



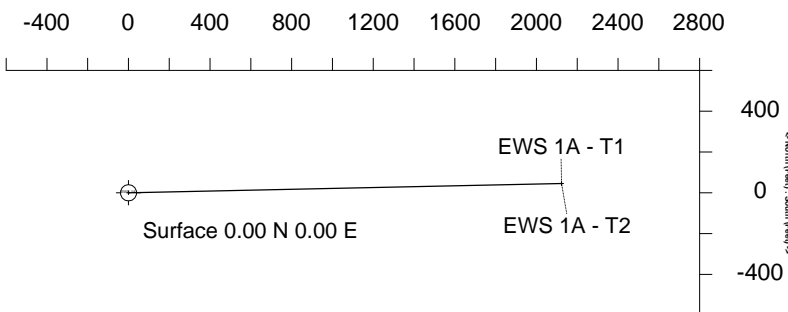
Expedition Water Solutions

Location Weld County, CO
Field Wattenberg
Installation EWS 1A

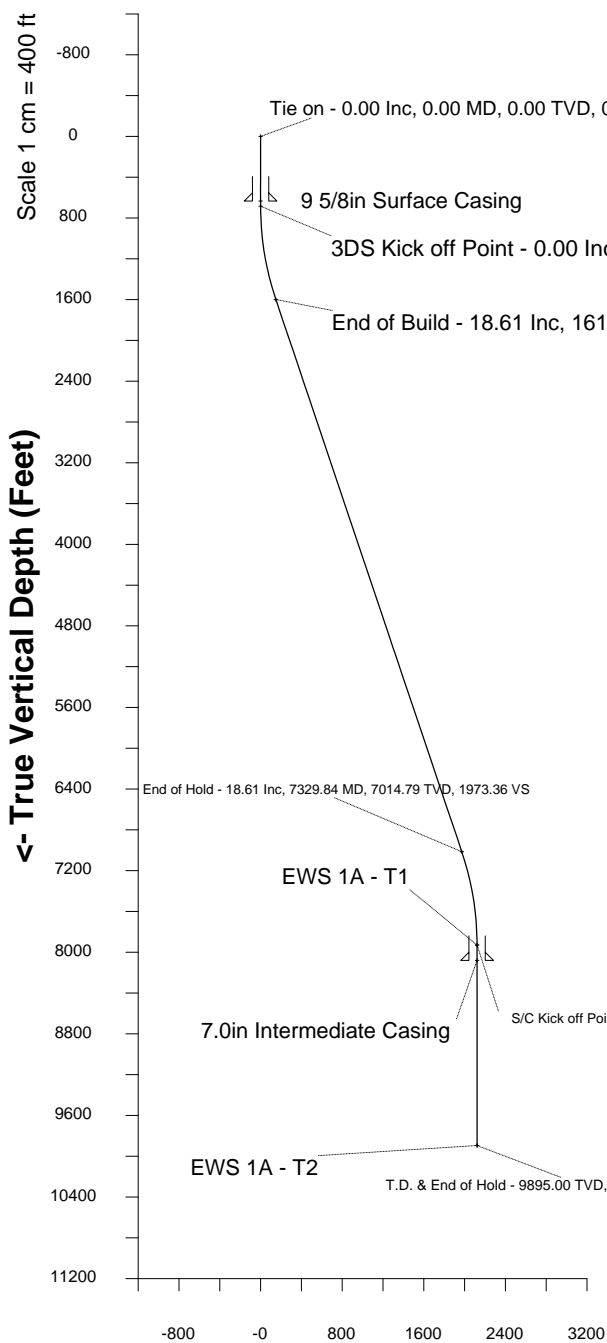
Slot EWS 1A
Well EWS 1A
Wellbore EWS 1A (PWB)

Scale 1 cm = 200 ft

East (Feet) ->



Scale 1 cm = 200 ft

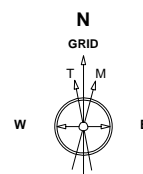


WELL PROFILE DATA

Point	MD	Inc	Azi	TVD	North	East	deg/100ft	V. Sect
Tie on	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP	685.00	0.00	88.77	685.00	0.00	0.00	0.00	0.00
End of Build	1615.49	18.61	88.77	1599.21	3.21	149.75	2.00	149.79
End of Hold	7329.84	18.61	88.77	7014.79	42.28	1972.90	0.00	1973.36
Target EWS 1A - T1	8260.33	0.00	88.77	7929.00	45.49	2122.66	2.00	2123.14
T.D. & Target EWS 1A -	10226.33	0.00	226.33	9895.00	45.49	2122.66	0.00	2123.14

Created by admin
Date plotted 14-Oct-2014

Plot reference is EWS 1A (PWB).
Ref wellpath is EWS 1A (PWP#1).
Coordinates are in Feet reference Installation Centre.
True Vertical Depths are reference Rig Datum.
Measured Depths are reference Rig Datum.
Rig Datum: Planned Datum #1
Rig Datum to Mean Sea Level: 4907.00 ft.
Plot North is aligned to GRID North.



