

MINERAL RESOURCES, INC. (Original)

Location	Weld County, CO, USA (Original)	Slot	Slot #9
Field	Wattenberg	Well	DT-Habitat #4-5-6
Installation	Downtown	Wellbore	DT-Habitat #4-5-6 (PWB_2)

Scale 1 cm = 800 ft

East (feet) ->

-9600 -8000 -6400 -4800 -3200 -1600 0 1600

<- North(feet)

Scale 1 cm = 800 ft

1600
0
-1600
-3200

Surface 0.00 N 0.00 E

DT-Habitat #4-5-6 - T2

D40

DT-Habitat #4-5-6 - T1

Tie on - 0.00 Inc, 16.00 MD, 16.00 TVD, -0.00 VS

9 5/8in Surface Casing

3DS Kick off Point - 0.00 Inc, 1075.00 MD, 1075.00 TVD, -0.00 VS

End of Build - 13.57 Inc, 1691.74 MD, 1685.99 TVD, 15.47 VS

Created by admin

Date plotted 13-Dec-2013

Plot reference is DT-Habitat #4-5-6 (PWB_2).

Ref wellpath is DT-Habitat #4-5-6 (PWP#1).

Coordinates are in feet reference Slot #9.

True Vertical Depths are reference Rig Datum.

Measured Depths are reference Rig Datum.

Rig Datum: Planned Datum #1

Rig Datum to Mean Sea Level: 4658.55 ft.

Plot North is aligned to GRID North.

WELL PROFILE DATA

Point	MD	Inc	Azi	TVD	North	East	deg/100ft	V. Sect
Tie on	16.00	0.00	0.00	16.00	0.00	0.00	0.00	-0.00
KOP	1075.00	0.00	0.00	1075.00	0.00	0.00	0.00	-0.00
End of Build	1691.74	13.57	184.78	1685.99	-72.43	-6.05	2.20	15.47
End of Hold	6182.62	13.57	184.78	6051.54	-1122.35	-93.79	0.00	239.77
Target DT-Habitat #4-5	7970.29	90.00	272.15	7153.55	-1344.90	-1248.79	5.00	1413.96
Target D40	10160.81	90.00	272.15	7153.55	-1262.82	-3437.77	0.00	3573.40
End of Turn	10172.32	90.00	271.92	7153.55	-1262.41	-3449.27	2.00	3584.75
T.D. & Target DT-Habita	15056.50	90.00	271.92	7153.55	-1098.99	-8330.71	0.00	8402.89

End of Hold - 13.57 Inc, 6182.62 MD, 6051.54 TVD, 239.77 VS

7.0in Intermediate Casing

DT-Habitat #4-5-6 - T1

3DJ Kick off Point - 90.00 Inc, 10160.81 MD, 7153.55 TVD, 3573.40 VS

4 1/2in Production Liner

S/C Kick off Point - 90.00 Inc, 7970.29 MD, 7153.55 TVD, 1413.96 VS

D40

DT-Habitat #4-5-6 - T2

T.D. & End of Hold - 7153.55 TVD, 1098.99 S 8330.71 W

Scale 1 cm = 300 ft

Vertical Section (feet) ->

Azimuth 262.48 with reference 0.00 N, 0.00 E from Slot #9

Scale 1 cm = 300 ft

<- True Vertical Depth (feet)

-2400
-1800
-1200
-600
0
600
1200
1800
2400
3000
3600
4200
4800
5400
6000
6600
7200
7800



INTEGRATED PETROLEUM TECHNOLOGIES, INC
SYSDRILL
Well Design Combined Report
Wellbore: DT-Habitat #4-5-6 (PWB_2)

Wellhead Details							
Name	Northing	Easting	Latitude	Longitude	North	East	Elevation Above Inst.
Slot #9	1402562.8961	3227066.8474	40.43557000	-104.68427000	131.17S	1.58W	-0.50

Declination			
Date	Source	Time	
30-Jan-2013	IGRF Model [1900.0-2015.0]	10:11	
5-Dec-2013	IGRF Model [1900.0-2015.0]	14:34	
5-Dec-2013	IGRF Model [1900.0-2015.0]	14:37	
5-Dec-2013	IGRF Model [1900.0-2015.0]	14:38	
5-Dec-2013	IGRF Model [1900.0-2015.0]	14:41	

