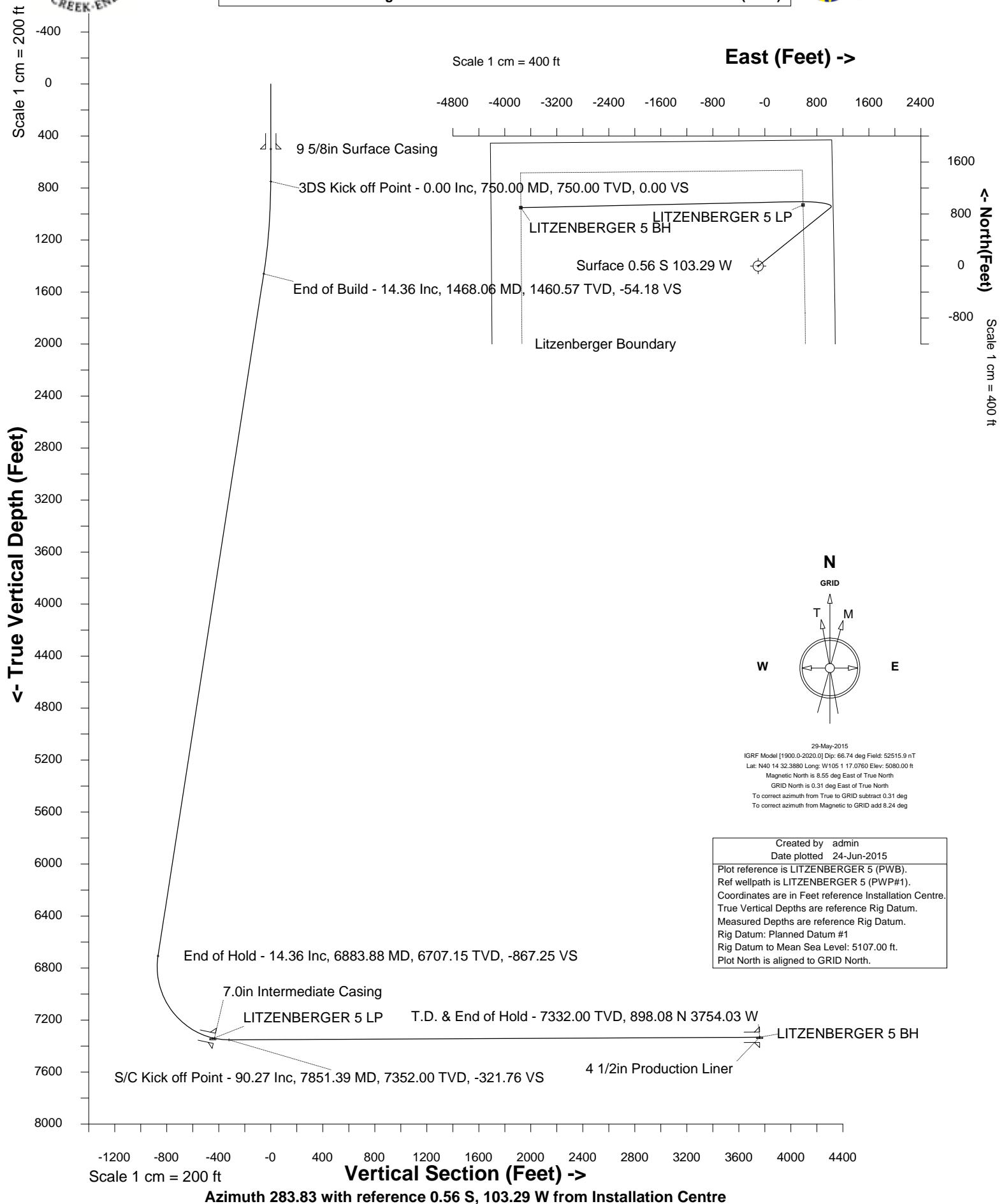




Cub Creek Energy, LLC

Location	Weld County, CO	Slot	LITZENBERGER 5
Field	WATTENBERG	Well	LITZENBERGER 5
Installation	Litzenberger Pad - Finalized	Wellbore	LITZENBERGER 5 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 5 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
LITZENBERGER 5	40.24233000	-105.02178000	1331482.5951	3133498.3353	0.56S	103.29W	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	1331482.60	3133498.34
12078.20	90.27	268.760	7332.00	898.63N	3650.73W	==>	3759.71	1332381.19	3129847.77

