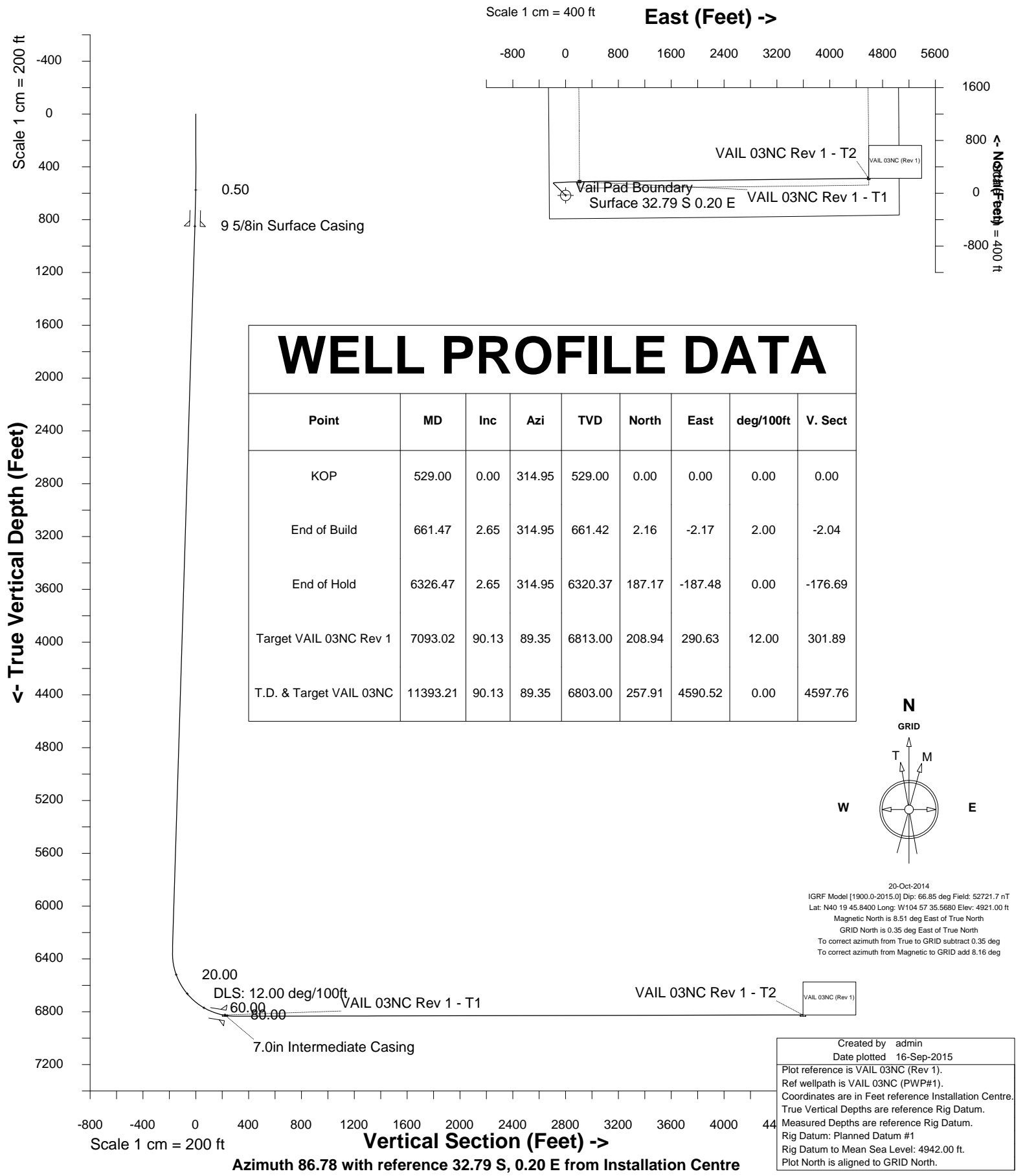


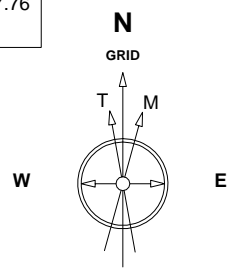
Cub Creek Energy, LLC

Location	Weld County, CO	Slot	VAIL 03NC
Field	WATTENBERG	Well	VAIL 03NC
Installation	Vail Pad	Wellbore	VAIL 03NC (Rev 1)



