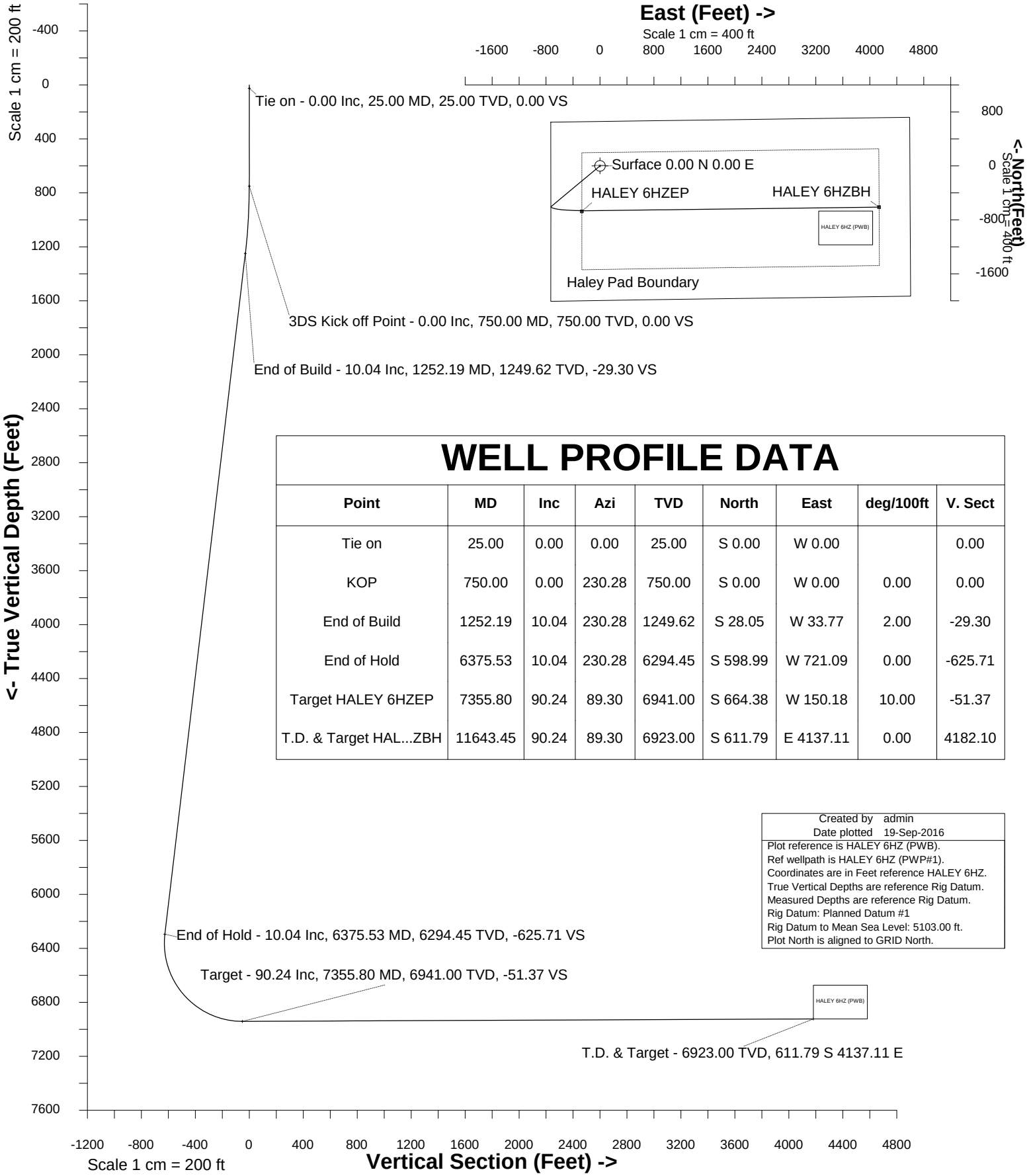
Cub Creek Energy, LLC

Location	**Weld County, CO**	**Slot**	**HALEY 6HZ**
Field	**WATTENBERG**	**Well**	**HALEY 6HZ**
Installation	**Haley**	**Wellbore**	**HALEY 6HZ (PWB)**