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	1.00	51.080	800.00	0.27N	0.34E	2.00	-0.26	
900.00	3.00	51.080	899.93	2.47N	3.05E	2.00	-2.38	
1000.00	5.00	51.080	999.68	6.85N	8.48E	2.00	-6.60	
1100.00	7.00	51.080	1099.13	13.42N	16.61E	2.00	-12.92	
1200.00	9.00	51.080	1198.15	22.16N	27.44E	2.00	-21.35	
1300.00	11.00	51.080	1296.63	33.07N	40.95E	2.00	-31.86	
1400.00	13.00	51.080	1394.44	46.13N	57.12E	2.00	-44.44	
1500.00	14.36	51.080	1491.51	61.22N	75.81E	==>	-58.98	
1600.00	14.36	51.080	1588.38	76.81N	95.11E	==>	-73.99	
1700.00	14.36	51.080	1685.26	92.39N	114.40E	==>	-89.00	
1800.00	14.36	51.080	1782.13	107.97N	133.70E	==>	-104.02	
1900.00	14.36	51.080	1879.01	123.56N	153.00E	==>	-119.03	
2000.00	14.36	51.080	1975.88	139.14N	172.29E	==>	-134.04	
2100.00	14.36	51.080	2072.76	154.72N	191.59E	==>	-149.06	
2200.00	14.36	51.080	2169.63	170.31N	210.89E	==>	-164.07	
2300.00	14.36	51.080	2266.51	185.89N	230.18E	==>	-179.08	
2400.00	14.36	51.080	2363.38	201.47N	249.48E	==>	-194.09	
2500.00	14.36	51.080	2460.26	217.06N	268.78E	==>	-209.11	
2600.00	14.36	51.080	2557.13	232.64N	288.07E	==>	-224.12	
2700.00	14.36	51.080	2654.01	248.22N	307.37E	==>	-239.13	
2800.00	14.36	51.080	2750.88	263.81N	326.67E	==>	-254.14	
2900.00	14.36	51.080	2847.76	279.39N	345.96E	==>	-269.16	
3000.00	14.36	51.080	2944.63	294.97N	365.26E	==>	-284.17	
3100.00	14.36	51.080	3041.51	310.56N	384.56E	==>	-299.18	
3200.00	14.36	51.080	3138.38	326.14N	403.85E	==>	-314.20	
3300.00	14.36	51.080	3235.26	341.73N	423.15E	==>	-329.21	
3400.00	14.36	51.080	3332.13	357.31N	442.45E	==>	-344.22	
3500.00	14.36	51.080	3429.01	372.89N	461.74E	==>	-359.23	

