



SYSDRILL
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
850.00	0.00	292.740	850.00	0.00N	0.00E	==>	0.00	1363267.05	3150584.94
11588.27	90.00	89.360	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 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	292.740	850.00	0.00N	0.00E	==>	0.00	9 5/8in Surface Casing
900.00	1.00	292.740	900.00	0.17N	0.40W	2.00	-0.39	
1000.00	3.00	292.740	999.93	1.52N	3.62W	2.00	-3.53	
1100.00	5.00	292.740	1099.68	4.21N	10.05W	2.00	-9.80	
1200.00	5.09	292.740	1199.29	7.64N	18.23W	==>	-17.77	
1300.00	5.09	292.740	1298.90	11.07N	26.41W	==>	-25.75	
1400.00	5.09	292.740	1398.50	14.50N	34.59W	==>	-33.72	
1500.00	5.09	292.740	1498.11	17.93N	42.76W	==>	-41.69	
1600.00	5.09	292.740	1597.71	21.35N	50.94W	==>	-49.66	
1700.00	5.09	292.740	1697.32	24.78N	59.12W	==>	-57.64	
1800.00	5.09	292.740	1796.93	28.21N	67.30W	==>	-65.61	
1900.00	5.09	292.740	1896.53	31.64N	75.48W	==>	-73.58	
2000.00	5.09	292.740	1996.14	35.07N	83.66W	==>	-81.56	
2100.00	5.09	292.740	2095.74	38.49N	91.83W	==>	-89.53	
2200.00	5.09	292.740	2195.35	41.92N	100.01W	==>	-97.50	
2300.00	5.09	292.740	2294.96	45.35N	108.19W	==>	-105.48	
2400.00	5.09	292.740	2394.56	48.78N	116.37W	==>	-113.45	
2500.00	5.09	292.740	2494.17	52.21N	124.55W	==>	-121.42	
2600.00	5.09	292.740	2593.77	55.63N	132.73W	==>	-129.40	
2700.00	5.09	292.740	2693.38	59.06N	140.90W	==>	-137.37	
2800.00	5.09	292.740	2792.99	62.49N	149.08W	==>	-145.34	
2900.00	5.09	292.740	2892.59	65.92N	157.26W	==>	-153.32	
3000.00	5.09	292.740	2992.20	69.35N	165.44W	==>	-161.29	
3100.00	5.09	292.740	3091.80	72.77N	173.62W	==>	-169.26	
3200.00	5.09	292.740	3191.41	76.20N	181.80W	==>	-177.24	
3300.00	5.09	292.740	3291.02	79.63N	189.98W	==>	-185.21	
3400.00	5.09	292.740	3390.62	83.06N	198.15W	==>	-193.18	

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
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: 25-Jun-2015



