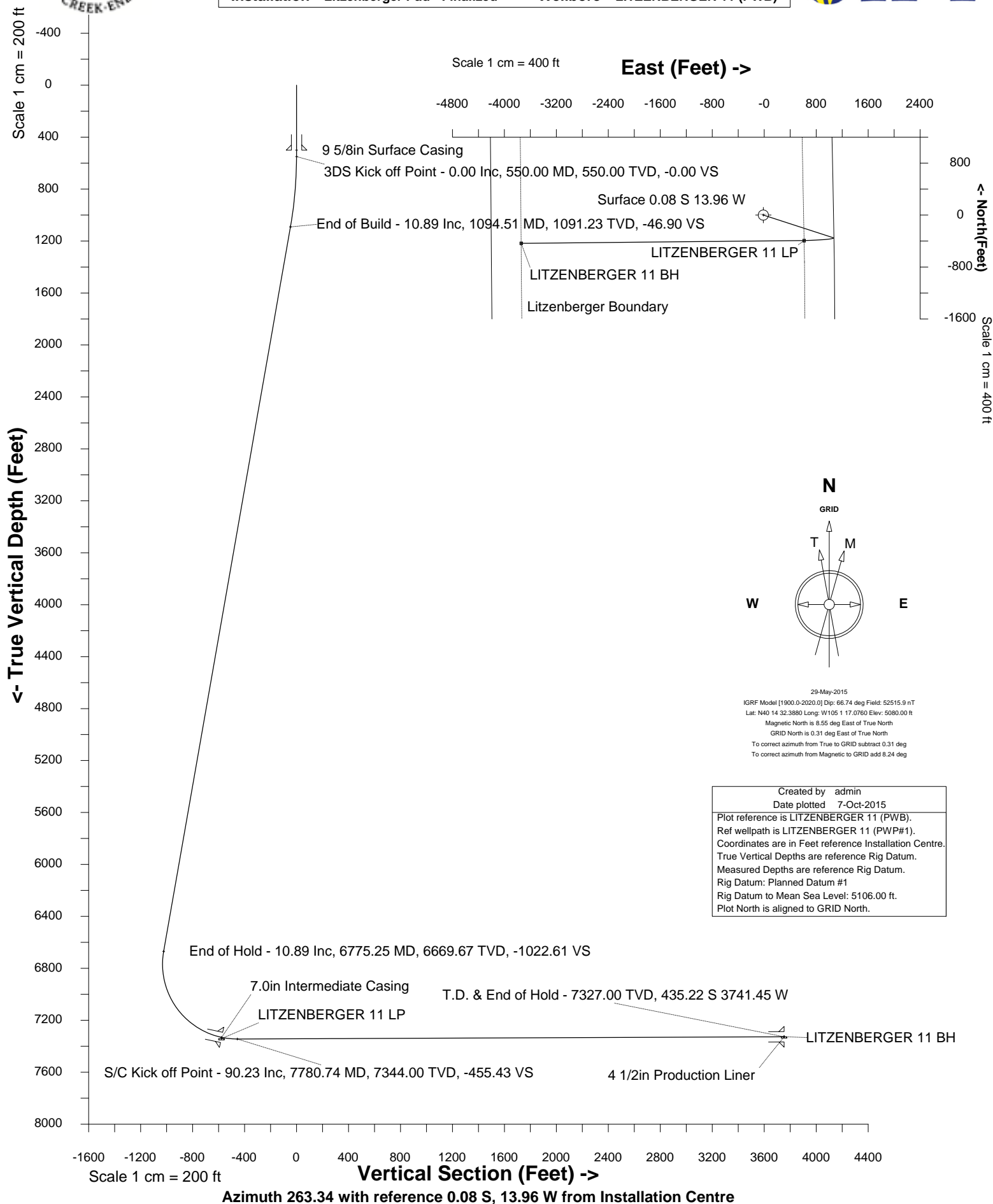




Cub Creek Energy, LLC

Location	Weld County, CO	Slot	LITZENBERGER 11
Field	WATTENBERG	Well	LITZENBERGER 11
Installation	Litzenberger Pad - Finalized	Wellbore	LITZENBERGER 11 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 11 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
LITZENBERGER 11	40.24233000	-105.02146000	1331483.0771	3133587.6646	0.08S	13.96W	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	1331483.08	3133587.66
12012.96	90.23	269.440	7327.00	435.15S	3727.49W	==>	3752.80	1331047.95	3129860.34