WELL PROFILE DATA

Point	MD	Inc	Azi	TVD	North	East	deg/100ft	V. Sect
Tie on	25.00	0.00	0.00	25.00	S 0.00	W 0.00		0.00
KOP	750.00	0.00	230.28	750.00	S 0.00	W 0.00	0.00	0.00
End of Build	1252.19	10.04	230.28	1249.62	S 28.05	W 33.77	2.00	-29.30
End of Hold	6375.53	10.04	230.28	6294.45	S 598.99	W 721.09	0.00	-625.71
Target HALEY 6HZEP	7355.80	90.24	89.30	6941.00	S 664.38	W 150.18	10.00	-51.37
T.D. & Target HAL...ZBH	11643.45	90.24	89.30	6923.00	S 611.79	E 4137.11	0.00	4182.10

Created by admin
Date plotted 19-Sep-2016

Plot reference is HALEY 6HZ (PWB).
Ref wellpath is HALEY 6HZ (PWP#1).
Coordinates are in Feet reference HALEY 6HZ.
True Vertical Depths are reference Rig Datum.
Measured Depths are reference Rig Datum.
Rig Datum: Planned Datum #1
Rig Datum to Mean Sea Level: 5103.00 ft.
Plot North is aligned to GRID North.

SYSDRILL
Well Design Combined Report
Wellbore: HALEY 6HZ (PWB)

Wellhead Details

Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
HALEY 6HZ	40.20933000	-105.03375000	1319443.5714	3130220.0682	0.26N	50.27E	0.00

Declination

Date	Source	Time
Oct-19-2015	IGRF Model [1900.0-2020.0]	09:07

Installation Details

Name	Installation Position (Latitude)	Installation Position (Longitude)	Northing	Easting	Coord System Name	North Alignment
Haley	40.20933000	-105.03393000	1319443.3072	3130169.7961	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	1319443.57	3130220.07
750.00	0.00	230.280	750.00	0.00N	0.00E	==>	0.00	1319443.57	3130220.07
1252.19	10.04	230.280	1249.62	28.05S	33.77W	2.00	-29.30	1319415.52	3130186.30
6375.53	10.04	230.280	6294.45	598.99S	721.09W	==>	-625.71	1318844.61	3129499.01
7355.80	90.24	89.300	6941.00	664.38S	150.18W	10.00	-51.37	1318779.22	3130069.90
11643.45	90.24	89.300	6923.00	611.79S	4137.11E	==>	4182.10	1318831.81	3134356.99

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
25.00	0.00	0.000	25.00	0.00N	0.00E	==>	0.00	Slot Datum
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	
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	230.280	800.00	0.28S	0.34W	2.00	-0.29	
900.00	3.00	230.280	899.93	2.51S	3.02W	2.00	-2.62	
1000.00	5.00	230.280	999.68	6.97S	8.39W	2.00	-7.28	
1100.00	7.00	230.280	1099.13	13.64S	16.43W	2.00	-14.25	
1200.00	9.00	230.280	1198.15	22.54S	27.13W	2.00	-23.54	
1300.00	10.04	230.280	1296.70	33.38S	40.19W	==>	-34.87	
1400.00	10.04	230.280	1395.17	44.52S	53.60W	==>	-46.51	
1500.00	10.04	230.280	1493.63	55.67S	67.02W	==>	-58.15	
1600.00	10.04	230.280	1592.10	66.81S	80.43W	==>	-69.79	
1700.00	10.04	230.280	1690.57	77.96S	93.85W	==>	-81.43	
1800.00	10.04	230.280	1789.04	89.10S	107.26W	==>	-93.07	
1900.00	10.04	230.280	1887.50	100.24S	120.68W	==>	-104.72	
2000.00	10.04	230.280	1985.97	111.39S	134.09W	==>	-116.36	
2100.00	10.04	230.280	2084.44	122.53S	147.51W	==>	-128.00	
2200.00	10.04	230.280	2182.91	133.68S	160.92W	==>	-139.64	
2300.00	10.04	230.280	2281.37	144.82S	174.34W	==>	-151.28	
2400.00	10.04	230.280	2379.84	155.96S	187.75W	==>	-162.92	
2500.00	10.04	230.280	2478.31	167.11S	201.17W	==>	-174.56	
2600.00	10.04	230.280	2576.78	178.25S	214.59W	==>	-186.20	
2700.00	10.04	230.280	2675.24	189.39S	228.00W	==>	-197.84	
2800.00	10.04	230.280	2773.71	200.54S	241.42W	==>	-209.48	
2900.00	10.04	230.280	2872.18	211.68S	254.83W	==>	-221.12	

