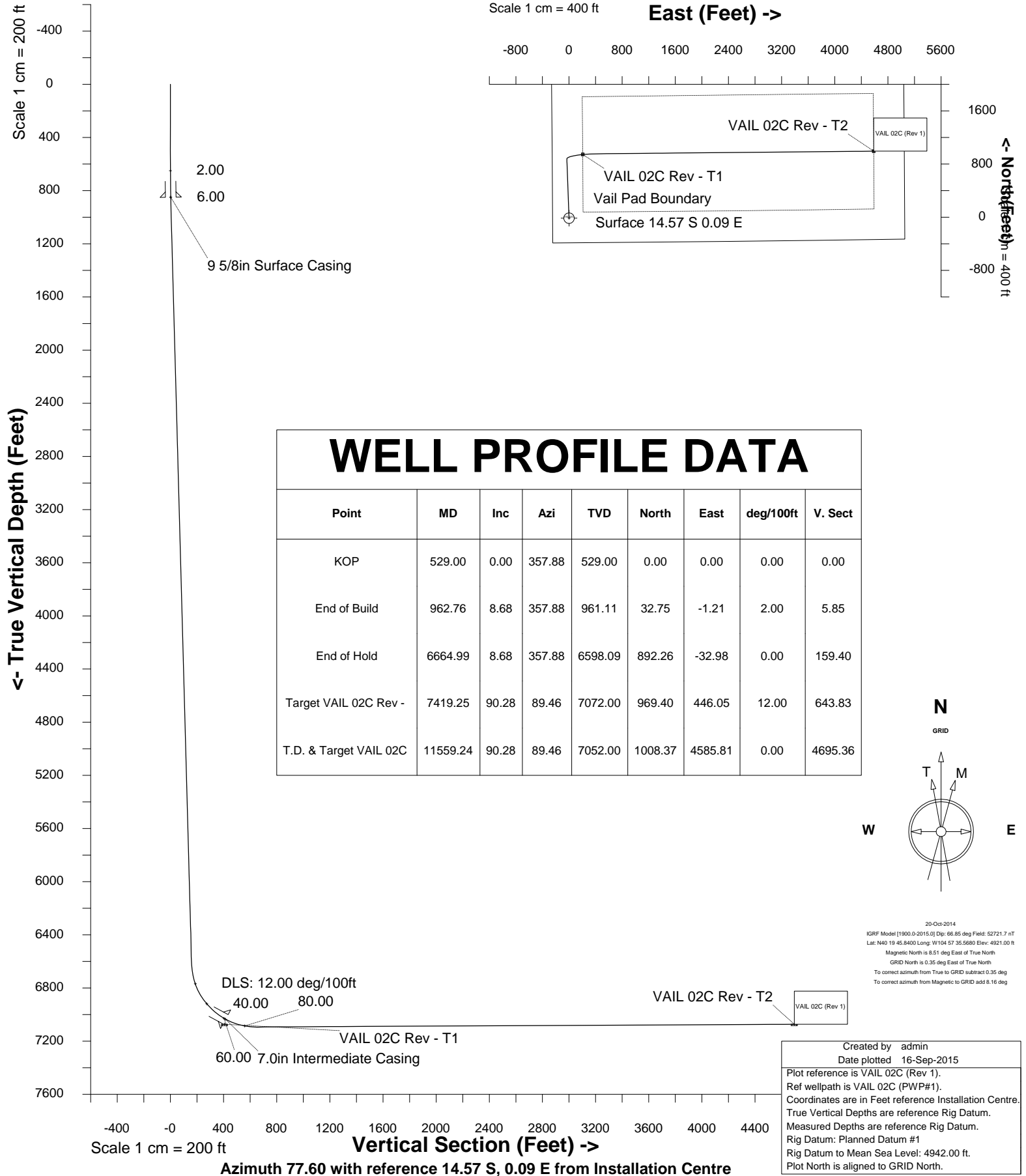


Cub Creek Energy, LLC

Location Weld County, CO
Field WATTENBERG
Installation Vail Pad

Slot VAIL 02C
Well VAIL 02C
Wellbore VAIL 02C (Rev 1)