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	1.00	107.960	600.00	0.13S	0.42E	2.00	-0.40	
700.00	3.00	107.960	699.93	1.21S	3.73E	2.00	-3.57	
800.00	5.00	107.960	799.68	3.36S	10.37E	2.00	-9.91	
900.00	7.00	107.960	899.13	6.58S	20.31E	2.00	-19.41	
1000.00	9.00	107.960	998.15	10.87S	33.55E	2.00	-32.07	
1100.00	10.89	107.960	1096.63	16.23S	50.07E	==>	-47.85	
1200.00	10.89	107.960	1194.83	22.05S	68.04E	==>	-65.02	
1300.00	10.89	107.960	1293.03	27.87S	86.01E	==>	-82.20	
1400.00	10.89	107.960	1391.23	33.70S	103.98E	==>	-99.37	
1500.00	10.89	107.960	1489.43	39.52S	121.95E	==>	-116.55	
1600.00	10.89	107.960	1587.62	45.35S	139.93E	==>	-133.72	
1700.00	10.89	107.960	1685.82	51.17S	157.90E	==>	-150.90	
1800.00	10.89	107.960	1784.02	57.00S	175.87E	==>	-168.08	
1900.00	10.89	107.960	1882.22	62.82S	193.84E	==>	-185.25	
2000.00	10.89	107.960	1980.42	68.65S	211.82E	==>	-202.43	
2100.00	10.89	107.960	2078.62	74.47S	229.79E	==>	-219.60	
2200.00	10.89	107.960	2176.82	80.30S	247.76E	==>	-236.78	
2300.00	10.89	107.960	2275.02	86.12S	265.73E	==>	-253.95	
2400.00	10.89	107.960	2373.22	91.95S	283.71E	==>	-271.13	
2500.00	10.89	107.960	2471.42	97.77S	301.68E	==>	-288.31	
2600.00	10.89	107.960	2569.62	103.59S	319.65E	==>	-305.48	
2700.00	10.89	107.960	2667.81	109.42S	337.62E	==>	-322.66	
2800.00	10.89	107.960	2766.01	115.24S	355.59E	==>	-339.83	
2900.00	10.89	107.960	2864.21	121.07S	373.57E	==>	-357.01	
3000.00	10.89	107.960	2962.41	126.89S	391.54E	==>	-374.18	
3100.00	10.89	107.960	3060.61	132.72S	409.51E	==>	-391.36	
3200.00	10.89	107.960	3158.81	138.54S	427.48E	==>	-408.54	
3300.00	10.89	107.960	3257.01	144.37S	445.46E	==>	-425.71	
3400.00	10.89	107.960	3355.21	150.19S	463.43E	==>	-442.89	
3500.00	10.89	107.960	3453.41	156.02S	481.40E	==>	-460.06	