Site Details				
Name	Northing	Easting	Coord System Name	North Alignment
Downtown	1402694.0641	3227068.4245	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
16.00	0.00	0.000	16.00	0.00N	0.00E		0.00	1402562.90	3227066.85
1075.00	0.00	0.000	1075.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
1691.74	13.57	184.780	1685.99	72.43S	6.05W	2.20	15.47	1402490.47	3227060.79
6182.62	13.57	184.780	6051.54	1122.35S	93.79W		239.77	1401440.59	3226973.06
7970.29	90.00	272.150	7153.55	1344.90S	1248.79W	5.00	1413.96	1401218.05	3225818.11
10160.81	90.00	272.150	7153.55	1262.82S	3437.77W	==>	3573.40	1401300.13	3223629.21
10172.32	90.00	271.920	7153.55	1262.41S	3449.27W	2.00	3584.75	1401300.54	3223617.71
15056.50	90.00	271.920	7153.55	1098.99S	8330.71W	==>	8402.89	1401463.95	3218736.47

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
0.00	0.00	0.000	0.00	0.00N	0.00E		0.00	1402562.90	3227066.85
16.00	0.00	0.000	16.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
1059.00	0.00	0.000	1059.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
1075.00	0.00	0.000	1075.00	0.00N	0.00E	==>	0.00	1402562.90	3227066.85
1159.00	1.85	184.780	1158.99	1.35S	0.11W	2.20	0.29	1402561.55	3227066.73
1259.00	4.05	184.780	1258.85	6.47S	0.54W	2.20	1.38	1402556.42	3227066.31
1359.00	6.25	184.780	1358.44	15.42S	1.29W	2.20	3.29	1402547.48	3227065.56
1459.00	8.45	184.780	1457.61	28.16S	2.35W	2.20	6.02	1402534.74	3227064.49
1559.00	10.65	184.780	1556.22	44.69S	3.73W	2.20	9.55	1402518.21	3227063.11
1659.00	12.85	184.780	1654.12	64.98S	5.43W	2.20	13.88	1402497.92	3227061.42
1691.74	13.57	184.780	1685.99	72.43S	6.05W	2.20	15.47	1402490.47	3227060.79
1700.00	13.57	184.780	1694.02	74.36S	6.21W	==>	15.89	1402488.54	3227060.63
1800.00	13.57	184.780	1791.23	97.74S	8.17W	==>	20.88	1402465.16	3227058.68
1900.00	13.57	184.780	1888.44	121.12S	10.12W	==>	25.88	1402441.78	3227056.73
2000.00	13.57	184.780	1985.65	144.50S	12.08W	==>	30.87	1402418.40	3227054.77
2100.00	13.57	184.780	2082.86	167.88S	14.03W	==>	35.86	1402395.02	3227052.82
2200.00	13.57	184.780	2180.07	191.26S	15.98W	==>	40.86	1402371.65	3227050.87
2300.00	13.57	184.780	2277.28	214.64S	17.94W	==>	45.85	1402348.27	3227048.91
2400.00	13.57	184.780	2374.49	238.02S	19.89W	==>	50.85	1402324.89	3227046.96
2500.00	13.57	184.780	2471.69	261.39S	21.84W	==>	55.84	1402301.51	3227045.00
2600.00	13.57	184.780	2568.90	284.77S	23.80W	==>	60.84	1402278.13	3227043.05
2700.00	13.57	184.780	2666.11	308.15S	25.75W	==>	65.83	1402254.76	3227041.10
2800.00	13.57	184.780	2763.32	331.53S	27.70W	==>	70.83	1402231.38	3227039.14

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 4658.6ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 262.480 degrees
Bottom hole distance is 8402.89 Feet on azimuth 262.48 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 13-Dec-2013



INTEGRATED PETROLEUM TECHNOLOGIES, INC
SYSDRILL

Well Design Combined Report
Wellbore: DT-Habitat #4-5-6 (PWB_2)

