

WARD PETROLEUM

Location	ADAMS COUNTY, CO	Slot	Slot #12
Field	West Brighton	Well	TCF 14-4-1HC
Installation	TC Farms Pad	Wellbore	TCF 14-4-1HC (PWB)

Tie on - 0.00 Inc, 15.00 MD, 15.00 TVD, 0.00 VS

Scale 1 cm = 400 ft

East (feet) ->

-1600 -800 -0 800 1600 2400 3200 4000 4800 5600

9 5/8in Surface Casing

3DS Kick off Point - 0.00 Inc, 1200.00 MD, 1200.00 TVD, 0.00 VS

TCF 14-4-1HC BHL

TCF 14-4-1HC LP

End of Build - 14.97 Inc, 1948.58 MD, 1940.09 TVD, 3.95 VS

Surface 0.00 N 0.00 E

WELL PROFILE DATA

Point	MD	Inc	Azi	TVD	North	East	deg/100ft	V. Sect
Tie on	15.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00
KOP	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00
End of Build	1948.58	14.97	341.49	1940.09	92.22	-30.87	2.00	3.95
End of Hold	7428.87	14.97	341.49	7234.35	1434.78	-480.25	0.00	61.47
Target TCF 14-4-1HC LP	8377.58	90.46	88.86	7832.00	1599.99	92.31	10.00	655.36
T.D. & Target TCF 14-4-	12716.67	90.46	88.86	7797.00	1686.06	4430.41	0.00	4740.39

End of Hold - 14.97 Inc, 7428.87 MD, 7234.35 TVD, 61.47 VS

7.0in Intermediate Casing

TCF 14-4-1HC LP

T.D. & End of Hold - 7797.00 TVD, 1686.06 N 4430.41 E

TCF 14-4-1HC BHL

S/C Kick off Point - 90.46 Inc, 8377.58 MD, 7832.00 TVD, 655.36 VS

4 1/2in Production Liner

Created by admin
Date plotted 10-Jan-2014
Plot reference is TCF 14-4-1HC (PWB).
Ref wellpath is W #12 (PWP#1).
Coordinates are in feet reference Slot #12.
True Vertical Depths are reference Rig Datum.
Measured Depths are reference Rig Datum.
Rig Datum: Planned Datum #1
Rig Datum to Mean Sea Level: 5097.00 ft.
Plot North is aligned to GRID North.

<- North(feet)

Scale 1 cm = 400 ft

<- True Vertical Depth (feet)

Vertical Section (feet) ->

Azimuth 69.16 with reference 0.00 N, 0.00 E from Slot #12

Scale 1 cm = 200 ft

-400 -0 400 800 1200 1600 2000 2400 2800 3200 3600 4000 4400 4800 5200



INTEGRATED PETROLEUM TECHNOLOGIES, INC
SYSDRILL
Well Design Combined Report
Wellbore: TCF 14-4-1HC (PWB)

Wellhead Details							
Name	Northing	Easting	Latitude	Longitude	North	East	Elevation Above Inst.
Slot #12	1231745.2273	3178212.7144	39.96777000	-104.86417000	83.90N	16.22E	-0.00

Declination			
Date	Source	Time	
27-Nov-2013	IGRF Model [1900.0-2015.0]		12:38

Site Details				
Name	Northing	Easting	Coord System Name	North Alignment
TC Farms Pad	1231661.3262	3178196.4983	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
15.00	0.00	0.000	15.00	0.00N	0.00E		0.00	1231745.23	3178212.71
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
1948.58	14.97	341.490	1940.09	92.22N	30.87W	2.00	3.95	1231837.44	3178181.85
7428.87	14.97	341.490	7234.35	1434.78N	480.25W	==>	61.47	1233179.96	3177732.48
8377.58	90.46	88.860	7832.00	1599.99N	92.31E	10.00	655.36	1233345.16	3178305.02
12716.67	90.46	88.860	7797.00	1686.06N	4430.41E	==>	4740.39	1233431.23	3182642.98