26-Sep-2014
IGRF Model (1900-0-2015.0) Dip: 67.24 deg Field: 52982.5 nT
Lat: N40 38 23.1720 Long: W104 3 36.7200 Elev: 4907.00 ft
Magnetic North is 8.05 deg East of True North
GRID North is 0.93 deg East of True North
To correct azimuth from True to GRID subtract 0.93 deg
To correct azimuth from Magnetic to GRID add 7.12 deg

Vertical Section (Feet) ->

Scale 1 cm = 400 ft

Azimuth 88.77 with reference 0.00 N, 0.00 E from Installation Centre



INTEGRATED PETROLEUM TECHNOLOGIES, INC
SYSDRILL

Well Design Combined Report
Wellbore: EWS 1A (PWB)

Wellhead Details							
Name	Northing	Easting	Latitude	Longitude	North	East	Elevation Above Inst.
EWS 1A	1479154.2982	3399563.3647	N40 38 23.1720	W104 3 36.7200	0.00N	0.00E	-0.00

Declination			
Date	Source	Time	
26-Sep-2014	IGRF Model [1900.0-2015.0]	11:07	

Site Details				
Name	Northing	Easting	Coord System Name	North Alignment
EWS 1A	1479154.2982	3399563.3647	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
0.00	0.00	0.000	0.00	0.00N	0.00E		0.00	1479154.30	3399563.36
685.00	0.00	88.770	685.00	0.00N	0.00E	==>	0.00	1479154.30	3399563.36
7329.84	18.61	88.770	7014.79	42.28N	1972.90E	==>	1973.36	1479154.30	3401536.22
10226.33	0.00	226.330	9895.00	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97

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	1479154.30	3399563.36
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	1479154.30	3399563.36
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	1479154.30	3399563.36
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	1479154.30	3399563.36
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	1479154.30	3399563.36
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	1479154.30	3399563.36
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	1479154.30	3399563.36
685.00	0.00	88.770	685.00	0.00N	0.00E	==>	0.00	1479154.30	3399563.36
785.00	2.00	88.770	784.98	0.04N	1.74E	2.00	1.75	1479154.34	3399565.11
885.00	4.00	88.770	884.84	0.15N	6.98E	2.00	6.98	1479154.45	3399570.34
985.00	6.00	88.770	984.45	0.34N	15.69E	2.00	15.69	1479154.63	3399579.05
1085.00	8.00	88.770	1083.70	0.60N	27.87E	2.00	27.88	1479154.90	3399591.24
1185.00	10.00	88.770	1182.47	0.93N	43.51E	2.00	43.52	1479155.23	3399606.88
1285.00	12.00	88.770	1280.62	1.34N	62.59E	2.00	62.60	1479155.64	3399625.95
1385.00	14.00	88.770	1378.06	1.82N	85.08E	2.00	85.10	1479156.12	3399648.44
1485.00	16.00	88.770	1474.64	2.38N	110.95E	2.00	110.98	1479156.68	3399674.31
1585.00	18.00	88.770	1570.27	3.00N	140.18E	2.00	140.21	1479157.30	3399703.54
1700.00	18.61	88.770	1679.31	3.79N	176.72E	==>	176.76	1479158.09	3399740.08
1800.00	18.61	88.770	1774.08	4.47N	208.62E	==>	208.67	1479158.77	3399771.98
1900.00	18.61	88.770	1868.85	5.15N	240.53E	==>	240.58	1479159.45	3399803.89
2000.00	18.61	88.770	1963.62	5.84N	272.43E	==>	272.49	1479160.14	3399835.79
2100.00	18.61	88.770	2058.39	6.52N	304.34E	==>	304.41	1479160.82	3399867.69
2200.00	18.61	88.770	2153.16	7.21N	336.24E	==>	336.32	1479161.50	3399899.60
2300.00	18.61	88.770	2247.94	7.89N	368.15E	==>	368.23	1479162.19	3399931.50
2400.00	18.61	88.770	2342.71	8.57N	400.05E	==>	400.14	1479162.87	3399963.41
2500.00	18.61	88.770	2437.48	9.26N	431.95E	==>	432.05	1479163.56	3399995.31
2600.00	18.61	88.770	2532.25	9.94N	463.86E	==>	463.97	1479164.24	3400027.21
2700.00	18.61	88.770	2627.02	10.62N	495.76E	==>	495.88	1479164.92	3400059.12
2800.00	18.61	88.770	2721.79	11.31N	527.67E	==>	527.79	1479165.61	3400091.02
2900.00	18.61	88.770	2816.56	11.99N	559.57E	==>	559.70	1479166.29	3400122.93
3000.00	18.61	88.770	2911.34	12.68N	591.48E	==>	591.61	1479166.97	3400154.83
3100.00	18.61	88.770	3006.11	13.36N	623.38E	==>	623.53	1479167.66	3400186.73
3200.00	18.61	88.770	3100.88	14.04N	655.29E	==>	655.44	1479168.34	3400218.64
3300.00	18.61	88.770	3195.65	14.73N	687.19E	==>	687.35	1479169.03	3400250.54
3400.00	18.61	88.770	3290.42	15.41N	719.10E	==>	719.26	1479169.71	3400282.45
3500.00	18.61	88.770	3385.19	16.09N	751.00E	==>	751.17	1479170.39	3400314.35
3600.00	18.61	88.770	3479.96	16.78N	782.91E	==>	783.09	1479171.08	3400346.25
3700.00	18.61	88.770	3574.74	17.46N	814.81E	==>	815.00	1479171.76	3400378.16
3800.00	18.61	88.770	3669.51	18.15N	846.72E	==>	846.91	1479172.44	3400410.06
3900.00	18.61	88.770	3764.28	18.83N	878.62E	==>	878.82	1479173.13	3400441.97