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Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5106.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 263.340 degrees
Bottom hole distance is 3752.80 Feet on azimuth 263.34 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 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
3600.00	10.89	107.960	3551.61	161.84S	499.37E	==>	-477.24	
3700.00	10.89	107.960	3649.81	167.67S	517.35E	==>	-494.41	
3800.00	10.89	107.960	3748.01	173.49S	535.32E	==>	-511.59	
3900.00	10.89	107.960	3846.20	179.31S	553.29E	==>	-528.77	
4000.00	10.89	107.960	3944.40	185.14S	571.26E	==>	-545.94	
4100.00	10.89	107.960	4042.60	190.96S	589.23E	==>	-563.12	
4200.00	10.89	107.960	4140.80	196.79S	607.21E	==>	-580.29	
4300.00	10.89	107.960	4239.00	202.61S	625.18E	==>	-597.47	
4400.00	10.89	107.960	4337.20	208.44S	643.15E	==>	-614.64	
4500.00	10.89	107.960	4435.40	214.26S	661.12E	==>	-631.82	
4600.00	10.89	107.960	4533.60	220.09S	679.10E	==>	-649.00	
4700.00	10.89	107.960	4631.80	225.91S	697.07E	==>	-666.17	
4800.00	10.89	107.960	4730.00	231.74S	715.04E	==>	-683.35	
4900.00	10.89	107.960	4828.20	237.56S	733.01E	==>	-700.52	
5000.00	10.89	107.960	4926.39	243.39S	750.99E	==>	-717.70	
5100.00	10.89	107.960	5024.59	249.21S	768.96E	==>	-734.87	
5200.00	10.89	107.960	5122.79	255.03S	786.93E	==>	-752.05	
5300.00	10.89	107.960	5220.99	260.86S	804.90E	==>	-769.23	
5400.00	10.89	107.960	5319.19	266.68S	822.87E	==>	-786.40	
5500.00	10.89	107.960	5417.39	272.51S	840.85E	==>	-803.58	
5600.00	10.89	107.960	5515.59	278.33S	858.82E	==>	-820.75	
5700.00	10.89	107.960	5613.79	284.16S	876.79E	==>	-837.93	
5800.00	10.89	107.960	5711.99	289.98S	894.76E	==>	-855.10	
5900.00	10.89	107.960	5810.19	295.81S	912.74E	==>	-872.28	
6000.00	10.89	107.960	5908.39	301.63S	930.71E	==>	-889.46	
6100.00	10.89	107.960	6006.59	307.46S	948.68E	==>	-906.63	
6200.00	10.89	107.960	6104.78	313.28S	966.65E	==>	-923.81	
6300.00	10.89	107.960	6202.98	319.11S	984.63E	==>	-940.98	
6400.00	10.89	107.960	6301.18	324.93S	1002.60E	==>	-958.16	
6500.00	10.89	107.960	6399.38	330.76S	1020.57E	==>	-975.33	
6600.00	10.89	107.960	6497.58	336.58S	1038.54E	==>	-992.51	
6700.00	10.89	107.960	6595.78	342.40S	1056.52E	==>	-1009.69	
6800.00	8.58	113.320	6694.07	348.24S	1073.96E	10.00	-1026.34	
6900.00	4.11	211.090	6793.63	354.28S	1078.98E	10.00	-1030.62	
7000.00	12.64	253.600	6892.54	360.45S	1066.60E	10.00	-1017.61	
7100.00	22.42	260.900	6987.79	366.57S	1037.20E	10.00	-987.69	
7200.00	32.33	263.880	7076.49	372.45S	991.67E	10.00	-941.79	
7300.00	42.27	265.570	7155.94	377.92S	931.40E	10.00	-881.30	
7400.00	52.24	266.710	7223.73	382.80S	858.22E	10.00	-808.04	
7500.00	62.21	267.580	7277.79	386.94S	774.34E	10.00	-724.25	
7600.00	72.19	268.300	7316.49	390.23S	682.33E	10.00	-632.48	
7658.00	77.98	268.680	7331.42	391.71S	626.33E	10.00	-576.69	
7700.00	82.17	268.940	7338.65	392.57S	584.98E	10.00	-535.51	7.0in Intermediate Casing
7800.00	90.23	269.440	7343.92	393.89S	485.23E	==>	-436.29	
7900.00	90.23	269.440	7343.52	394.87S	385.24E	==>	-336.85	
8000.00	90.23	269.440	7343.12	395.85S	285.24E	==>	-237.42	
8100.00	90.23	269.440	7342.72	396.83S	185.25E	==>	-137.98	
8200.00	90.23	269.440	7342.32	397.81S	85.25E	==>	-38.55	
8300.00	90.23	269.440	7341.91	398.79S	14.74W	==>	60.88	
8400.00	90.23	269.440	7341.51	399.77S	114.74W	==>	160.32	
8500.00	90.23	269.440	7341.11	400.74S	214.73W	==>	259.75	
8600.00	90.23	269.440	7340.71	401.72S	314.72W	==>	359.18	
8700.00	90.23	269.440	7340.31	402.70S	414.72W	==>	458.62	
8800.00	90.23	269.440	7339.91	403.68S	514.71W	==>	558.05	
8900.00	90.23	269.440	7339.50	404.66S	614.71W	==>	657.48	
9000.00	90.23	269.440	7339.10	405.64S	714.70W	==>	756.92	
9100.00	90.23	269.440	7338.70	406.62S	814.70W	==>	856.35	
9200.00	90.23	269.440	7338.30	407.60S	914.69W	==>	955.78	
9300.00	90.23	269.440	7337.90	408.58S	1014.69W	==>	1055.22	
9400.00	90.23	269.440	7337.50	409.56S	1114.68W	==>	1154.65	