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 5103.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 98.410 degrees
Bottom hole distance is 4182.10 Feet on azimuth 98.41 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 22-Sep-2016

SYSDRILL
Well Design Combined Report
Wellbore: HALEY 6HZ (PWB)

Interpolated Wellpath

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3000.00	10.04	230.280	2970.65	222.83S	268.25W	==>	-232.76	
3100.00	10.04	230.280	3069.11	233.97S	281.66W	==>	-244.41	
3200.00	10.04	230.280	3167.58	245.11S	295.08W	==>	-256.05	
3300.00	10.04	230.280	3266.05	256.26S	308.49W	==>	-267.69	
3400.00	10.04	230.280	3364.52	267.40S	321.91W	==>	-279.33	
3500.00	10.04	230.280	3462.98	278.54S	335.32W	==>	-290.97	
3600.00	10.04	230.280	3561.45	289.69S	348.74W	==>	-302.61	
3700.00	10.04	230.280	3659.92	300.83S	362.15W	==>	-314.25	
3800.00	10.04	230.280	3758.39	311.98S	375.57W	==>	-325.89	
3900.00	10.04	230.280	3856.85	323.12S	388.99W	==>	-337.53	
4000.00	10.04	230.280	3955.32	334.26S	402.40W	==>	-349.17	
4100.00	10.04	230.280	4053.79	345.41S	415.82W	==>	-360.81	
4200.00	10.04	230.280	4152.26	356.55S	429.23W	==>	-372.45	
4300.00	10.04	230.280	4250.72	367.69S	442.65W	==>	-384.10	
4400.00	10.04	230.280	4349.19	378.84S	456.06W	==>	-395.74	
4500.00	10.04	230.280	4447.66	389.98S	469.48W	==>	-407.38	
4600.00	10.04	230.280	4546.13	401.13S	482.89W	==>	-419.02	
4700.00	10.04	230.280	4644.59	412.27S	496.31W	==>	-430.66	
4800.00	10.04	230.280	4743.06	423.41S	509.72W	==>	-442.30	
4900.00	10.04	230.280	4841.53	434.56S	523.14W	==>	-453.94	
5000.00	10.04	230.280	4940.00	445.70S	536.55W	==>	-465.58	
5100.00	10.04	230.280	5038.46	456.84S	549.97W	==>	-477.22	
5200.00	10.04	230.280	5136.93	467.99S	563.39W	==>	-488.86	
5300.00	10.04	230.280	5235.40	479.13S	576.80W	==>	-500.50	
5400.00	10.04	230.280	5333.87	490.28S	590.22W	==>	-512.15	
5500.00	10.04	230.280	5432.33	501.42S	603.63W	==>	-523.79	
5600.00	10.04	230.280	5530.80	512.56S	617.05W	==>	-535.43	
5700.00	10.04	230.280	5629.27	523.71S	630.46W	==>	-547.07	
5800.00	10.04	230.280	5727.74	534.85S	643.88W	==>	-558.71	
5900.00	10.04	230.280	5826.20	545.99S	657.29W	==>	-570.35	
6000.00	10.04	230.280	5924.67	557.14S	670.71W	==>	-581.99	
6100.00	10.04	230.280	6023.14	568.28S	684.12W	==>	-593.63	
6200.00	10.04	230.280	6121.61	579.43S	697.54W	==>	-605.27	
6300.00	10.04	230.280	6220.07	590.57S	710.95W	==>	-616.91	
6400.00	8.30	219.450	6318.60	601.71S	723.85W	10.00	-628.04	
6500.00	7.88	142.990	6417.86	612.79S	724.31W	10.00	-626.87	
6600.00	15.96	112.290	6515.71	623.51S	707.42W	10.00	-608.60	
6700.00	25.42	102.900	6609.18	633.54S	673.70W	10.00	-573.77	
6800.00	35.17	98.430	6695.43	642.58S	624.16W	10.00	-523.44	
6900.00	45.02	95.730	6771.84	650.35S	560.32W	10.00	-459.15	
7000.00	54.91	93.820	6836.09	656.62S	484.11W	10.00	-382.85	
7100.00	64.83	92.330	6886.22	661.19S	397.86W	10.00	-296.85	
7200.00	74.76	91.070	6920.72	663.94S	304.17W	10.00	-203.77	
7300.00	84.69	89.920	6938.54	664.77S	205.90W	10.00	-106.44	
7400.00	90.24	89.300	6940.81	663.84S	105.98W	==>	-7.73	
7500.00	90.24	89.300	6940.39	662.61S	5.99W	==>	91.00	
7600.00	90.24	89.300	6939.97	661.39S	94.00E	==>	189.74	
7700.00	90.24	89.300	6939.56	660.16S	193.99E	==>	288.48	
7800.00	90.24	89.300	6939.14	658.93S	293.98E	==>	387.21	
7900.00	90.24	89.300	6938.72	657.71S	393.97E	==>	485.95	
8000.00	90.24	89.300	6938.30	656.48S	493.96E	==>	584.69	
8100.00	90.24	89.300	6937.88	655.26S	593.96E	==>	683.42	
8200.00	90.24	89.300	6937.46	654.03S	693.95E	==>	782.16	
8300.00	90.24	89.300	6937.04	652.80S	793.94E	==>	880.90	
8400.00	90.24	89.300	6936.62	651.58S	893.93E	==>	979.63	
8500.00	90.24	89.300	6936.20	650.35S	993.92E	==>	1078.37	
8600.00	90.24	89.300	6935.78	649.12S	1093.91E	==>	1177.11	

