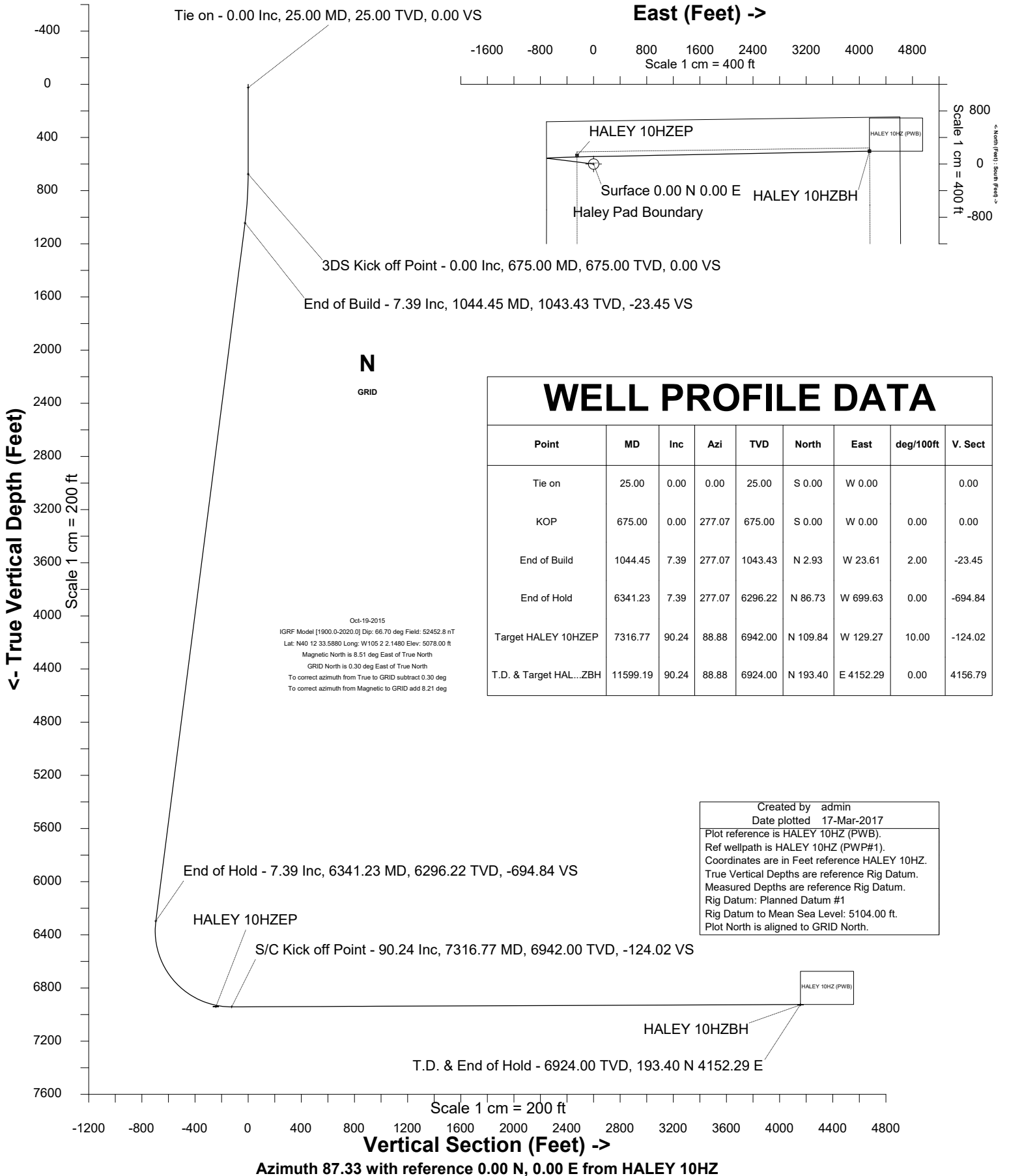


Cub Creek Energy, LLC

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
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	1319454.40	3130200.46
675.00	0.00	277.070	675.00	0.00N	0.00E	==>	0.00	1319454.40	3130200.46
1044.45	7.39	277.070	1043.43	2.93N	23.61W	2.00	-23.45	1319457.32	3130176.85
6341.23	7.39	277.070	6296.22	86.73N	699.63W	==>	-694.84	1319541.13	3129500.86
7316.77	90.24	88.880	6942.00	109.84N	129.27W	10.00	-124.02	1319564.23	3130071.20
11599.19	90.24	88.880	6924.00	193.40N	4152.29E	==>	4156.79	1319647.79	3134352.57

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	0.50	277.070	700.00	0.01N	0.11W	2.00	-0.11	
800.00	2.50	277.070	799.96	0.34N	2.71W	2.00	-2.69	
900.00	4.50	277.070	899.77	1.09N	8.76W	2.00	-8.70	
1000.00	6.50	277.070	999.30	2.27N	18.28W	2.00	-18.15	
1100.00	7.39	277.070	1098.52	3.81N	30.70W	==>	-30.49	
1200.00	7.39	277.070	1197.69	5.39N	43.46W	==>	-43.16	
1300.00	7.39	277.070	1296.85	6.97N	56.22W	==>	-55.84	
1400.00	7.39	277.070	1396.02	8.55N	68.99W	==>	-68.51	
1500.00	7.39	277.070	1495.19	10.13N	81.75W	==>	-81.19	
1600.00	7.39	277.070	1594.36	11.72N	94.51W	==>	-93.87	
