.51E	==>	422.91	
7200.00	25.32	161.390	6603.90	2338.38S	1184.52E	10.00	431.36	
7300.00	24.36	185.230	6694.88	2379.29S	1189.48E	10.00	451.60	
7400.00	27.08	207.550	6785.18	2420.11S	1177.04E	10.00	485.81	
7500.00	32.57	224.460	6872.06	2459.60S	1147.59E	10.00	532.93	
7600.00	39.69	236.430	6952.87	2496.56S	1102.01E	10.00	591.55	
7700.00	47.71	245.110	7025.17	2529.87S	1041.70E	10.00	659.87	
7800.00	56.24	251.770	7086.76	2558.52S	968.48E	10.00	735.83	
7900.00	65.05	257.190	7135.76	2581.64S	884.58E	10.00	817.11	
8000.00	74.04	261.880	7170.69	2598.51S	792.55E	10.00	901.25	
8043.00	77.93	263.760	7181.10	2603.72S	751.16E	10.00	937.67	
8100.00	83.12	266.170	7190.48	2608.64S	695.18E	10.00	985.68	
8200.00	90.34	269.440	7194.88	2611.87S	595.43E	==>	1067.95	7.0in Intermediate Casing
8300.00	90.34	269.440	7194.29	2612.85S	495.44E	==>	1149.08	
8400.00	90.34	269.440	7193.69	2613.83S	395.45E	==>	1230.21	
8500.00	90.34	269.440	7193.10	2614.81S	295.45E	==>	1311.34	
8600.00	90.34	269.440	7192.51	2615.79S	195.46E	==>	1392.47	
8700.00	90.34	269.440	7191.92	2616.78S	95.47E	==>	1473.61	
8800.00	90.34	269.440	7191.33	2617.76S	4.53W	==>	1554.74	
8900.00	90.34	269.440	7190.73	2618.74S	104.52W	==>	1635.87	
9000.00	90.34	269.440	7190.14	2619.72S	204.51W	==>	1717.00	
9100.00	90.34	269.440	7189.55	2620.70S	304.51W	==>	1798.13	
9200.00	90.34	269.440	7188.96	2621.69S	404.50W	==>	1879.26	
9300.00	90.34	269.440	7188.37	2622.67S	504.49W	==>	1960.40	

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Bottom hole distance is 4477.65 Feet on azimuth 233.66 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 24-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 21 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
9400.00	90.34	269.440	7187.77	2623.65S	604.49W	==>	2041.53	
9500.00	90.34	269.440	7187.18	2624.63S	704.48W	==>	2122.66	
9600.00	90.34	269.440	7186.59	2625.61S	804.48W	==>	2203.79	
9700.00	90.34	269.440	7186.00	2626.59S	904.47W	==>	2284.92	
9800.00	90.34	269.440	7185.41	2627.58S	1004.46W	==>	2366.05	
9900.00	90.34	269.440	7184.81	2628.56S	1104.46W	==>	2447.18	
10000.00	90.34	269.440	7184.22	2629.54S	1204.45W	==>	2528.32	
10100.00	90.34	269.440	7183.63	2630.52S	1304.44W	==>	2609.45	
10200.00	90.34	269.440	7183.04	2631.50S	1404.44W	==>	2690.58	
10300.00	90.34	269.440	7182.45	2632.48S	1504.43W	==>	2771.71	
10400.00	90.34	269.440	7181.85	2633.47S	1604.42W	==>	2852.84	
10500.00	90.34	269.440	7181.26	2634.45S	1704.42W	==>	2933.97	
10600.00	90.34	269.440	7180.67	2635.43S	1804.41W	==>	3015.11	
10700.00	90.34	269.440	7180.08	2636.41S	1904.40W	==>	3096.24	
10800.00	90.34	269.440	7179.49	2637.39S	2004.40W	==>	3177.37	
10900.00	90.34	269.440	7178.89	2638.37S	2104.39W	==>	3258.50	
11000.00	90.34	269.440	7178.30	2639.36S	2204.38W	==>	3339.63	
11100.00	90.34	269.440	7177.71	2640.34S	2304.38W	==>	3420.76	
11200.00	90.34	269.440	7177.12	2641.32S	2404.37W	==>	3501.89	
11300.00	90.34	269.440	7176.53	2642.30S	2504.36W	==>	3583.03	
11400.00	90.34	269.440	7175.94	2643.28S	2604.36W	==>	3664.16	
11500.00	90.34	269.440	7175.34	2644.26S	2704.35W	==>	3745.29	
11600.00	90.34	269.440	7174.75	2645.25S	2804.34W	==>	3826.42	
11700.00	90.34	269.440	7174.16	2646.23S	2904.34W	==>	3907.55	
11800.00	90.34	269.440	7173.57	2647.21S	3004.33W	==>	3988.68	
11900.00	90.34	269.440	7172.98	2648.19S	3104.32W	==>	4069.81	
12000.00	90.34	269.440	7172.38	2649.17S	3204.32W	==>	4150.95	
12100.00	90.34	269.440	7171.79	2650.16S	3304.31W	==>	4232.08	
12200.00	90.34	269.440	7171.20	2651.14S	3404.30W	==>	4313.21	
12300.00	90.34	269.440	7170.61	2652.12S	3504.30W	==>	4394.34	
12400.00	90.34	269.440	7170.02	2653.10S	3604.29W	==>	4475.47	
12402.69	90.34	269.440	7170.00	2653.13S	3606.98W	==>	4477.65	4 1/2in Production Liner

