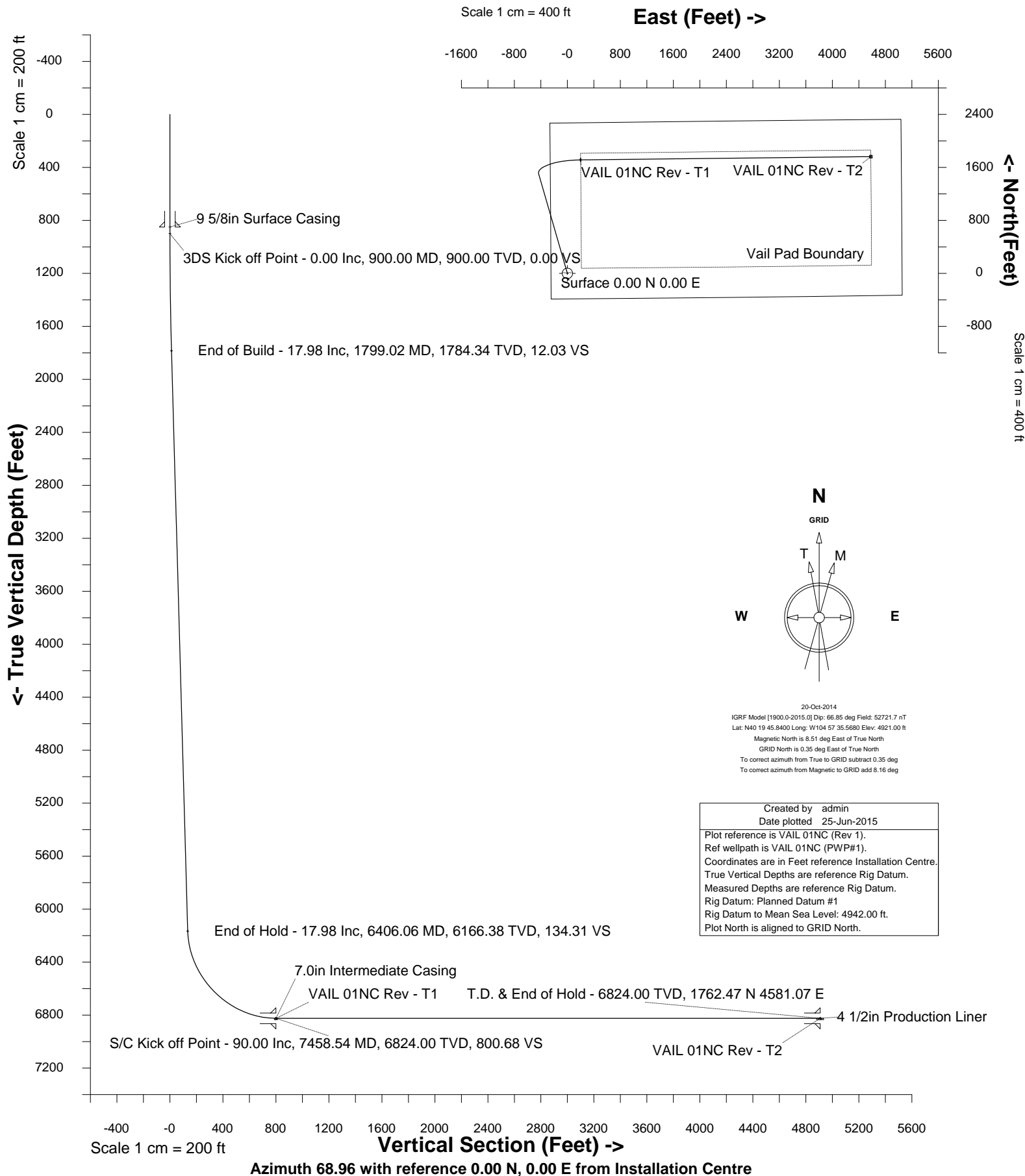




Cub Creek Energy, LLC

Location Weld County, CO
Field WATTENBERG
Installation Vail Pad

Slot VAIL 01NC
Well VAIL 01NC
Wellbore VAIL 01NC (Rev 1)





SYSDRILL
Well Design Combined Report
Wellbore: VAIL 01NC (Rev 1)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
VAIL 01NC	40.32940000	-104.95988000	1363299.8308	3150584.7385	0.00N	0.00E	0.00

