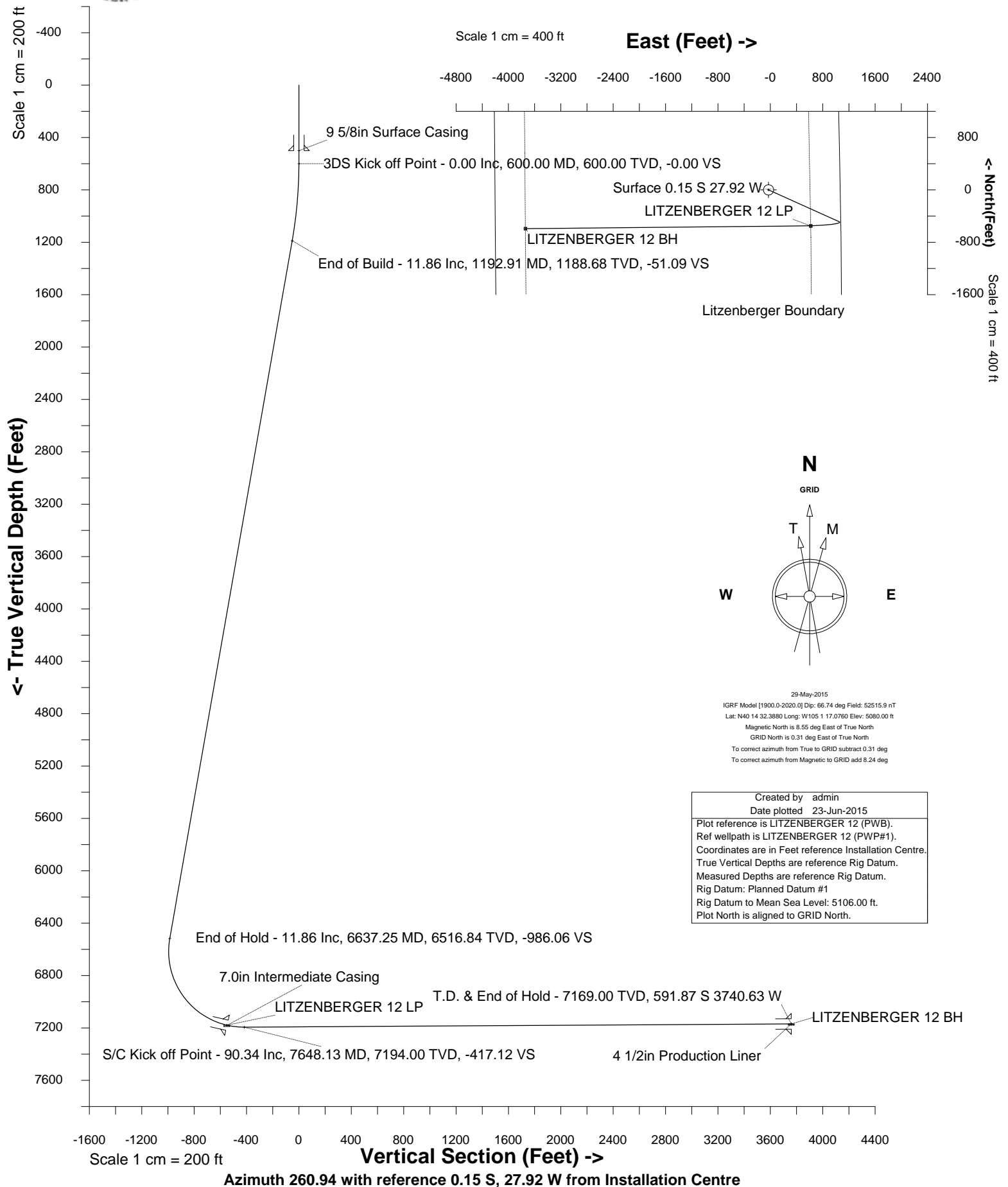




Cub Creek Energy, LLC

Location	Weld County, CO	Slot	LITZENBERGER 12
Field	WATTENBERG	Well	LITZENBERGER 12
Installation	Litzenberger Pad - Finalized	Wellbore	LITZENBERGER 12 (PWB)





