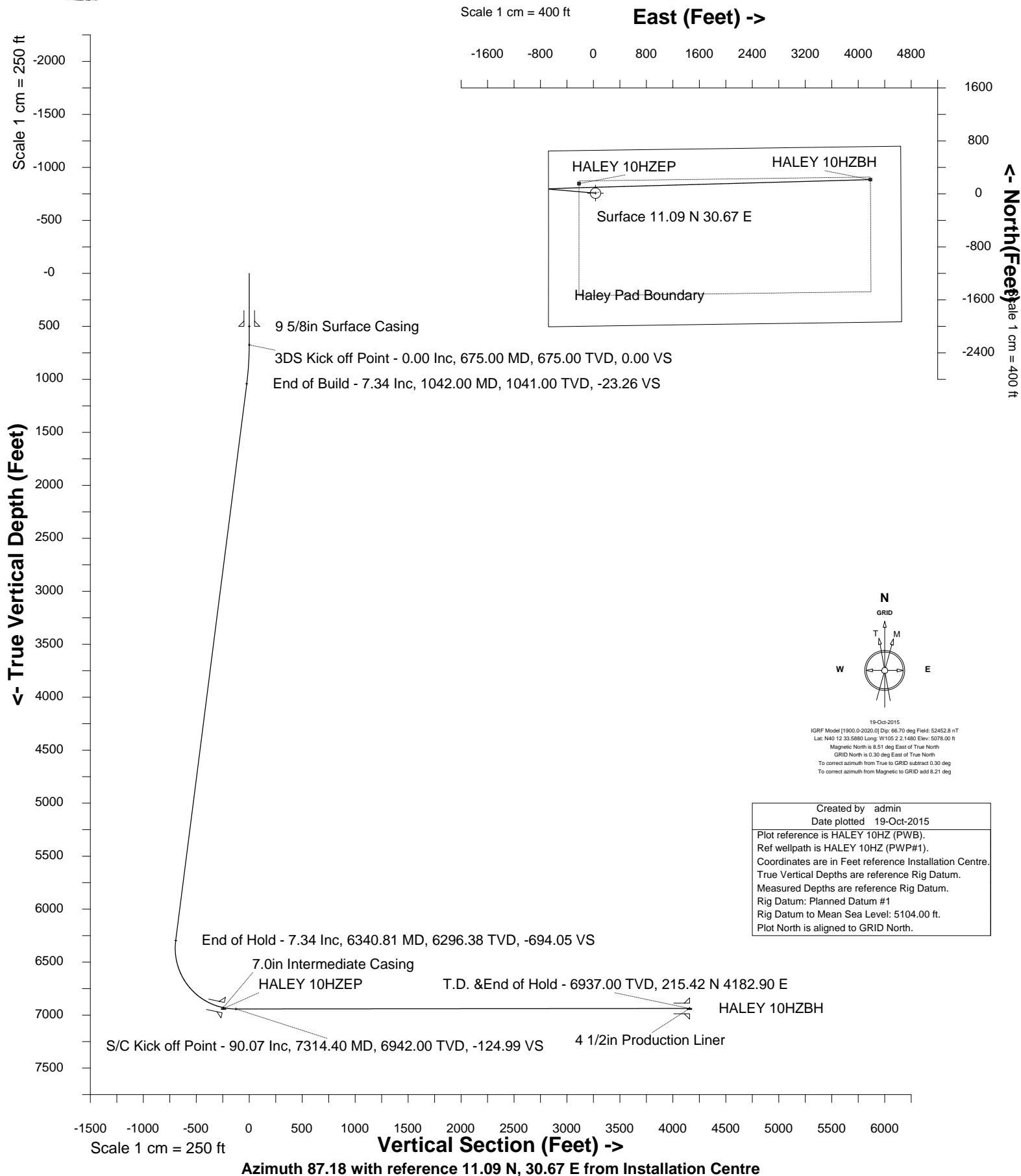




Cub Creek Energy, LLC

Location Weld County, CO
Field WATTENBERG
Installation Haley

Slot HALEY 10HZ
Well HALEY 10HZ
Wellbore HALEY 10HZ (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: HALEY 10HZ (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
HALEY 10HZ	40.20936000	-105.03382000	1319454.3970	3130200.4605	11.09N	30.67E	0.00

