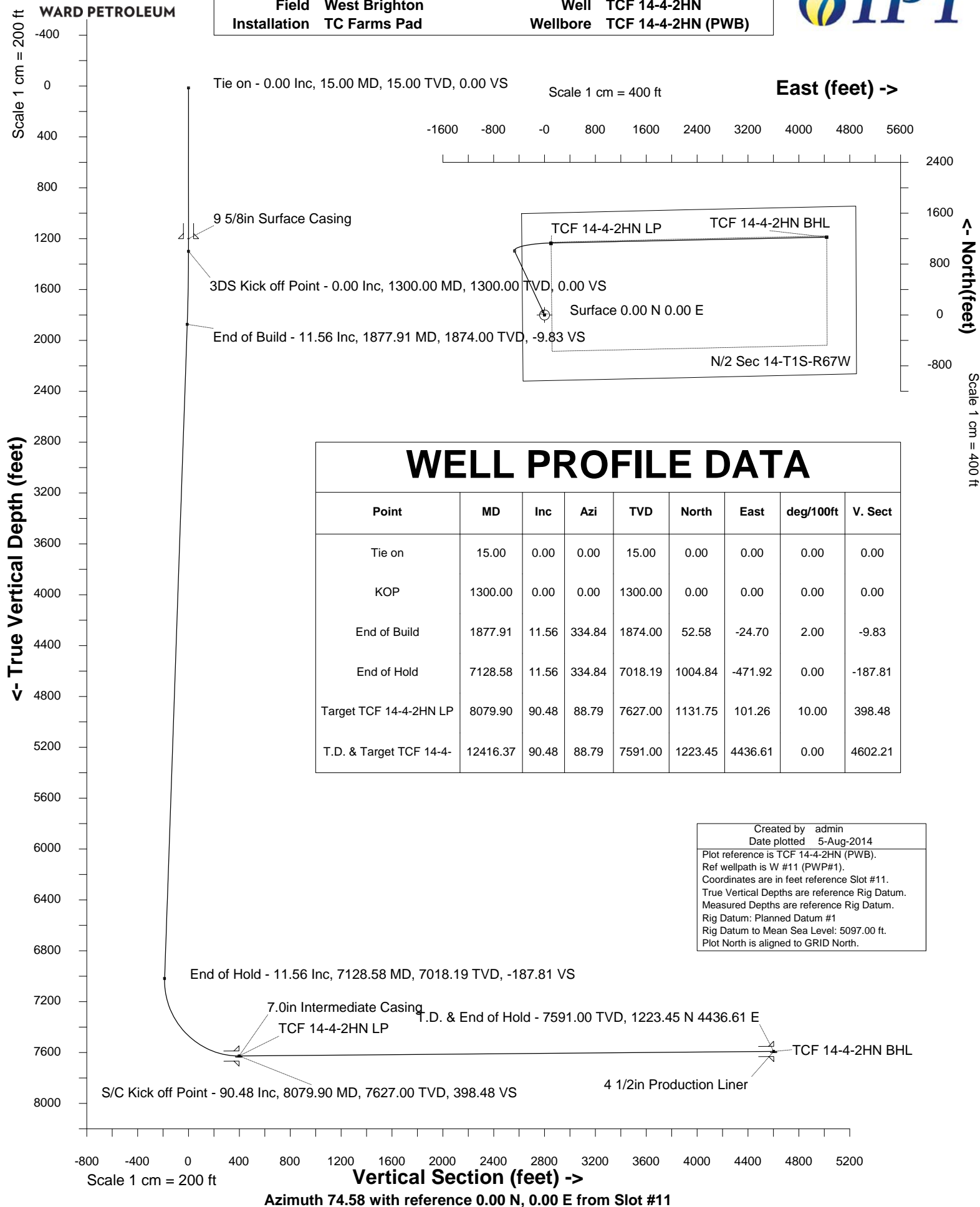




# WARD PETROLEUM



Location ADAMS COUNTY, CO Slot Slot #11  
Field West Brighton Well TCF 14-4-2HN  
Installation TC Farms Pad Wellbore TCF 14-4-2HN (PWB)





**WARD PETROLEUM**

INTEGRATED PETROLEUM TECHNOLOGIES, INC  
SYSDRILL  
Well Design Combined Report  
Wellbore: TCF 14-4-2HN (PWB)