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Vertical Section is from 0.00N 0.00E on azimuth 283.830 degrees
Bottom hole distance is 3759.71 Feet on azimuth 283.83 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 19-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 5 (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	14.36	51.080	3525.88	388.48N	481.04E	==>	-374.25	
3700.00	14.36	51.080	3622.76	404.06N	500.34E	==>	-389.26	
3800.00	14.36	51.080	3719.63	419.64N	519.63E	==>	-404.27	
3900.00	14.36	51.080	3816.51	435.23N	538.93E	==>	-419.28	
4000.00	14.36	51.080	3913.38	450.81N	558.23E	==>	-434.30	
4100.00	14.36	51.080	4010.26	466.39N	577.53E	==>	-449.31	
4200.00	14.36	51.080	4107.13	481.98N	596.82E	==>	-464.32	
4300.00	14.36	51.080	4204.01	497.56N	616.12E	==>	-479.34	
4400.00	14.36	51.080	4300.89	513.14N	635.42E	==>	-494.35	
4500.00	14.36	51.080	4397.76	528.73N	654.71E	==>	-509.36	
4600.00	14.36	51.080	4494.64	544.31N	674.01E	==>	-524.37	
4700.00	14.36	51.080	4591.51	559.89N	693.31E	==>	-539.39	
4800.00	14.36	51.080	4688.39	575.48N	712.60E	==>	-554.40	
4900.00	14.36	51.080	4785.26	591.06N	731.90E	==>	-569.41	
5000.00	14.36	51.080	4882.14	606.64N	751.20E	==>	-584.42	
5100.00	14.36	51.080	4979.01	622.23N	770.49E	==>	-599.44	
5200.00	14.36	51.080	5075.89	637.81N	789.79E	==>	-614.45	
5300.00	14.36	51.080	5172.76	653.40N	809.09E	==>	-629.46	
5400.00	14.36	51.080	5269.64	668.98N	828.38E	==>	-644.48	
5500.00	14.36	51.080	5366.51	684.56N	847.68E	==>	-659.49	
5600.00	14.36	51.080	5463.39	700.15N	866.98E	==>	-674.50	
5700.00	14.36	51.080	5560.26	715.73N	886.27E	==>	-689.51	
5800.00	14.36	51.080	5657.14	731.31N	905.57E	==>	-704.53	
5900.00	14.36	51.080	5754.01	746.90N	924.87E	==>	-719.54	
6000.00	14.36	51.080	5850.89	762.48N	944.16E	==>	-734.55	
6100.00	14.36	51.080	5947.76	778.06N	963.46E	==>	-749.56	
6200.00	14.36	51.080	6044.64	793.65N	982.76E	==>	-764.58	
6300.00	14.36	51.080	6141.51	809.23N	1002.05E	==>	-779.59	
6400.00	14.36	51.080	6238.39	824.81N	1021.35E	==>	-794.60	
6500.00	14.36	51.080	6335.26	840.40N	1040.65E	==>	-809.62	
6600.00	14.36	51.080	6432.14	855.98N	1059.94E	==>	-824.63	
6700.00	14.36	51.080	6529.01	871.56N	1079.24E	==>	-839.64	
6800.00	14.36	51.080	6625.89	887.15N	1098.54E	==>	-854.65	
6900.00	13.08	46.410	6722.81	902.73N	1117.60E	10.50	-869.44	
7000.00	8.95	353.140	6821.18	918.30N	1124.89E	10.50	-872.79	
7100.00	14.41	306.370	6919.27	933.44N	1113.91E	10.50	-858.51	
7200.00	23.54	289.880	7013.80	947.65N	1085.03E	10.50	-827.07	
7300.00	33.45	282.520	7101.60	960.46N	1039.22E	10.50	-779.53	
7400.00	43.62	278.270	7179.74	971.42N	978.00E	10.50	-717.47	
7500.00	53.89	275.370	7245.59	980.18N	903.44E	10.50	-642.98	
7600.00	64.22	273.140	7296.95	986.45N	818.03E	10.50	-558.54	
7700.00	74.57	271.280	7332.09	990.01N	724.63E	10.50	-467.00	
7735.00	78.20	270.680	7340.33	990.59N	690.63E	10.50	-433.84	7.0in Intermediate Casing
7800.00	84.94	269.600	7349.85	990.74N	626.37E	10.50	-371.41	
7900.00	90.27	268.760	7351.77	988.95N	526.45E	==>	-274.81	
8000.00	90.27	268.760	7351.30	986.79N	426.47E	==>	-178.25	
8100.00	90.27	268.760	7350.82	984.63N	326.50E	==>	-81.69	
8200.00	90.27	268.760	7350.35	982.47N	226.52E	==>	14.87	
8300.00	90.27	268.760	7349.88	980.30N	126.54E	==>	111.43	
8400.00	90.27	268.760	7349.40	978.14N	26.57E	==>	207.99	
8500.00	90.27	268.760	7348.93	975.98N	73.41W	==>	304.56	
8600.00	90.27	268.760	7348.46	973.82N	173.38W	==>	401.12	
8700.00	90.27	268.760	7347.98	971.66N	273.36W	==>	497.68	
8800.00	90.27	268.760	7347.51	969.50N	373.33W	==>	594.24	
8900.00	90.27	268.760	7347.04	967.34N	473.31W	==>	690.80	
9000.00	90.27	268.760	7346.57	965.17N	573.28W	==>	787.36	
9100.00	90.27	268.760	7346.09	963.01N	673.26W	==>	883.92	
9200.00	90.27	268.760	7345.62	960.85N	773.24W	==>	980.48	
9300.00	90.27	268.760	7345.15	958.69N	873.21W	==>	1077.04	
9400.00	90.27	268.760	7344.67	956.53N	973.19W	==>	1173.61	