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Bottom hole distance is 4182.10 Feet on azimuth 98.41 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 22-Sep-2016

SYSDRILL
Well Design Combined Report
Wellbore: HALEY 6HZ (PWB)

Interpolated Wellpath

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
8700.00	90.24	89.300	6935.36	647.90S	1193.91E	==>	1275.84	
8800.00	90.24	89.300	6934.94	646.67S	1293.90E	==>	1374.58	
8900.00	90.24	89.300	6934.52	645.44S	1393.89E	==>	1473.31	
9000.00	90.24	89.300	6934.10	644.22S	1493.88E	==>	1572.05	
9100.00	90.24	89.300	6933.68	642.99S	1593.87E	==>	1670.79	
9200.00	90.24	89.300	6933.26	641.76S	1693.86E	==>	1769.52	
9300.00	90.24	89.300	6932.84	640.54S	1793.86E	==>	1868.26	
9400.00	90.24	89.300	6932.42	639.31S	1893.85E	==>	1967.00	
9500.00	90.24	89.300	6932.00	638.08S	1993.84E	==>	2065.73	
9600.00	90.24	89.300	6931.58	636.86S	2093.83E	==>	2164.47	
9700.00	90.24	89.300	6931.16	635.63S	2193.82E	==>	2263.21	
9800.00	90.24	89.300	6930.74	634.40S	2293.81E	==>	2361.94	
9900.00	90.24	89.300	6930.32	633.18S	2393.81E	==>	2460.68	
10000.00	90.24	89.300	6929.90	631.95S	2493.80E	==>	2559.42	
10100.00	90.24	89.300	6929.48	630.72S	2593.79E	==>	2658.15	
10200.00	90.24	89.300	6929.06	629.50S	2693.78E	==>	2756.89	
10300.00	90.24	89.300	6928.64	628.27S	2793.77E	==>	2855.62	
10400.00	90.24	89.300	6928.22	627.04S	2893.76E	==>	2954.36	
10500.00	90.24	89.300	6927.80	625.82S	2993.75E	==>	3053.10	
10600.00	90.24	89.300	6927.38	624.59S	3093.75E	==>	3151.83	
10700.00	90.24	89.300	6926.96	623.36S	3193.74E	==>	3250.57	
10800.00	90.24	89.300	6926.54	622.14S	3293.73E	==>	3349.31	
10900.00	90.24	89.300	6926.12	620.91S	3393.72E	==>	3448.04	
11000.00	90.24	89.300	6925.70	619.69S	3493.71E	==>	3546.78	
11100.00	90.24	89.300	6925.28	618.46S	3593.70E	==>	3645.52	
11200.00	90.24	89.300	6924.86	617.23S	3693.70E	==>	3744.25	
11300.00	90.24	89.300	6924.44	616.01S	3793.69E	==>	3842.99	
11400.00	90.24	89.300	6924.02	614.78S	3893.68E	==>	3941.73	
11500.00	90.24	89.300	6923.60	613.55S	3993.67E	==>	4040.46	
11600.00	90.24	89.300	6923.18	612.33S	4093.66E	==>	4139.20	
11643.45	90.24	89.300	6923.00	611.79S	4137.11E	==>	4182.10	