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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	5.09	292.740	3490.23	86.49N	206.33W	==>	-201.16	
3600.00	5.09	292.740	3589.83	89.91N	214.51W	==>	-209.13	
3700.00	5.09	292.740	3689.44	93.34N	222.69W	==>	-217.10	
3800.00	5.09	292.740	3789.05	96.77N	230.87W	==>	-225.08	
3900.00	5.09	292.740	3888.65	100.20N	239.05W	==>	-233.05	
4000.00	5.09	292.740	3988.26	103.63N	247.22W	==>	-241.02	
4100.00	5.09	292.740	4087.86	107.05N	255.40W	==>	-249.00	
4200.00	5.09	292.740	4187.47	110.48N	263.58W	==>	-256.97	
4300.00	5.09	292.740	4287.08	113.91N	271.76W	==>	-264.94	
4400.00	5.09	292.740	4386.68	117.34N	279.94W	==>	-272.91	
4500.00	5.09	292.740	4486.29	120.77N	288.12W	==>	-280.89	
4600.00	5.09	292.740	4585.89	124.19N	296.29W	==>	-288.86	
4700.00	5.09	292.740	4685.50	127.62N	304.47W	==>	-296.83	
4800.00	5.09	292.740	4785.11	131.05N	312.65W	==>	-304.81	
4900.00	5.09	292.740	4884.71	134.48N	320.83W	==>	-312.78	
5000.00	5.09	292.740	4984.32	137.91N	329.01W	==>	-320.75	
5100.00	5.09	292.740	5083.92	141.34N	337.19W	==>	-328.73	
5200.00	5.09	292.740	5183.53	144.76N	345.36W	==>	-336.70	
5300.00	5.09	292.740	5283.14	148.19N	353.54W	==>	-344.67	
5400.00	5.09	292.740	5382.74	151.62N	361.72W	==>	-352.65	
5500.00	5.09	292.740	5482.35	155.05N	369.90W	==>	-360.62	
5600.00	5.09	292.740	5581.95	158.48N	378.08W	==>	-368.59	
5700.00	5.09	292.740	5681.56	161.90N	386.26W	==>	-376.57	
5800.00	5.09	292.740	5781.17	165.33N	394.43W	==>	-384.54	
5900.00	5.09	292.740	5880.77	168.76N	402.61W	==>	-392.51	
6000.00	5.09	292.740	5980.38	172.19N	410.79W	==>	-400.49	
6100.00	5.09	292.740	6079.98	175.62N	418.97W	==>	-408.46	
6200.00	2.15	339.530	6179.68	179.06N	425.65W	9.00	-414.93	
6300.00	8.51	75.710	6279.30	182.66N	419.12W	9.00	-408.21	
6400.00	17.39	82.880	6376.66	186.34N	397.07W	9.00	-386.00	
6500.00	26.34	85.270	6469.38	190.03N	360.06W	9.00	-348.84	
6600.00	35.32	86.500	6555.16	193.63N	308.99W	9.00	-297.64	
6700.00	44.31	87.290	6631.89	197.06N	245.12W	9.00	-233.68	
6800.00	53.30	87.850	6697.69	200.22N	170.02W	9.00	-158.52	
6900.00	62.29	88.300	6750.93	203.05N	85.54W	9.00	-74.02	
7000.00	71.28	88.670	6790.31	205.47N	6.24E	9.00	17.75	
7100.00	80.28	89.010	6814.85	207.42N	103.05E	9.00	114.53	
7200.00	89.27	89.330	6823.95	208.85N	202.52E	9.00	213.92	
7208.00	89.99	89.360	6824.00	208.94N	210.52E	9.00	221.91	7.0in Intermediate Casing
7300.00	90.00	89.360	6824.00	209.97N	302.52E	==>	313.82	
7400.00	90.00	89.360	6824.00	211.09N	402.51E	==>	413.72	
7500.00	90.00	89.360	6824.00	212.21N	502.51E	==>	513.62	
7600.00	90.00	89.360	6824.00	213.32N	602.50E	==>	613.52	
7700.00	90.00	89.360	6824.00	214.44N	702.49E	==>	713.42	
7800.00	90.00	89.360	6824.00	215.56N	802.49E	==>	813.31	
7900.00	90.00	89.360	6824.00	216.68N	902.48E	==>	913.21	
8000.00	90.00	89.360	6824.00	217.80N	1002.47E	==>	1013.11	
8100.00	90.00	89.360	6824.00	218.91N	1102.47E	==>	1113.01	
8200.00	90.00	89.360	6824.00	220.03N	1202.46E	==>	1212.91	
8300.00	90.00	89.360	6824.00	221.15N	1302.46E	==>	1312.81	
8400.00	90.00	89.360	6824.00	222.27N	1402.45E	==>	1412.71	
8500.00	90.00	89.360	6824.00	223.38N	1502.44E	==>	1512.61	
8600.00	90.00	89.360	6824.00	224.50N	1602.44E	==>	1612.51	
8700.00	90.00	89.360	6824.00	225.62N	1702.43E	==>	1712.41	
8800.00	90.00	89.360	6824.00	226.74N	1802.42E	==>	1812.31	
8900.00	90.00	89.360	6824.00	227.86N	1902.42E	==>	1912.20	
9000.00	90.00	89.360	6824.00	228.97N	2002.41E	==>	2012.10	
9100.00	90.00	89.360	6824.00	230.09N	2102.41E	==>	2112.00	
9200.00	90.00	89.360	6824.00	231.21N	2202.40E	==>	2211.90	
9300.00	90.00	89.360	6824.00	232.33N	2302.39E	==>	2311.80	