SYS DRILL
Well Design Combined Report
Wellbore: LITZENBERGER 12 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
LITZENBERGER 12	40.24233000	-105.02151000	1331483.0017	3133573.7069	0.15S	27.92W	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	1331483.00	3133573.71
600.00	0.00	114.250	600.00	0.00N	0.00E	==>	0.00	1331483.00	3133573.71
7648.13	90.34	269.440	7194.00	550.26S	510.08E	10.00	-417.12	1330932.77	3134083.77
11871.20	90.34	269.440	7169.00	591.72S	3712.71W	==>	3759.57	1330891.31	3129861.17

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	114.250	600.00	0.00N	0.00E	==>	0.00	
700.00	2.00	114.250	699.98	0.72S	1.59E	2.00	-1.46	
800.00	4.00	114.250	799.84	2.87S	6.36E	2.00	-5.83	
900.00	6.00	114.250	899.45	6.45S	14.31E	2.00	-13.12	
1000.00	8.00	114.250	998.70	11.45S	25.42E	2.00	-23.30	
1100.00	10.00	114.250	1097.47	17.88S	39.68E	2.00	-36.37	
1200.00	11.86	114.250	1195.62	25.71S	57.07E	==>	-52.31	
1300.00	11.86	114.250	1293.49	34.15S	75.80E	==>	-69.48	
1400.00	11.86	114.250	1391.36	42.59S	94.54E	==>	-86.66	
1500.00	11.86	114.250	1489.22	51.03S	113.27E	==>	-103.83	
1600.00	11.86	114.250	1587.09	59.48S	132.01E	==>	-121.00	
1700.00	11.86	114.250	1684.95	67.92S	150.75E	==>	-138.18	
1800.00	11.86	114.250	1782.82	76.36S	169.48E	==>	-155.35	
1900.00	11.86	114.250	1880.69	84.80S	188.22E	==>	-172.52	
2000.00	11.86	114.250	1978.55	93.24S	206.95E	==>	-189.70	
2100.00	11.86	114.250	2076.42	101.68S	225.69E	==>	-206.87	
2200.00	11.86	114.250	2174.28	110.12S	244.42E	==>	-224.04	
2300.00	11.86	114.250	2272.15	118.56S	263.16E	==>	-241.22	
2400.00	11.86	114.250	2370.02	127.00S	281.89E	==>	-258.39	
2500.00	11.86	114.250	2467.88	135.44S	300.63E	==>	-275.56	
2600.00	11.86	114.250	2565.75	143.88S	319.36E	==>	-292.74	
2700.00	11.86	114.250	2663.61	152.33S	338.10E	==>	-309.91	
2800.00	11.86	114.250	2761.48	160.77S	356.83E	==>	-327.08	
2900.00	11.86	114.250	2859.35	169.21S	375.57E	==>	-344.26	
3000.00	11.86	114.250	2957.21	177.65S	394.30E	==>	-361.43	
3100.00	11.86	114.250	3055.08	186.09S	413.04E	==>	-378.60	
3200.00	11.86	114.250	3152.94	194.53S	431.77E	==>	-395.78	
3300.00	11.86	114.250	3250.81	202.97S	450.51E	==>	-412.95	