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Vertical Section is from 0.00N 0.00E on azimuth 263.340 degrees
Bottom hole distance is 3752.80 Feet on azimuth 263.34 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 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
9500.00	90.23	269.440	7337.09	410.54S	1214.67W	==>	1254.08	
9600.00	90.23	269.440	7336.69	411.52S	1314.67W	==>	1353.52	
9700.00	90.23	269.440	7336.29	412.50S	1414.66W	==>	1452.95	
9800.00	90.23	269.440	7335.89	413.47S	1514.66W	==>	1552.38	
9900.00	90.23	269.440	7335.49	414.45S	1614.65W	==>	1651.82	
10000.00	90.23	269.440	7335.09	415.43S	1714.65W	==>	1751.25	
10100.00	90.23	269.440	7334.68	416.41S	1814.64W	==>	1850.68	
10200.00	90.23	269.440	7334.28	417.39S	1914.64W	==>	1950.12	
10300.00	90.23	269.440	7333.88	418.37S	2014.63W	==>	2049.55	
10400.00	90.23	269.440	7333.48	419.35S	2114.62W	==>	2148.99	
10500.00	90.23	269.440	7333.08	420.33S	2214.62W	==>	2248.42	
10600.00	90.23	269.440	7332.68	421.31S	2314.61W	==>	2347.85	
10700.00	90.23	269.440	7332.27	422.29S	2414.61W	==>	2447.29	
10800.00	90.23	269.440	7331.87	423.27S	2514.60W	==>	2546.72	
10900.00	90.23	269.440	7331.47	424.25S	2614.60W	==>	2646.15	
11000.00	90.23	269.440	7331.07	425.23S	2714.59W	==>	2745.59	
11100.00	90.23	269.440	7330.67	426.21S	2814.58W	==>	2845.02	
11200.00	90.23	269.440	7330.27	427.18S	2914.58W	==>	2944.45	
11300.00	90.23	269.440	7329.86	428.16S	3014.57W	==>	3043.89	
11400.00	90.23	269.440	7329.46	429.14S	3114.57W	==>	3143.32	
11500.00	90.23	269.440	7329.06	430.12S	3214.56W	==>	3242.75	
11600.00	90.23	269.440	7328.66	431.10S	3314.56W	==>	3342.19	
11700.00	90.23	269.440	7328.26	432.08S	3414.55W	==>	3441.62	
11800.00	90.23	269.440	7327.86	433.06S	3514.55W	==>	3541.05	
11900.00	90.23	269.440	7327.45	434.04S	3614.54W	==>	3640.49	
12000.00	90.23	269.440	7327.05	435.02S	3714.53W	==>	3739.92	
12012.96	90.23	269.440	7327.00	435.15S	3727.49W	==>	3752.80	4 1/2in Production Liner

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Vertical Section is from 0.00N 0.00E on azimuth 263.340 degrees
Bottom hole distance is 3752.80 Feet on azimuth 263.34 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 7-Oct-2015