1700.00	7.39	277.070	1693.53	13.30N	107.28W	==>	-106.54	
1800.00	7.39	277.070	1792.70	14.88N	120.04W	==>	-119.22	
1900.00	7.39	277.070	1891.87	16.46N	132.80W	==>	-131.89	
2000.00	7.39	277.070	1991.04	18.05N	145.56W	==>	-144.57	
2100.00	7.39	277.070	2090.21	19.63N	158.33W	==>	-157.24	
2200.00	7.39	277.070	2189.38	21.21N	171.09W	==>	-169.92	
2300.00	7.39	277.070	2288.55	22.79N	183.85W	==>	-182.59	
2400.00	7.39	277.070	2387.72	24.37N	196.62W	==>	-195.27	
2500.00	7.39	277.070	2486.89	25.96N	209.38W	==>	-207.94	
2600.00	7.39	277.070	2586.06	27.54N	222.14W	==>	-220.62	
2700.00	7.39	277.070	2685.23	29.12N	234.90W	==>	-233.29	
2800.00	7.39	277.070	2784.40	30.70N	247.67W	==>	-245.97	
2900.00	7.39	277.070	2883.57	32.29N	260.43W	==>	-258.65	
3000.00	7.39	277.070	2982.74	33.87N	273.19W	==>	-271.32	
3100.00	7.39	277.070	3081.91	35.45N	285.96W	==>	-284.00	

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Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5104.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 87.330 degrees
Bottom hole distance is 4156.79 Feet on azimuth 87.33 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Microsoft
Date Printed: 17-Mar-2017

Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3200.00	7.39	277.070	3181.08	37.03N	298.72W	==>	-296.67	
3300.00	7.39	277.070	3280.25	38.61N	311.48W	==>	-309.35	
3400.00	7.39	277.070	3379.42	40.20N	324.24W	==>	-322.02	
3500.00	7.39	277.070	3478.59	41.78N	337.01W	==>	-334.70	
3600.00	7.39	277.070	3577.76	43.36N	349.77W	==>	-347.37	
3700.00	7.39	277.070	3676.92	44.94N	362.53W	==>	-360.05	
3800.00	7.39	277.070	3776.09	46.53N	375.30W	==>	-372.72	
3900.00	7.39	277.070	3875.26	48.11N	388.06W	==>	-385.40	
4000.00	7.39	277.070	3974.43	49.69N	400.82W	==>	-398.07	
4100.00	7.39	277.070	4073.60	51.27N	413.58W	==>	-410.75	
4200.00	7.39	277.070	4172.77	52.85N	426.35W	==>	-423.43	
4300.00	7.39	277.070	4271.94	54.44N	439.11W	==>	-436.10	
4400.00	7.39	277.070	4371.11	56.02N	451.87W	==>	-448.78	
4500.00	7.39	277.070	4470.28	57.60N	464.63W	==>	-461.45	
4600.00	7.39	277.070	4569.45	59.18N	477.40W	==>	-474.13	
4700.00	7.39	277.070	4668.62	60.77N	490.16W	==>	-486.80	
4800.00	7.39	277.070	4767.79	62.35N	502.92W	==>	-499.48	
4900.00	7.39	277.070	4866.96	63.93N	515.69W	==>	-512.15	
5000.00	7.39	277.070	4966.13	65.51N	528.45W	==>	-524.83	
5100.00	7.39	277.070	5065.30	67.09N	541.21W	==>	-537.50	
5200.00	7.39	277.070	5164.47	68.68N	553.97W	==>	-550.18	
5300.00	7.39	277.070	5263.64	70.26N	566.74W	==>	-562.85	
5400.00	7.39	277.070	5362.81	71.84N	579.50W	==>	-575.53	
5500.00	7.39	277.070	5461.98	73.42N	592.26W	==>	-588.21	
5600.00	7.39	277.070	5561.15	75.01N	605.03W	==>	-600.88	
5700.00	7.39	277.070	5660.32	76.59N	617.79W	==>	-613.56	
5800.00	7.39	277.070	5759.49	78.17N	630.55W	==>	-626.23	
5900.00	7.39	277.070	5858.66	79.75N	643.31W	==>	-638.91	
6000.00	7.39	277.070	5957.83	81.33N	656.08W	==>	-651.58	
6100.00	7.39	277.070	6056.99	82.92N	668.84W	==>	-664.26	
6200.00	7.39	277.070	6156.16	84.50N	681.60W	==>	-676.93	
6300.00	7.39	277.070	6255.33	86.08N	694.37W	==>	-689.61	
6400.00	1.78	305.250	6354.78	87.73N	704.13W	10.00	-699.29	
6500.00	8.63	81.880	6454.45	89.69N	697.96W	10.00	-693.03	
6600.00	18.59	85.730	6551.52	91.94N	674.58W	10.00	-669.57	
6700.00	28.58	86.930	6643.05	94.41N	634.69W	10.00	-629.61	
6800.00	38.58	87.550	6726.26	97.03N	579.52W	10.00	-574.37	
6900.00	48.57	87.940	6798.61	99.72N	510.73W	10.00	-505.53	
7000.00	58.57	88.230	6857.92	102.39N	430.41W	10.00	-425.18	
7100.00	68.57	88.460	6902.38	104.96N	341.02W	10.00	-335.77	
7200.00	78.57	88.660	6930.63	107.36N	245.25W	10.00	-239.99	
7300.00	88.56	88.850	6941.83	109.51N	146.03W	10.00	-140.78	
7400.00	90.24	88.880	6941.65	111.46N	46.06W	==>	-40.82	
7500.00	90.24	88.880	6941.23	113.42N	53.92E	==>	59.14	
7600.00	90.24	88.880	6940.81	115.37N	153.90E	==>	159.11	
7700.00	90.24	88.880	6940.39	117.32N	253.88E	==>	259.07	
7800.00	90.24	88.880	6939.97	119.27N	353.86E	==>	359.03	
7900.00	90.24	88.880	6939.55	121.22N	453.84E	==>	458.99	
8000.00	90.24	88.880	6939.13	123.17N	553.82E	==>	558.96	
8100.00	90.24	88.880	6938.71	125.12N	653.80E	==>	658.92	
8200.00	90.24	88.880	6938.29	127.07N	753.79E	==>	758.88	
8300.00	90.24	88.880	6937.87	129.03N	853.77E	==>	858.84	
8400.00	90.24	88.880	6937.45	130.98N	953.75E	==>	958.81	
8500.00	90.24	88.880	6937.03	132.93N	1053.73E	==>	1058.77	
8600.00	90.24	88.880	6936.61	134.88N	1153.71E	==>	1158.73	
8700.00	90.24	88.880	6936.19	136.83N	1253.69E	==>	1258.69	
8800.00	90.24	88.880	6935.77	138.78N	1353.67E	==>	1358.66	
8900.00	90.24	88.880	6935.35	140.73N	1453.65E	==>	1458.62	
9000.00	90.24	88.880	6934.92	142.68N	1553.63E	==>	1558.58	