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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 260.940 degrees
Bottom hole distance is 3759.57 Feet on azimuth 260.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 23-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 12 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3400.00	11.86	114.250	3348.68	211.41S	469.24E	==>	-430.12	
3500.00	11.86	114.250	3446.54	219.85S	487.98E	==>	-447.29	
3600.00	11.86	114.250	3544.41	228.29S	506.71E	==>	-464.47	
3700.00	11.86	114.250	3642.27	236.73S	525.45E	==>	-481.64	
3800.00	11.86	114.250	3740.14	245.17S	544.18E	==>	-498.81	
3900.00	11.86	114.250	3838.01	253.62S	562.92E	==>	-515.99	
4000.00	11.86	114.250	3935.87	262.06S	581.66E	==>	-533.16	
4100.00	11.86	114.250	4033.74	270.50S	600.39E	==>	-550.33	
4200.00	11.86	114.250	4131.60	278.94S	619.13E	==>	-567.51	
4300.00	11.86	114.250	4229.47	287.38S	637.86E	==>	-584.68	
4400.00	11.86	114.250	4327.34	295.82S	656.60E	==>	-601.85	
4500.00	11.86	114.250	4425.20	304.26S	675.33E	==>	-619.03	
4600.00	11.86	114.250	4523.07	312.70S	694.07E	==>	-636.20	
4700.00	11.86	114.250	4620.93	321.14S	712.80E	==>	-653.37	
4800.00	11.86	114.250	4718.80	329.58S	731.54E	==>	-670.55	
4900.00	11.86	114.250	4816.66	338.02S	750.27E	==>	-687.72	
5000.00	11.86	114.250	4914.53	346.47S	769.01E	==>	-704.89	
5100.00	11.86	114.250	5012.40	354.91S	787.74E	==>	-722.07	
5200.00	11.86	114.250	5110.26	363.35S	806.48E	==>	-739.24	
5300.00	11.86	114.250	5208.13	371.79S	825.21E	==>	-756.41	
5400.00	11.86	114.250	5305.99	380.23S	843.95E	==>	-773.59	
5500.00	11.86	114.250	5403.86	388.67S	862.68E	==>	-790.76	
5600.00	11.86	114.250	5501.73	397.11S	881.42E	==>	-807.93	
5700.00	11.86	114.250	5599.59	405.55S	900.15E	==>	-825.10	
5800.00	11.86	114.250	5697.46	413.99S	918.89E	==>	-842.28	
5900.00	11.86	114.250	5795.32	422.43S	937.62E	==>	-859.45	
6000.00	11.86	114.250	5893.19	430.87S	956.36E	==>	-876.62	
6100.00	11.86	114.250	5991.06	439.32S	975.09E	==>	-893.80	
6200.00	11.86	114.250	6088.92	447.76S	993.83E	==>	-910.97	
6300.00	11.86	114.250	6186.79	456.20S	1012.56E	==>	-928.14	
6400.00	11.86	114.250	6284.65	464.64S	1031.30E	==>	-945.32	
6500.00	11.86	114.250	6382.52	473.08S	1050.04E	==>	-962.49	
6600.00	11.86	114.250	6480.39	481.52S	1068.77E	==>	-979.66	
6700.00	6.74	137.740	6578.77	490.04S	1084.11E	10.00	-993.47	
6800.00	7.48	227.170	6678.25	498.83S	1083.28E	10.00	-991.27	
6900.00	16.31	251.860	6776.06	507.64S	1065.12E	10.00	-971.95	
7000.00	25.99	258.980	6869.23	516.23S	1030.19E	10.00	-936.10	
7100.00	35.84	262.390	6954.93	524.31S	979.54E	10.00	-884.81	
7200.00	45.75	264.480	7030.55	531.65S	914.71E	10.00	-819.63	
7300.00	55.68	265.950	7093.79	538.03S	837.68E	10.00	-742.56	
7400.00	65.63	267.120	7142.74	543.25S	750.78E	10.00	-655.92	7.0in Intermediate Casing
7500.00	75.59	268.110	7175.90	547.15S	656.65E	10.00	-562.35	
7514.00	76.98	268.240	7179.22	547.58S	643.06E	10.00	-548.86	
7600.00	85.55	269.010	7192.27	549.61S	558.16E	10.00	-464.70	
7648.13	90.34	269.440	7194.00	550.26S	510.08E	10.00	-417.12	
7700.00	90.34	269.440	7193.69	550.77S	458.21E	==>	-365.82	
7800.00	90.34	269.440	7193.10	551.75S	358.22E	==>	-266.92	
7900.00	90.34	269.440	7192.51	552.73S	258.23E	==>	-168.01	
8000.00	90.34	269.440	7191.92	553.71S	158.23E	==>	-69.11	
8100.00	90.34	269.440	7191.32	554.69S	58.24E	==>	29.79	
8200.00	90.34	269.440	7190.73	555.68S	41.75W	==>	128.69	
8300.00	90.34	269.440	7190.14	556.66S	141.75W	==>	227.59	
8400.00	90.34	269.440	7189.55	557.64S	241.74W	==>	326.49	
8500.00	90.34	269.440	7188.96	558.62S	341.73W	==>	425.40	
8600.00	90.34	269.440	7188.37	559.60S	441.73W	==>	524.30	
8700.00	90.34	269.440	7187.77	560.58S	541.72W	==>	623.20	
8800.00	90.34	269.440	7187.18	561.57S	641.71W	==>	722.10	
8900.00	90.34	269.440	7186.59	562.55S	741.71W	==>	821.00	
9000.00	90.34	269.440	7186.00	563.53S	841.70W	==>	919.90	
9100.00	90.34	269.440	7185.41	564.51S	941.69W	==>	1018.81	