SYSDRILL
Well Design Combined Report
Wellbore: VAIL 02C (Rev 1)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
VAIL 02C	40.32936000	-104.95988000	1363285.2594	3150584.8273	14.57S	0.09E	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	1363285.26	3150584.83
11580.24	90.28	89.460	7073.00	1008.37N	4585.81E	==>	4695.36	1364293.58	3155170.43

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	1.00	357.880	600.00	0.44N	0.02W	2.00	0.08	
700.00	3.00	357.880	699.93	3.92N	0.15W	2.00	0.70	
800.00	5.00	357.880	799.68	10.89N	0.40W	2.00	1.95	
850.00	6.00	357.880	849.45	15.68N	0.58W	2.00	2.80	9 5/8in Surface Casing
900.00	7.00	357.880	899.13	21.34N	0.79W	2.00	3.81	
1000.00	8.68	357.880	998.16	35.20N	1.30W	==>	6.29	
1100.00	8.68	357.880	1097.01	50.27N	1.86W	==>	8.98	
1200.00	8.68	357.880	1195.87	65.35N	2.42W	==>	11.67	
1300.00	8.68	357.880	1294.73	80.42N	2.97W	==>	14.37	
1400.00	8.68	357.880	1393.58	95.49N	3.53W	==>	17.06	
1500.00	8.68	357.880	1492.44	110.57N	4.09W	==>	19.75	
1600.00	8.68	357.880	1591.29	125.64N	4.64W	==>	22.45	
1700.00	8.68	357.880	1690.15	140.71N	5.20W	==>	25.14	
1800.00	8.68	357.880	1789.01	155.79N	5.76W	==>	27.83	
1900.00	8.68	357.880	1887.86	170.86N	6.32W	==>	30.52	
2000.00	8.68	357.880	1986.72	185.93N	6.87W	==>	33.22	
2100.00	8.68	357.880	2085.57	201.00N	7.43W	==>	35.91	
2200.00	8.68	357.880	2184.43	216.08N	7.99W	==>	38.60	
2300.00	8.68	357.880	2283.29	231.15N	8.55W	==>	41.30	
2400.00	8.68	357.880	2382.14	246.22N	9.10W	==>	43.99	
2500.00	8.68	357.880	2481.00	261.30N	9.66W	==>	46.68	
2600.00	8.68	357.880	2579.85	276.37N	10.22W	==>	49.37	
2700.00	8.68	357.880	2678.71	291.44N	10.77W	==>	52.07	
2800.00	8.68	357.880	2777.57	306.52N	11.33W	==>	54.76	
2900.00	8.68	357.880	2876.42	321.59N	11.89W	==>	57.45	
3000.00	8.68	357.880	2975.28	336.66N	12.45W	==>	60.15	
3100.00	8.68	357.880	3074.13	351.74N	13.00W	==>	62.84	