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Bottom hole distance is 4182.10 Feet on azimuth 98.41 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 22-Sep-2016

SYSDRILL
Well Design Combined Report
Wellbore: HALEY 6HZ (PWB)

Targets

Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
HALEY 6HZBH	611.79S	4137.11E	6923.00	40.20759000	-105.01895000	1318831.81	3134356.99
HALEY 6HZEP	675.38S	270.18W	6936.00	40.20748000	-105.03473000	1318768.22	3129949.90

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
419632	Planned	11643.45	6923.00	ISCWSA MWD	Rev 3 + ROT

Notes

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Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 22-Sep-2016

SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: HALEY 6HZ (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
HALEY 6HZ (PWB)	Oct-19-2015	Sep-21-2016

Well

Name	Government ID	Last Revised
HALEY 6HZ		Oct-19-2015

Slot

Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
HALEY 6HZ	40.20933000	-105.03375000	1319443.5714	3130220.0682	0.26N	50.27E

Installation

Name	Installation Position (Latitude)	Installation Position (Longitude)	Easting	Northing	Coord System Name	North Alignment
Haley	40.20933000	-105.03393000	3130169.7961	1319443.3072	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]
Haley #3	6.20	8078.85	8078.85	-67.13	8079.46	0.08	8079.46
HALEY 5HZ	8.38	675.00	11640.61	4.45	700.00	1.24	11643.45
HALEY 12HZ	10.93	750.00	750.00	6.57	779.59	2.46	800.00
HALEY 11HZ	13.77	749.00	11643.45	9.46	779.59	2.29	11643.45
HALEY 4HZ	19.55	650.00	11641.18	-29.10	11643.45	0.92	11643.45
HALEY 10HZ	22.40	674.00	674.00	18.51	700.00	2.42	11643.45
HALEY 9HZ	29.99	669.00	669.00	26.14	697.57	1.83	11643.45
HALEY 3HZ	30.72	625.00	11636.87	27.07	664.76	2.45	11643.45
HALEY 2HZ	39.10	550.00	11638.92	35.89	582.74	1.82	11643.45
HALEY 8HZ	40.60	624.00	624.00	-32.66	11643.45	0.91	11643.45
HALEY 1HZ	50.28	500.72	11635.54	47.33	549.93	3.20	11643.45
HALEY 7HZ	51.45	424.00	7355.80	49.01	451.51	1.19	11643.45
Haley #10	74.88	23.00	6455.45	74.73	41.40	24.29	6570.28
HALEY #1	76.26	1341.73	7419.86	62.03	1370.14	5.23	1452.17
HALEY #2	78.30	1177.14	8700.00	71.27	1189.70	5.60	8883.27
HALEY #6-4-20	1402.98	10776.52	10776.52	1218.37	10786.15	7.59	10851.77