**Wellhead Details**

Name	Northing	Easting	Latitude	Longitude	North	East	Elevation Above Inst.
Slot #11	1231730.6166	3178207.2133	39.96773000	-104.86419000	69.29N	10.72E	-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	1231730.62	3178207.21
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
1877.91	11.56	334.840	1874.00	52.58N	24.70W	2.00	-9.83	1231783.20	3178182.52
7128.58	11.56	334.840	7018.19	1004.84N	471.92W	==>	-187.81	1232735.42	3177735.31
8079.90	90.48	88.790	7627.00	1131.75N	101.26E	10.00	398.48	1232862.33	3178308.47
12416.37	90.48	88.790	7591.00	1223.45N	4436.61E	==>	4602.21	1232954.03	3182643.68

**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	1231730.62	3178207.21
15.00	0.00	0.000	15.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
1285.00	0.00	0.000	1285.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	1231730.62	3178207.21
1385.00	1.70	334.840	1384.99	1.14N	0.54W	2.00	-0.21	1231731.76	3178206.68
1485.00	3.70	334.840	1484.87	5.40N	2.54W	2.00	-1.01	1231736.02	3178204.67
1585.00	5.70	334.840	1584.53	12.82N	6.02W	2.00	-2.40	1231743.44	3178201.19
1685.00	7.70	334.840	1683.84	23.38N	10.98W	2.00	-4.37	1231754.00	3178196.23
1785.00	9.70	334.840	1782.69	37.07N	17.41W	2.00	-6.93	1231767.69	3178189.80
1877.91	11.56	334.840	1874.00	52.58N	24.70W	2.00	-9.83	1231783.20	3178182.52
1900.00	11.56	334.840	1895.64	56.59N	26.58W	==>	-10.58	1231787.20	3178180.64
2000.00	11.56	334.840	1993.61	74.72N	35.09W	==>	-13.97	1231805.34	3178172.12
2100.00	11.56	334.840	2091.58	92.86N	43.61W	==>	-17.36	1231823.47	3178163.60
2200.00	11.56	334.840	2189.56	111.00N	52.13W	==>	-20.75	1231841.61	3178155.09
2300.00	11.56	334.840	2287.53	129.13N	60.65W	==>	-24.14	1231859.74	3178146.57
2400.00	11.56	334.840	2385.50	147.27N	69.16W	==>	-27.53	1231877.88	3178138.05
2500.00	11.56	334.840	2483.47	165.40N	77.68W	==>	-30.91	1231896.02	3178129.53
2600.00	11.56	334.840	2581.45	183.54N	86.20W	==>	-34.30	1231914.15	3178121.02
2700.00	11.56	334.840	2679.42	201.68N	94.72W	==>	-37.69	1231932.29	3178112.50
2800.00	11.56	334.840	2777.39	219.81N	103.23W	==>	-41.08	1231950.42	3178103.98
2900.00	11.56	334.840	2875.36	237.95N	111.75W	==>	-44.47	1231968.56	3178095.47
3000.00	11.56	334.840	2973.33	256.08N	120.27W	==>	-47.86	1231986.69	3178086.95
3100.00	11.56	334.840	3071.31	274.22N	128.79W	==>	-51.25	1232004.83	3178078.43
3200.00	11.56	334.840	3169.28	292.36N	137.30W	==>	-54.64	1232022.96	3178069.91

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 74.580 degrees  
Bottom hole distance is 4602.21 Feet on azimuth 74.58 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Integrated Petroleum Technologies, Inc.  
Date Printed: 5-Aug-2014



# WARD PETROLEUM

## INTEGRATED PETROLEUM TECHNOLOGIES, INC SYSDRILL

Well Design Combined Report  
Wellbore: TCF 14-4-2HN (PWB)



Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
3300.00	11.56	334.840	3267.25	310.49N	145.82W	==>	-58.03	1232041.10	3178061.40
3400.00	11.56	334.840	3365.22	328.63N	154.34W	==>	-61.42	1232059.23	3178052.88
3500.00	11.56	334.840	3463.19	346.76N	162.86W	==>	-64.81	1232077.37	3178044.36
3600.00	11.56	334.840	3561.17	364.90N	171.37W	==>	-68.20	1232095.50	3178035.85
3700.00	11.56	334.840	3659.14	383.04N	179.89W	==>	-71.59	1232113.64	3178027.33
3800.00	11.56	334.840	3757.11	401.17N	188.41W	==>	-74.98	1232131.77	3178018.81
3900.00	11.56	334.840	3855.08	419.31N	196.93W	==>	-78.37	1232149.91	3178010.29
4000.00	11.56	334.840	3953.06	437.44N	205.44W	==>	-81.76	1232168.05	3178001.78
4100.00	11.56	334.840	4051.03	455.58N	213.96W	==>	-85.15	1232186.18	3177993.26
4200.00	11.56	334.840	4149.00	473.71N	222.48W	==>	-88.54	1232204.32	3177984.74
4300.00	11.56	334.840	4246.97	491.85N	230.99W	==>	-91.93	1232222.45	3177976.23
4400.00	11.56	334.840	4344.94	509.99N	239.51W	==>	-95.32	1232240.59	3177967.71
4500.00	11.56	334.840	4442.92	528.12N	248.03W	==>	-98.71	1232258.72	3177959.19
4600.00	11.56	334.840	4540.89	546.26N	256.55W	==>	-102.10	1232276.86	3177950.67
4700.00	11.56	334.840	4638.86	564.39N	265.06W	==>	-105.49	1232294.99	3177942.16
4800.00	11.56	334.840	4736.83	582.53N	273.58W	==>	-108.88	1232313.13	3177933.64
4900.00	11.56	334.840	4834.81	600.67N	282.10W	==>	-112.27	1232331.26	3177925.12
5000.00	11.56	334.840	4932.78	618.80N	290.62W	==>	-115.66	1232349.40	3177916.61
5100.00	11.56	334.840	5030.75	636.94N	299.13W	==>	-119.05	1232367.53	3177908.09
5200.00	11.56	334.840	5128.72	655.07N	307.65W	==>	-122.44	1232385.67	3177899.57
5300.00	11.56	334.840	5226.69	673.21N	316.17W	==>	-125.83	1232403.80	3177891.05
5400.00	11.56	334.840	5324.67	691.35N	324.69W	==>	-129.22	1232421.94	3177882.54
5500.00	11.56	334.840	5422.64	709.48N	333.20W	==>	-132.61	1232440.07	3177874.02
5600.00	11.56	334.840	5520.61	727.62N	341.72W	==>	-136.00	1232458.21	3177865.50
5700.00	11.56	334.840	5618.58	745.75N	350.24W	==>	-139.39	1232476.35	3177856.99
5800.00	11.56	334.840	5716.55	763.89N	358.76W	==>	-142.78	1232494.48	3177848.47
5900.00	11.56	334.840	5814.53	782.02N	367.27W	==>	-146.16	1232512.62	3177839.95
6000.00	11.56	334.840	5912.50	800.16N	375.79W	==>	-149.55	1232530.75	3177831.43
6100.00	11.56	334.840	6010.47	818.30N	384.31W	==>	-152.94	1232548.89	3177822.92
6200.00	11.56	334.840	6108.44	836.43N	392.83W	==>	-156.33	1232567.02	3177814.40