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	1231745.23	3178212.71
15.00	0.00	0.000	15.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
1185.00	0.00	0.000	1185.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	1231745.23	3178212.71
1285.00	1.70	341.490	1284.99	1.20N	0.40W	2.00	0.05	1231746.42	3178212.31
1385.00	3.70	341.490	1384.87	5.66N	1.90W	2.00	0.24	1231750.89	3178210.82
1485.00	5.70	341.490	1484.53	13.43N	4.50W	2.00	0.58	1231758.66	3178208.22
1585.00	7.70	341.490	1583.84	24.50N	8.20W	2.00	1.05	1231769.72	3178204.52
1685.00	9.70	341.490	1682.69	38.84N	13.00W	2.00	1.66	1231784.06	3178199.71
1785.00	11.70	341.490	1780.94	56.44N	18.89W	2.00	2.42	1231801.67	3178193.82
1885.00	13.70	341.490	1878.49	77.29N	25.87W	2.00	3.31	1231822.52	3178186.84
1948.58	14.97	341.490	1940.09	92.22N	30.87W	2.00	3.95	1231837.44	3178181.85
2000.00	14.97	341.490	1989.76	104.82N	35.08W	==>	4.49	1231850.04	3178177.63
2100.00	14.97	341.490	2086.37	129.31N	43.28W	==>	5.54	1231874.54	3178169.43
2200.00	14.97	341.490	2182.98	153.81N	51.48W	==>	6.59	1231899.03	3178161.23
2300.00	14.97	341.490	2279.58	178.31N	59.68W	==>	7.64	1231923.53	3178153.03
2400.00	14.97	341.490	2376.19	202.81N	67.88W	==>	8.69	1231948.03	3178144.83
2500.00	14.97	341.490	2472.79	227.31N	76.08W	==>	9.74	1231972.53	3178136.63
2600.00	14.97	341.490	2569.40	251.80N	84.28W	==>	10.79	1231997.02	3178128.43
2700.00	14.97	341.490	2666.00	276.30N	92.48W	==>	11.84	1232021.52	3178120.23
2800.00	14.97	341.490	2762.61	300.80N	100.68W	==>	12.89	1232046.02	3178112.03
2900.00	14.97	341.490	2859.21	325.30N	108.88W	==>	13.94	1232070.51	3178103.83
3000.00	14.97	341.490	2955.82	349.80N	117.08W	==>	14.99	1232095.01	3178095.63
3100.00	14.97	341.490	3052.42	374.29N	125.28W	==>	16.04	1232119.51	3178087.43
3200.00	14.97	341.490	3149.03	398.79N	133.48W	==>	17.09	1232144.01	3178079.23
3300.00	14.97	341.490	3245.64	423.29N	141.68W	==>	18.14	1232168.50	3178071.03
3400.00	14.97	341.490	3342.24	447.79N	149.88W	==>	19.19	1232193.00	3178062.83

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 5097.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 69.160 degrees
Bottom hole distance is 4740.39 Feet on azimuth 69.16 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 10-Jan-2014



INTEGRATED PETROLEUM TECHNOLOGIES, INC
SYSDRILL

Well Design Combined Report
Wellbore: TCF 14-4-1HC (PWB)