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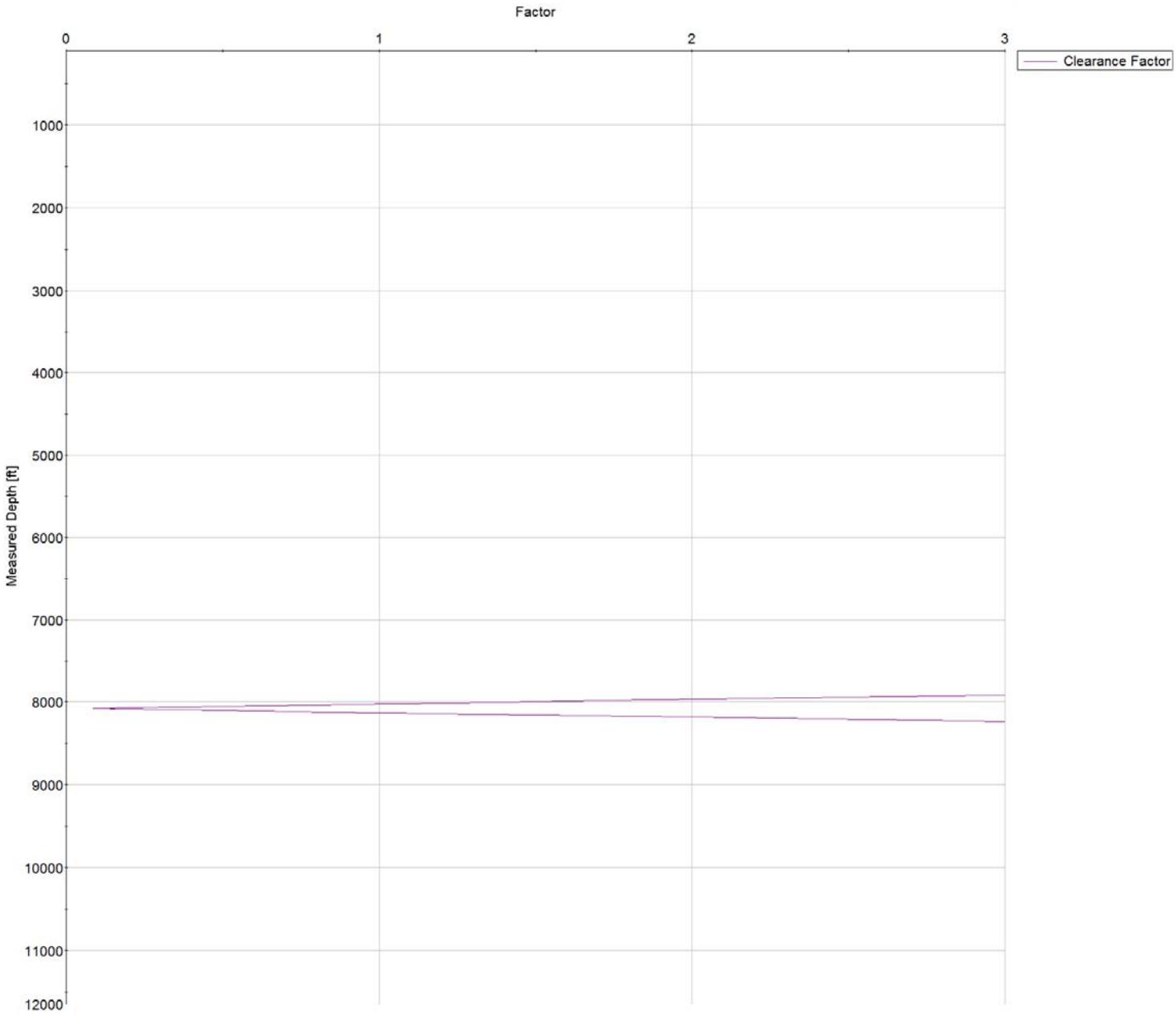
Vertical Section is from 0.00N 0.00E on azimuth 98.410 degrees
Prepared by IPT
Date Printed: 28-Sep-2016

SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: HALEY 6HZ (PWB)



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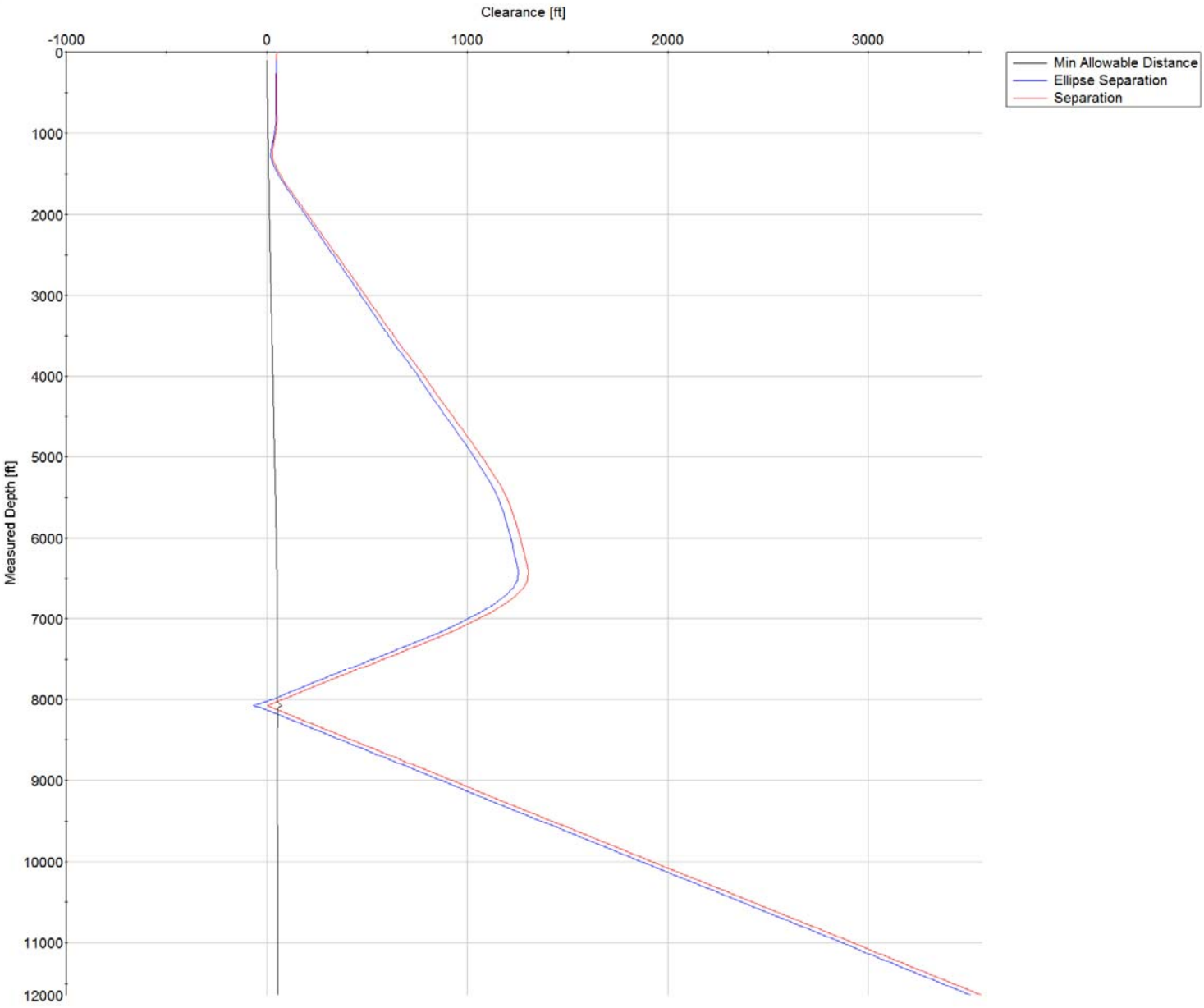
Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5103.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 98.410 degrees
Prepared by IPT
Date Printed: 28-Sep-2016

SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: HALEY 6HZ (PWB)