Declination		
Date	Source	Time
19-Oct-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	1319454.40	3130200.46
11597.63	90.07	88.410	6937.00	204.33N	4152.23E	==>	4157.26	1319658.72	3134352.51

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 Slot Datum
25.00	0.00	0.000	25.00	0.00N	0.00E	==>	0.00	
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	9 5/8in Surface Casing
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	0.50	274.930	700.00	0.01N	0.11W	2.00	-0.11	
800.00	2.50	274.930	799.96	0.23N	2.72W	2.00	-2.70	
900.00	4.50	274.930	899.77	0.76N	8.80W	2.00	-8.75	
1000.00	6.50	274.930	999.30	1.58N	18.35W	2.00	-18.25	
1100.00	7.34	274.930	1098.52	2.65N	30.77W	==>	-30.60	
1200.00	7.34	274.930	1197.70	3.75N	43.50W	==>	-43.26	
1300.00	7.34	274.930	1296.88	4.85N	56.23W	==>	-55.92	
1400.00	7.34	274.930	1396.06	5.95N	68.96W	==>	-68.58	
1500.00	7.34	274.930	1495.24	7.04N	81.69W	==>	-81.24	
1600.00	7.34	274.930	1594.42	8.14N	94.41W	==>	-93.90	
1700.00	7.34	274.930	1693.60	9.24N	107.14W	==>	-106.56	
1800.00	7.34	274.930	1792.79	10.33N	119.87W	==>	-119.22	
1900.00	7.34	274.930	1891.97	11.43N	132.60W	==>	-131.88	
2000.00	7.34	274.930	1991.15	12.53N	145.33W	==>	-144.54	
2100.00	7.34	274.930	2090.33	13.63N	158.06W	==>	-157.20	
2200.00	7.34	274.930	2189.51	14.72N	170.79W	==>	-169.86	
2300.00	7.34	274.930	2288.69	15.82N	183.51W	==>	-182.52	
2400.00	7.34	274.930	2387.87	16.92N	196.24W	==>	-195.17	
2500.00	7.34	274.930	2487.05	18.02N	208.97W	==>	-207.83	
2600.00	7.34	274.930	2586.23	19.11N	221.70W	==>	-220.49	
2700.00	7.34	274.930	2685.41	20.21N	234.43W	==>	-233.15	
2800.00	7.34	274.930	2784.59	21.31N	247.16W	==>	-245.81	
2900.00	7.34	274.930	2883.77	22.41N	259.89W	==>	-258.47	
3000.00	7.34	274.930	2982.95	23.50N	272.61W	==>	-271.13	
3100.00	7.34	274.930	3082.13	24.60N	285.34W	==>	-283.79	
3200.00	7.34	274.930	3181.31	25.70N	298.07W	==>	-296.45	
3300.00	7.34	274.930	3280.49	26.80N	310.80W	==>	-309.11	
3400.00	7.34	274.930	3379.67	27.89N	323.53W	==>	-321.77	
3500.00	7.34	274.930	3478.85	28.99N	336.26W	==>	-334.43	
3600.00	7.34	274.930	3578.04	30.09N	348.99W	==>	-347.09	

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Bottom hole distance is 4157.26 Feet on azimuth 87.18 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 19-Oct-2015