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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	233.44N	2402.39E	==>	2411.70	
9500.00	90.00	89.360	6824.00	234.56N	2502.38E	==>	2511.60	
9600.00	90.00	89.360	6824.00	235.68N	2602.37E	==>	2611.50	
9700.00	90.00	89.360	6824.00	236.80N	2702.37E	==>	2711.40	
9800.00	90.00	89.360	6824.00	237.92N	2802.36E	==>	2811.30	
9900.00	90.00	89.360	6824.00	239.03N	2902.36E	==>	2911.19	
10000.00	90.00	89.360	6824.00	240.15N	3002.35E	==>	3011.09	
10100.00	90.00	89.360	6824.00	241.27N	3102.34E	==>	3110.99	
10200.00	90.00	89.360	6824.00	242.39N	3202.34E	==>	3210.89	
10300.00	90.00	89.360	6824.00	243.51N	3302.33E	==>	3310.79	
10400.00	90.00	89.360	6824.00	244.62N	3402.32E	==>	3410.69	
10500.00	90.00	89.360	6824.00	245.74N	3502.32E	==>	3510.59	
10600.00	90.00	89.360	6824.00	246.86N	3602.31E	==>	3610.49	
10700.00	90.00	89.360	6824.00	247.98N	3702.31E	==>	3710.39	
10800.00	90.00	89.360	6824.00	249.09N	3802.30E	==>	3810.29	
10900.00	90.00	89.360	6824.00	250.21N	3902.29E	==>	3910.18	
11000.00	90.00	89.360	6824.00	251.33N	4002.29E	==>	4010.08	
11100.00	90.00	89.360	6824.00	252.45N	4102.28E	==>	4109.98	
11200.00	90.00	89.360	6824.00	253.57N	4202.27E	==>	4209.88	
11300.00	90.00	89.360	6824.00	254.68N	4302.27E	==>	4309.78	
11400.00	90.00	89.360	6824.00	255.80N	4402.26E	==>	4409.68	
11500.00	90.00	89.360	6824.00	256.92N	4502.26E	==>	4509.58	
11588.27	90.00	89.360	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	850.00	0.00N	0.00E
8 3/4	850.00	850.00	0.00N	0.00E	7208.00	6824.00	208.94N	210.52E
6 1/8	7208.00	6824.00	208.94N	210.52E	11588.27	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	850.00	0.00N	0.00E
7.0in Intermediate Casing	21.00	21.00	0.00N	0.00E	7208.00	6824.00	208.94N	210.52E
4 1/2in Production Liner	6208.00	6187.67	179.35N	425.70W	11588.27	6824.00	257.91N	4590.52E

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

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
392557	Planned	11588.27	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	25-Jun-2015