WELL PROFILE DATA

Point	MD	Inc	Azi	TVD	North	East	deg/100ft	V. Sect
KOP	529.00	0.00	314.95	529.00	0.00	0.00	0.00	0.00
End of Build	661.47	2.65	314.95	661.42	2.16	-2.17	2.00	-2.04
End of Hold	6326.47	2.65	314.95	6320.37	187.17	-187.48	0.00	-176.69
Target VAIL 03NC Rev 1	7093.02	90.13	89.35	6813.00	208.94	290.63	12.00	301.89
T.D. & Target VAIL 03NC	11393.21	90.13	89.35	6803.00	257.91	4590.52	0.00	4597.76



20-Oct-2014
 IGRF Model [1900.0-2015.0] Dip: 66.85 deg Field: 52721.7 nT
 Lat: N40 19 45.8400 Long: W104 57 35.5680 Elev: 4921.00 ft
 Magnetic North is 8.51 deg East of True North
 GRID North is 0.35 deg East of True North
 To correct azimuth from True to GRID subtract 0.35 deg
 To correct azimuth from Magnetic to GRID add 8.16 deg

Created by admin
 Date plotted 16-Sep-2015
 Plot reference is VAIL 03NC (Rev 1).
 Ref wellpath is VAIL 03NC (PWP#1).
 Coordinates are in Feet reference Installation Centre.
 True Vertical Depths are reference Rig Datum.
 Measured Depths are reference Rig Datum.
 Rig Datum: Planned Datum #1
 Rig Datum to Mean Sea Level: 4942.00 ft.
 Plot North is aligned to GRID North.

Azimuth 86.78 with reference 32.79 S, 0.20 E from Installation Centre



SYS DRILL
Well Design Combined Report
Wellbore: VAIL 03NC (Rev 1)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
VAIL 03NC	40.32931000	-104.95988000	1363267.0452	3150584.9382	32.79S	0.20E	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	1363267.05	3150584.94
11414.21	90.13	89.350	6824.00	257.91N	4590.52E	==>	4597.76	1363524.94	3155175.26

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
21.00	0.00	0.000	21.00	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	1.00	314.950	600.00	0.31N	0.31W	2.00	-0.29		
700.00	2.65	314.950	699.93	2.74N	2.74W	==>	-2.58		
800.00	2.65	314.950	799.83	6.00N	6.01W	==>	-5.67		
850.00	2.65	314.950	849.77	7.63N	7.65W	==>	-7.21		9 5/8in Surface Casing
900.00	2.65	314.950	899.72	9.27N	9.28W	==>	-8.75		
1000.00	2.65	314.950	999.61	12.53N	12.55W	==>	-11.83		
1100.00	2.65	314.950	1099.51	15.80N	15.83W	==>	-14.91		
1200.00	2.65	314.950	1199.40	19.07N	19.10W	==>	-18.00		
1300.00	2.65	314.950	1299.29	22.33N	22.37W	==>	-21.08		
1400.00	2.65	314.950	1399.19	25.60N	25.64W	==>	-24.16		
1500.00	2.65	314.950	1499.08	28.86N	28.91W	==>	-27.25		
1600.00	2.65	314.950	1598.97	32.13N	32.18W	==>	-30.33		
1700.00	2.65	314.950	1698.87	35.39N	35.45W	==>	-33.41		
1800.00	2.65	314.950	1798.76	38.66N	38.72W	==>	-36.49		
1900.00	2.65	314.950	1898.65	41.93N	41.99W	==>	-39.58		
2000.00	2.65	314.950	1998.54	45.19N	45.27W	==>	-42.66		
2100.00	2.65	314.950	2098.44	48.46N	48.54W	==>	-45.74		
2200.00	2.65	314.950	2198.33	51.72N	51.81W	==>	-48.83		
2300.00	2.65	314.950	2298.22	54.99N	55.08W	==>	-51.91		
2400.00	2.65	314.950	2398.12	58.25N	58.35W	==>	-54.99		
2500.00	2.65	314.950	2498.01	61.52N	61.62W	==>	-58.07		
2600.00	2.65	314.950	2597.90	64.79N	64.89W	==>	-61.16		
2700.00	2.65	314.950	2697.80	68.05N	68.16W	==>	-64.24		
2800.00	2.65	314.950	2797.69	71.32N	71.44W	==>	-67.32		
2900.00	2.65	314.950	2897.58	74.58N	74.71W	==>	-70.41		
3000.00	2.65	314.950	2997.48	77.85N	77.98W	==>	-73.49		
3100.00	2.65	314.950	3097.37	81.12N	81.25W	==>	-76.57		