SYSDRILL
Well Design Combined Report
Wellbore: HALEY 10HZ (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3700.00	7.34	274.930	3677.22	31.19N	361.71W	==>	-359.74	
3800.00	7.34	274.930	3776.40	32.28N	374.44W	==>	-372.40	
3900.00	7.34	274.930	3875.58	33.38N	387.17W	==>	-385.06	
4000.00	7.34	274.930	3974.76	34.48N	399.90W	==>	-397.72	
4100.00	7.34	274.930	4073.94	35.58N	412.63W	==>	-410.38	
4200.00	7.34	274.930	4173.12	36.67N	425.36W	==>	-423.04	
4300.00	7.34	274.930	4272.30	37.77N	438.09W	==>	-435.70	
4400.00	7.34	274.930	4371.48	38.87N	450.82W	==>	-448.36	
4500.00	7.34	274.930	4470.66	39.96N	463.54W	==>	-461.02	
4600.00	7.34	274.930	4569.84	41.06N	476.27W	==>	-473.68	
4700.00	7.34	274.930	4669.02	42.16N	489.00W	==>	-486.34	
4800.00	7.34	274.930	4768.20	43.26N	501.73W	==>	-499.00	
4900.00	7.34	274.930	4867.38	44.35N	514.46W	==>	-511.66	
5000.00	7.34	274.930	4966.56	45.45N	527.19W	==>	-524.32	
5100.00	7.34	274.930	5065.74	46.55N	539.92W	==>	-536.97	
5200.00	7.34	274.930	5164.92	47.65N	552.64W	==>	-549.63	
5300.00	7.34	274.930	5264.10	48.74N	565.37W	==>	-562.29	
5400.00	7.34	274.930	5363.28	49.84N	578.10W	==>	-574.95	
5500.00	7.34	274.930	5462.47	50.94N	590.83W	==>	-587.61	
5600.00	7.34	274.930	5561.65	52.04N	603.56W	==>	-600.27	
5700.00	7.34	274.930	5660.83	53.13N	616.29W	==>	-612.93	
5800.00	7.34	274.930	5760.01	54.23N	629.02W	==>	-625.59	
5900.00	7.34	274.930	5859.19	55.33N	641.74W	==>	-638.25	
6000.00	7.34	274.930	5958.37	56.43N	654.47W	==>	-650.91	
6100.00	7.34	274.930	6057.55	57.52N	667.20W	==>	-663.57	
6200.00	7.34	274.930	6156.73	58.62N	679.93W	==>	-676.23	
6300.00	7.34	274.930	6255.91	59.72N	692.66W	==>	-688.89	
6400.00	1.61	299.790	6355.37	60.90N	702.34W	10.00	-698.50	
6500.00	8.67	82.900	6455.04	62.54N	696.07W	10.00	-692.16	
6600.00	18.64	85.920	6552.09	64.61N	672.59W	10.00	-668.60	
6700.00	28.64	86.870	6643.58	67.06N	632.62W	10.00	-628.55	
6800.00	38.63	87.360	6726.73	69.81N	577.36W	10.00	-573.23	
6900.00	48.63	87.670	6799.02	72.78N	508.51W	10.00	-504.32	
7000.00	58.63	87.900	6858.24	75.88N	428.15W	10.00	-423.90	
7100.00	68.63	88.080	6902.60	79.02N	338.73W	10.00	-334.43	
7193.00	77.93	88.230	6929.33	81.88N	249.80W	10.00	-245.48	7.0in Intermediate Casing
7200.00	78.63	88.240	6930.75	82.09N	242.95W	10.00	-238.62	
7300.00	88.63	88.390	6941.84	85.01N	143.74W	10.00	-139.39	
7400.00	90.07	88.410	6941.90	87.79N	43.78W	==>	-39.41	
7500.00	90.07	88.410	6941.78	90.56N	56.18E	==>	60.57	
7600.00	90.07	88.410	6941.67	93.34N	156.15E	==>	160.54	
7700.00	90.07	88.410	6941.55	96.12N	256.11E	==>	260.52	
7800.00	90.07	88.410	6941.43	98.89N	356.07E	==>	360.50	
7900.00	90.07	88.410	6941.32	101.67N	456.03E	==>	460.48	
8000.00	90.07	88.410	6941.20	104.45N	555.99E	==>	560.45	
8100.00	90.07	88.410	6941.08	107.22N	655.95E	==>	660.43	
8200.00	90.07	88.410	6940.97	110.00N	755.91E	==>	760.41	
8300.00	90.07	88.410	6940.85	112.78N	855.87E	==>	860.38	
8400.00	90.07	88.410	6940.73	115.55N	955.84E	==>	960.36	
8500.00	90.07	88.410	6940.62	118.33N	1055.80E	==>	1060.34	
8600.00	90.07	88.410	6940.50	121.10N	1155.76E	==>	1160.31	
8700.00	90.07	88.410	6940.38	123.88N	1255.72E	==>	1260.29	
8800.00	90.07	88.410	6940.27	126.66N	1355.68E	==>	1360.27	
8900.00	90.07	88.410	6940.15	129.43N	1455.64E	==>	1460.25	
9000.00	90.07	88.410	6940.03	132.21N	1555.60E	==>	1560.22	
9100.00	90.07	88.410	6939.92	134.99N	1655.57E	==>	1660.20	
9200.00	90.07	88.410	6939.80	137.76N	1755.53E	==>	1760.18	
9300.00	90.07	88.410	6939.68	140.54N	1855.49E	==>	1860.15	
9400.00	90.07	88.410	6939.57	143.32N	1955.45E	==>	1960.13	
9500.00	90.07	88.410	6939.45	146.09N	2055.41E	==>	2060.11	