Declination		
Date	Source	Time
20-Oct-2014	IGRF Model [1900.0-2015.0]	08:52

Installation Details						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Northing	Easting	Coord System Name	North Alignment
Vail Pad	40.32940000	-104.95988000	1363299.8308	3150584.7385	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
21.00	0.00	0.000	21.00	0.00N	0.00E		0.00	1363299.83	3150584.74
900.00	0.00	343.890	900.00	0.00N	0.00E	==>	0.00	1363299.83	3150584.74
11841.22	90.00	89.360	6824.00	1762.47N	4581.07E	==>	4908.41	1365062.22	3155165.61

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
21.00	0.00	0.000	21.00	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	
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	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	
850.00	0.00	0.000	850.00	0.00N	0.00E	==>	0.00	9 5/8in Surface Casing
900.00	0.00	343.890	900.00	0.00N	0.00E	==>	0.00	
1000.00	2.00	343.890	999.98	1.68N	0.48W	2.00	0.15	
1100.00	4.00	343.890	1099.84	6.70N	1.94W	2.00	0.60	
1200.00	6.00	343.890	1199.45	15.08N	4.35W	2.00	1.35	
1300.00	8.00	343.890	1298.70	26.79N	7.74W	2.00	2.40	
1400.00	10.00	343.890	1397.47	41.81N	12.08W	2.00	3.74	
1500.00	12.00	343.890	1495.62	60.14N	17.37W	2.00	5.38	
1600.00	14.00	343.890	1593.06	81.75N	23.61W	2.00	7.32	
1700.00	16.00	343.890	1689.64	106.62N	30.80W	2.00	9.54	
1800.00	17.98	343.890	1785.27	134.71N	38.91W	==>	12.06	
1900.00	17.98	343.890	1880.38	164.36N	47.47W	==>	14.71	
2000.00	17.98	343.890	1975.50	194.02N	56.04W	==>	17.36	
2100.00	17.98	343.890	2070.62	223.68N	64.61W	==>	20.02	
2200.00	17.98	343.890	2165.73	253.33N	73.17W	==>	22.67	
2300.00	17.98	343.890	2260.85	282.99N	81.74W	==>	25.33	
2400.00	17.98	343.890	2355.97	312.65N	90.30W	==>	27.98	
2500.00	17.98	343.890	2451.08	342.30N	98.87W	==>	30.64	
2600.00	17.98	343.890	2546.20	371.96N	107.43W	==>	33.29	
2700.00	17.98	343.890	2641.31	401.62N	116.00W	==>	35.94	
2800.00	17.98	343.890	2736.43	431.27N	124.57W	==>	38.60	
2900.00	17.98	343.890	2831.55	460.93N	133.13W	==>	41.25	
3000.00	17.98	343.890	2926.66	490.59N	141.70W	==>	43.91	
3100.00	17.98	343.890	3021.78	520.25N	150.26W	==>	46.56	
3200.00	17.98	343.890	3116.90	549.90N	158.83W	==>	49.22	
3300.00	17.98	343.890	3212.01	579.56N	167.40W	==>	51.87	
3400.00	17.98	343.890	3307.13	609.22N	175.96W	==>	54.52	