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Vertical Section is from 0.00N 0.00E on azimuth 87.330 degrees
Bottom hole distance is 4156.79 Feet on azimuth 87.33 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Microsoft
Date Printed: 17-Mar-2017



SYS DRILL
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
9100.00	90.24	88.880	6934.50	144.64N	1653.61E	==>	1658.54	
9200.00	90.24	88.880	6934.08	146.59N	1753.59E	==>	1758.51	
9300.00	90.24	88.880	6933.66	148.54N	1853.57E	==>	1858.47	
9400.00	90.24	88.880	6933.24	150.49N	1953.55E	==>	1958.43	
9500.00	90.24	88.880	6932.82	152.44N	2053.53E	==>	2058.39	
9600.00	90.24	88.880	6932.40	154.39N	2153.51E	==>	2158.36	
9700.00	90.24	88.880	6931.98	156.34N	2253.49E	==>	2258.32	
9800.00	90.24	88.880	6931.56	158.29N	2353.47E	==>	2358.28	
9900.00	90.24	88.880	6931.14	160.25N	2453.45E	==>	2458.25	
10000.00	90.24	88.880	6930.72	162.20N	2553.43E	==>	2558.21	
10100.00	90.24	88.880	6930.30	164.15N	2653.41E	==>	2658.17	
10200.00	90.24	88.880	6929.88	166.10N	2753.39E	==>	2758.13	
10300.00	90.24	88.880	6929.46	168.05N	2853.37E	==>	2858.10	
10400.00	90.24	88.880	6929.04	170.00N	2953.35E	==>	2958.06	
10500.00	90.24	88.880	6928.62	171.95N	3053.33E	==>	3058.02	
10600.00	90.24	88.880	6928.20	173.90N	3153.31E	==>	3157.98	
10700.00	90.24	88.880	6927.78	175.86N	3253.29E	==>	3257.95	
10800.00	90.24	88.880	6927.36	177.81N	3353.27E	==>	3357.91	
10900.00	90.24	88.880	6926.94	179.76N	3453.25E	==>	3457.87	
11000.00	90.24	88.880	6926.52	181.71N	3553.23E	==>	3557.83	
11100.00	90.24	88.880	6926.10	183.66N	3653.21E	==>	3657.80	
11200.00	90.24	88.880	6925.68	185.61N	3753.19E	==>	3757.76	
11300.00	90.24	88.880	6925.26	187.56N	3853.17E	==>	3857.72	
11400.00	90.24	88.880	6924.84	189.51N	3953.15E	==>	3957.68	
11500.00	90.24	88.880	6924.42	191.47N	4053.13E	==>	4057.65	
11599.19	90.24	88.880	6924.00	193.40N	4152.29E	==>	4156.79	

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Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
HALEY 10HZEP	129.84N	249.27W	6937.00	40.20972000	-105.03471000	1319584.23	3129951.20
HALEY 10HZBH	193.40N	4152.29E	6924.00	40.20983000	-105.01895000	1319647.79	3134352.57

Survey Tool Program					
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
419714	Planned	11599.19	6924.00	ISCWSA MWD	Rev 3 + ROT

Notes