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Bottom hole distance is 4157.26 Feet on azimuth 87.18 degrees from Wellhead
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Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 19-Oct-2015



SYSDRILL
Well Design Combined Report
Wellbore: HALEY 10HZ (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
9600.00	90.07	88.410	6939.33	148.87N	2155.37E	==>	2160.08	
9700.00	90.07	88.410	6939.22	151.64N	2255.33E	==>	2260.06	
9800.00	90.07	88.410	6939.10	154.42N	2355.30E	==>	2360.04	
9900.00	90.07	88.410	6938.98	157.20N	2455.26E	==>	2460.02	
10000.00	90.07	88.410	6938.86	159.97N	2555.22E	==>	2559.99	
10100.00	90.07	88.410	6938.75	162.75N	2655.18E	==>	2659.97	
10200.00	90.07	88.410	6938.63	165.53N	2755.14E	==>	2759.95	
10300.00	90.07	88.410	6938.51	168.30N	2855.10E	==>	2859.92	
10400.00	90.07	88.410	6938.40	171.08N	2955.06E	==>	2959.90	
10500.00	90.07	88.410	6938.28	173.86N	3055.03E	==>	3059.88	
10600.00	90.07	88.410	6938.16	176.63N	3154.99E	==>	3159.85	
10700.00	90.07	88.410	6938.05	179.41N	3254.95E	==>	3259.83	
10800.00	90.07	88.410	6937.93	182.18N	3354.91E	==>	3359.81	
10900.00	90.07	88.410	6937.81	184.96N	3454.87E	==>	3459.79	
11000.00	90.07	88.410	6937.70	187.74N	3554.83E	==>	3559.76	
11100.00	90.07	88.410	6937.58	190.51N	3654.79E	==>	3659.74	
11200.00	90.07	88.410	6937.46	193.29N	3754.75E	==>	3759.72	
11300.00	90.07	88.410	6937.35	196.07N	3854.72E	==>	3859.69	
11400.00	90.07	88.410	6937.23	198.84N	3954.68E	==>	3959.67	
11500.00	90.07	88.410	6937.11	201.62N	4054.64E	==>	4059.65	
11597.63	90.07	88.410	6937.00	204.33N	4152.23E	==>	4157.26	4 1/2in Production Liner

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SYS DRILL
Well Design Combined Report
Wellbore: HALEY 10HZ (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	25.00	25.00	0.00N	0.00E	500.00	500.00	0.00N	0.00E
8 3/4	500.00	500.00	0.00N	0.00E	7193.00	6929.33	81.88N	249.80W
6 1/8	7193.00	6929.33	81.88N	249.80W	11597.63	6937.00	204.33N	4152.23E

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	25.00	25.00	0.00N	0.00E	500.00	500.00	0.00N	0.00E
7.0in Intermediate Casing	25.00	25.00	0.00N	0.00E	7193.00	6929.33	81.88N	249.80W
4 1/2in Production Liner	6414.00	6369.37	61.10N	702.52W	11597.63	6937.00	204.33N	4152.23E

Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
HALEY 10HQBH	204.33N	4152.23E	6937.00	40.20986000	-105.01895000	1319658.72	3134352.51
HALEY 10HZEP	144.41N	249.34W	6937.00	40.20976000	-105.03471000	1319598.80	3129951.13

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
419714	Planned	11597.63	6937.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating	

Notes



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: HALEY 10HZ (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 10HZ (PWB)	19-Oct-2015	19-Oct-2015