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 5103.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 98.410 degrees
Prepared by IPT
Date Printed: 28-Sep-2016

SYSDRILL
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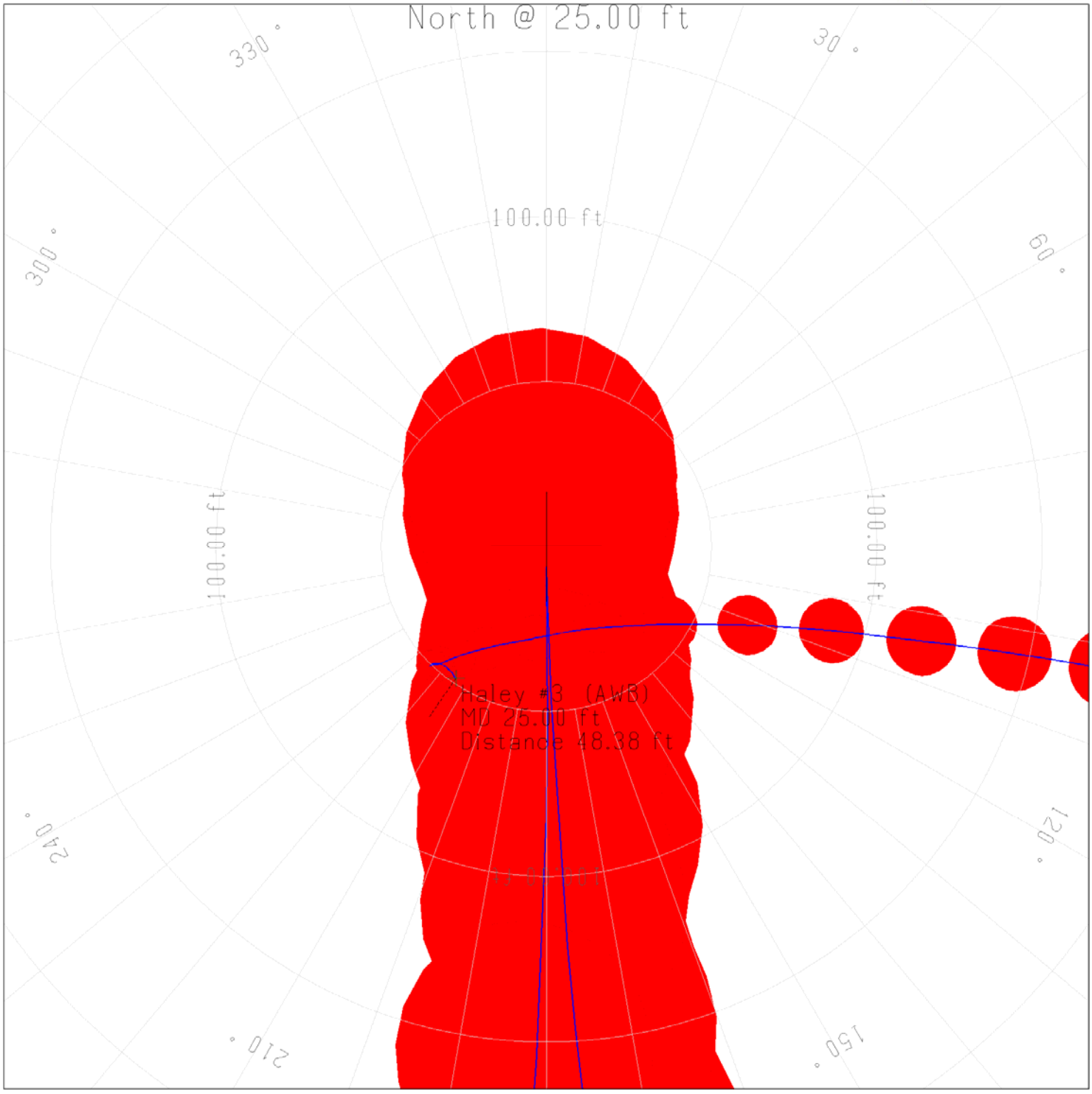

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