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
3500.00	14.97	341.490	3438.85	472.28N	158.08W	==>	20.24	1232217.50	3178054.64
3600.00	14.97	341.490	3535.45	496.78N	166.28W	==>	21.28	1232241.99	3178046.44
3700.00	14.97	341.490	3632.06	521.28N	174.48W	==>	22.33	1232266.49	3178038.24
3800.00	14.97	341.490	3728.66	545.78N	182.68W	==>	23.38	1232290.99	3178030.04
3900.00	14.97	341.490	3825.27	570.28N	190.88W	==>	24.43	1232315.49	3178021.84
4000.00	14.97	341.490	3921.87	594.77N	199.08W	==>	25.48	1232339.98	3178013.64
4100.00	14.97	341.490	4018.48	619.27N	207.28W	==>	26.53	1232364.48	3178005.44
4200.00	14.97	341.490	4115.08	643.77N	215.48W	==>	27.58	1232388.98	3177997.24
4300.00	14.97	341.490	4211.69	668.27N	223.68W	==>	28.63	1232413.47	3177989.04
4400.00	14.97	341.490	4308.30	692.77N	231.88W	==>	29.68	1232437.97	3177980.84
4500.00	14.97	341.490	4404.90	717.26N	240.08W	==>	30.73	1232462.47	3177972.64
4600.00	14.97	341.490	4501.51	741.76N	248.28W	==>	31.78	1232486.96	3177964.44
4700.00	14.97	341.490	4598.11	766.26N	256.48W	==>	32.83	1232511.46	3177956.24
4800.00	14.97	341.490	4694.72	790.76N	264.68W	==>	33.88	1232535.96	3177948.04
4900.00	14.97	341.490	4791.32	815.26N	272.88W	==>	34.93	1232560.46	3177939.84
5000.00	14.97	341.490	4887.93	839.75N	281.08W	==>	35.98	1232584.95	3177931.64
5100.00	14.97	341.490	4984.53	864.25N	289.28W	==>	37.03	1232609.45	3177923.44
5200.00	14.97	341.490	5081.14	888.75N	297.48W	==>	38.08	1232633.95	3177915.24
5300.00	14.97	341.490	5177.74	913.25N	305.68W	==>	39.13	1232658.44	3177907.04
5400.00	14.97	341.490	5274.35	937.75N	313.88W	==>	40.18	1232682.94	3177898.84
5500.00	14.97	341.490	5370.96	962.24N	322.08W	==>	41.23	1232707.44	3177890.64
5600.00	14.97	341.490	5467.56	986.74N	330.28W	==>	42.28	1232731.94	3177882.44
5700.00	14.97	341.490	5564.17	1011.24N	338.48W	==>	43.33	1232756.43	3177874.24
5800.00	14.97	341.490	5660.77	1035.74N	346.68W	==>	44.38	1232780.93	3177866.04
5900.00	14.97	341.490	5757.38	1060.23N	354.88W	==>	45.43	1232805.43	3177857.84
6000.00	14.97	341.490	5853.98	1084.73N	363.08W	==>	46.48	1232829.92	3177849.64
6100.00	14.97	341.490	5950.59	1109.23N	371.28W	==>	47.53	1232854.42	3177841.44
6200.00	14.97	341.490	6047.19	1133.73N	379.48W	==>	48.58	1232878.92	3177833.24
6300.00	14.97	341.490	6143.80	1158.23N	387.68W	==>	49.62	1232903.42	3177825.04
6400.00	14.97	341.490	6240.40	1182.72N	395.88W	==>	50.67	1232927.91	3177816.84