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Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 19-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: LITZENBERGER 5 (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	90.27	268.760	7344.20	954.37N	1073.16W	==>	1270.17	
9600.00	90.27	268.760	7343.73	952.20N	1173.14W	==>	1366.73	
9700.00	90.27	268.760	7343.25	950.04N	1273.11W	==>	1463.29	
9800.00	90.27	268.760	7342.78	947.88N	1373.09W	==>	1559.85	
9900.00	90.27	268.760	7342.31	945.72N	1473.06W	==>	1656.41	
10000.00	90.27	268.760	7341.83	943.56N	1573.04W	==>	1752.97	
10100.00	90.27	268.760	7341.36	941.40N	1673.01W	==>	1849.53	
10200.00	90.27	268.760	7340.89	939.23N	1772.99W	==>	1946.09	
10300.00	90.27	268.760	7340.41	937.07N	1872.97W	==>	2042.65	
10400.00	90.27	268.760	7339.94	934.91N	1972.94W	==>	2139.22	
10500.00	90.27	268.760	7339.47	932.75N	2072.92W	==>	2235.78	
10600.00	90.27	268.760	7338.99	930.59N	2172.89W	==>	2332.34	
10700.00	90.27	268.760	7338.52	928.43N	2272.87W	==>	2428.90	
10800.00	90.27	268.760	7338.05	926.26N	2372.84W	==>	2525.46	
10900.00	90.27	268.760	7337.57	924.10N	2472.82W	==>	2622.02	
11000.00	90.27	268.760	7337.10	921.94N	2572.79W	==>	2718.58	
11100.00	90.27	268.760	7336.63	919.78N	2672.77W	==>	2815.14	
11200.00	90.27	268.760	7336.16	917.62N	2772.75W	==>	2911.70	
11300.00	90.27	268.760	7335.68	915.46N	2872.72W	==>	3008.27	
11400.00	90.27	268.760	7335.21	913.30N	2972.70W	==>	3104.83	
11500.00	90.27	268.760	7334.74	911.13N	3072.67W	==>	3201.39	
11600.00	90.27	268.760	7334.26	908.97N	3172.65W	==>	3297.95	
11700.00	90.27	268.760	7333.79	906.81N	3272.62W	==>	3394.51	
11800.00	90.27	268.760	7333.32	904.65N	3372.60W	==>	3491.07	
11900.00	90.27	268.760	7332.84	902.49N	3472.57W	==>	3587.63	
12000.00	90.27	268.760	7332.37	900.33N	3572.55W	==>	3684.19	
12078.20	90.27	268.760	7332.00	898.63N	3650.73W	==>	3759.71	4 1/2in Production Liner

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SYSDRILL
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Wellbore: LITZENBERGER 5 (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	7735.00	7340.33	990.59N	690.63E
6 1/8	7735.00	7340.33	990.59N	690.63E	12078.20	7332.00	898.63N	3650.73W