Well		
Name	Government ID	Last Revised
HALEY 10HZ		19-Oct-2015

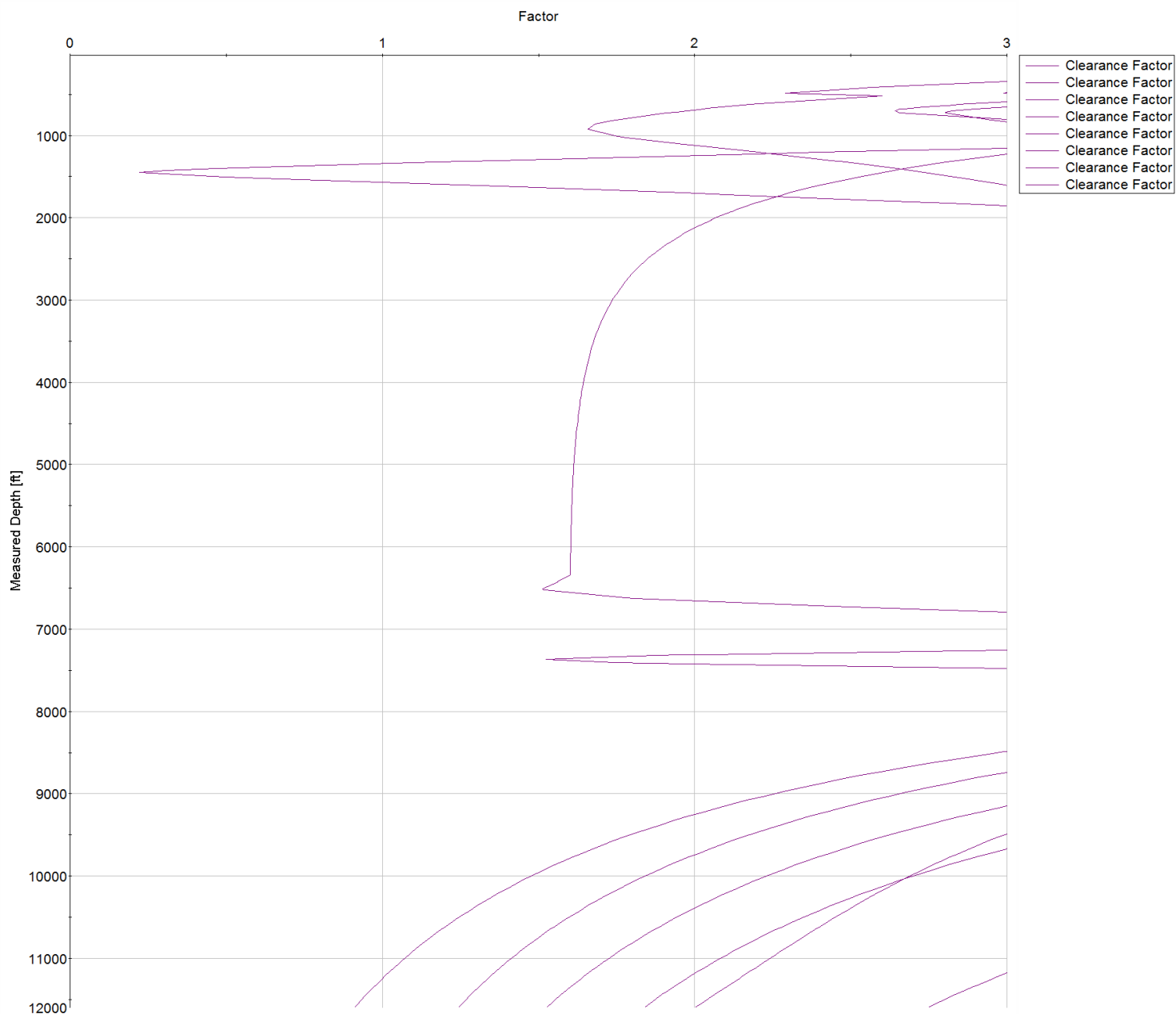
Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
HALEY 10HZ	40.20936000	-105.03382000	1319454.3970	3130200.4605	11.09N	30.67E

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 #1	3.34	1448.99	7366.72	-11.66	1448.99	0.22	1448.99
HALEY 9HZ	8.38	670.00	825.44	3.56	861.61	1.24	11597.63
HALEY 4HZ	10.93	651.00	651.00	6.92	681.17	2.64	697.57
HALEY 11HZ	11.17	675.00	11597.39	7.27	697.57	1.51	6504.66
HALEY 3HZ	15.63	526.00	526.00	11.97	484.32	4.28	484.32
HALEY 5HZ	15.63	675.00	675.00	11.44	697.57	3.16	11597.63
HALEY 8HZ	19.55	440.00	440.00	16.16	451.51	1.53	11597.63
HALEY 12HZ	19.55	675.00	11597.63	-32.03	11597.63	0.91	11597.63
HALEY 2HZ	22.40	626.00	626.00	18.52	648.36	4.65	11597.63
HALEY 6HZ	22.40	675.00	675.00	18.21	697.57	2.75	11597.63
Haley #3	28.84	1212.69	7967.43	21.69	1212.69	4.00	1225.00
HALEY 7HZ	30.72	425.00	425.00	27.39	451.51	1.84	11597.63
HALEY 1HZ	32.61	500.72	500.72	28.96	484.32	5.49	11597.63
Haley #10	53.07	25.00	6406.23	51.97	41.40	20.41	484.32
HALEY #2	75.39	29.00	8620.80	73.78	107.02	11.92	9145.73