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Vertical Section is from 0.00N 0.00E on azimuth 233.660 degrees
Bottom hole distance is 4477.65 Feet on azimuth 233.66 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 24-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 21 (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	8043.00	7181.10	2603.72S	751.16E
6 1/8	8043.00	7181.10	2603.72S	751.16E	12402.69	7170.00	2653.13S	3606.98W

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	8043.00	7181.10	2603.72S	751.16E
4 1/2in Production Liner	7279.00	6675.74	2370.67S	1189.89E	12402.69	7170.00	2653.13S	3606.98W

Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
LITZENBERGER 21 LP	2611.66S	751.18E	7180.00	40.23508000	-105.01919000	1328845.47	3134235.66
LITZENBERGER 21 BH	2653.13S	3606.98W	7170.00	40.23503000	-105.03480000	1328804.01	3129877.70

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
391522	Planned	12402.69	7170.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating	

Notes

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Vertical Section is from 0.00N 0.00E on azimuth 233.660 degrees
Bottom hole distance is 4477.65 Feet on azimuth 233.66 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 24-Jun-2015



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 21 (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 21 (PWB)	19-Jun-2015	19-Jun-2015

Well		
Name	Government ID	Last Revised
LITZENBERGER 21		16-Jun-2015

Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
LITZENBERGER 21	40.24226000	-105.02183000	1331457.0202	3133484.5151	26.13S	117.11W