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
2900.00	13.57	184.780	2860.53	354.91S	29.66W	==>	75.82	1402208.00	3227037.19
3000.00	13.57	184.780	2957.74	378.29S	31.61W	==>	80.82	1402184.62	3227035.24
3100.00	13.57	184.780	3054.95	401.67S	33.57W	==>	85.81	1402161.24	3227033.28
3200.00	13.57	184.780	3152.16	425.05S	35.52W	==>	90.80	1402137.87	3227031.33
3300.00	13.57	184.780	3249.37	448.42S	37.47W	==>	95.80	1402114.49	3227029.38
3400.00	13.57	184.780	3346.58	471.80S	39.43W	==>	100.79	1402091.11	3227027.42
3500.00	13.57	184.780	3443.79	495.18S	41.38W	==>	105.79	1402067.73	3227025.47
3600.00	13.57	184.780	3540.99	518.56S	43.33W	==>	110.78	1402044.36	3227023.52
3700.00	13.57	184.780	3638.20	541.94S	45.29W	==>	115.78	1402020.98	3227021.56
3800.00	13.57	184.780	3735.41	565.32S	47.24W	==>	120.77	1401997.60	3227019.61
3900.00	13.57	184.780	3832.62	588.70S	49.19W	==>	125.77	1401974.22	3227017.65
4000.00	13.57	184.780	3929.83	612.08S	51.15W	==>	130.76	1401950.84	3227015.70
4100.00	13.57	184.780	4027.04	635.46S	53.10W	==>	135.76	1401927.47	3227013.75
4200.00	13.57	184.780	4124.25	658.83S	55.06W	==>	140.75	1401904.09	3227011.79
4300.00	13.57	184.780	4221.46	682.21S	57.01W	==>	145.74	1401880.71	3227009.84
4400.00	13.57	184.780	4318.67	705.59S	58.96W	==>	150.74	1401857.33	3227007.89
4500.00	13.57	184.780	4415.88	728.97S	60.92W	==>	155.73	1401833.95	3227005.93
4600.00	13.57	184.780	4513.09	752.35S	62.87W	==>	160.73	1401810.58	3227003.98
4700.00	13.57	184.780	4610.29	775.73S	64.82W	==>	165.72	1401787.20	3227002.03
4800.00	13.57	184.780	4707.50	799.11S	66.78W	==>	170.72	1401763.82	3227000.07
4900.00	13.57	184.780	4804.71	822.49S	68.73W	==>	175.71	1401740.44	3226998.12
5000.00	13.57	184.780	4901.92	845.87S	70.69W	==>	180.71	1401717.06	3226996.17
5100.00	13.57	184.780	4999.13	869.24S	72.64W	==>	185.70	1401693.69	3226994.21
5200.00	13.57	184.780	5096.34	892.62S	74.59W	==>	190.70	1401670.31	3226992.26
5300.00	13.57	184.780	5193.55	916.00S	76.55W	==>	195.69	1401646.93	3226990.30
5400.00	13.57	184.780	5290.76	939.38S	78.50W	==>	200.68	1401623.55	3226988.35
5500.00	13.57	184.780	5387.97	962.76S	80.45W	==>	205.68	1401600.18	3226986.40
5600.00	13.57	184.780	5485.18	986.14S	82.41W	==>	210.67	1401576.80	3226984.44
5700.00	13.57	184.780	5582.39	1009.52S	84.36W	==>	215.67	1401553.42	3226982.49
5800.00	13.57	184.780	5679.60	1032.90S	86.31W	==>	220.66	1401530.04	3226980.54
5900.00	13.57	184.780	5776.80	1056.27S	88.27W	==>	225.66	1401506.66	3226978.58
6000.00	13.57	184.780	5874.01	1079.65S	90.22W	==>	230.65	1401483.29	3226976.63
6100.00	13.57	184.780	5971.22	1103.03S	92.18W	==>	235.65	1401459.91	3226974.68
6182.62	13.57	184.780	6051.54	1122.35S	93.79W	==>	239.77	1401440.59	3226973.06
6200.00	13.63	188.460	6068.43	1126.41S	94.26W	5.00	240.77	1401436.54	3226972.59
6300.00	15.00	208.020	6165.38	1149.50S	102.08W	5.00	251.54	1401413.44	3226964.77
6400.00	17.70	223.070	6261.37	1172.04S	118.55W	5.00	270.82	1401390.90	3226948.30
6500.00	21.22	233.770	6355.67	1193.86S	143.54W	5.00	298.45	1401369.09	3226923.31
6600.00	25.23	241.380	6447.57	1214.78S	176.87W	5.00	334.23	1401348.17	3226889.98
6700.00	29.53	246.960	6536.36	1234.65S	218.29W	5.00	377.89	1401328.30	3226848.57
6800.00	34.00	251.210	6621.37	1253.31S	267.46W	5.00	429.08	1401309.64	3226799.40
6900.00	38.59	254.560	6701.96	1270.63S	324.03W	5.00	487.43	1401292.32	3226742.83
7000.00	43.26	257.300	6777.50	1286.47S	387.56W	5.00	552.49	1401276.47	3226679.30
7100.00	47.98	259.600	6847.42	1300.72S	457.57W	5.00	623.76	1401262.23	3226609.29
7200.00	52.74	261.580	6911.20	1313.26S	533.52W	5.00	700.70	1401249.69	3226533.34
7300.00	57.54	263.320	6968.34	1323.99S	614.85W	5.00	782.73	1401238.96	3226452.03
7400.00	62.35	264.890	7018.42	1332.85S	700.91W	5.00	869.21	1401230.10	3226365.96
7500.00	67.18	266.320	7061.04	1339.75S	791.08W	5.00	959.50	1401223.20	3226275.80
7600.00	72.02	267.660	7095.89	1344.65S	884.64W	5.00	1052.91	1401218.30	3226182.24
7700.00	76.87	268.920	7122.70	1347.51S	980.91W	5.00	1148.72	1401215.44	3226085.98
7800.00	81.72	270.140	7141.27	1348.30S	1079.13W	5.00	1246.21	1401214.65	3225987.76
7900.00	86.58	271.320	7151.45	1347.03S	1178.57W	5.00	1344.62	1401215.92	3225888.32
7970.29	90.00	272.150	7153.55	1344.90S	1248.79W	5.00	1413.96	1401218.05	3225818.11
8000.00	90.00	272.150	7153.55	1343.79S	1278.48W	==>	1443.25	1401219.16	3225788.42
8100.00	90.00	272.150	7153.55	1340.04S	1378.41W	==>	1541.83	1401222.91	3225688.49
8200.00	90.00	272.150	7153.55	1336.29S	1478.34W	==>	1640.41	1401226.65	3225588.57
8300.00	90.00	272.150	7153.55	1332.55S	1578.27W	==>	1738.99	1401230.40	3225488.64
8400.00	90.00	272.150	7153.55	1328.80S	1678.20W	==>	1837.57	1401234.15	3225388.72
8500.00	90.00	272.150	7153.55	1325.05S	1778.13W	==>	1936.15	1401237.90	3225288.79
8600.00	90.00	272.150	7153.55	1321.31S	1878.06W	==>	2034.74	1401241.64	3225188.87
8700.00	90.00	272.150	7153.55	1317.56S	1977.99W	==>	2133.32	1401245.39	3225088.94