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	7735.00	7340.33	990.59N	690.63E
4 1/2in Production Liner	6992.00	6813.27	917.06N	1124.98E	12078.20	7332.00	898.63N	3650.73W

Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
LITZENBERGER 5 LP	940.00N	690.05E	7342.00	40.24490000	-105.01929000	1332422.55	3134188.35
LITZENBERGER 5 BH	898.63N	3650.73W	7332.00	40.24485000	-105.03484000	1332381.19	3129847.77

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
391528	Planned	12078.20	7332.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating	

Notes

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SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 5 (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 5 (PWB)	19-Jun-2015	19-Jun-2015

Well		
Name	Government ID	Last Revised
LITZENBERGER 5		16-Jun-2015

Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
LITZENBERGER 5	40.24233000	-105.02178000	1331482.5951	3133498.3353	0.56S	103.29W

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 6	11.26	1092.62	12078.20	-8.43	12078.20	0.96	12078.20
LITZENBERGER 4	11.54	1042.06	7858.87	-4.84	12078.20	0.98	12078.20
LITZENBERGER 7	22.01	1127.71	12078.20	14.80	1140.49	1.44	12078.20
LITZENBERGER 20	25.50	750.00	12078.20	20.56	750.00	5.00	796.00
LITZENBERGER 3	27.24	961.87	961.87	20.85	1009.25	1.82	12078.20
LITZENBERGER 21	29.07	700.00	12078.20	24.34	725.00	5.82	796.00
LITZENBERGER 19	29.07	750.00	12078.20	23.87	828.81	5.23	894.42
LITZENBERGER 2	35.88	968.61	968.61	29.43	992.85	1.89	12078.20
LITZENBERGER 8	36.44	1129.27	12078.20	29.17	1156.89	1.90	12078.20
LITZENBERGER 18	39.41	901.29	12078.20	33.58	901.29	6.51	992.85
LITZENBERGER 22	39.92	650.00	12078.20	35.41	697.57	7.94	812.40
LITZENBERGER 17	50.52	889.30	12078.20	44.66	927.23	7.45	12078.20
LITZENBERGER 23	51.43	550.00	12078.20	47.14	697.57	10.11	845.21
LITZENBERGER 1	52.53	910.83	910.83	46.40	943.64	2.76	12078.20
LITZENBERGER 16	58.59	1061.39	12078.20	51.72	1091.27	7.14	12078.20
LITZENBERGER 9	58.63	651.00	12078.20	54.26	651.00	2.36	12078.20
Kintz #1	63.97	2183.17	8197.39	41.30	2190.35	2.81	2206.76
LITZENBERGER 24	66.51	549.93	12078.20	62.22	681.17	12.10	12078.20
LITZENBERGER 15	70.30	1145.02	12078.20	62.93	1156.89	6.24	12078.20
LITZENBERGER 12	75.38	601.00	12078.20	71.26	625.00	4.30	12078.20
LITZENBERGER 14	81.50	1165.37	12078.20	73.95	1189.70	5.66	12078.20