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Vertical Section is from 0.00N 0.00E on azimuth 68.960 degrees
Bottom hole distance is 4908.41 Feet on azimuth 68.96 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 25-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: VAIL 01NC (Rev 1)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3500.00	17.98	343.890	3402.24	638.87N	184.53W	==>	57.18	
3600.00	17.98	343.890	3497.36	668.53N	193.09W	==>	59.83	
3700.00	17.98	343.890	3592.48	698.19N	201.66W	==>	62.49	
3800.00	17.98	343.890	3687.59	727.84N	210.23W	==>	65.14	
3900.00	17.98	343.890	3782.71	757.50N	218.79W	==>	67.80	
4000.00	17.98	343.890	3877.83	787.16N	227.36W	==>	70.45	
4100.00	17.98	343.890	3972.94	816.81N	235.92W	==>	73.10	
4200.00	17.98	343.890	4068.06	846.47N	244.49W	==>	75.76	
4300.00	17.98	343.890	4163.17	876.13N	253.05W	==>	78.41	
4400.00	17.98	343.890	4258.29	905.78N	261.62W	==>	81.07	
4500.00	17.98	343.890	4353.41	935.44N	270.19W	==>	83.72	
4600.00	17.98	343.890	4448.52	965.10N	278.75W	==>	86.38	
4700.00	17.98	343.890	4543.64	994.76N	287.32W	==>	89.03	
4800.00	17.98	343.890	4638.76	1024.41N	295.88W	==>	91.68	
4900.00	17.98	343.890	4733.87	1054.07N	304.45W	==>	94.34	
5000.00	17.98	343.890	4828.99	1083.73N	313.02W	==>	96.99	
5100.00	17.98	343.890	4924.10	1113.38N	321.58W	==>	99.65	
5200.00	17.98	343.890	5019.22	1143.04N	330.15W	==>	102.30	
5300.00	17.98	343.890	5114.34	1172.70N	338.71W	==>	104.96	
5400.00	17.98	343.890	5209.45	1202.35N	347.28W	==>	107.61	
5500.00	17.98	343.890	5304.57	1232.01N	355.85W	==>	110.26	
5600.00	17.98	343.890	5399.68	1261.67N	364.41W	==>	112.92	
5700.00	17.98	343.890	5494.80	1291.32N	372.98W	==>	115.57	
5800.00	17.98	343.890	5589.92	1320.98N	381.54W	==>	118.23	
5900.00	17.98	343.890	5685.03	1350.64N	390.11W	==>	120.88	
6000.00	17.98	343.890	5780.15	1380.29N	398.68W	==>	123.54	
6100.00	17.98	343.890	5875.27	1409.95N	407.24W	==>	126.19	
6200.00	17.98	343.890	5970.38	1439.61N	415.81W	==>	128.84	
6300.00	17.98	343.890	6065.50	1469.27N	424.37W	==>	131.50	
6400.00	17.98	343.890	6160.61	1498.92N	432.94W	==>	134.15	
6500.00	17.75	11.680	6255.95	1528.72N	434.58W	9.00	143.32	
6600.00	21.42	36.480	6350.31	1558.40N	420.61W	9.00	167.01	
6700.00	27.55	52.530	6441.37	1587.21N	391.34W	9.00	204.68	
6800.00	34.88	62.700	6526.90	1614.45N	347.49W	9.00	255.39	
6900.00	42.78	69.600	6604.78	1639.45N	290.13W	9.00	317.90	
7000.00	50.99	74.680	6673.09	1661.60N	220.69W	9.00	390.66	
7100.00	59.37	78.690	6730.16	1680.34N	140.87W	9.00	471.88	
7200.00	67.85	82.040	6774.58	1695.22N	52.64W	9.00	559.58	
7300.00	76.39	85.020	6805.26	1705.87N	41.83E	9.00	651.57	
7400.00	84.97	87.780	6821.43	1712.03N	140.22E	9.00	745.61	
7458.00	89.95	89.350	6824.00	1713.48N	198.12E	9.00	800.17	
7500.00	90.00	89.360	6824.00	1713.95N	240.12E	==>	839.54	7.0in Intermediate Casing
7600.00	90.00	89.360	6824.00	1715.07N	340.11E	==>	933.26	
7700.00	90.00	89.360	6824.00	1716.19N	440.11E	==>	1026.99	
7800.00	90.00	89.360	6824.00	1717.31N	540.10E	==>	1120.72	
7900.00	90.00	89.360	6824.00	1718.42N	640.10E	==>	1214.44	
8000.00	90.00	89.360	6824.00	1719.54N	740.09E	==>	1308.17	
8100.00	90.00	89.360	6824.00	1720.66N	840.08E	==>	1401.90	
8200.00	90.00	89.360	6824.00	1721.78N	940.08E	==>	1495.62	
8300.00	90.00	89.360	6824.00	1722.89N	1040.07E	==>	1589.35	
8400.00	90.00	89.360	6824.00	1724.01N	1140.06E	==>	1683.08	
8500.00	90.00	89.360	6824.00	1725.13N	1240.06E	==>	1776.80	
8600.00	90.00	89.360	6824.00	1726.25N	1340.05E	==>	1870.53	
8700.00	90.00	89.360	6824.00	1727.36N	1440.05E	==>	1964.25	
8800.00	90.00	89.360	6824.00	1728.48N	1540.04E	==>	2057.98	
8900.00	90.00	89.360	6824.00	1729.60N	1640.03E	==>	2151.71	
9000.00	90.00	89.360	6824.00	1730.72N	1740.03E	==>	2245.43	
9100.00	90.00	89.360	6824.00	1731.83N	1840.02E	==>	2339.16	
9200.00	90.00	89.360	6824.00	1732.95N	1940.01E	==>	2432.89	
9300.00	90.00	89.360	6824.00	1734.07N	2040.01E	==>	2526.61	