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Vertical Section is from 0.00N 0.00E on azimuth 262.480 degrees
Bottom hole distance is 8402.89 Feet on azimuth 262.48 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
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Well Design Combined Report
Wellbore: DT-Habitat #4-5-6 (PWB_2)

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
8800.00	90.00	272.150	7153.55	1313.81S	2077.92W	==>	2231.90	1401249.14	3224989.01
8900.00	90.00	272.150	7153.55	1310.06S	2177.85W	==>	2330.48	1401252.88	3224889.09
9000.00	90.00	272.150	7153.55	1306.32S	2277.78W	==>	2429.06	1401256.63	3224789.16
9100.00	90.00	272.150	7153.55	1302.57S	2377.71W	==>	2527.64	1401260.38	3224689.24
9200.00	90.00	272.150	7153.55	1298.82S	2477.64W	==>	2626.22	1401264.13	3224589.31
9300.00	90.00	272.150	7153.55	1295.08S	2577.56W	==>	2724.80	1401267.87	3224489.39
9400.00	90.00	272.150	7153.55	1291.33S	2677.49W	==>	2823.39	1401271.62	3224389.46
9500.00	90.00	272.150	7153.55	1287.58S	2777.42W	==>	2921.97	1401275.37	3224289.53
9600.00	90.00	272.150	7153.55	1283.83S	2877.35W	==>	3020.55	1401279.11	3224189.61
9700.00	90.00	272.150	7153.55	1280.09S	2977.28W	==>	3119.13	1401282.86	3224089.68
9800.00	90.00	272.150	7153.55	1276.34S	3077.21W	==>	3217.71	1401286.61	3223989.76
9900.00	90.00	272.150	7153.55	1272.59S	3177.14W	==>	3316.29	1401290.36	3223889.83
10000.00	90.00	272.150	7153.55	1268.84S	3277.07W	==>	3414.87	1401294.10	3223789.91
10100.00	90.00	272.150	7153.55	1265.10S	3377.00W	==>	3513.46	1401297.85	3223689.98
10160.81	90.00	272.150	7153.55	1262.82S	3437.77W	==>	3573.40	1401300.13	3223629.21
10172.32	90.00	271.920	7153.55	1262.41S	3449.27W	2.00	3584.75	1401300.54	3223617.71
10200.00	90.00	271.920	7153.55	1261.48S	3476.94W	==>	3612.06	1401301.46	3223590.05
10300.00	90.00	271.920	7153.55	1258.14S	3576.88W	==>	3710.71	1401304.81	3223490.11
10400.00	90.00	271.920	7153.55	1254.79S	3676.83W	==>	3809.35	1401308.15	3223390.17
10500.00	90.00	271.920	7153.55	1251.45S	3776.77W	==>	3908.00	1401311.50	3223290.23
10600.00	90.00	271.920	7153.55	1248.10S	3876.71W	==>	4006.65	1401314.85	3223190.29
10700.00	90.00	271.920	7153.55	1244.76S	3976.66W	==>	4105.30	1401318.19	3223090.35
10800.00	90.00	271.920	7153.55	1241.41S	4076.60W	==>	4203.95	1401321.54	3222990.41
10900.00	90.00	271.920	7153.55	1238.06S	4176.55W	==>	4302.59	1401324.88	3222890.47
11000.00	90.00	271.920	7153.55	1234.72S	4276.49W	==>	4401.24	1401328.23	3222790.53
11100.00	90.00	271.920	7153.55	1231.37S	4376.43W	==>	4499.89	1401331.57	3222690.59
11200.00	90.00	271.920	7153.55	1228.03S	4476.38W	==>	4598.54	1401334.92	3222590.65
11300.00	90.00	271.920	7153.55	1224.68S	4576.32W	==>	4697.19	1401338.26	3222490.71