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 Vertical Section is from 0.00N 0.00E on azimuth 86.780 degrees
 Bottom hole distance is 4597.76 Feet on azimuth 86.78 degrees from Wellhead
 Calculation method uses Minimum Curvature method
 Prepared by Integrated Petroleum Technologies, Inc.
 Date Printed: 16-Sep-2015



SYS DRILL
Well Design Combined Report
Wellbore: VAIL 03NC (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	2.65	314.950	3197.26	84.38N	84.52W	==>	-79.65	
3300.00	2.65	314.950	3297.15	87.65N	87.79W	==>	-82.74	
3400.00	2.65	314.950	3397.05	90.91N	91.06W	==>	-85.82	
3500.00	2.65	314.950	3496.94	94.18N	94.33W	==>	-88.90	
3600.00	2.65	314.950	3596.83	97.44N	97.60W	==>	-91.99	
3700.00	2.65	314.950	3696.73	100.71N	100.88W	==>	-95.07	
3800.00	2.65	314.950	3796.62	103.98N	104.15W	==>	-98.15	
3900.00	2.65	314.950	3896.51	107.24N	107.42W	==>	-101.23	
4000.00	2.65	314.950	3996.41	110.51N	110.69W	==>	-104.32	
4100.00	2.65	314.950	4096.30	113.77N	113.96W	==>	-107.40	
4200.00	2.65	314.950	4196.19	117.04N	117.23W	==>	-110.48	
4300.00	2.65	314.950	4296.09	120.31N	120.50W	==>	-113.57	
4400.00	2.65	314.950	4395.98	123.57N	123.77W	==>	-116.65	
4500.00	2.65	314.950	4495.87	126.84N	127.05W	==>	-119.73	
4600.00	2.65	314.950	4595.77	130.10N	130.32W	==>	-122.81	
4700.00	2.65	314.950	4695.66	133.37N	133.59W	==>	-125.90	
4800.00	2.65	314.950	4795.55	136.63N	136.86W	==>	-128.98	
4900.00	2.65	314.950	4895.44	139.90N	140.13W	==>	-132.06	
5000.00	2.65	314.950	4995.34	143.17N	143.40W	==>	-135.15	
5100.00	2.65	314.950	5095.23	146.43N	146.67W	==>	-138.23	
5200.00	2.65	314.950	5195.12	149.70N	149.94W	==>	-141.31	
5300.00	2.65	314.950	5295.02	152.96N	153.22W	==>	-144.39	
5400.00	2.65	314.950	5394.91	156.23N	156.49W	==>	-147.48	
5500.00	2.65	314.950	5494.80	159.49N	159.76W	==>	-150.56	
5600.00	2.65	314.950	5594.70	162.76N	163.03W	==>	-153.64	