SYS DRILL
Well Design Combined Report
Wellbore: LITZENBERGER 11 (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	7658.00	7331.42	391.71S	626.33E
6 1/8	7658.00	7331.42	391.71S	626.33E	12012.96	7327.00	435.15S	3727.49W

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	7658.00	7331.42	391.71S	626.33E
4 1/2in Production Liner	6880.00	6773.67	353.05S	1079.37E	12012.96	7327.00	435.15S	3727.49W

Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
LITZENBERGER 11 LP	393.70S	627.49E	7341.00	40.24124000	-105.01922000	1331089.39	3134215.12
LITZENBERGER 11 BH	435.15S	3727.49W	7327.00	40.24119000	-105.03482000	1331047.95	3129860.34

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
391539	Planned	12012.96	7327.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating	

Notes



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 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
LITZENBERGER 11 (PWB)	19-Jun-2015	6-Oct-2015

Well		
Name	Government ID	Last Revised
LITZENBERGER 11		16-Jun-2015

Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
LITZENBERGER 11	40.24233000	-105.02146000	1331483.0771	3133587.6646	0.08S	13.96W

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 10	13.96	500.72	7795.31	-30.74	12012.96	0.89	12012.96	
LITZENBERGER 12	13.96	550.00	7791.24	-38.48	12012.96	0.85	12012.96	
LITZENBERGER 13	18.97	920.24	7825.00	12.94	927.23	1.56	12012.96	
LITZENBERGER 14	24.22	764.02	12012.96	19.10	779.59	1.87	12012.96	
LITZENBERGER 15	29.07	550.00	550.00	25.05	631.96	2.48	12012.96	
LITZENBERGER 9	30.71	550.00	7800.59	26.88	566.34	1.66	12012.96	
LITZENBERGER 16	39.92	550.00	12012.96	36.04	582.74	3.44	12012.96	
LITZENBERGER 8	44.67	550.00	12012.96	40.83	566.34	1.89	12012.96	
LITZENBERGER 17	51.43	550.00	12012.96	47.58	582.74	3.76	12012.96	
LITZENBERGER 7	58.63	550.00	7800.64	54.79	566.34	2.60	12012.96	
LITZENBERGER 18	63.93	550.00	550.00	60.09	566.34	4.41	12012.96	
LITZENBERGER 6	75.38	550.00	550.00	71.54	566.34	3.59	12012.96	
LITZENBERGER 19	79.57	550.00	550.00	75.73	566.34	5.40	12012.96	
Kintz #2	83.15	1442.29	9216.99	73.10	1452.17	8.16	1484.97	
LITZENBERGER 5	89.33	550.00	12012.96	85.50	566.34	3.80	12012.96	
LITZENBERGER 20	92.90	550.00	12012.96	89.06	566.34	5.63	12012.96	
LITZENBERGER 4	103.29	550.00	550.00	99.46	566.34	4.55	12012.96	
LITZENBERGER 21	106.39	550.00	550.00	102.55	566.34	6.35	12012.96	
LITZENBERGER 3	120.04	550.00	550.00	116.21	566.34	5.54	12012.96	
LITZENBERGER 22	122.72	550.00	550.00	118.88	566.34	7.02	12012.96	
LITZENBERGER 2	133.97	566.34	12012.96	130.00	599.15	5.65	12012.96	
LITZENBERGER 23	136.35	566.34	12012.96	132.42	582.74	7.40	12012.96	