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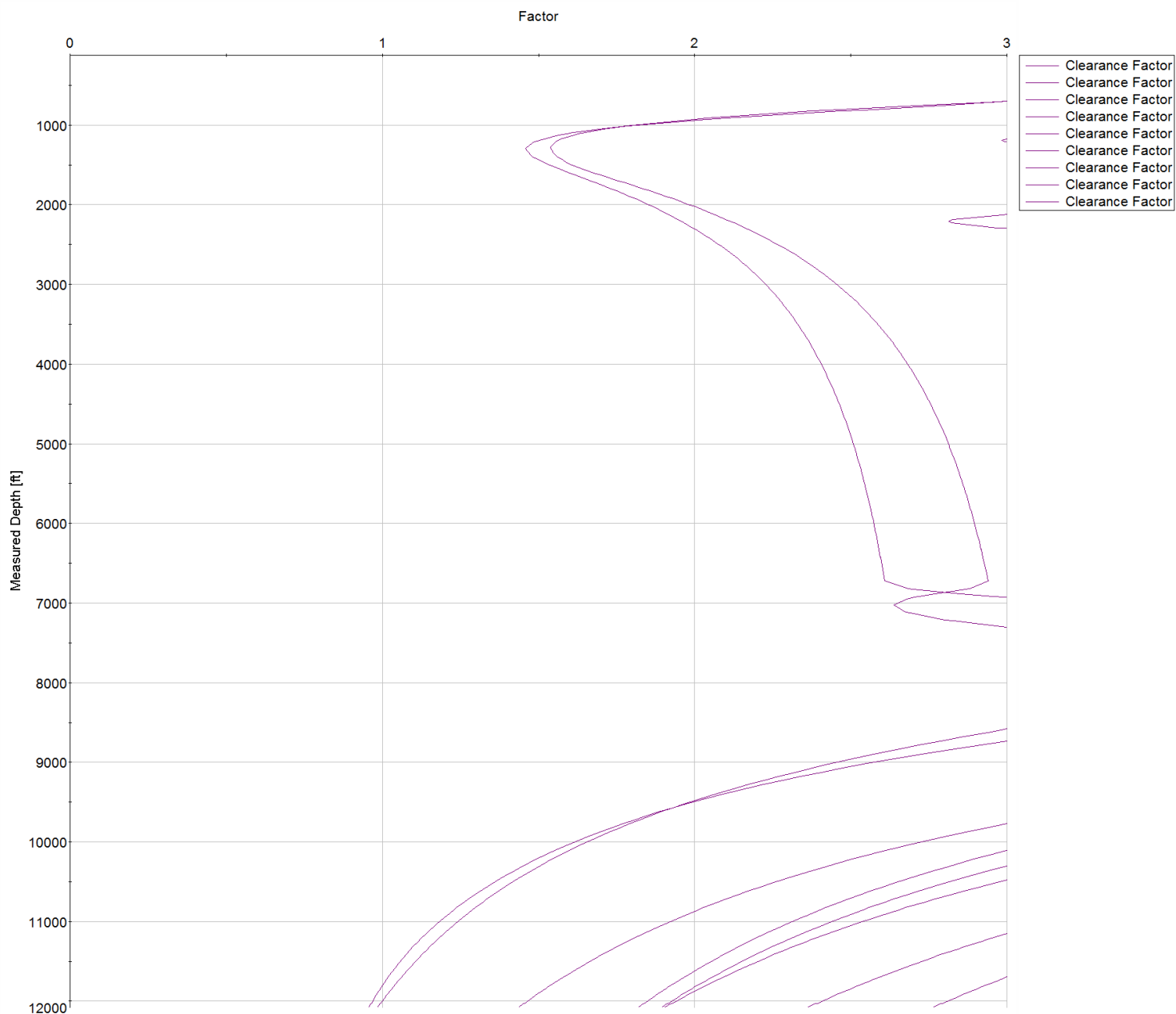
SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 5 (PWB)



Clearance Summary							
Offset WellName	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
Kintz #2	83.10	1600.75	9310.81	71.53	1600.75	7.10	1616.21
LITZENBERGER 11	89.33	551.00	12078.20	85.56	566.34	3.79	12078.20
LITZENBERGER 13	94.07	1233.87	12078.20	86.19	1233.87	5.24	12078.20
LITZENBERGER 10	103.29	502.00	12078.20	99.65	484.32	3.32	12078.20
Billings #2A-18H	4388.42	12078.20	12078.20	3997.25	12078.20	11.17	10436.24
Billings #2B-18H	4718.38	12078.20	12078.20	4328.65	12078.20	12.11	12078.20