6500.00	14.97	341.490	6337.01	1207.22N	404.08W	==>	51.72	1232952.41	3177808.64
6600.00	14.97	341.490	6433.62	1231.72N	412.28W	==>	52.77	1232976.91	3177800.44
6700.00	14.97	341.490	6530.22	1256.22N	420.48W	==>	53.82	1233001.40	3177792.24
6800.00	14.97	341.490	6626.83	1280.72N	428.68W	==>	54.87	1233025.90	3177784.04
6900.00	14.97	341.490	6723.43	1305.21N	436.88W	==>	55.92	1233050.40	3177775.84
7000.00	14.97	341.490	6820.04	1329.71N	445.08W	==>	56.97	1233074.90	3177767.64
7100.00	14.97	341.490	6916.64	1354.21N	453.28W	==>	58.02	1233099.39	3177759.44
7200.00	14.97	341.490	7013.25	1378.71N	461.48W	==>	59.07	1233123.89	3177751.25
7300.00	14.97	341.490	7109.85	1403.21N	469.68W	==>	60.12	1233148.39	3177743.05
7400.00	14.97	341.490	7206.46	1427.70N	477.88W	==>	61.17	1233172.88	3177734.85
7428.87	14.97	341.490	7234.35	1434.78N	480.25W	==>	61.47	1233179.96	3177732.48
7500.00	14.58	9.610	7303.22	1452.34N	481.68W	10.00	66.39	1233197.52	3177731.05
7600.00	19.07	41.120	7399.11	1477.11N	468.80W	10.00	87.23	1233222.29	3177743.93
7700.00	26.65	58.160	7491.28	1501.31N	438.93W	10.00	123.76	1233246.49	3177773.80
7800.00	35.40	67.680	7576.94	1524.20N	392.96W	10.00	174.86	1233269.38	3177819.77
7900.00	44.62	73.740	7653.49	1545.08N	332.30W	10.00	238.98	1233290.26	3177880.42
8000.00	54.06	78.080	7718.59	1563.32N	258.79W	10.00	314.17	1233308.50	3177953.93
8100.00	63.63	81.470	7770.27	1578.37N	174.67W	10.00	398.15	1233323.54	3178038.05
8200.00	73.27	84.340	7806.96	1589.76N	82.48W	10.00	488.36	1233334.94	3178130.24
8300.00	82.95	86.930	7827.54	1597.15N	14.97E	10.00	582.07	1233342.33	3178227.69
8377.58	90.46	88.860	7832.00	1599.99N	92.31E	10.00	655.36	1233345.16	3178305.02
8400.00	90.46	88.860	7831.82	1600.43N	114.73E	==>	676.47	1233345.60	3178327.44
8500.00	90.46	88.860	7831.01	1602.41N	214.70E	==>	770.61	1233347.59	3178427.41
8600.00	90.46	88.860	7830.21	1604.40N	314.68E	==>	864.76	1233349.57	3178527.39
8700.00	90.46	88.860	7829.40	1606.38N	414.66E	==>	958.90	1233351.56	3178627.36
8800.00	90.46	88.860	7828.59	1608.36N	514.64E	==>	1053.05	1233353.54	3178727.33
8900.00	90.46	88.860	7827.79	1610.35N	614.61E	==>	1147.19	1233355.52	3178827.31
9000.00	90.46	88.860	7826.98	1612.33N	714.59E	==>	1241.34	1233357.51	3178927.28
9100.00	90.46	88.860	7826.17	1614.32N	814.57E	==>	1335.48	1233359.49	3179027.25
9200.00	90.46	88.860	7825.37	1616.30N	914.54E	==>	1429.63	1233361.47	3179127.23
9300.00	90.46	88.860	7824.56	1618.28N	1014.52E	==>	1523.77	1233363.46	3179227.20