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SYSDRILL
Well Design Combined Report
Wellbore: VAIL 02C (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
3200.00	8.68	357.880	3172.99	366.81N	13.56W	==>	65.53	
3300.00	8.68	357.880	3271.84	381.88N	14.12W	==>	68.22	
3400.00	8.68	357.880	3370.70	396.96N	14.67W	==>	70.92	
3500.00	8.68	357.880	3469.56	412.03N	15.23W	==>	73.61	
3600.00	8.68	357.880	3568.41	427.10N	15.79W	==>	76.30	
3700.00	8.68	357.880	3667.27	442.17N	16.35W	==>	79.00	
3800.00	8.68	357.880	3766.12	457.25N	16.90W	==>	81.69	
3900.00	8.68	357.880	3864.98	472.32N	17.46W	==>	84.38	
4000.00	8.68	357.880	3963.84	487.39N	18.02W	==>	87.07	
4100.00	8.68	357.880	4062.69	502.47N	18.57W	==>	89.77	
4200.00	8.68	357.880	4161.55	517.54N	19.13W	==>	92.46	
4300.00	8.68	357.880	4260.40	532.61N	19.69W	==>	95.15	
4400.00	8.68	357.880	4359.26	547.69N	20.25W	==>	97.85	
4500.00	8.68	357.880	4458.12	562.76N	20.80W	==>	100.54	
4600.00	8.68	357.880	4556.97	577.83N	21.36W	==>	103.23	
4700.00	8.68	357.880	4655.83	592.91N	21.92W	==>	105.92	
4800.00	8.68	357.880	4754.68	607.98N	22.48W	==>	108.62	
4900.00	8.68	357.880	4853.54	623.05N	23.03W	==>	111.31	
5000.00	8.68	357.880	4952.40	638.12N	23.59W	==>	114.00	
5100.00	8.68	357.880	5051.25	653.20N	24.15W	==>	116.70	
5200.00	8.68	357.880	5150.11	668.27N	24.70W	==>	119.39	
5300.00	8.68	357.880	5248.96	683.34N	25.26W	==>	122.08	
5400.00	8.68	357.880	5347.82	698.42N	25.82W	==>	124.77	
5500.00	8.68	357.880	5446.67	713.49N	26.38W	==>	127.47	
5600.00	8.68	357.880	5545.53	728.56N	26.93W	==>	130.16	
5700.00	8.68	357.880	5644.39	743.64N	27.49W	==>	132.85	
5800.00	8.68	357.880	5743.24	758.71N	28.05W	==>	135.55	
5900.00	8.68	357.880	5842.10	773.78N	28.60W	==>	138.24	
6000.00	8.68	357.880	5940.95	788.86N	29.16W	==>	140.93	
6100.00	8.68	357.880	6039.81	803.93N	29.72W	==>	143.62	
6200.00	8.68	357.880	6138.67	819.00N	30.28W	==>	146.32	
6300.00	8.68	357.880	6237.52	834.08N	30.83W	==>	149.01	
6400.00	8.68	357.880	6336.38	849.15N	31.39W	==>	151.70	
6500.00	8.68	357.880	6435.23	864.22N	31.95W	==>	154.40	
6600.00	8.68	357.880	6534.09	879.29N	32.51W	==>	157.09	
6700.00	8.79	8.950	6632.94	894.37N	32.86W	12.00	159.98	
6800.00	15.96	57.190	6730.79	909.42N	20.07W	12.00	175.71	7.0in Intermediate Casing
6900.00	26.79	71.840	6823.83	923.95N	13.03E	12.00	211.15	
7000.00	38.30	78.280	6908.01	937.32N	64.97E	12.00	264.75	
7100.00	50.01	82.070	6979.65	948.94N	133.51E	12.00	334.18	
7198.71	61.65	84.700	7035.00	958.21N	214.50E	12.00	415.27	
7200.00	61.81	84.730	7035.61	958.31N	215.63E	12.00	416.40	
7300.00	73.64	86.850	7073.45	965.02N	307.75E	12.00	507.81	
7400.00	85.50	88.730	7091.52	968.77N	405.85E	12.00	604.43	
7500.00	90.28	89.460	7092.71	969.97N	505.80E	==>	702.31	
7600.00	90.28	89.460	7092.23	970.91N	605.79E	==>	800.17	
7700.00	90.28	89.460	7091.75	971.85N	705.79E	==>	898.03	
7800.00	90.28	89.460	7091.26	972.79N	805.78E	==>	995.90	
7900.00	90.28	89.460	7090.78	973.73N	905.78E	==>	1093.76	
8000.00	90.28	89.460	7090.30	974.67N	1005.77E	==>	1191.62	
8100.00	90.28	89.460	7089.81	975.61N	1105.77E	==>	1289.49	
8200.00	90.28	89.460	7089.33	976.55N	1205.76E	==>	1387.35	
8300.00	90.28	89.460	7088.85	977.49N	1305.75E	==>	1485.21	
8400.00	90.28	89.460	7088.36	978.44N	1405.75E	==>	1583.08	
8500.00	90.28	89.460	7087.88	979.38N	1505.74E	==>	1680.94	
8600.00	90.28	89.460	7087.40	980.32N	1605.74E	==>	1778.80	
8700.00	90.28	89.460	7086.91	981.26N	1705.73E	==>	1876.67	