5700.00	2.65	314.950	5694.59	166.03N	166.30W	==>	-156.73	
5800.00	2.65	314.950	5794.48	169.29N	169.57W	==>	-159.81	
5900.00	2.65	314.950	5894.38	172.56N	172.84W	==>	-162.89	
6000.00	2.65	314.950	5994.27	175.82N	176.11W	==>	-165.97	
6100.00	2.65	314.950	6094.16	179.09N	179.38W	==>	-169.06	
6200.00	2.65	314.950	6194.06	182.36N	182.66W	==>	-172.14	
6300.00	2.65	314.950	6293.95	185.62N	185.93W	==>	-175.22	
6400.00	4.84	66.340	6393.83	188.92N	186.31W	12.00	-175.42	
6500.00	16.56	82.960	6491.94	192.37N	168.24W	12.00	-157.19	
6600.00	28.51	85.850	6584.14	195.86N	130.16W	12.00	-118.97	
6700.00	40.49	87.120	6666.40	199.22N	73.73W	12.00	-62.44	
6800.00	52.47	87.890	6735.14	202.33N	1.41W	12.00	9.94	
6900.00	64.47	88.440	6787.34	205.03N	83.62E	12.00	94.99	
7000.00	76.46	88.890	6820.72	207.21N	177.67E	12.00	189.01	
7035.00	80.66	89.030	6827.66	207.83N	211.96E	12.00	223.28	
7100.00	88.45	89.290	6833.83	208.78N	276.61E	12.00	287.88	7.0in Intermediate Casing
7200.00	90.13	89.350	6833.80	209.92N	376.60E	==>	387.78	
7300.00	90.13	89.350	6833.57	211.06N	476.59E	==>	487.68	
7400.00	90.13	89.350	6833.33	212.20N	576.59E	==>	587.58	
7500.00	90.13	89.350	6833.10	213.34N	676.58E	==>	687.48	
7600.00	90.13	89.350	6832.87	214.48N	776.57E	==>	787.38	
7700.00	90.13	89.350	6832.64	215.62N	876.57E	==>	887.28	
7800.00	90.13	89.350	6832.40	216.75N	976.56E	==>	987.18	
7900.00	90.13	89.350	6832.17	217.89N	1076.55E	==>	1087.08	
8000.00	90.13	89.350	6831.94	219.03N	1176.55E	==>	1186.98	
8100.00	90.13	89.350	6831.71	220.17N	1276.54E	==>	1286.88	
8200.00	90.13	89.350	6831.47	221.31N	1376.53E	==>	1386.78	
8300.00	90.13	89.350	6831.24	222.45N	1476.53E	==>	1486.68	
8400.00	90.13	89.350	6831.01	223.59N	1576.52E	==>	1586.58	
8500.00	90.13	89.350	6830.78	224.72N	1676.51E	==>	1686.48	
8600.00	90.13	89.350	6830.54	225.86N	1776.51E	==>	1786.38	
8700.00	90.13	89.350	6830.31	227.00N	1876.50E	==>	1886.28	