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

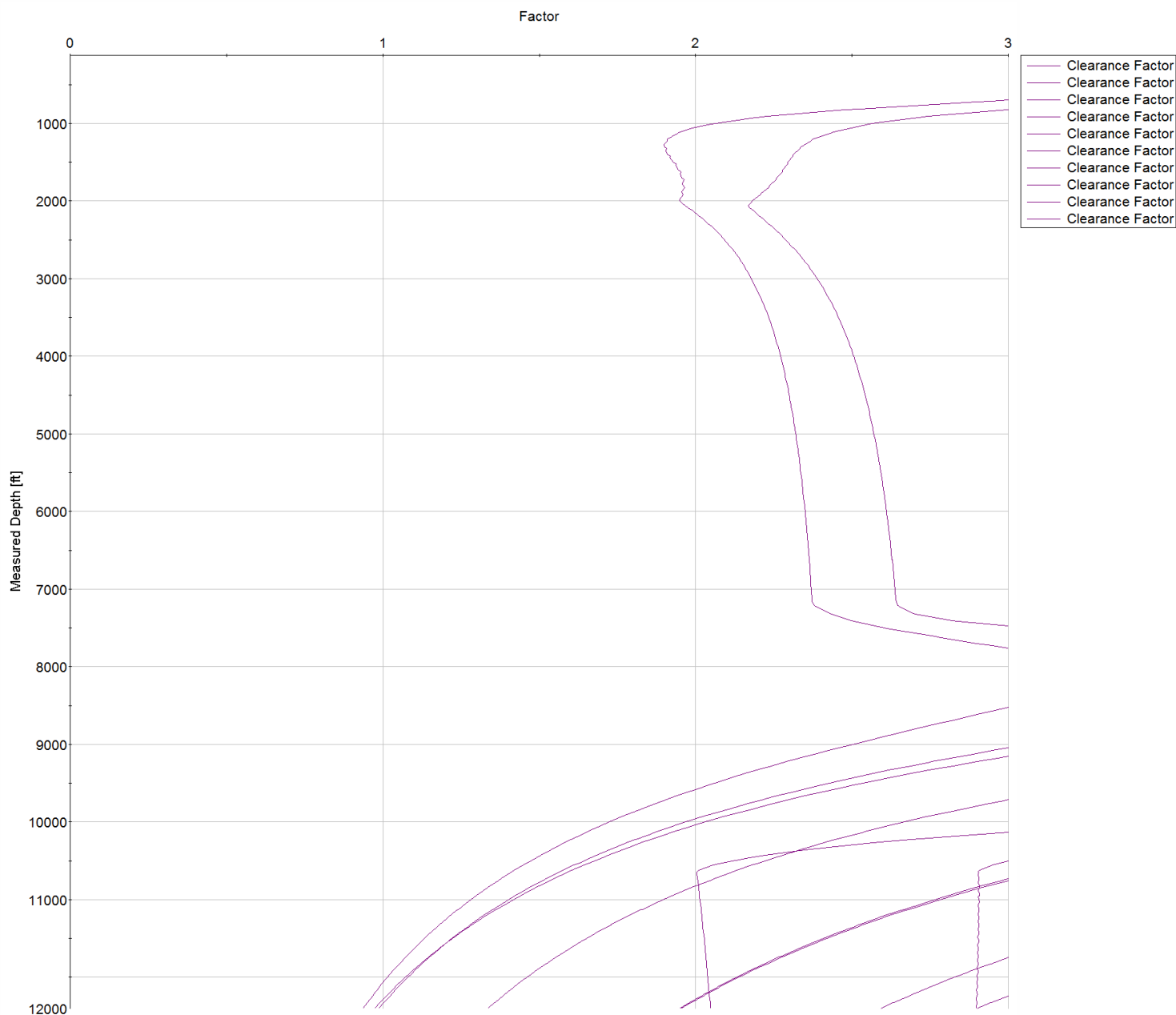
Clearance Summary							
Offset WellName	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
LITZENBERGER 20	13.13	925.34	8161.48	-20.00	12402.69	0.94	12402.69
LITZENBERGER 22	16.12	845.21	7527.87	-4.62	12402.69	0.99	12402.69
LITZENBERGER 19	25.14	992.85	12401.11	-9.23	12401.11	0.97	12401.11
LITZENBERGER 4	25.50	700.00	700.00	20.84	713.98	5.29	763.19
LITZENBERGER 23	27.47	885.93	8179.25	21.44	960.04	1.34	12402.69
LITZENBERGER 5	29.07	700.00	12396.54	24.33	730.38	5.82	796.00
LITZENBERGER 3	30.51	650.00	650.00	26.01	700.00	6.35	763.19
LITZENBERGER 6	37.81	700.00	700.00	32.98	763.19	7.12	861.61
LITZENBERGER 2	39.91	631.96	12396.28	35.37	700.00	8.15	779.59
LITZENBERGER 18	40.75	1042.35	1042.35	33.90	1091.27	1.95	12402.69
LITZENBERGER 24	44.18	828.81	12402.69	38.58	878.02	1.95	12402.69
LITZENBERGER 7	51.44	713.98	713.98	46.26	845.21	8.61	992.85
LITZENBERGER 1	53.51	700.00	12395.98	48.82	713.98	10.60	812.40
LITZENBERGER 17	55.23	1028.09	1028.09	48.56	1058.46	2.59	12402.69
LITZENBERGER 8	63.84	845.21	9769.09	58.12	894.42	8.25	12402.69
LITZENBERGER 16	65.62	1107.68	9674.65	58.43	1140.49	2.90	12402.69
LITZENBERGER 9	76.93	651.00	12398.34	72.57	651.00	7.86	12402.69
LITZENBERGER 15	80.66	1149.29	12399.12	73.20	1173.29	3.91	12402.69
LITZENBERGER 12	92.90	601.00	12398.73	88.78	625.00	5.89	12402.69
LITZENBERGER 14	93.82	1163.08	1163.08	86.27	1189.70	4.47	12402.69
LITZENBERGER 11	106.39	551.00	551.00	102.60	582.74	6.34	12402.69



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Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 21 (PWB)