6300.00	11.56	334.840	6206.42	854.57N	401.34W	==>	-159.72	1232585.16	3177805.88
6400.00	11.56	334.840	6304.39	872.70N	409.86W	==>	-163.11	1232603.29	3177797.37
6500.00	11.56	334.840	6402.36	890.84N	418.38W	==>	-166.50	1232621.43	3177788.85
6600.00	11.56	334.840	6500.33	908.98N	426.90W	==>	-169.89	1232639.56	3177780.33
6700.00	11.56	334.840	6598.30	927.11N	435.41W	==>	-173.28	1232657.70	3177771.81
6800.00	11.56	334.840	6696.28	945.25N	443.93W	==>	-176.67	1232675.83	3177763.30
6900.00	11.56	334.840	6794.25	963.38N	452.45W	==>	-180.06	1232693.97	3177754.78
7000.00	11.56	334.840	6892.22	981.52N	460.97W	==>	-183.45	1232712.10	3177746.26
7100.00	11.56	334.840	6990.19	999.66N	469.48W	==>	-186.84	1232730.24	3177737.75
7128.58	11.56	334.840	7018.19	1004.84N	471.92W	==>	-187.81	1232735.42	3177735.31
7200.00	10.88	12.030	7088.34	1017.92N	473.56W	10.00	-185.91	1232748.51	3177733.67
7300.00	16.33	49.020	7185.67	1036.42N	460.95W	10.00	-168.84	1232767.00	3177746.28
7400.00	24.75	64.760	7279.30	1054.61N	431.33W	10.00	-135.45	1232785.19	3177775.90
7500.00	34.00	72.600	7366.38	1071.94N	385.60W	10.00	-86.76	1232802.52	3177821.62
7600.00	43.55	77.350	7444.27	1087.88N	325.16W	10.00	-24.26	1232818.47	3177882.07
7700.00	53.24	80.670	7510.60	1101.96N	251.83W	10.00	50.17	1232832.54	3177955.39
7800.00	63.00	83.230	7563.36	1113.74N	167.85W	10.00	134.26	1232844.32	3178039.37
7900.00	72.80	85.380	7600.94	1122.86N	75.77W	10.00	225.46	1232853.44	3178131.45
8000.00	82.62	87.310	7622.19	1129.05N	21.62E	10.00	320.99	1232859.62	3178228.83
8079.90	90.48	88.790	7627.00	1131.75N	101.26E	10.00	398.48	1232862.33	3178308.47
8100.00	90.48	88.790	7626.83	1132.18N	121.36E	==>	417.97	1232862.76	3178328.57
8200.00	90.48	88.790	7626.00	1134.29N	221.33E	==>	514.91	1232864.87	3178428.54
8300.00	90.48	88.790	7625.17	1136.41N	321.31E	==>	611.85	1232866.99	3178528.51
8400.00	90.48	88.790	7624.34	1138.52N	421.28E	==>	708.79	1232869.10	3178628.48
8500.00	90.48	88.790	7623.51	1140.64N	521.26E	==>	805.73	1232871.21	3178728.45
8600.00	90.48	88.790	7622.68	1142.75N	621.23E	==>	902.67	1232873.33	3178828.42
8700.00	90.48	88.790	7621.85	1144.87N	721.21E	==>	999.60	1232875.44	3178928.39
8800.00	90.48	88.790	7621.02	1146.98N	821.18E	==>	1096.54	1232877.56	3179028.37
8900.00	90.48	88.790	7620.19	1149.09N	921.15E	==>	1193.48	1232879.67	3179128.34
9000.00	90.48	88.790	7619.36	1151.21N	1021.13E	==>	1290.42	1232881.79	3179228.31