11400.00	90.00	271.920	7153.55	1221.33S	4676.27W	==>	4795.83	1401341.61	3222390.77
11500.00	90.00	271.920	7153.55	1217.99S	4776.21W	==>	4894.48	1401344.96	3222290.83
11600.00	90.00	271.920	7153.55	1214.64S	4876.15W	==>	4993.13	1401348.30	3222190.89
11700.00	90.00	271.920	7153.55	1211.30S	4976.10W	==>	5091.78	1401351.65	3222090.95
11800.00	90.00	271.920	7153.55	1207.95S	5076.04W	==>	5190.43	1401354.99	3221991.01
11900.00	90.00	271.920	7153.55	1204.61S	5175.99W	==>	5289.07	1401358.34	3221891.07
12000.00	90.00	271.920	7153.55	1201.26S	5275.93W	==>	5387.72	1401361.68	3221791.13
12100.00	90.00	271.920	7153.55	1197.91S	5375.87W	==>	5486.37	1401365.03	3221691.19
12200.00	90.00	271.920	7153.55	1194.57S	5475.82W	==>	5585.02	1401368.38	3221591.25
12300.00	90.00	271.920	7153.55	1191.22S	5575.76W	==>	5683.67	1401371.72	3221491.31
12400.00	90.00	271.920	7153.55	1187.88S	5675.71W	==>	5782.31	1401375.07	3221391.37
12500.00	90.00	271.920	7153.55	1184.53S	5775.65W	==>	5880.96	1401378.41	3221291.43
12600.00	90.00	271.920	7153.55	1181.18S	5875.59W	==>	5979.61	1401381.76	3221191.49
12700.00	90.00	271.920	7153.55	1177.84S	5975.54W	==>	6078.26	1401385.10	3221091.55
12800.00	90.00	271.920	7153.55	1174.49S	6075.48W	==>	6176.91	1401388.45	3220991.61
12900.00	90.00	271.920	7153.55	1171.15S	6175.43W	==>	6275.55	1401391.80	3220891.67
13000.00	90.00	271.920	7153.55	1167.80S	6275.37W	==>	6374.20	1401395.14	3220791.73
13100.00	90.00	271.920	7153.55	1164.46S	6375.31W	==>	6472.85	1401398.49	3220691.79
13200.00	90.00	271.920	7153.55	1161.11S	6475.26W	==>	6571.50	1401401.83	3220591.85
13300.00	90.00	271.920	7153.55	1157.76S	6575.20W	==>	6670.14	1401405.18	3220491.91
13400.00	90.00	271.920	7153.55	1154.42S	6675.15W	==>	6768.79	1401408.52	3220391.97
13500.00	90.00	271.920	7153.55	1151.07S	6775.09W	==>	6867.44	1401411.87	3220292.03
13600.00	90.00	271.920	7153.55	1147.73S	6875.03W	==>	6966.09	1401415.22	3220192.09
13700.00	90.00	271.920	7153.55	1144.38S	6974.98W	==>	7064.74	1401418.56	3220092.15
13800.00	90.00	271.920	7153.55	1141.03S	7074.92W	==>	7163.38	1401421.91	3219992.21
13900.00	90.00	271.920	7153.55	1137.69S	7174.87W	==>	7262.03	1401425.25	3219892.27
14000.00	90.00	271.920	7153.55	1134.34S	7274.81W	==>	7360.68	1401428.60	3219792.33
14100.00	90.00	271.920	7153.55	1131.00S	7374.75W	==>	7459.33	1401431.94	3219692.39
14200.00	90.00	271.920	7153.55	1127.65S	7474.70W	==>	7557.98	1401435.29	3219592.45
14300.00	90.00	271.920	7153.55	1124.31S	7574.64W	==>	7656.62	1401438.64	3219492.51
14400.00	90.00	271.920	7153.55	1120.96S	7674.59W	==>	7755.27	1401441.98	3219392.57
14500.00	90.00	271.920	7153.55	1117.61S	7774.53W	==>	7853.92	1401445.33	3219292.63
14600.00	90.00	271.920	7153.55	1114.27S	7874.47W	==>	7952.57	1401448.67	3219192.69