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 4907.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 88.770 degrees
Bottom hole distance is 2123.14 Feet on azimuth 88.77 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 14-Oct-2014



INTEGRATED PETROLEUM TECHNOLOGIES, INC
SYSDRILL

Well Design Combined Report
Wellbore: EWS 1A (PWB)

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
4000.00	18.61	88.770	3859.05	19.51N	910.53E	==>	910.73	1479173.81	3400473.87
4100.00	18.61	88.770	3953.82	20.20N	942.43E	==>	942.65	1479174.50	3400505.77
4200.00	18.61	88.770	4048.59	20.88N	974.34E	==>	974.56	1479175.18	3400537.68
4300.00	18.61	88.770	4143.36	21.56N	1006.24E	==>	1006.47	1479175.86	3400569.58
4400.00	18.61	88.770	4238.14	22.25N	1038.14E	==>	1038.38	1479176.55	3400601.49
4500.00	18.61	88.770	4332.91	22.93N	1070.05E	==>	1070.29	1479177.23	3400633.39
4600.00	18.61	88.770	4427.68	23.62N	1101.95E	==>	1102.21	1479177.91	3400665.29
4700.00	18.61	88.770	4522.45	24.30N	1133.86E	==>	1134.12	1479178.60	3400697.20
4800.00	18.61	88.770	4617.22	24.98N	1165.76E	==>	1166.03	1479179.28	3400729.10
4900.00	18.61	88.770	4711.99	25.67N	1197.67E	==>	1197.94	1479179.97	3400761.01
5000.00	18.61	88.770	4806.76	26.35N	1229.57E	==>	1229.86	1479180.65	3400792.91
5100.00	18.61	88.770	4901.53	27.04N	1261.48E	==>	1261.77	1479181.33	3400824.81
5200.00	18.61	88.770	4996.31	27.72N	1293.38E	==>	1293.68	1479182.02	3400856.72
5300.00	18.61	88.770	5091.08	28.40N	1325.29E	==>	1325.59	1479182.70	3400888.62
5400.00	18.61	88.770	5185.85	29.09N	1357.19E	==>	1357.50	1479183.38	3400920.53
5500.00	18.61	88.770	5280.62	29.77N	1389.10E	==>	1389.42	1479184.07	3400952.43
5600.00	18.61	88.770	5375.39	30.45N	1421.00E	==>	1421.33	1479184.75	3400984.33
5700.00	18.61	88.770	5470.16	31.14N	1452.91E	==>	1453.24	1479185.44	3401016.24
5800.00	18.61	88.770	5564.93	31.82N	1484.81E	==>	1485.15	1479186.12	3401048.14
5900.00	18.61	88.770	5659.71	32.51N	1516.72E	==>	1517.06	1479186.80	3401080.05
6000.00	18.61	88.770	5754.48	33.19N	1548.62E	==>	1548.98	1479187.49	3401111.95
6100.00	18.61	88.770	5849.25	33.87N	1580.52E	==>	1580.89	1479188.17	3401143.85
6200.00	18.61	88.770	5944.02	34.56N	1612.43E	==>	1612.80	1479188.85	3401175.76
6300.00	18.61	88.770	6038.79	35.24N	1644.33E	==>	1644.71	1479189.54	3401207.66
6400.00	18.61	88.770	6133.56	35.92N	1676.24E	==>	1676.62	1479190.22	3401239.57
6500.00	18.61	88.770	6228.33	36.61N	1708.14E	==>	1708.54	1479190.91	3401271.47
6600.00	18.61	88.770	6323.11	37.29N	1740.05E	==>	1740.45	1479191.59	3401303.37
6700.00	18.61	88.770	6417.88	37.98N	1771.95E	==>	1772.36	1479192.27	3401335.28
6800.00	18.61	88.770	6512.65	38.66N	1803.86E	==>	1804.27	1479192.96	3401367.18
6900.00	18.61	88.770	6607.42	39.34N	1835.76E	==>	1836.18	1479193.64	3401399.09
7000.00	18.61	88.770	6702.19	40.03N	1867.67E	==>	1868.10	1479194.32	3401430.99
7100.00	18.61	88.770	6796.96	40.71N	1899.57E	==>	1900.01	1479195.01	3401462.89
7200.00	18.61	88.770	6891.73	41.39N	1931.48E	==>	1931.92	1479195.69	3401494.80
7300.00	18.61	88.770	6986.51	42.08N	1963.38E	==>	1963.83	1479196.37	3401526.70
7329.84	18.61	88.770	7014.79	42.28N	1972.90E	==>	1973.36	1479196.58	3401536.22