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Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5097.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 69.160 degrees
Bottom hole distance is 4740.39 Feet on azimuth 69.16 degrees from Wellhead
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SYSDRILL

Well Design Combined Report
Wellbore: TCF 14-4-1HC (PWB)

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
9400.00	90.46	88.860	7823.75	1620.27N	1114.50E	==>	1617.92	1233365.44	3179327.18
9500.00	90.46	88.860	7822.95	1622.25N	1214.48E	==>	1712.06	1233367.42	3179427.15
9600.00	90.46	88.860	7822.14	1624.23N	1314.45E	==>	1806.21	1233369.41	3179527.12
9700.00	90.46	88.860	7821.33	1626.22N	1414.43E	==>	1900.35	1233371.39	3179627.10
9800.00	90.46	88.860	7820.53	1628.20N	1514.41E	==>	1994.50	1233373.38	3179727.07
9900.00	90.46	88.860	7819.72	1630.19N	1614.38E	==>	2088.64	1233375.36	3179827.04
10000.00	90.46	88.860	7818.91	1632.17N	1714.36E	==>	2182.78	1233377.34	3179927.02
10100.00	90.46	88.860	7818.11	1634.15N	1814.34E	==>	2276.93	1233379.33	3180026.99
10200.00	90.46	88.860	7817.30	1636.14N	1914.32E	==>	2371.07	1233381.31	3180126.97
10300.00	90.46	88.860	7816.49	1638.12N	2014.29E	==>	2465.22	1233383.29	3180226.94
10400.00	90.46	88.860	7815.69	1640.10N	2114.27E	==>	2559.36	1233385.28	3180326.91
10500.00	90.46	88.860	7814.88	1642.09N	2214.25E	==>	2653.51	1233387.26	3180426.89
10600.00	90.46	88.860	7814.07	1644.07N	2314.22E	==>	2747.65	1233389.25	3180526.86
10700.00	90.46	88.860	7813.27	1646.06N	2414.20E	==>	2841.80	1233391.23	3180626.84
10800.00	90.46	88.860	7812.46	1648.04N	2514.18E	==>	2935.94	1233393.21	3180726.81
10900.00	90.46	88.860	7811.65	1650.02N	2614.15E	==>	3030.09	1233395.20	3180826.78
11000.00	90.46	88.860	7810.85	1652.01N	2714.13E	==>	3124.23	1233397.18	3180926.76
11100.00	90.46	88.860	7810.04	1653.99N	2814.11E	==>	3218.38	1233399.16	3181026.73
11200.00	90.46	88.860	7809.23	1655.97N	2914.09E	==>	3312.52	1233401.15	3181126.70
11300.00	90.46	88.860	7808.43	1657.96N	3014.06E	==>	3406.67	1233403.13	3181226.68
11400.00	90.46	88.860	7807.62	1659.94N	3114.04E	==>	3500.81	1233405.11	3181326.65
11500.00	90.46	88.860	7806.81	1661.93N	3214.02E	==>	3594.96	1233407.10	3181426.63
11600.00	90.46	88.860	7806.01	1663.91N	3313.99E	==>	3689.10	1233409.08	3181526.60
11700.00	90.46	88.860	7805.20	1665.89N	3413.97E	==>	3783.25	1233411.07	3181626.57
11800.00	90.46	88.860	7804.39	1667.88N	3513.95E	==>	3877.39	1233413.05	3181726.55
11900.00	90.46	88.860	7803.59	1669.86N	3613.93E	==>	3971.54	1233415.03	3181826.52
12000.00	90.46	88.860	7802.78	1671.84N	3713.90E	==>	4065.68	1233417.02	3181926.49
12100.00	90.46	88.860	7801.97	1673.83N	3813.88E	==>	4159.83	1233419.00	3182026.47
12200.00	90.46	88.860	7801.17	1675.81N	3913.86E	==>	4253.97	1233420.98	3182126.44
12300.00	90.46	88.860	7800.36	1677.80N	4013.83E	==>	4348.12	1233422.97	3182226.42
12400.00	90.46	88.860	7799.55	1679.78N	4113.81E	==>	4442.26	1233424.95	3182326.39
12500.00	90.46	88.860	7798.75	1681.76N	4213.79E	==>	4536.41	1233426.93	3182426.36
12600.00	90.46	88.860	7797.94	1683.75N	4313.76E	==>	4630.55	1233428.92	3182526.34
12700.00	90.46	88.860	7797.13	1685.73N	4413.74E	==>	4724.70	1233430.90	3182626.31
12716.67	90.46	88.860	7797.00	1686.06N	4430.41E	==>	4740.39	1233431.23	3182642.98

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Vertical Section is from 0.00N 0.00E on azimuth 69.160 degrees
Bottom hole distance is 4740.39 Feet on azimuth 69.16 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 10-Jan-2014



INTEGRATED PETROLEUM TECHNOLOGIES, INC
SYSDRILL
Well Design Combined Report
Wellbore: TCF 14-4-1HC (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]
13 1/2	15.00	15.00	0.00N	0.00E	1200.00	1200.00	0.00N	0.00E
8 3/4	1200.00	1200.00	0.00N	0.00E	8377.00	7832.00	1599.97N	91.73E
6 1/8	8377.00	7832.00	1599.97N	91.73E	12716.00	7797.01	1686.05N	4429.74E