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Date Printed: 16-Sep-2015



SYSDRILL
Well Design Combined Report
Wellbore: VAIL 02C (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
8800.00	90.28	89.460	7086.43	982.20N	1805.73E	==>	1974.53	
8900.00	90.28	89.460	7085.95	983.14N	1905.72E	==>	2072.39	
9000.00	90.28	89.460	7085.46	984.08N	2005.72E	==>	2170.26	
9100.00	90.28	89.460	7084.98	985.02N	2105.71E	==>	2268.12	
9200.00	90.28	89.460	7084.50	985.96N	2205.70E	==>	2365.98	
9300.00	90.28	89.460	7084.02	986.91N	2305.70E	==>	2463.85	
9400.00	90.28	89.460	7083.53	987.85N	2405.69E	==>	2561.71	
9500.00	90.28	89.460	7083.05	988.79N	2505.69E	==>	2659.57	
9600.00	90.28	89.460	7082.57	989.73N	2605.68E	==>	2757.44	
9700.00	90.28	89.460	7082.08	990.67N	2705.68E	==>	2855.30	
9800.00	90.28	89.460	7081.60	991.61N	2805.67E	==>	2953.16	
9900.00	90.28	89.460	7081.12	992.55N	2905.67E	==>	3051.03	
10000.00	90.28	89.460	7080.63	993.49N	3005.66E	==>	3148.89	
10100.00	90.28	89.460	7080.15	994.43N	3105.65E	==>	3246.75	
10200.00	90.28	89.460	7079.67	995.38N	3205.65E	==>	3344.62	
10300.00	90.28	89.460	7079.18	996.32N	3305.64E	==>	3442.48	
10400.00	90.28	89.460	7078.70	997.26N	3405.64E	==>	3540.34	
10500.00	90.28	89.460	7078.22	998.20N	3505.63E	==>	3638.21	
10600.00	90.28	89.460	7077.74	999.14N	3605.63E	==>	3736.07	
10700.00	90.28	89.460	7077.25	1000.08N	3705.62E	==>	3833.93	
10800.00	90.28	89.460	7076.77	1001.02N	3805.61E	==>	3931.80	
10900.00	90.28	89.460	7076.29	1001.96N	3905.61E	==>	4029.66	
11000.00	90.28	89.460	7075.80	1002.90N	4005.60E	==>	4127.52	
11100.00	90.28	89.460	7075.32	1003.85N	4105.60E	==>	4225.39	
11200.00	90.28	89.460	7074.84	1004.79N	4205.59E	==>	4323.25	
11300.00	90.28	89.460	7074.35	1005.73N	4305.59E	==>	4421.11	
11400.00	90.28	89.460	7073.87	1006.67N	4405.58E	==>	4518.98	
11500.00	90.28	89.460	7073.39	1007.61N	4505.58E	==>	4616.84	
11580.24	90.28	89.460	7073.00	1008.37N	4585.81E	==>	4695.36	4 1/2in Production Liner

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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	21.00	21.00	0.00N	0.00E	850.00	849.45	15.68N	0.58W
8 3/4	850.00	849.45	15.68N	0.58W	7035.00	6934.69	941.61N	87.21E
6 1/8	7035.00	6934.69	941.61N	87.21E	11580.24	7073.00	1008.37N	4585.81E

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	21.00	21.00	0.00N	0.00E	850.00	849.45	15.68N	0.58W
7.0in Intermediate Casing	21.00	21.00	0.00N	0.00E	7198.71	7035.00	958.21N	214.50E
4 1/2in Production Liner	6531.00	6465.88	868.89N	32.12W	11580.24	7073.00	1008.37N	4585.81E

Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
VAIL 02C Rev - T1	959.40N	206.05E	7073.00	40.33199000	-104.95912000	1364244.62	3150790.87
VAIL 02C Rev - T2	1008.37N	4585.81E	7073.00	40.33205000	-104.94341000	1364293.58	3155170.43

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
392532	Planned	11580.24	7073.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating	

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SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: VAIL 02C (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 02C (Rev 1)	24-Jun-2015	16-Sep-2015