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Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 25-Jun-2015



SYSDRILL
Well Design Combined Report
Wellbore: VAIL 01NC (Rev 1)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
9400.00	90.00	89.360	6824.00	1735.19N	2140.00E	==>	2620.34	
9500.00	90.00	89.360	6824.00	1736.30N	2240.00E	==>	2714.07	
9600.00	90.00	89.360	6824.00	1737.42N	2339.99E	==>	2807.79	
9700.00	90.00	89.360	6824.00	1738.54N	2439.98E	==>	2901.52	
9800.00	90.00	89.360	6824.00	1739.66N	2539.98E	==>	2995.25	
9900.00	90.00	89.360	6824.00	1740.77N	2639.97E	==>	3088.97	
10000.00	90.00	89.360	6824.00	1741.89N	2739.96E	==>	3182.70	
10100.00	90.00	89.360	6824.00	1743.01N	2839.96E	==>	3276.43	
10200.00	90.00	89.360	6824.00	1744.13N	2939.95E	==>	3370.15	
10300.00	90.00	89.360	6824.00	1745.24N	3039.95E	==>	3463.88	
10400.00	90.00	89.360	6824.00	1746.36N	3139.94E	==>	3557.61	
10500.00	90.00	89.360	6824.00	1747.48N	3239.93E	==>	3651.33	
10600.00	90.00	89.360	6824.00	1748.60N	3339.93E	==>	3745.06	
10700.00	90.00	89.360	6824.00	1749.71N	3439.92E	==>	3838.78	
10800.00	90.00	89.360	6824.00	1750.83N	3539.91E	==>	3932.51	
10900.00	90.00	89.360	6824.00	1751.95N	3639.91E	==>	4026.24	
11000.00	90.00	89.360	6824.00	1753.07N	3739.90E	==>	4119.96	
11100.00	90.00	89.360	6824.00	1754.18N	3839.90E	==>	4213.69	
11200.00	90.00	89.360	6824.00	1755.30N	3939.89E	==>	4307.42	
11300.00	90.00	89.360	6824.00	1756.42N	4039.88E	==>	4401.14	
11400.00	90.00	89.360	6824.00	1757.54N	4139.88E	==>	4494.87	
11500.00	90.00	89.360	6824.00	1758.65N	4239.87E	==>	4588.60	
11600.00	90.00	89.360	6824.00	1759.77N	4339.86E	==>	4682.32	
11700.00	90.00	89.360	6824.00	1760.89N	4439.86E	==>	4776.05	
11800.00	90.00	89.360	6824.00	1762.01N	4539.85E	==>	4869.78	
11841.22	90.00	89.360	6824.00	1762.47N	4581.07E	==>	4908.41	4 1/2in Production Liner

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SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: VAIL 01NC (Rev 1)



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
VAIL 01NC (Rev 1)	24-Jun-2015	25-Jun-2015