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	15.00	15.00	0.00N	0.00E	1200.00	1200.00	0.00N	0.00E
7.0in Intermediate Casing	15.00	15.00	0.00N	0.00E	8377.00	7832.00	1599.97N	91.73E
4 1/2in Production Liner	7500.00	7303.22	1452.34N	481.68W	12716.00	7797.01	1686.05N	4429.74E

Targets								
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting	Last Revised
TCF 14-4-1HC	1686.06N	4430.41E	7797.00	39.97231000	-104.84832000	1233431.23	3182642.98	11-Dec-2013
BHL								
TCF 14-4-1HC LP	1588.99N	92.31E	7832.00	39.97213000	-104.86380000	1233334.16	3178305.02	11-Dec-2013

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
142652	Planned	12716.67	7797.00	WdW Rate Gyro	Standard	

Notes

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SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: TCF 14-4-1HC (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
Proximities beyond 3000.00ft 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
TCF 14-4-1HC (PWB)	9-Dec-2013	10-Jan-2014

Well		
Name	Government ID	Last Revised
TCF 14-4-1HC		10-Jan-2014

Slot						
Name	Grid Northing	Grid Easting	Latitude	Longitude	North	East
Slot #12	1231745.2273	3178212.7144	39.96777000	-104.86417000	83.90N	16.22E

Installation				
Name	Easting	Northing	Coord System Name	North Alignment
TC Farms Pad	3178196.4983	1231661.3262	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid

Field				
Name	Easting	Northing	Coord System Name	North Alignment
West Brighton	3178196.4983	1231661.3262	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]
TCF 14-4-2HN	TCF 14-4-2HN (PWB)	Slot #11	TC Farms Pad	15.61	1200.00	12710.07	12.74	1200.00	5.44	1200.00
TCF 15-2-1HC	TCF 15-2-1HC (PWB)	Slot #6	TC Farms Pad	18.35	1212.51	7853.14	11.48	7856.21	1.54	7872.61
TCF 15-2-2HN	TCF 15-2-2HN (PWB)	Slot #5	TC Farms Pad	26.11	1200.00	7615.00	23.24	1200.00	9.09	1200.00
TCF 14-4-3HC	TCF 14-4-3HC (PWB)	Slot #10	TC Farms Pad	31.23	1200.00	12702.90	28.35	1200.00	10.76	12702.90
TCF 15-2-3HC	TCF 15-2-3HC (PWB)	Slot #4	TC Farms Pad	40.07	1200.00	7629.51	37.20	1200.00	13.95	1200.00
TCF 14-4-4HN	TCF 14-4-4HN (PWB)	Slot #9	TC Farms Pad	46.84	1200.00	12696.24	43.97	1200.00	16.31	1200.00
TCF 15-2-4HN	TCF 15-2-4HN (PWB)	Slot #3	TC Farms Pad	54.93	1200.00	1200.00	52.06	1200.00	19.13	1200.00
TCF 14-4-5HC	TCF 14-4-5HC (PWB)	Slot #8	TC Farms Pad	59.06	1200.00	12689.08	56.20	1196.10	20.60	1196.10
TCF 15-2-5HC	TCF 15-2-5HC (PWB)	Slot #2	TC Farms Pad	70.12	1200.00	1200.00	67.24	1200.00	24.41	1200.00
TCF	TCF	Slot #7	TC Farms	74.67	1199.00	12685.28	71.80	1199.00	26.01	1199.00

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SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: TCF 14-4-1HC (PWB)