Well		
Name	Government ID	Last Revised
VAIL 02C		21-Oct-2014

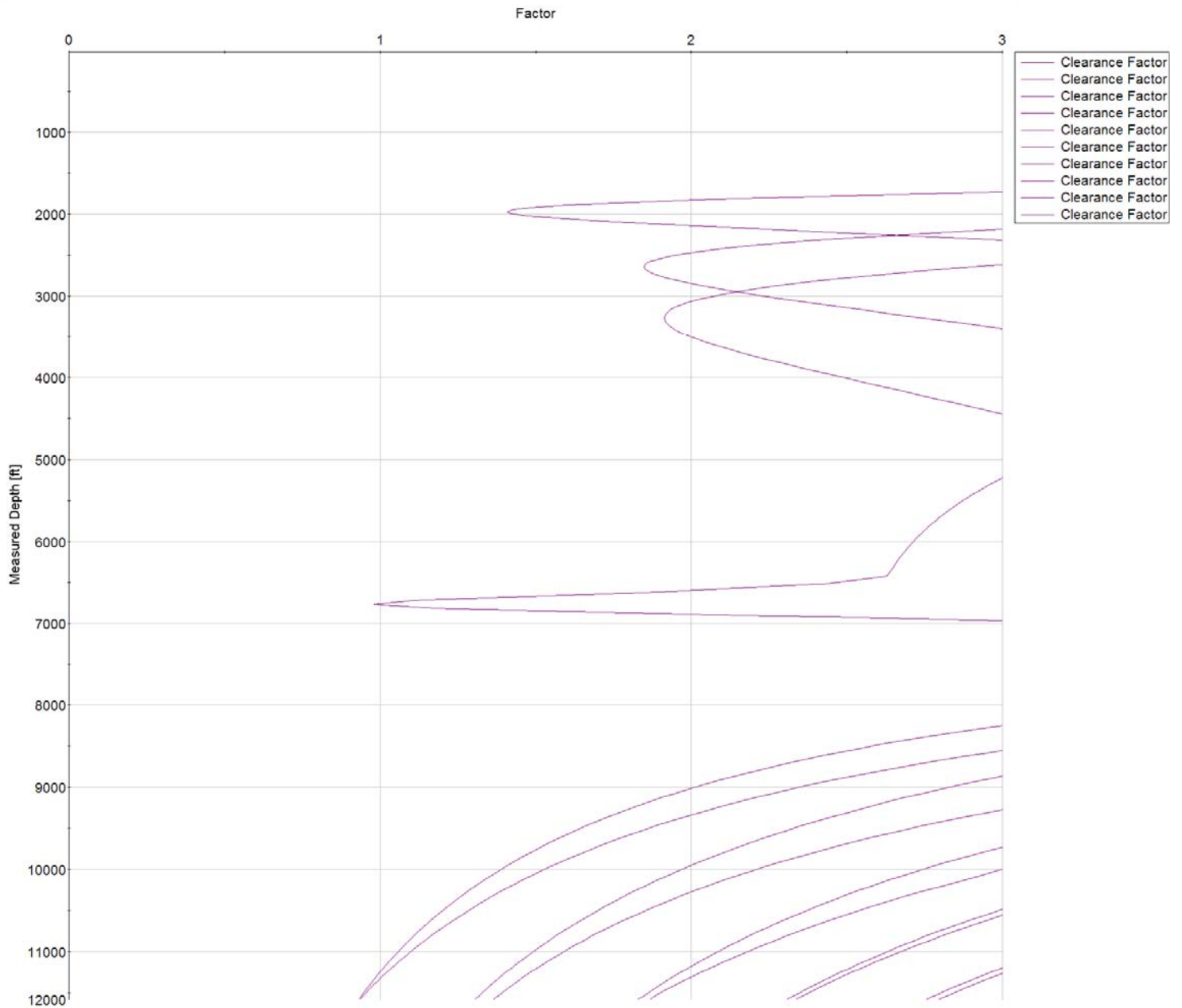
Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
VAIL 02C	40.32936000	-104.95988000	1363285.2594	3150584.8273	14.57S	0.09E

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 01NC	14.57	500.00	500.00	10.77	521.00	2.31	11580.24
VAIL 03NC	18.19	562.34	11580.24	13.97	611.55	2.34	11580.24
VAIL 04NC	21.89	1946.64	9272.97	6.42	1973.10	1.41	1973.10
VAIL 05C	39.65	2505.94	7435.70	-25.26	11580.24	0.93	11580.24
VAIL 07NC	43.54	6763.13	6763.13	-0.88	6763.13	0.98	6762.98
VAIL 06NC	51.58	3022.97	11580.24	25.35	3170.61	1.30	11580.24
VAIL 08C	98.36	550.00	11579.18	-23.50	11579.18	0.94	11579.18
VAIL 09NC	112.94	550.00	11579.66	108.84	562.34	1.87	11579.66
VAIL 10NC	127.51	550.00	11580.24	123.41	562.34	2.79	11580.24
VAIL 11C	145.72	550.00	11577.11	141.62	562.34	2.75	11580.24
VAIL 12NC	160.30	550.00	11580.24	156.20	562.34	3.66	11580.24