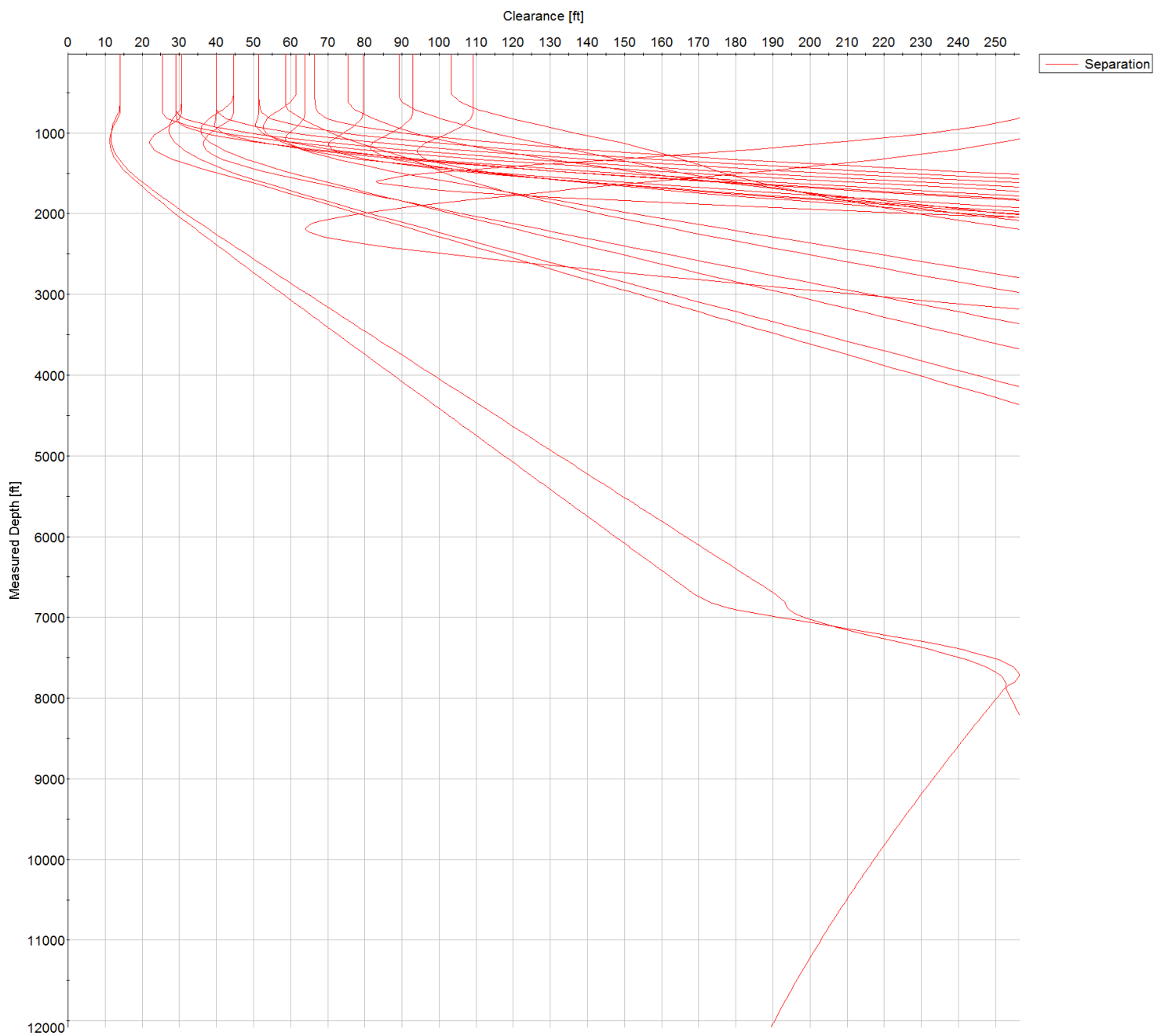


SYS DRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: LITZENBERGER 5 (PWB)