Well		
Name	Government ID	Last Revised
VAIL 01NC		21-Oct-2014

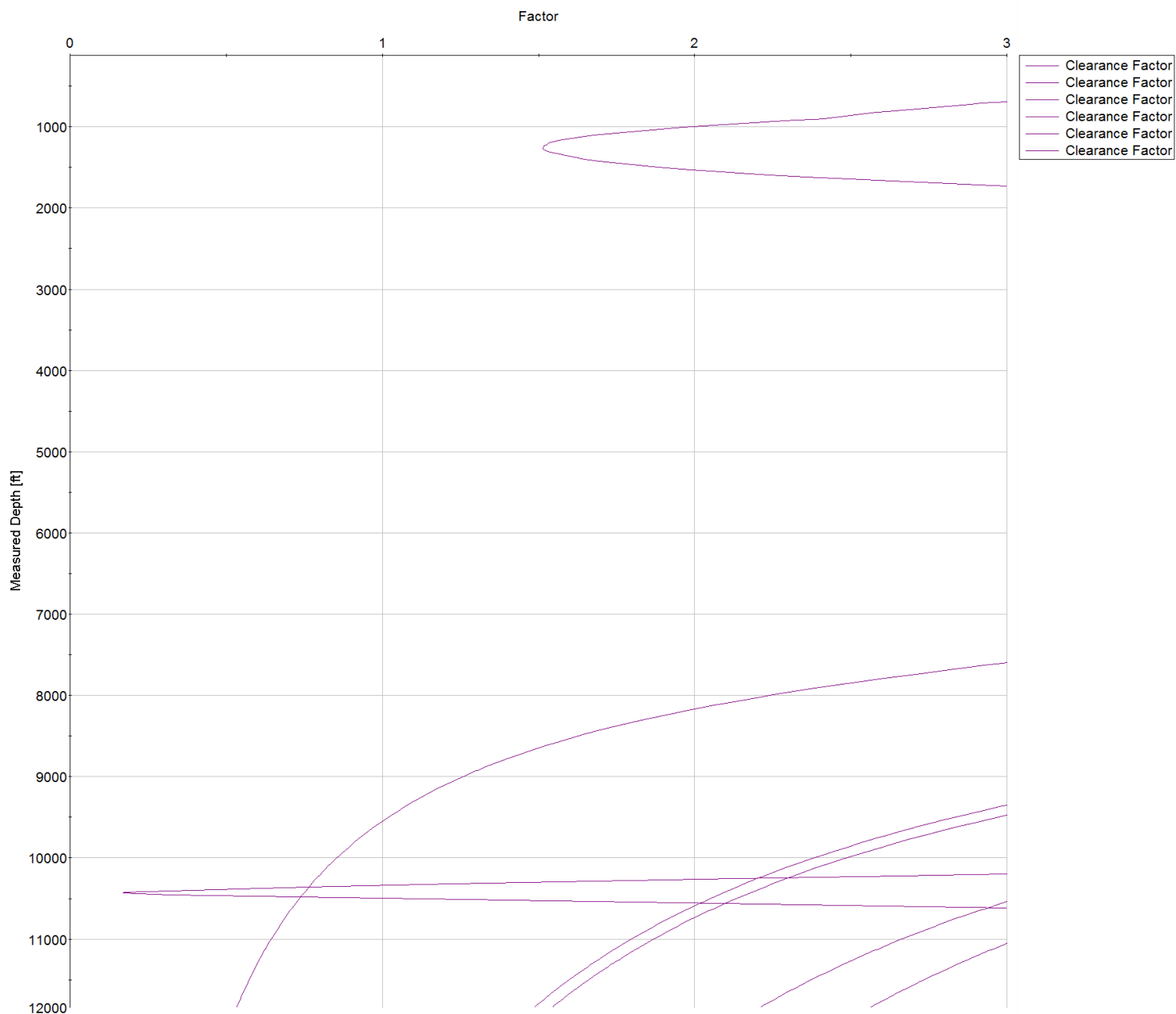
Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
VAIL 01NC	40.32940000	-104.95988000	1363299.8308	3150584.7385	0.00N	0.00E

Installation						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Easting	Northing	Coord System Name	North Alignment
Vail Pad	40.32940000	-104.95988000	3150584.7385	1363299.8308	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]
VAIL 02C	11.65	1169.29	11837.46	4.07	1234.91	1.51	1267.72
NLB #2-1-12	29.11	10427.92	10427.92	-141.92	10427.92	0.17	10427.92
VAIL 03NC	32.51	939.64	11833.69	26.40	956.04	4.05	11841.22
VAIL 04NC	47.36	900.00	7599.74	-174.90	11841.22	0.53	11841.22
VAIL 05C	65.58	900.00	11839.12	59.69	923.23	1.49	11839.12
VAIL 06NC	80.15	900.00	11838.39	74.26	923.23	1.54	11838.39
VAIL 07NC	94.72	900.00	7490.40	88.83	923.23	2.56	11841.22
VAIL 08C	112.94	900.00	11835.80	107.05	923.23	3.09	11841.22
VAIL 09NC	127.51	900.00	11834.67	121.62	921.00	3.57	11841.22
VAIL 10NC	142.08	900.00	11832.82	138.08	841.21	7.40	11841.22
VAIL 11C	160.30	900.00	11832.57	156.30	841.21	7.74	11841.22
VAIL 12NC	174.87	900.00	11831.19	170.87	841.21	8.84	11841.22
VAIL #1	986.92	2797.91	8072.34	944.14	8091.87	13.86	8272.31
UPRC #11-8I8	1028.17	4421.00	4421.00	982.29	4521.00	19.42	5942.92
NLB #1-3-12	1252.37	10321.00	10321.00	1087.66	10372.05	7.43	10552.50
ABRAMS #1	1690.77	7534.12	7534.12	1633.73	7583.34	21.38	8666.01
HSR-MAPLEWOOD ACRES #12-7	3025.13	11841.22	11841.22	2818.10	11841.22	14.61	11841.22