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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 74.580 degrees  
Bottom hole distance is 4602.21 Feet on azimuth 74.58 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Integrated Petroleum Technologies, Inc.  
Date Printed: 5-Aug-2014



**WARD PETROLEUM**

INTEGRATED PETROLEUM TECHNOLOGIES, INC  
SYSDRILL

Well Design Combined Report  
Wellbore: TCF 14-4-2HN (PWB)



Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
9100.00	90.48	88.790	7618.53	1153.32N	1121.10E	==>	1387.36	1232883.90	3179328.28
9200.00	90.48	88.790	7617.70	1155.44N	1221.08E	==>	1484.30	1232886.02	3179428.25
9300.00	90.48	88.790	7616.87	1157.55N	1321.05E	==>	1581.24	1232888.13	3179528.22
9400.00	90.48	88.790	7616.04	1159.67N	1421.02E	==>	1678.18	1232890.25	3179628.19
9500.00	90.48	88.790	7615.21	1161.78N	1521.00E	==>	1775.12	1232892.36	3179728.16
9600.00	90.48	88.790	7614.38	1163.90N	1620.97E	==>	1872.06	1232894.47	3179828.13
9700.00	90.48	88.790	7613.55	1166.01N	1720.95E	==>	1968.99	1232896.59	3179928.10
9800.00	90.48	88.790	7612.72	1168.13N	1820.92E	==>	2065.93	1232898.70	3180028.07
9900.00	90.48	88.790	7611.89	1170.24N	1920.90E	==>	2162.87	1232900.82	3180128.05
10000.00	90.48	88.790	7611.06	1172.35N	2020.87E	==>	2259.81	1232902.93	3180228.02
10100.00	90.48	88.790	7610.23	1174.47N	2120.84E	==>	2356.75	1232905.05	3180327.99
10200.00	90.48	88.790	7609.40	1176.58N	2220.82E	==>	2453.69	1232907.16	3180427.96
10300.00	90.48	88.790	7608.57	1178.70N	2320.79E	==>	2550.63	1232909.28	3180527.93
10400.00	90.48	88.790	7607.74	1180.81N	2420.77E	==>	2647.57	1232911.39	3180627.90
10500.00	90.48	88.790	7606.91	1182.93N	2520.74E	==>	2744.51	1232913.51	3180727.87
10600.00	90.48	88.790	7606.08	1185.04N	2620.71E	==>	2841.45	1232915.62	3180827.84
10700.00	90.48	88.790	7605.25	1187.16N	2720.69E	==>	2938.38	1232917.73	3180927.81
10800.00	90.48	88.790	7604.42	1189.27N	2820.66E	==>	3035.32	1232919.85	3181027.78
10900.00	90.48	88.790	7603.59	1191.39N	2920.64E	==>	3132.26	1232921.96	3181127.75
11000.00	90.48	88.790	7602.76	1193.50N	3020.61E	==>	3229.20	1232924.08	3181227.73
11100.00	90.48	88.790	7601.93	1195.62N	3120.59E	==>	3326.14	1232926.19	3181327.70
11200.00	90.48	88.790	7601.10	1197.73N	3220.56E	==>	3423.08	1232928.31	3181427.67
11300.00	90.48	88.790	7600.27	1199.84N	3320.53E	==>	3520.02	1232930.42	3181527.64
11400.00	90.48	88.790	7599.44	1201.96N	3420.51E	==>	3616.96	1232932.54	3181627.61
11500.00	90.48	88.790	7598.61	1204.07N	3520.48E	==>	3713.90	1232934.65	3181727.58
11600.00	90.48	88.790	7597.78	1206.19N	3620.46E	==>	3810.84	1232936.77	3181827.55
11700.00	90.48	88.790	7596.95	1208.30N	3720.43E	==>	3907.77	1232938.88	3181927.52
11800.00	90.48	88.790	7596.12	1210.42N	3820.41E	==>	4004.71	1232940.99	3182027.49
11900.00	90.48	88.790	7595.29	1212.53N	3920.38E	==>	4101.65	1232943.11	3182127.46
12000.00	90.48	88.790	7594.46	1214.65N	4020.35E	==>	4198.59	1232945.22	3182227.43
12100.00	90.48	88.790	7593.63	1216.76N	4120.33E	==>	4295.53	1232947.34	3182327.41
12200.00	90.48	88.790	7592.80	1218.88N	4220.30E	==>	4392.47	1232949.45	3182427.38
12300.00	90.48	88.790	7591.97	1220.99N	4320.28E	==>	4489.41	1232951.57	3182527.35
12400.00	90.48	88.790	7591.14	1223.11N	4420.25E	==>	4586.35	1232953.68	3182627.32
12416.37	90.48	88.790	7591.00	1223.45N	4436.61E	==>	4602.21	1232954.03	3182643.68

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Vertical Section is from 0.00N 0.00E on azimuth 74.580 degrees  
Bottom hole distance is 4602.21 Feet on azimuth 74.58 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Integrated Petroleum Technologies, Inc.  
Date Printed: 5-Aug-2014



**WARD PETROLEUM**

INTEGRATED PETROLEUM TECHNOLOGIES, INC

SYS DRILL

Well Design Combined Report

Wellbore: TCF 14-4-2HN (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	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	8079.00	7627.01	1131.73N	100.37E
6 1/8	8079.00	7627.01	1131.73N	100.37E	12416.37	7591.00	1223.45N	4436.61E

### 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	8079.00	7627.01	1131.73N	100.37E
4 1/2in Production Liner	7879.00	7594.37	1121.18N	95.64W	12416.37	7591.00	1223.45N	4436.61E

### Targets

Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting	Last Revised
TCF 14-4-2HN	1223.45N	4436.61E	7591.00	39.97100000	-104.84833000	1232954.03	3182643.68	11-Feb-2014
BHL								
TCF 14-4-2HN LP	1122.75N	101.26E	7627.00	39.97081000	-104.86380000	1232853.33	3178308.47	11-Feb-2014

### Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
142656	Planned	12416.37	7591.00	WdW Rate Gyro	Standard

### Notes

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 74.580 degrees  
Bottom hole distance is 4602.21 Feet on azimuth 74.58 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Integrated Petroleum Technologies, Inc.  
Date Printed: 5-Aug-2014



SYSDRILL  
Closest Approach + Clearance Factor Summary Report  
Wellbore: TCF 14-4-2HN (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 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
TCF 14-4-2HN (PWB)	9-Dec-2013	5-Aug-2014