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Vertical Section is from 0.00N 0.00E on azimuth 260.940 degrees
Bottom hole distance is 3759.57 Feet on azimuth 260.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 23-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 12 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
9200.00	90.34	269.440	7184.81	565.49S	1041.69W	==>	1117.71	
9300.00	90.34	269.440	7184.22	566.48S	1141.68W	==>	1216.61	
9400.00	90.34	269.440	7183.63	567.46S	1241.68W	==>	1315.51	
9500.00	90.34	269.440	7183.04	568.44S	1341.67W	==>	1414.41	
9600.00	90.34	269.440	7182.45	569.42S	1441.66W	==>	1513.31	
9700.00	90.34	269.440	7181.85	570.40S	1541.66W	==>	1612.22	
9800.00	90.34	269.440	7181.26	571.38S	1641.65W	==>	1711.12	
9900.00	90.34	269.440	7180.67	572.37S	1741.64W	==>	1810.02	
10000.00	90.34	269.440	7180.08	573.35S	1841.64W	==>	1908.92	
10100.00	90.34	269.440	7179.49	574.33S	1941.63W	==>	2007.82	
10200.00	90.34	269.440	7178.89	575.31S	2041.62W	==>	2106.72	
10300.00	90.34	269.440	7178.30	576.29S	2141.62W	==>	2205.63	
10400.00	90.34	269.440	7177.71	577.27S	2241.61W	==>	2304.53	
10500.00	90.34	269.440	7177.12	578.26S	2341.60W	==>	2403.43	
10600.00	90.34	269.440	7176.53	579.24S	2441.60W	==>	2502.33	
10700.00	90.34	269.440	7175.93	580.22S	2541.59W	==>	2601.23	
10800.00	90.34	269.440	7175.34	581.20S	2641.58W	==>	2700.14	
10900.00	90.34	269.440	7174.75	582.18S	2741.58W	==>	2799.04	
11000.00	90.34	269.440	7174.16	583.16S	2841.57W	==>	2897.94	
11100.00	90.34	269.440	7173.57	584.15S	2941.56W	==>	2996.84	
11200.00	90.34	269.440	7172.97	585.13S	3041.56W	==>	3095.74	
11300.00	90.34	269.440	7172.38	586.11S	3141.55W	==>	3194.64	
11400.00	90.34	269.440	7171.79	587.09S	3241.54W	==>	3293.55	
11500.00	90.34	269.440	7171.20	588.07S	3341.54W	==>	3392.45	
11600.00	90.34	269.440	7170.61	589.06S	3441.53W	==>	3491.35	
11700.00	90.34	269.440	7170.01	590.04S	3541.52W	==>	3590.25	
11800.00	90.34	269.440	7169.42	591.02S	3641.52W	==>	3689.15	
11871.20	90.34	269.440	7169.00	591.72S	3712.71W	==>	3759.57	4 1/2in Production Liner