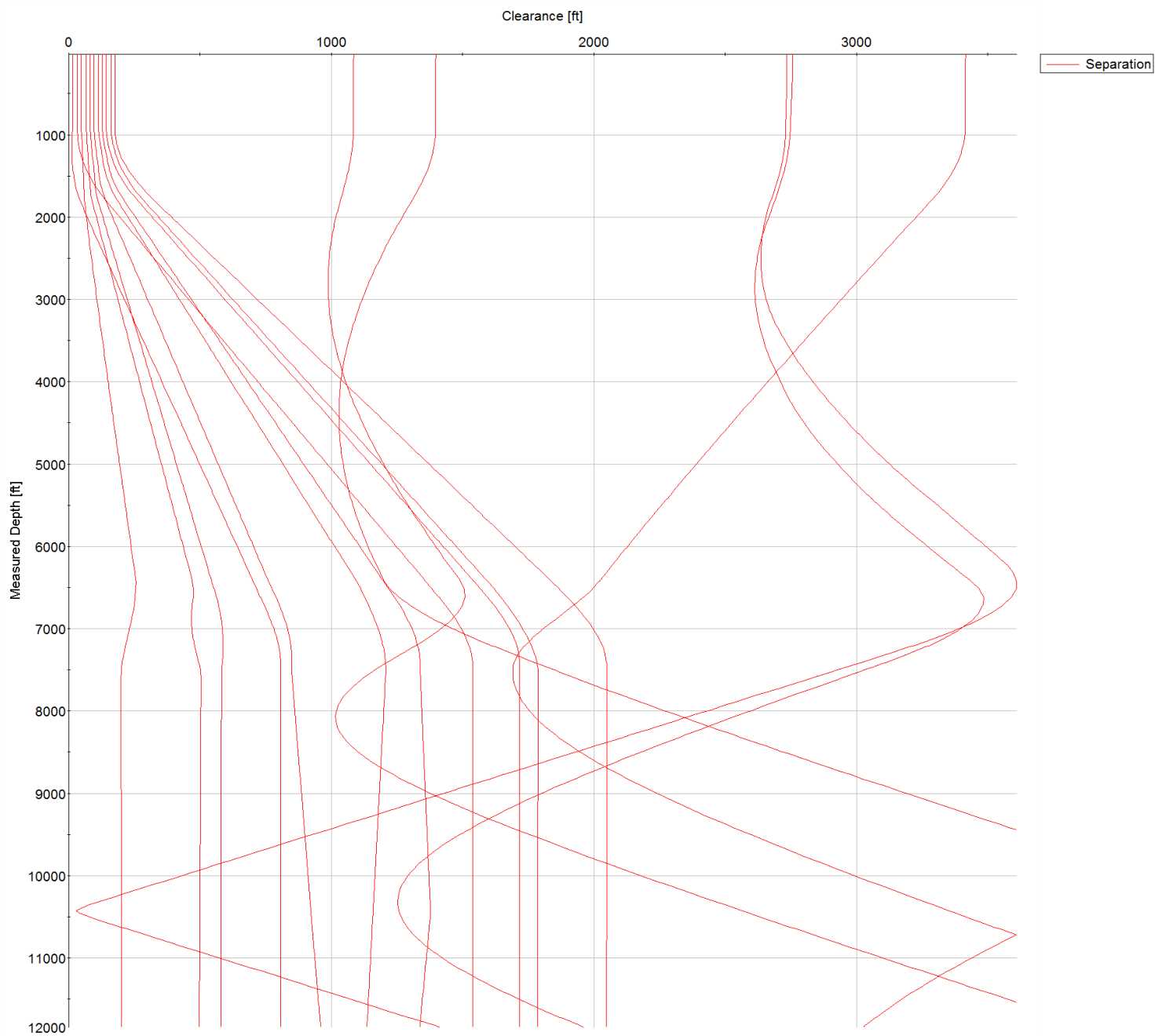


SYS DRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: VAIL 01NC (Rev 1)





SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: VAIL 01NC (Rev 1)



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