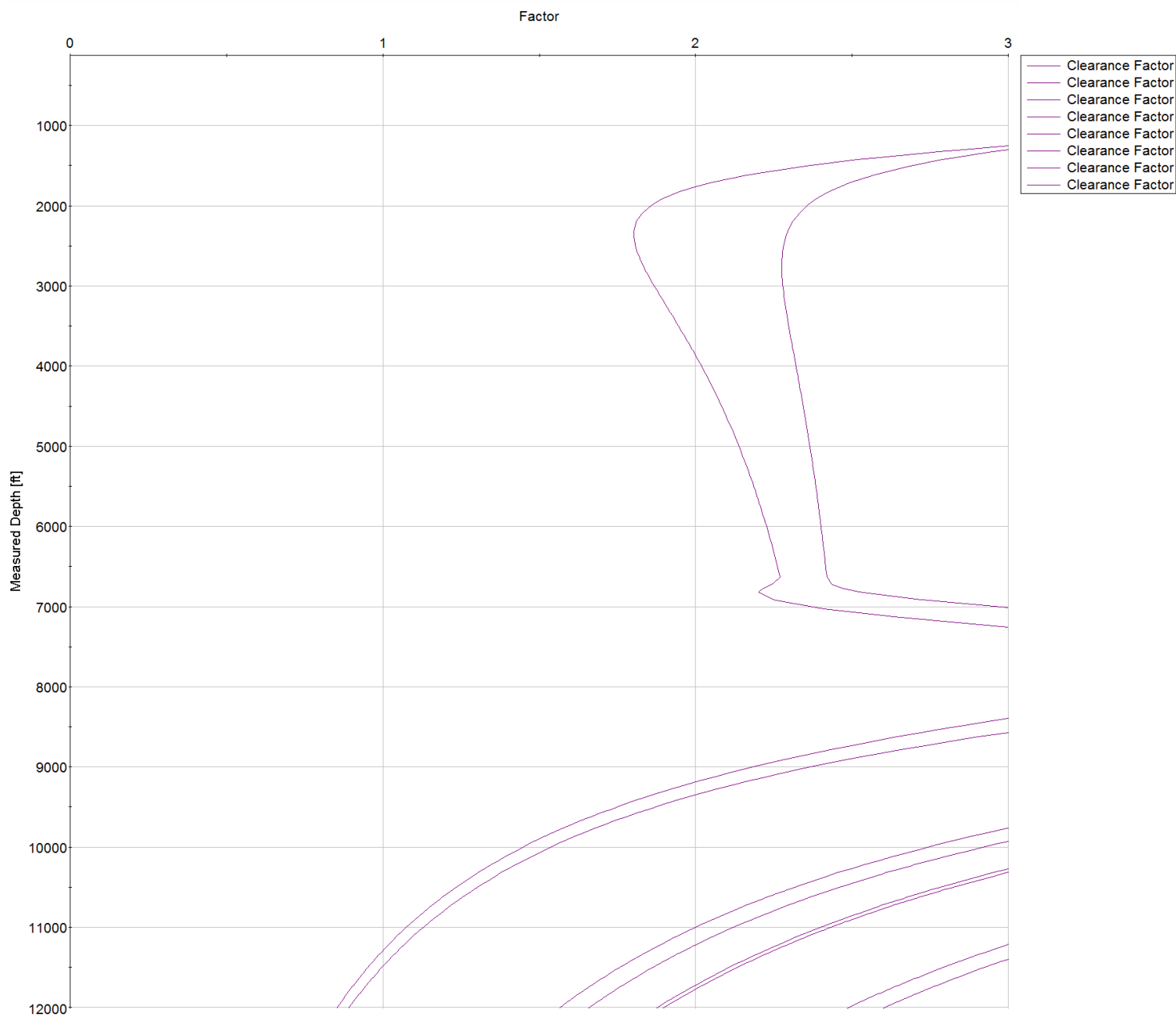
All data is in Feet unless otherwise stated
Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5106.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 263.340 degrees
Prepared by Integrated Petroleum Technologies, Inc.
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SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 11 (PWB)