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Bottom hole distance is 3759.57 Feet on azimuth 260.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
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Date Printed: 23-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 12 (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	7514.00	7179.22	547.58S	643.06E
6 1/8	7514.00	7179.22	547.58S	643.06E	11871.20	7169.00	591.72S	3712.71W

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	7514.00	7179.22	547.58S	643.06E
4 1/2in Production Liner	6746.00	6624.54	494.06S	1085.90E	11871.20	7169.00	591.72S	3712.71W

Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
LITZENBERGER 12 LP	550.26S	645.09E	7179.00	40.24081000	-105.01921000	1330932.77	3134218.76
LITZENBERGER 12 BH	591.72S	3712.71W	7169.00	40.24076000	-105.03482000	1330891.31	3129861.17

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
391543	Planned	11871.20	7169.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating	

Notes

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Bottom hole distance is 3759.57 Feet on azimuth 260.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 23-Jun-2015



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 12 (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 12 (PWB)	19-Jun-2015	19-Jun-2015

Well		
Name	Government ID	Last Revised
LITZENBERGER 12		16-Jun-2015

Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
LITZENBERGER 12	40.24233000	-105.02151000	1331483.0017	3133573.7069	0.15S	27.92W

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

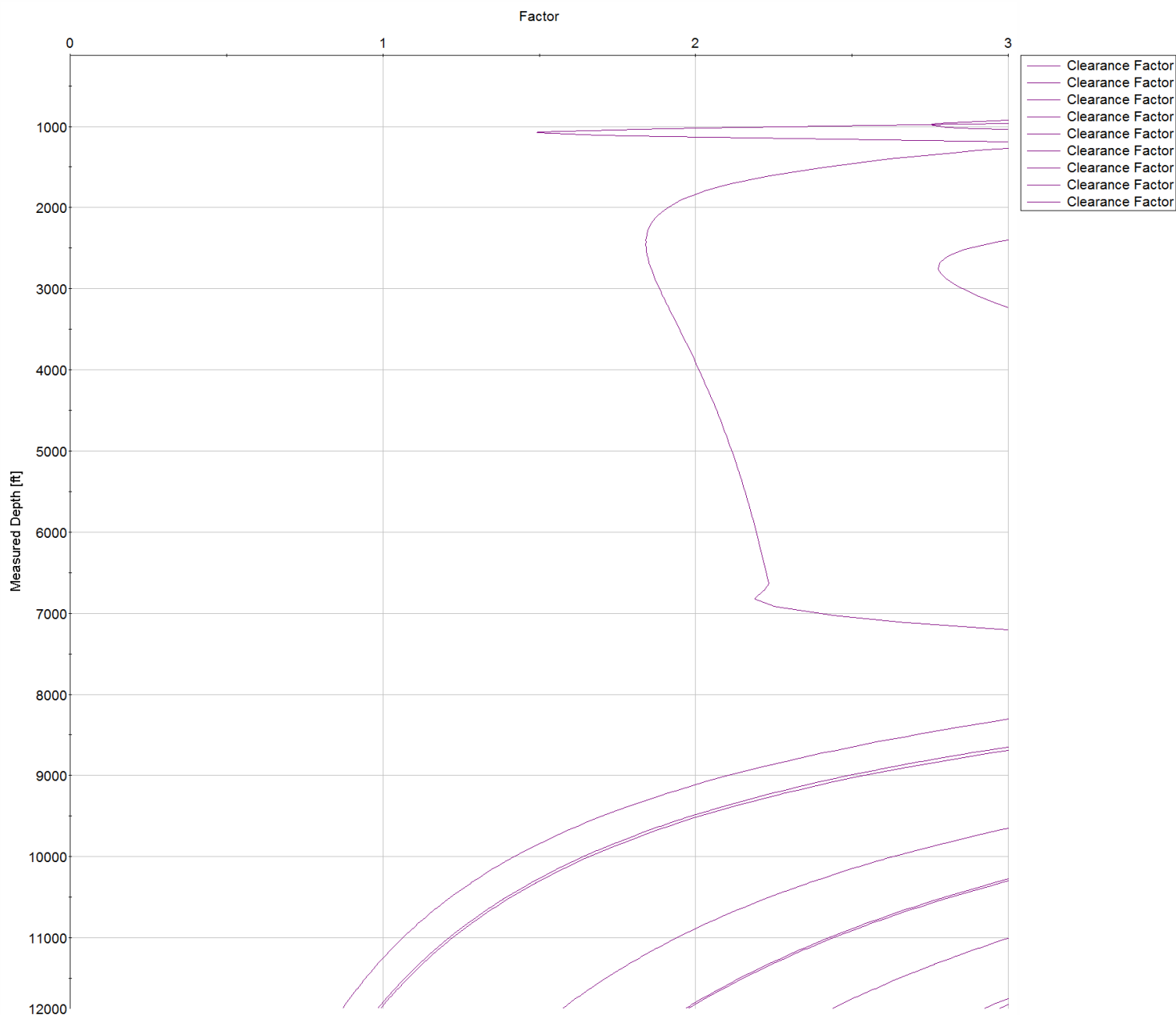
Clearance Summary							
Offset WellName	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
LITZENBERGER 13	10.43	1070.33	11871.20	-5.84	11871.20	0.98	11871.20
LITZENBERGER 11	13.96	550.00	7648.13	-33.06	11868.83	0.87	11868.83