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Vertical Section is from 0.00N 0.00E on azimuth 86.780 degrees
Bottom hole distance is 4597.76 Feet on azimuth 86.78 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Integrated Petroleum Technologies, Inc.
Date Printed: 16-Sep-2015



SYSDRILL
Well Design Combined Report
Wellbore: VAIL 03NC (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	90.13	89.350	6830.08	228.14N	1976.49E	==>	1986.18	
8900.00	90.13	89.350	6829.85	229.28N	2076.49E	==>	2086.08	
9000.00	90.13	89.350	6829.61	230.42N	2176.48E	==>	2185.98	
9100.00	90.13	89.350	6829.38	231.56N	2276.47E	==>	2285.88	
9200.00	90.13	89.350	6829.15	232.69N	2376.47E	==>	2385.78	
9300.00	90.13	89.350	6828.92	233.83N	2476.46E	==>	2485.68	
9400.00	90.13	89.350	6828.68	234.97N	2576.45E	==>	2585.58	
9500.00	90.13	89.350	6828.45	236.11N	2676.45E	==>	2685.48	
9600.00	90.13	89.350	6828.22	237.25N	2776.44E	==>	2785.38	
9700.00	90.13	89.350	6827.99	238.39N	2876.43E	==>	2885.27	
9800.00	90.13	89.350	6827.75	239.53N	2976.42E	==>	2985.17	
9900.00	90.13	89.350	6827.52	240.66N	3076.42E	==>	3085.07	
10000.00	90.13	89.350	6827.29	241.80N	3176.41E	==>	3184.97	
10100.00	90.13	89.350	6827.06	242.94N	3276.40E	==>	3284.87	
10200.00	90.13	89.350	6826.82	244.08N	3376.40E	==>	3384.77	
10300.00	90.13	89.350	6826.59	245.22N	3476.39E	==>	3484.67	
10400.00	90.13	89.350	6826.36	246.36N	3576.38E	==>	3584.57	
10500.00	90.13	89.350	6826.13	247.50N	3676.38E	==>	3684.47	
10600.00	90.13	89.350	6825.89	248.64N	3776.37E	==>	3784.37	
10700.00	90.13	89.350	6825.66	249.77N	3876.36E	==>	3884.27	
10800.00	90.13	89.350	6825.43	250.91N	3976.36E	==>	3984.17	
10900.00	90.13	89.350	6825.20	252.05N	4076.35E	==>	4084.07	
11000.00	90.13	89.350	6824.96	253.19N	4176.34E	==>	4183.97	
11100.00	90.13	89.350	6824.73	254.33N	4276.34E	==>	4283.87	
11200.00	90.13	89.350	6824.50	255.47N	4376.33E	==>	4383.77	
11300.00	90.13	89.350	6824.27	256.61N	4476.32E	==>	4483.67	
11400.00	90.13	89.350	6824.03	257.74N	4576.32E	==>	4583.57	
11414.21	90.13	89.350	6824.00	257.91N	4590.52E	==>	4597.76	4 1/2in Production Liner

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Vertical Section is from 0.00N 0.00E on azimuth 86.780 degrees
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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	849.77	7.63N	7.65W
8 3/4	850.00	849.77	7.63N	7.65W	7014.99	6824.00	207.49N	192.29E
6 1/8	7014.99	6824.00	207.49N	192.29E	11414.21	6824.00	257.91N	4590.52E

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	849.77	7.63N	7.65W
7.0in Intermediate Casing	21.00	21.00	0.00N	0.00E	7035.00	6827.66	207.83N	211.96E
4 1/2in Production Liner	6208.00	6202.05	182.62N	182.92W	11414.21	6824.00	257.91N	4590.52E

Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
VAIL 03NC Rev 1 - T1	208.94N	210.63E	6824.00	40.32988000	-104.95912000	1363475.98	3150795.56
VAIL 03NC Rev 1 - T2	257.91N	4590.52E	6824.00	40.32994000	-104.94341000	1363524.94	3155175.26

Survey Tool Program					
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
392557	Planned	11414.21	6824.00	ISCWSA MWD	Rev 3 + Fixed Rig + Rotating

Notes



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: VAIL 03NC (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 03NC (Rev 1)	24-Jun-2015	16-Sep-2015