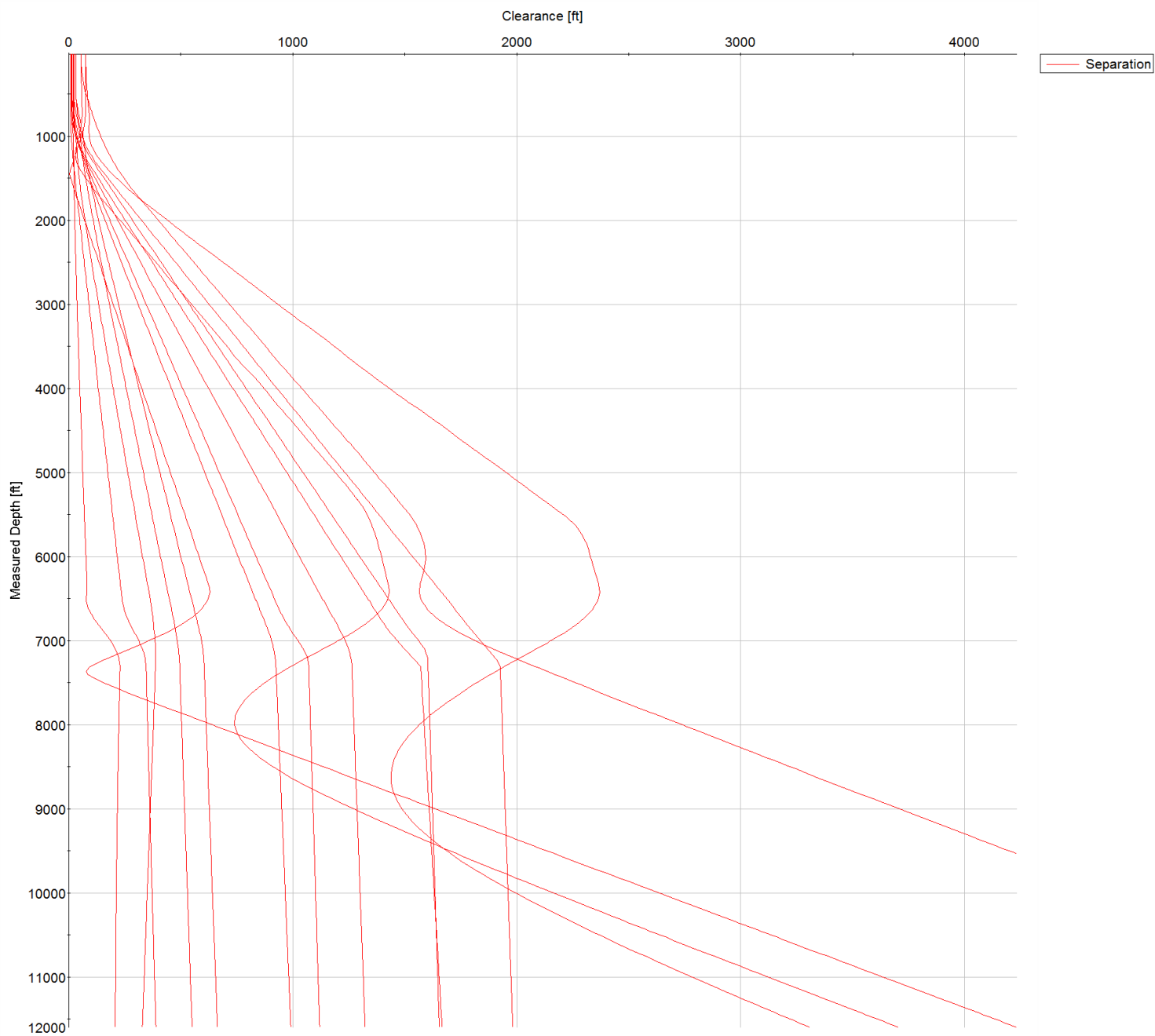


SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: HALEY 10HZ (PWB)





SYSDRILL
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