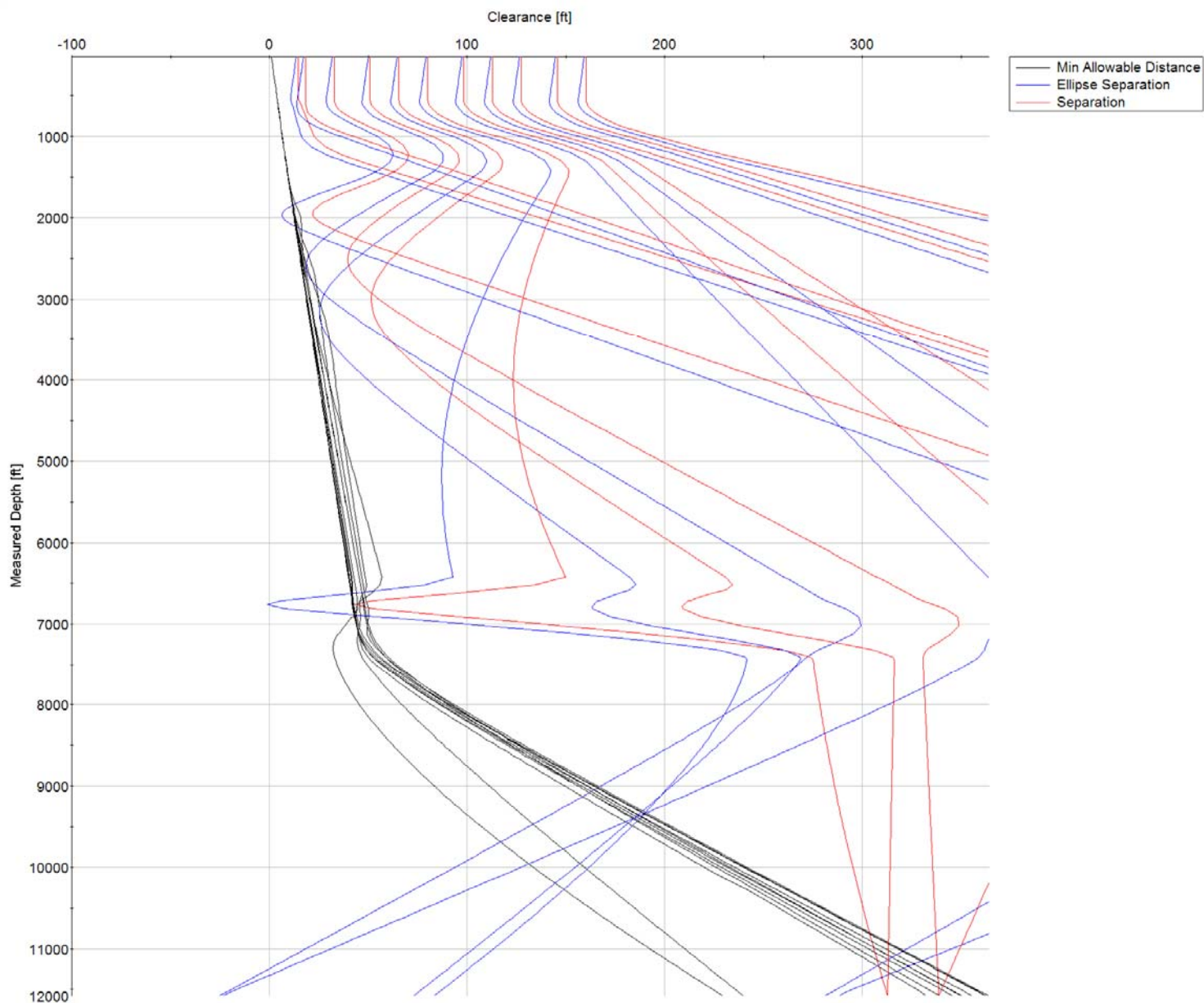


SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: VAIL 02C (Rev 1)





SYS DRILL
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