7429.84	16.61	88.770	7110.10	42.93N	2003.15E	2.00	2003.61	1479197.23	3401566.47
7529.84	14.61	88.770	7206.40	43.51N	2030.05E	2.00	2030.51	1479197.80	3401593.37
7629.84	12.61	88.770	7303.59	44.01N	2053.57E	2.00	2054.04	1479198.31	3401616.89
7729.84	10.61	88.770	7401.54	44.44N	2073.69E	2.00	2074.17	1479198.74	3401637.01
7829.84	8.61	88.770	7500.13	44.80N	2090.38E	2.00	2090.86	1479199.10	3401653.70
7929.84	6.61	88.770	7599.25	45.08N	2103.62E	2.00	2104.10	1479199.38	3401666.94
8029.84	4.61	88.770	7698.76	45.29N	2113.39E	2.00	2113.88	1479199.59	3401676.71
8129.84	2.61	88.770	7798.56	45.43N	2119.69E	2.00	2120.17	1479199.72	3401683.00
8229.84	0.61	88.770	7898.51	45.49N	2122.49E	2.00	2122.98	1479199.78	3401685.81
8300.00	0.00	88.770	7968.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
8400.00	0.00	88.770	8068.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
8500.00	0.00	88.770	8168.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
8600.00	0.00	88.770	8268.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
8700.00	0.00	88.770	8368.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
8800.00	0.00	88.770	8468.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
8900.00	0.00	88.770	8568.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9000.00	0.00	88.770	8668.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9100.00	0.00	88.770	8768.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9200.00	0.00	88.770	8868.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9300.00	0.00	88.770	8968.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9400.00	0.00	88.770	9068.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9500.00	0.00	88.770	9168.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9600.00	0.00	88.770	9268.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9700.00	0.00	88.770	9368.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9800.00	0.00	88.770	9468.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
9900.00	0.00	88.770	9568.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97

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 4907.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 88.770 degrees
Bottom hole distance is 2123.14 Feet on azimuth 88.77 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 14-Oct-2014



INTEGRATED PETROLEUM TECHNOLOGIES, INC
SYSDRILL
Well Design Combined Report
Wellbore: EWS 1A (PWB)

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
10000.00	0.00	88.770	9668.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
10100.00	0.00	88.770	9768.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
10200.00	0.00	88.770	9868.67	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97
10226.33	0.00	226.330	9895.00	45.49N	2122.66E	==>	2123.14	1479199.79	3401685.97

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INTEGRATED PETROLEUM TECHNOLOGIES, INC
SYSDRILL

Well Design Combined Report
Wellbore: EWS 1A (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	0.00	0.00	0.00N	0.00E	635.00	635.00	0.00N	0.00E
8 3/4	634.00	634.00	0.00N	0.00E	8410.33	8079.00	45.49N	2122.66E
6 1/8	8430.33	8099.00	45.49N	2122.66E	10226.33	9895.00	45.49N	2122.66E