Well		
Name	Government ID	Last Revised
VAIL 03NC		21-Oct-2014

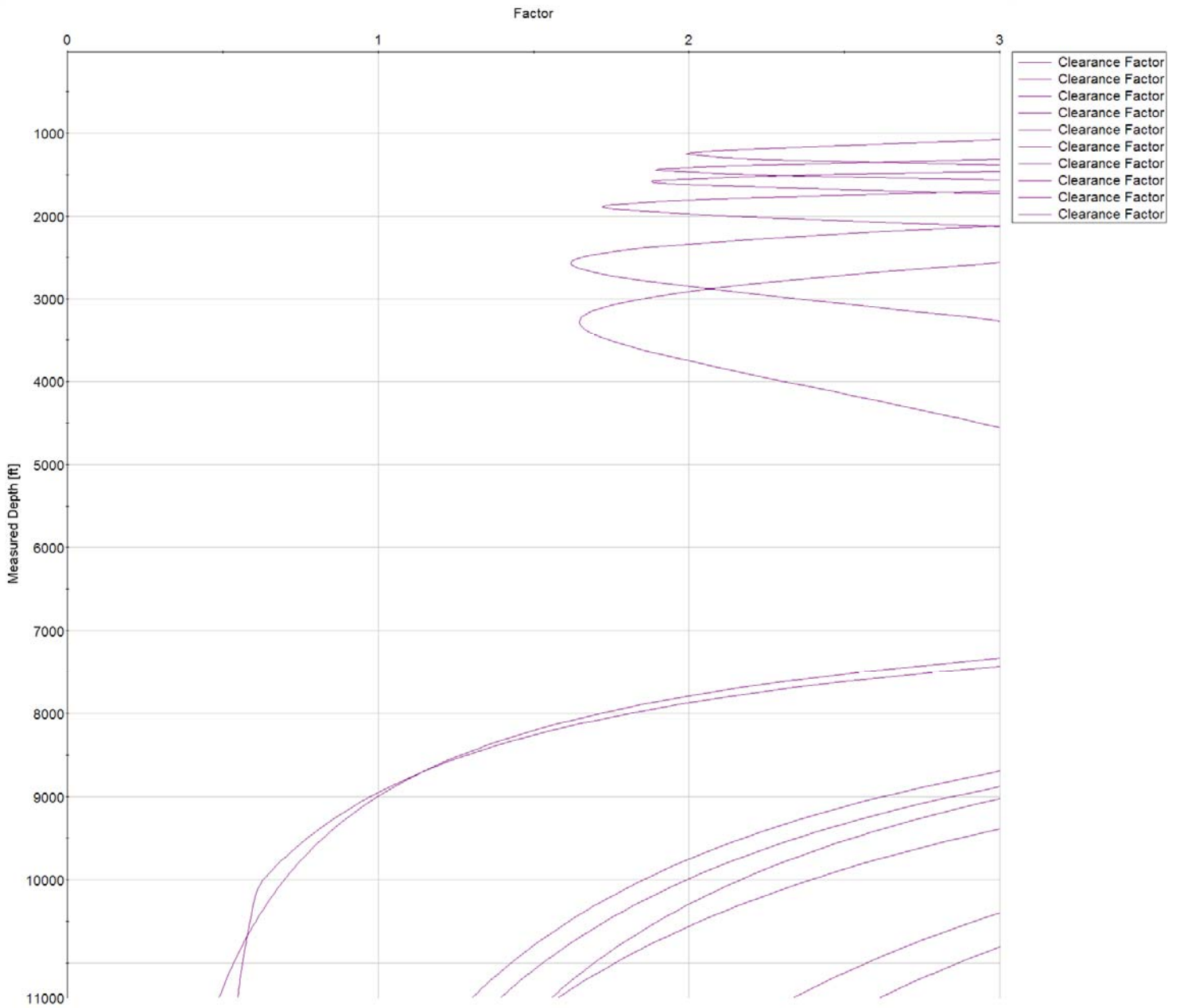
Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
VAIL 03NC	40.32931000	-104.95988000	1363267.0452	3150584.9382	32.79S	0.20E

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 04NC	14.57	550.00	11414.21	7.99	1251.31	1.99	1251.31
VAIL 05C	17.68	1435.27	1435.27	8.39	1435.27	1.89	1448.17
VAIL 02C	18.22	550.03	11414.21	14.01	585.67	2.34	11414.21
VAIL 06NC	19.39	1575.97	1575.97	9.08	1579.40	1.88	1579.40
VAIL 07NC	21.17	1871.70	11414.21	8.93	1874.67	1.58	11414.21
VAIL 08C	26.61	2504.47	2504.47	10.28	2547.25	1.56	11414.21
VAIL 01NC	32.79	500.00	500.00	28.98	521.00	4.19	11414.21
VAIL 09NC	33.96	3142.32	10003.66	-165.28	11414.21	0.55	11414.21
VAIL 10NC	109.29	550.00	11413.30	-187.44	11414.21	0.49	11413.30
VAIL 11C	127.51	550.00	11412.46	78.64	11414.21	1.30	11414.21
VAIL 12NC	142.08	550.00	11411.60	137.96	578.74	1.39	11414.21