LITZENBERGER 9	16.75	600.00	11871.20	12.63	615.55	1.98	11871.20
LITZENBERGER 14	17.39	965.51	7648.13	11.10	976.44	1.57	11871.20
LITZENBERGER 15	23.19	846.48	11871.20	17.61	861.61	1.97	11871.20
LITZENBERGER 10	27.92	500.72	500.72	-2.61	11871.20	0.99	11871.20
LITZENBERGER 16	30.51	600.00	11871.20	26.15	681.17	2.92	11871.20
LITZENBERGER 8	30.71	600.00	600.00	26.59	615.55	2.44	11871.20
LITZENBERGER 17	39.92	600.00	7648.13	35.74	648.36	3.33	11871.20
LITZENBERGER 7	44.67	600.00	600.00	40.55	615.55	2.97	11871.20
LITZENBERGER 18	51.43	600.00	11871.20	47.28	631.96	3.93	11871.20
LITZENBERGER 6	61.42	600.00	600.00	57.30	615.55	3.98	11871.20
LITZENBERGER 19	66.50	600.00	600.00	62.37	631.96	4.93	11871.20
LITZENBERGER 5	75.38	600.00	11871.20	71.25	615.55	4.29	11871.20
LITZENBERGER 20	79.57	600.00	11871.20	75.44	625.00	5.20	11871.20
Kintz #2	87.36	1501.38	9080.12	76.89	1501.38	7.53	9358.99
LITZENBERGER 4	89.33	600.00	600.00	85.21	615.55	4.96	11871.20
LITZENBERGER 21	92.90	600.00	11871.20	88.77	625.00	5.89	11871.20
LITZENBERGER 3	106.08	600.00	600.00	101.96	615.55	5.96	11871.20
LITZENBERGER 22	109.11	600.00	600.00	104.98	625.00	6.92	11871.20
LITZENBERGER 2	118.98	713.98	11871.20	114.08	763.19	6.14	11871.20



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 12 (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	122.56	631.96	11871.20	118.25	648.36	7.01	11871.20
LITZENBERGER 1	134.28	730.38	11836.02	129.32	763.19	6.93	11871.20
LITZENBERGER 24	138.69	631.96	11871.20	134.36	664.76	7.84	11871.20
Kintz #1	177.98	1425.65	7981.04	161.89	1468.57	10.17	1780.25
Billings #2A-18H	2882.74	10109.05	10109.05	2488.41	10129.99	7.31	10129.99
Billings #2B-18H	3227.21	11871.20	11871.20	2835.05	11835.94	8.22	10107.28



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 260.940 degrees
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 23-Jun-2015



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