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Vertical Section is from 0.00N 0.00E on azimuth 262.480 degrees
Bottom hole distance is 8402.89 Feet on azimuth 262.48 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 13-Dec-2013



INTEGRATED PETROLEUM TECHNOLOGIES, INC
 SYSDRILL
 Well Design Combined Report
 Wellbore: DT-Habitat #4-5-6 (PWB_2)

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
14700.00	90.00	271.920	7153.55	1110.92S	7974.42W	==>	8051.22	1401452.02	3219092.75
14800.00	90.00	271.920	7153.55	1107.58S	8074.36W	==>	8149.86	1401455.36	3218992.81
14900.00	90.00	271.920	7153.55	1104.23S	8174.31W	==>	8248.51	1401458.71	3218892.87
15000.00	90.00	271.920	7153.55	1100.88S	8274.25W	==>	8347.16	1401462.06	3218792.93
15056.50	90.00	271.920	7153.55	1098.99S	8330.71W	==>	8402.89	1401463.95	3218736.47

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SYSDRILL
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Wellbore: DT-Habitat #4-5-6 (PWB_2)

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	16.00	16.00	0.00N	0.00E	1000.00	1000.00	0.00N	0.00E
8 3/4	1000.00	1000.00	0.00N	0.00E	7970.00	7153.55	1344.91S	1248.50W
6 1/8	7970.00	7153.55	1344.91S	1248.50W	15056.50	7153.55	1098.99S	8330.71W

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	16.00	16.00	0.00N	0.00E	1000.00	1000.00	0.00N	0.00E
7.0in Intermediate Casing	16.00	16.00	0.00N	0.00E	7970.00	7153.55	1344.91S	1248.50W
4 1/2in Production Liner	6182.00	6050.93	1122.20S	93.78W	15056.50	7153.55	1098.99S	8330.71W

Targets								
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting	Last Revised
D40	1262.82S	3437.77W	7153.55	40.43219000	-104.69666000	1401300.13	3223629.21	27-Nov-2013
DT-Habitat #4-5-6	1344.90S	1248.79W	7153.55	40.43191000	-104.68880000	1401218.05	3225818.11	27-Nov-2013
- T1								
DT-Habitat #4-5-6	1098.99S	8330.71W	7153.55	40.43276000	-104.71423000	1401463.95	3218736.47	27-Nov-2013
- T2								

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
142868	Planned	15056.50	7153.55	WdW Rate Gyro	Standard	

Notes

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SYSDRILL
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Wellbore: DT-Habitat #4-5-6 (PWB_2)

Ellipse separations are reported ONLY if BOTH wells have uncertainty data
Only Depth and Magnetic Reference Field error terms are correlated across tie points
Proximities beyond 2500.00ft with expansion rate of 0.00ft/1000ft are not reported
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
DT-Habitat #4-5-6 (PWB_2)	12-Dec-2013	13-Dec-2013

Well		
Name	Government ID	Last Revised
DT-Habitat #4-5-6		4-Apr-2013

Slot						
Name	Grid Northing	Grid Easting	Latitude	Longitude	North	East
Slot #9	1402562.8961	3227066.8474	40.43557000	-104.68427000	131.17S	1.58W

Installation				
Name	Easting	Northing	Coord System Name	North Alignment
Downtown	3227068.4245	1402694.0641	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid

Field				
Name	Easting	Northing	Coord System Name	North Alignment
Wattenberg	3211772.6087	1400656.3763	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid

Clearance Summary										
Offset WellName	Offset Wellbore	Offset Slot	Offset Structure	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
DT-Habitat #5-5-6	DT-Habitat #5-5-6 (PWB_2)	Slot #10	Downtown	14.57	1000.25	15045.71	12.10	983.85	2.58	15056.50
DT-Habitat #3-5-6	DT-Habitat #3-5-6 (PWB_2)	Slot #8	Downtown	16.37	1246.31	15056.50	13.73	1246.31	2.64	15056.50
DT-Martinez #1-5-6	DT-Martinez #1-5-6 (PWB)	Slot #11	Downtown	29.15	850.20	15034.77	27.00	850.20	4.32	15056.50
DT-Habitat #2-5-6	DT-Habitat #2-5-6 (PWB_2)	Slot #7	Downtown	32.77	1115.08	15056.50	30.30	1147.89	4.34	15056.50
ERBES #5-2H5	ERBES #5-2H5 (AWB)	ERBES #5-2H5	Island Grove Offsets	41.58	2348.15	2348.15	25.42	2348.15	2.57	2361.80
Erbes #5-2H5	Erbes #5-2H5 (AWB)	Erbes #5-2H5	Downtown Pad offsets	41.58	2348.15	2348.15	25.42	2348.15	2.57	2361.80
DT-Pioneer #2-5-17	DT-Pioneer #2-5-17 (PWB)	Slot #12	Downtown	47.36	800.30	800.30	45.30	800.30	21.77	934.64
DT-Heath #1-5-8	DT-Heath #1-5-8 (PWB)	Slot #1	Downtown	48.40	7466.68	7466.68	28.58	7447.10	2.22	7447.10
DT-Habitat #1-5-6	DT-Habitat #1-5-6 (PWB_2)	Slot #6	Downtown	51.08	1075.00	15056.50	48.61	983.85	6.67	15056.50
DT-Pioneer #1-5-17	DT-Pioneer #1-5-17 (PWB)	Slot #13	Downtown	61.93	750.40	750.40	59.95	750.40	29.19	918.23

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SYSDRILL
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Wellbore: DT-Habitat #4-5-6 (PWB_2)

Clearance Summary										
Offset WellName	Offset Wellbore	Offset Slot	Offset Structure	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
DT-Lopez #2-5-6	DT-Lopez #2-5-6 (PWB)	Slot #5	Downtown	63.84	1082.27	12963.10	61.45	1098.68	8.22	13221.38
DT-StarPak #5-5-17	DT-StarPak #5-5-17 (PWB)	Slot #14	Downtown	80.15	700.40	700.40	78.24	700.40	38.78	901.83
DT-Lextron #1-32-32	DT-Lextron #1-32-32 (PWB)	Slot #4	Downtown	80.20	704.98	704.98	78.25	770.59	34.78	983.85
DT-StarPak #4-5-17	DT-StarPak #4-5-17 (PWB)	Slot #15	Downtown	94.76	650.60	650.60	92.94	650.60	47.17	885.42
DT-Lopez #1-5-6	DT-Lopez #1-5-6 (PWB)	Slot #3	Downtown	98.40	699.60	13008.13	96.50	699.60	10.91	13287.00
DT-StarPak #3-5-17	DT-StarPak #3-5-17 (PWB)	Slot #16	Downtown	109.33	600.60	600.60	107.54	557.34	50.41	6872.96
DT-Heath #2-5-8	DT-Heath #2-5-8 (PWB)	Slot #2	Downtown	112.97	649.50	7269.83	111.15	649.50	10.61	7365.08
DT-StarPak #2-5-17	DT-StarPak #2-5-17 (PWB)	Slot #17	Downtown	127.54	550.50	550.50	125.77	550.50	42.75	7086.21
DT-StarPak #1-5-17	DT-StarPak #1-5-17 (PWB)	Slot #18	Downtown	142.11	491.72	491.72	140.43	491.72	42.60	7463.51
DT-Martinez #2-5-6	DT-Martinez #2-5-6 (PWB)	Slot #19	Downtown	160.32	450.40	15021.05	158.71	450.40	6.62	15056.50
DT-Martinez #3-5-6	DT-Martinez #3-5-6 (PWB)	Slot #20	Downtown	174.89	400.40	15009.44	173.36	400.40	8.61	15056.50
DT-Forbes #1-5-6	DT-Forbes #1-5-6 (PWB)	Slot #21	Downtown	189.46	350.60	14993.61	188.01	350.60	10.89	15056.50
DT-Forbes #2-5-6	DT-Forbes #2-5-6 (PWB)	Slot #22	Downtown	207.68	300.80	14979.59	206.31	300.80	13.03	15056.50
DT-Forbes #3-5-6	DT-Forbes #3-5-6 (PWB)	Slot #23	Downtown	222.23	250.55	14962.62	220.94	250.55	15.31	15056.50
DT-Forbes #4-5-6	DT-Forbes #4-5-6 (PWB)	Slot #24	Downtown	236.82	200.55	14948.60	235.61	200.55	17.47	15056.50
DT-Forbes #5-5-6	DT-Forbes #5-5-6 (PWB)	Slot #25	Downtown	255.04	151.55	151.55	253.90	151.55	141.87	6987.78
DT-Luther #1-5-6	DT-Luther #1-5-6 (PWB)	Slot #26	Downtown	269.61	101.55	101.55	268.55	101.55	160.85	6616.00
Warnoco 6-2-6	Warnoco 6-2-6 (AWB)	Warnoco 6-2-6	Island Grove Offsets	440.24	11479.59	11479.59	341.57	11433.32	4.16	11318.49
Gas 2-2-5	Gas 2-2-5 (AWB)	Gas 2-2-5	Island Grove Offsets	497.47	8909.87	8909.87	432.23	8939.88	6.96	9116.00
CS-Longmeadow #2-1-12	CS-Longmeadow #2-1-12 (PWB)	Slot #17	C Street Pad	506.84	15056.50	15056.50	470.92	15056.50	14.11	15056.50
CS-Longmeadow #1-1-12	CS-Longmeadow #1-1-12 (PWB)	Slot #18	C Street Pad	790.62	15056.50	15056.50	755.41	15056.50	22.46	15056.50
W Mcelroy #41-5	W Mcelroy #41-5 (AWB)	Mcelroy #41-5	Downtown Pad offsets	907.19	3050.78	3050.78	887.69	3132.80	37.56	5281.75
Namara	Namara	Namara	Island Grove	1034.11	819.81	8260.10	1030.01	934.64	41.89	8529.78