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	0.00	0.00	0.00N	0.00E	634.00	634.00	0.00N	0.00E
7.0in Intermediate Casing	0.00	0.00	0.00N	0.00E	8410.33	8079.00	45.49N	2122.66E
4 1/2in Production Liner	8247.00	7915.67	45.49N	2122.62E	10226.33	9895.00	45.49N	2122.66E

Targets								
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting	Last Revised
EWS 1A - T1	45.49N	2122.66E	7929.00	N40 38 23.2800	W104 3 9.1800	1479199.79	3401685.97	13-Oct-2014
EWS 1A - T2	45.49N	2122.66E	9895.00	N40 38 23.2800	W104 3 9.1800	1479199.79	3401685.97	13-Oct-2014

Formations			
Formation Name	Formation MD	Formation TVD	
Pierre Shale:		479.00	479.00
Parkman Ss:		3509.29	3394.00
Sussex Ss		3778.36	3649.00
Shannon Ss		4237.36	4084.00
Niobrara		6376.19	6111.00
Ft Hayes		6632.60	6354.00
Codell Ss		6720.18	6437.00
Carlisle Sh		6734.95	6451.00
Greenhorn		6882.67	6591.00
X Bentonite		6957.59	6662.00
D Ss		7132.75	6828.00
J Ss		7224.55	6915.00
Skull Creek		7393.14	7075.00
Dakota Ss		7497.34	7175.00
Morrison Fm		7596.40	7271.00
Entrada Ss		7873.15	7543.00
Permian (shale marker in Lykins)		7929.59	7599.00
Forelle Anh		8142.29	7811.00
Minnekahta Anh		8188.32	7857.00
Blaine Anh		8364.33	8033.00
Lyons Ss		8410.33	8079.00
L. Satanka Shale		8532.33	8201.00
Wolfcamp		8739.33	8408.00
Amazon		8821.33	8490.00
Council Grove		8887.33	8556.00
Admire		9064.33	8733.00
U. Virgil		9110.33	8779.00
Mamoo		9148.33	8817.00
L. Virgil		9200.33	8869.00
Missouri Carbonate		9280.33	8949.00
Desmoine		9454.33	9123.00
Cherokee		9510.33	9179.00
Atoka Carbonate		9666.33	9335.00
Atoka Shale		9806.33	9475.00
Morrow		10090.33	9759.00
Mississippian		10175.33	9844.00

Survey Tool Program					
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
304502	Planned	10226.33	9895.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating

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 4907.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 88.770 degrees
Bottom hole distance is 2123.14 Feet on azimuth 88.77 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 14-Oct-2014



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: EWS 1A (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
EWS 1A (PWB)	26-Sep-2014	14-Oct-2014

Well		
Name	Government ID	Last Revised
EWS 1A		26-Sep-2014

Slot						
Name	Grid Northing	Grid Easting	Latitude	Longitude	North	East
EWS 1A	1479154.2982	3399563.3647	N40 38 23.1720	W104 3 36.7200	0.00N	0.00E

Installation					
Name	Easting	Northing	Coord System Name	North Alignment	
EWS 1A	3399563.3647	1479154.2982	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid	

Field				
Name	Easting	Northing	Coord System Name	North Alignment
Wattenberg	3399563.3647	1479154.2982	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid

Clearance Summary								
Offset WellName	Offset Wellbore	Separation [ft]	MD[ft]	Diverging From[ft]	Ellipse Separation [ft]	Ellipse MD[ft]	Clearance Factor	Clearance MD[ft]
Taylor ##1	Taylor ##1 (AWB)	392.91	688.98	688.98	383.23	721.78	29.54	1640.42
DUELL ET AL #1-26	DUELL ET AL #1-26 (AWB)	524.65	7416.24	7416.24	459.06	7416.24	7.99	7431.10
Taylor ##1A	Taylor ##1A (AWB)	678.24	688.98	688.98	668.59	721.78	41.97	3051.18
FEDERAL J #15-23	FEDERAL J #15-23 (AWB)	988.71	4740.81	4740.81	936.37	4839.24	17.00	5938.32
Stanley #14-23	Stanley #14-23 (AWB)	1801.07	688.98	688.98	1791.40	705.38	67.75	7283.46
EWS #1	EWS #1 (AWB)	1837.29	688.98	10226.33	1826.28	705.38	59.15	10226.33