Well		
Name	Government ID	Last Revised
TCF 14-4-2HN		10-Jan-2014

Slot						
Name	Grid Northing	Grid Easting	Latitude	Longitude	North	East
Slot #11	1231730.6166	3178207.2133	39.96773000	-104.86419000	69.29N	10.72E

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 Wellbore	Offset Structure	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
TCF 14-4-1HC (PWB)	TC Farms Pad	15.61	1200.00	12416.37	12.79	1200.00	5.54	1200.00
TCF 14-4-3HC (PWB)	TC Farms Pad	15.61	1300.00	12409.13	12.80	1196.10	5.55	1196.10
TCF 15-2-2HN (PWB)	TC Farms Pad	15.62	1310.93	7543.17	9.81	7544.53	1.59	7560.93
TCF 15-2-1HC (PWB)	TC Farms Pad	16.58	1310.93	7668.71	13.82	1327.34	5.92	1376.55
TCF 15-2-3HC (PWB)	TC Farms Pad	26.11	1300.00	7599.77	23.29	1196.10	9.28	1196.10
TCF 14-4-4HN (PWB)	TC Farms Pad	31.23	1300.00	12401.94	28.41	1196.10	10.35	12401.94
TCF 15-2-4HN (PWB)	TC Farms Pad	40.07	1300.00	7352.22	37.26	1196.10	13.85	1524.19
TCF 14-4-5HC (PWB)	TC Farms Pad	43.46	1261.72	1261.72	40.64	1196.10	15.44	1196.10
TCF 15-2-5HC (PWB)	TC Farms Pad	54.93	1275.00	1275.00	52.12	1196.10	19.52	1196.10
TCF 14-4-6HN (PWB)	TC Farms Pad	59.06	1199.00	12389.82	56.25	1199.00	20.95	1199.00
TCF 15-2-6HN (PWB)	TC Farms Pad	70.12	1200.00	1200.00	67.30	1200.00	24.87	1200.00
W RC Nauman 2 (AWB)	Offsets	467.70	1300.00	1300.00	458.00	1310.93	44.03	1770.25

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**WARD PETROLEUM**

SYSDRILL  
Closest Approach + Clearance Factor Summary Report  
Wellbore: TCF 14-4-2HN (PWB)



Offset Wellbore	Offset Structure	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
W Nauman 1-14 (AWB)	Offsets	599.95	1300.00	8553.71	587.92	1343.74	31.55	8561.59
W Krough-Nauman 1 (AWB)	Offsets	601.25	10818.35	10818.35	549.29	10815.00	11.55	10776.15
W RC Nauman 1 (AWB)	Offsets	686.75	5242.50	8304.86	662.20	5242.50	27.95	5264.34
W Ehler, John 19 (AWB)	Offsets	746.19	5318.24	5318.24	723.13	5318.24	32.35	5313.56
W Ehler, John 18 (AWB)	Offsets	1038.79	2278.78	2278.78	1025.03	2377.20	50.07	5247.94
W Biow-Newstat 1 (AWB)	Offsets	1710.48	5446.68	5446.68	1687.17	5446.68	73.30	5510.41
W RC Nauman 4 (AWB)	Offsets	1731.39	1300.00	1300.00	1721.63	1310.93	100.35	5231.54
W Ehler 10-5P (AWB)	Offsets	1742.09	5567.08	5567.08	1720.65	5567.08	81.26	5543.22
W RC Nauman 3 (AWB)	Offsets	1894.84	2615.00	9625.45	1879.76	2787.31	81.27	5313.56
W United Bank of Denver 1 (AWB)	Offsets	1894.95	1300.00	1300.00	1884.99	1310.93	118.81	4936.26
W Ehler, John 15 (AWB)	Offsets	1943.09	1300.00	1300.00	1933.00	1327.34	105.88	5149.51
W Nauman 1 (AWB)	Offsets	1972.81	2590.46	9696.59	1957.62	2787.31	82.53	5444.79
W Ehler, John 10 (AWB)	Offsets	2023.72	5461.19	5461.19	1999.45	5461.19	83.11	5592.43
W United Bank of Denver 3 (AWB)	Offsets	2027.38	1300.00	1300.00	2017.79	1310.93	136.22	4116.05
W Ehler, John 11 (AWB)	Offsets	2269.76	4690.20	4690.20	2246.66	4887.05	91.37	5461.19
W Krogh 2 (AWB)	Offsets	2363.59	12252.53	12252.53	2337.74	12252.53	90.44	12416.37