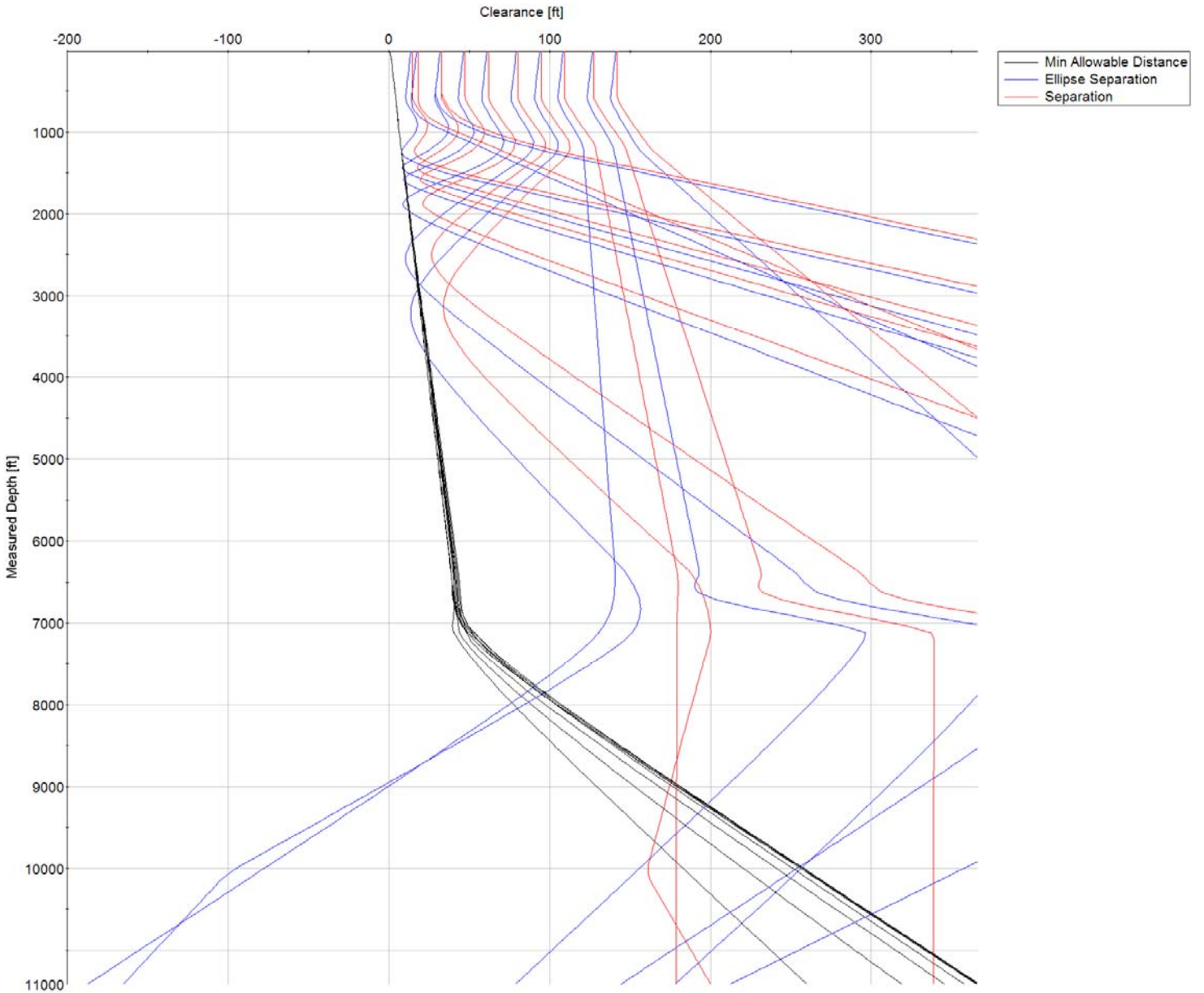


SYS DRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: VAIL 03NC (Rev 1)