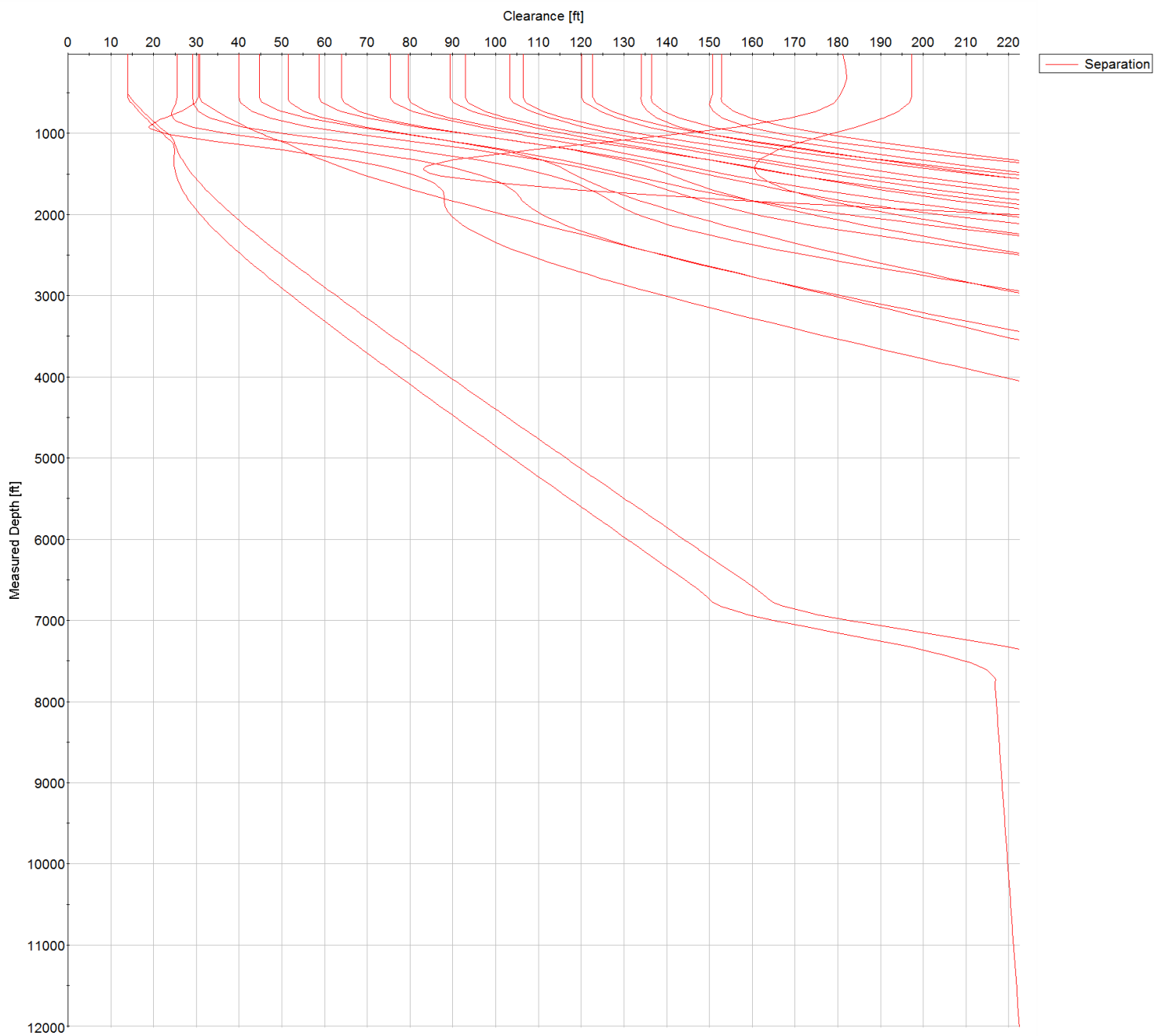
Clearance Summary							
Offset WellName	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
LITZENBERGER 1	150.05	631.96	631.96	145.68	664.76	6.51	12012.96
LITZENBERGER 24	152.74	566.34	566.34	148.78	599.15	8.01	12012.96
Kintz #1	160.58	1427.86	8121.71	144.39	1468.57	8.16	8194.29
Billings #2A-18H	3044.23	10252.05	10252.05	2650.38	10277.62	7.73	10277.62
Billings #2B-18H	3385.48	12012.96	12012.96	2993.31	11999.05	8.62	10499.20



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 5106.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 263.340 degrees
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 7-Oct-2015



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