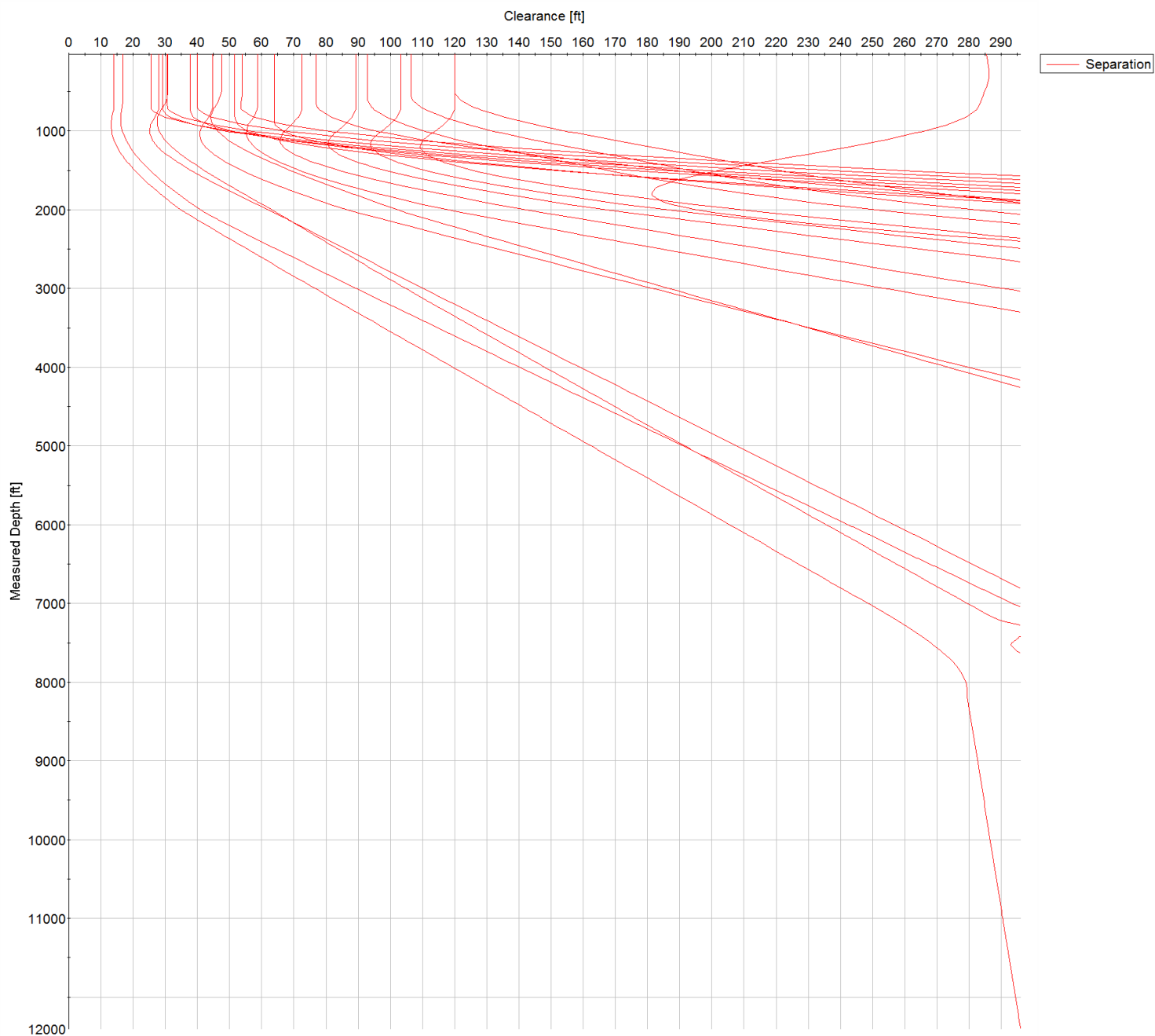
Clearance Summary							
Offset WellName	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
LITZENBERGER 13	109.25	1197.53	1197.53	101.54	1206.10	4.86	12402.69
LITZENBERGER 10	119.99	502.00	502.00	116.35	484.32	6.88	12402.69
Kintz #2	181.30	1787.27	9607.15	168.55	1813.06	10.51	9670.67
Kintz #1	298.42	730.38	8506.72	287.15	976.44	19.28	1681.82
Billings #2A-18H	795.45	10638.52	10638.52	398.63	10654.92	2.00	10654.92
Billings #2B-18H	1140.31	12402.69	12402.69	746.69	12383.47	2.90	12383.47



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 233.660 degrees
Prepared by Integrated Petroleum Technologies, Inc.
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