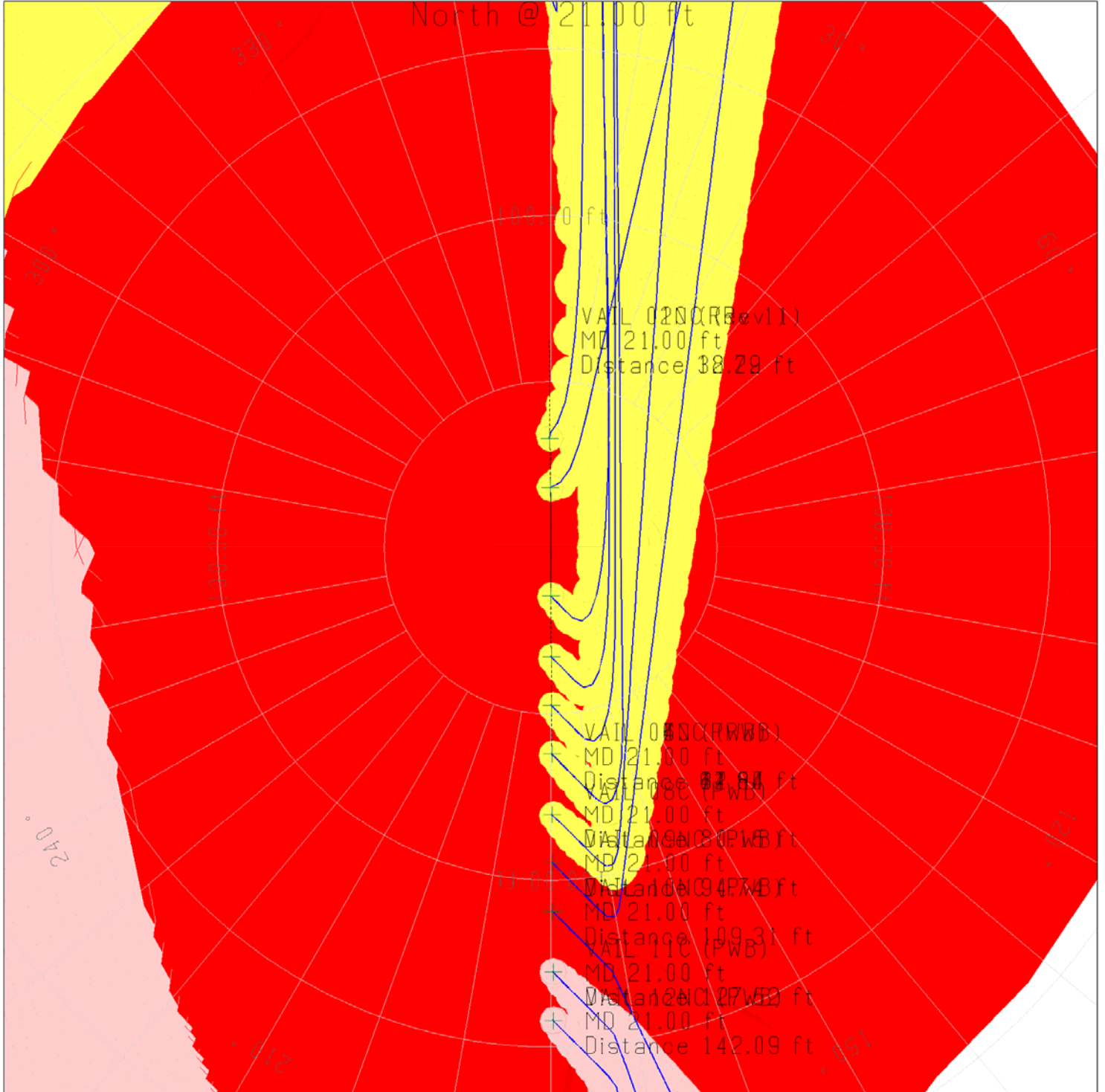
SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: VAIL 03NC (Rev 1)



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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 4942.0ft above Mean Sea Level)
 Vertical Section is from 0.00N 0.00E on azimuth 86.780 degrees
 Prepared by Integrated Petroleum Technologies, Inc.
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