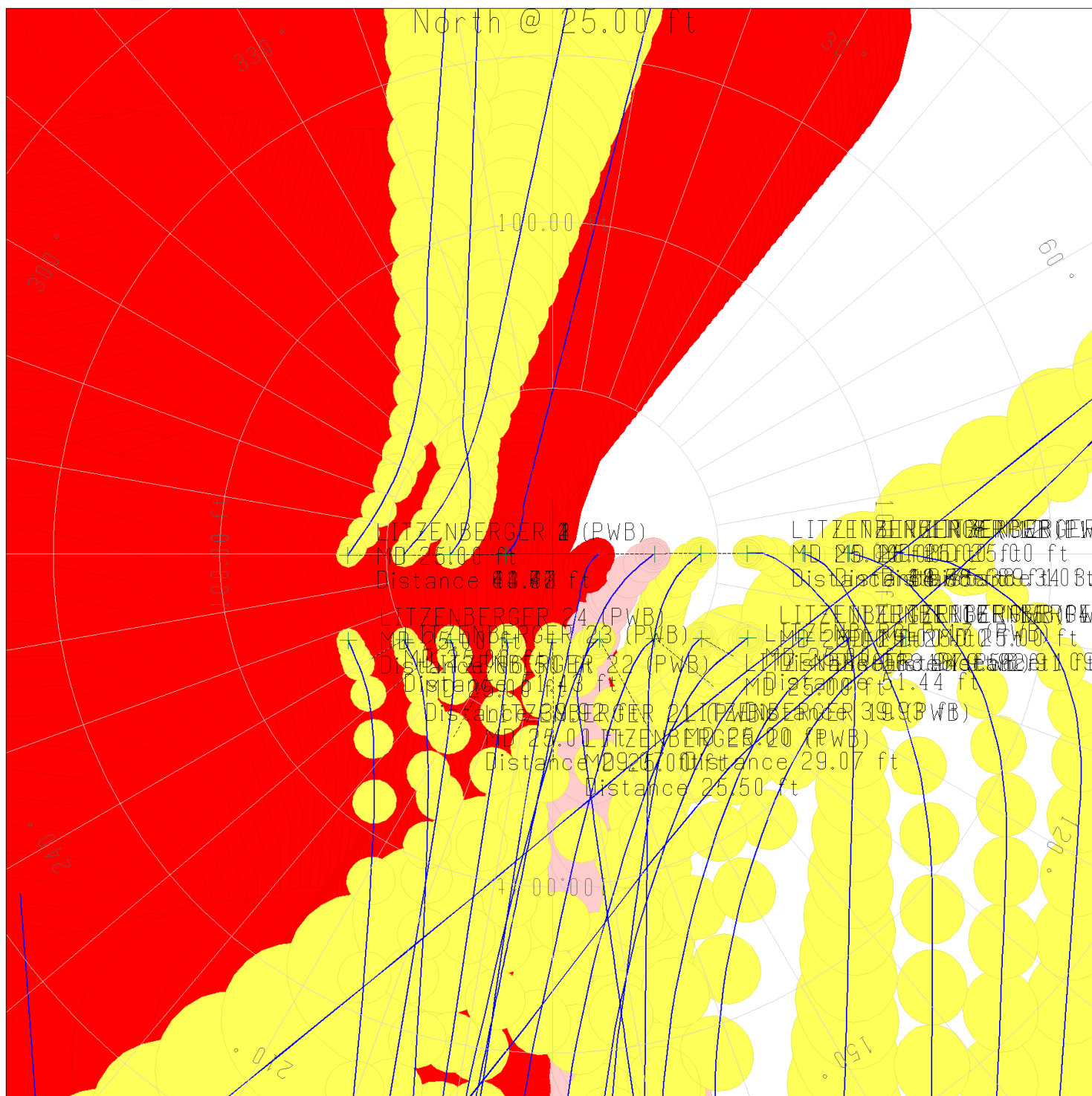




SYSDRILL
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All data is in Feet unless otherwise stated
Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5107.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 283.830 degrees
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 19-Jun-2015



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