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Wellbore: DT-Habitat #4-5-6 (PWB_2)

Clearance Summary										
Offset WellName	Offset Wellbore	Offset Slot	Offset Structure	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
3-7-32	3-7-32 (AWB)	3-7-32	Offsets							
Joz A 5-7-32	Joz A 5-7-32 (AWB)	Joz A 5-7-32	Island Grove Offsets	1063.97	1075.00	1075.00	1053.76	1082.27	80.18	4477.94
Thermo 5-5-32	Thermo 5-5-32 (AWB)	Thermo 5-5-32	Island Grove Offsets	1066.87	17.55	17.55	1065.27	130.83	152.97	4051.43
CS-Kinkade #5-1-12	CS-Kinkade #5-1-12 (PWB)	Slot #19	C Street Pad	1144.47	15056.50	15056.50	1108.79	15056.50	32.08	15056.50
Arnold #1	Arnold #1 (AWB)	Arnold #1	Downtown Pad offsets	1448.69	6315.21	6315.21	1416.56	6316.00	44.23	6577.68
CS-Kinkade #4-1-12	CS-Kinkade #4-1-12 (PWB)	Slot #20	C Street Pad	1457.24	15056.50	15056.50	1421.95	15056.50	41.29	15056.50
CS-Kinkade #3-1-12	CS-Kinkade #3-1-12 (PWB)	Slot #21	C Street Pad	1803.20	15056.50	15056.50	1767.77	15056.50	50.89	15056.50
CS-Kinkade #2-1-12	CS-Kinkade #2-1-12 (PWB)	Slot #22	C Street Pad	2124.80	15056.50	15056.50	2089.59	15056.50	60.36	15056.50
4H 5-7-31	4H 5-7-31 (AWB)	4H 5-7-31	Island Grove Offsets	2144.62	12277.56	12277.56	2028.31	12253.53	18.26	12040.28
Island Grove 2-32	Island Grove 2-32 (AWB)	Island Grove 2-32	Island Grove Offsets	2270.09	8940.96	8940.96	2215.05	8972.69	37.98	9661.67
CS-Kinkade #1-1-12	CS-Kinkade #1-1-12 (PWB)	Slot #23	C Street Pad	2468.32	15056.50	15056.50	2432.96	15056.50	69.82	15056.50