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]
14-4-6HN	14-4-6HN (PWB)		Pad							
TCF #15-2-6HN	TCF 15-2-6HN (PWB)	Slot #1	TC Farms Pad	85.46	1200.00	1200.00	82.59	1200.00	29.76	1200.00
W RC Nauman 2	W RC Nauman 2 (AWB)	RC Nauman 2	Offsets	474.62	1200.00	1200.00	465.04	1200.00	45.93	1721.04
W RC Nauman 1	W RC Nauman 1 (AWB)	RC Nauman 1	Offsets	587.27	4657.39	8597.72	563.41	4690.20	23.41	5280.75
W Nauman 1-14	W Nauman 1-14 (AWB)	Nauman 1-14	Offsets	593.49	1200.00	8846.69	581.75	1200.00	39.37	2787.31
W Ehler, John 19	W Ehler, John 19 (AWB)	Ehler, John 19	Offsets	711.13	5319.96	5319.96	685.24	5319.96	27.46	5329.96
W Ehler, John 18	W Ehler, John 18 (AWB)	Ehler, John 18	Offsets	1057.58	1409.36	1409.36	1046.88	1639.02	57.97	5100.30
W Biow-News tat 1	W Biow-Newstat 1 (AWB)	Biow-Newstat 1	Offsets	1453.84	5538.02	8610.80	1429.50	5538.02	59.71	5576.02
W Ehler 10-5P	W Ehler 10-5P (AWB)	Ehler 10-5P	Offsets	1491.70	5658.04	5658.04	1469.94	5658.04	68.50	5615.00
W RC Nauman 4	W RC Nauman 4 (AWB)	RC Nauman 4	Offsets	1729.78	1200.00	1200.00	1720.15	1200.00	101.37	5280.75
W RC Nauman 3	W RC Nauman 3 (AWB)	RC Nauman 3	Offsets	1848.92	3148.60	9918.30	1831.20	3279.44	74.62	5346.36
W United Bank of Denver 1	W United Bank of Denver 1 (AWB)	United Bank of Denver 1	Offsets	1909.63	1200.00	1200.00	1899.79	1200.00	127.99	5315.00
W Nauman 1	W Nauman 1 (AWB)	Nauman 1	Offsets	1926.63	3181.01	9989.43	1908.62	3295.84	75.76	5477.60
W Ehler, John 15	W Ehler, John 15 (AWB)	Ehler, John 15	Offsets	1958.48	1200.00	1200.00	1948.51	1200.00	114.65	5198.73
W Ehler, John 10	W Ehler, John 10 (AWB)	Ehler, John 10	Offsets	2024.27	5456.90	5456.90	1997.79	5461.19	75.96	5641.64
W United Bank of Denver 3	W United Bank of Denver 3 (AWB)	United Bank of Denver 3	Offsets	2034.79	1200.00	1200.00	2025.32	1200.00	134.34	5280.75
W Ehler, John 11	W Ehler, John 11 (AWB)	Ehler, John 11	Offsets	2336.23	2902.14	2902.14	2319.27	3049.78	91.75	5477.60
W Ehler 10-4	W Ehler 10-4 (AWB)	Ehler 10-4	Offsets	2384.89	5760.88	5760.88	2360.36	5760.88	97.00	5887.70
W Biow 11-8	W Biow 11-8 (AWB)	Biow 11-8	Offsets	2445.54	5469.25	9931.28	2419.42	5477.60	92.72	5740.07
W Krogh 2	W Krogh 2 (AWB)	Krogh 2	Offsets	2638.62	12541.85	12541.85	2610.49	12541.85	93.72	12679.04
W Biow 11-6	W Biow 11-6 (AWB)	Biow 11-6	Offsets	2731.25	5864.94	5864.94	2707.61	5871.30	115.29	6015.00
W Ehler, John 22	W Ehler, John 22 (AWB)	Ehler, John 22	Offsets	2869.49	1200.00	1200.00	2859.62	1200.00	174.22	3115.39

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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]
W Krough-Nauman 1	W Krough-Nauman 1 (AWB)	Krough-Nauman 1	Offsets	2903.51	1200.00	1200.00	2892.18	1200.00	136.42	3459.88
W Adams Aggregate 2	W Adams Aggregate 2 (AWB)	Adams Aggregate 2	Offsets	2916.25	1200.00	1200.00	2906.95	1200.00	216.56	2410.01