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

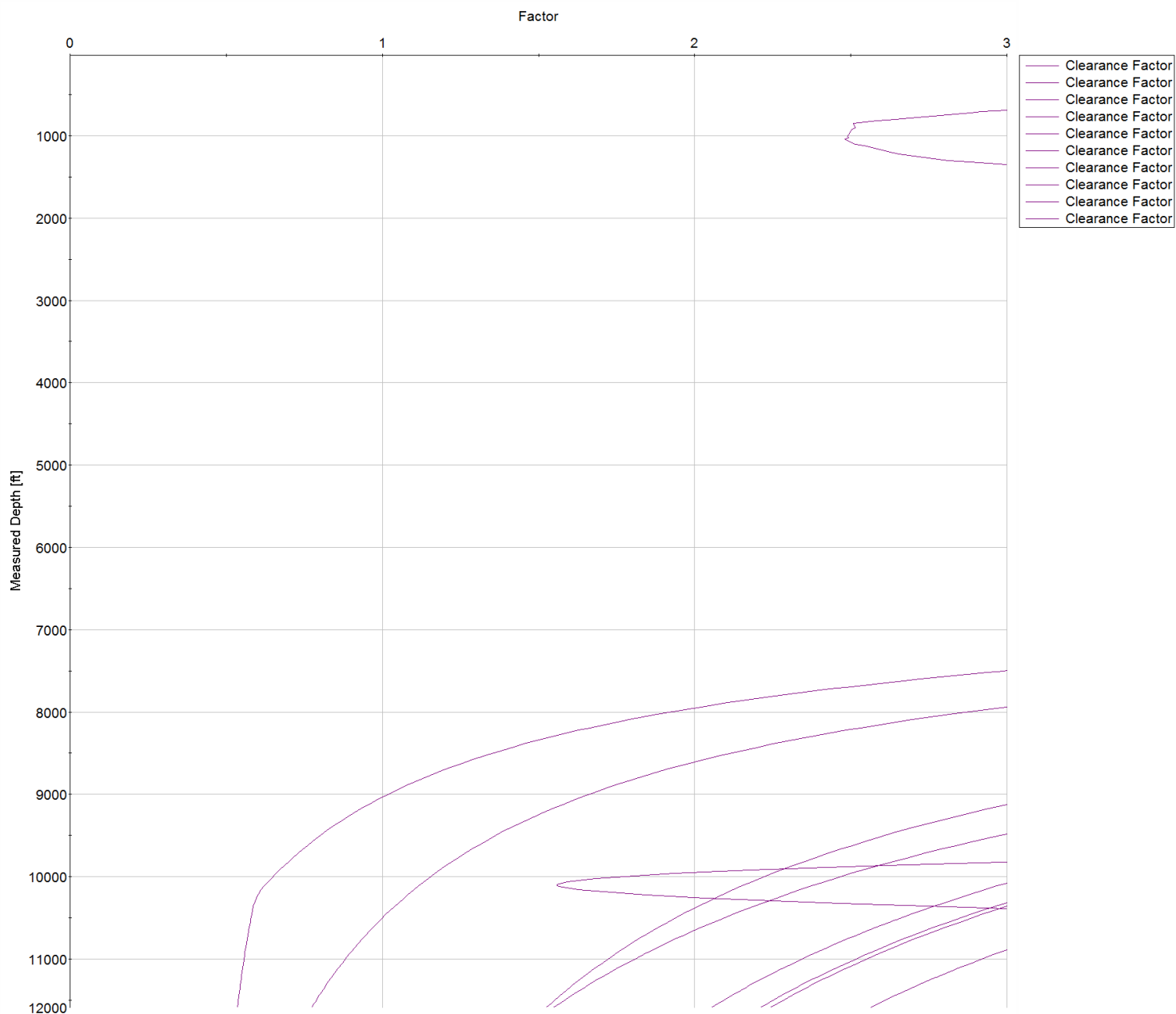
Slot						
Name	Latitude	Longitude	Grid Northing	Grid Easting	North	East
VAIL 03NC	40.32931000	-104.95988000	1363267.0452	3150584.9382	32.79S	0.20E

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	850.00	11588.27	8.76	850.00	2.48	1038.06	
VAIL 02C	18.22	850.01	850.01	12.41	850.01	2.24	11588.27	
VAIL 01NC	32.52	921.31	11588.27	26.41	956.04	4.06	11588.27	
VAIL 05C	32.56	1435.90	11588.27	23.44	1464.57	3.11	11588.27	
VAIL 06NC	37.69	1597.54	1597.54	27.48	1612.21	2.56	11588.27	
VAIL 07NC	41.03	1734.51	11588.27	29.89	1759.85	1.55	11588.27	
VAIL 08C	56.80	2087.93	6668.01	43.50	2153.55	1.52	11588.27	
VAIL 09NC	70.74	2432.42	10201.25	-173.37	11588.27	0.54	11588.27	
VAIL 10NC	109.29	850.00	11588.27	-52.26	11588.27	0.77	11588.27	
VAIL 11C	127.51	850.00	11588.27	123.48	850.00	2.05	11588.27	
VAIL 12NC	142.08	850.00	11585.96	138.05	850.00	2.21	11588.27	
NLB #1-3-12	257.89	10112.47	10112.47	92.50	10109.58	1.56	10093.18	
VAIL #1	521.47	7826.92	7826.92	452.36	7845.80	7.38	7927.82	
UPRC #11-8I8	952.84	6221.79	6221.79	911.70	6221.79	23.08	6287.40	
NLB #2-1-12	1508.23	10182.46	10182.46	1337.18	10240.82	8.61	10454.07	
HSR-MAPLEWOOD ACRES #12-7	1716.35	11588.27	11588.27	1553.00	11588.27	10.51	11588.27	
ABRAMS #1	3228.14	7288.06	7288.06	3174.88	7386.49	34.01	9748.69	

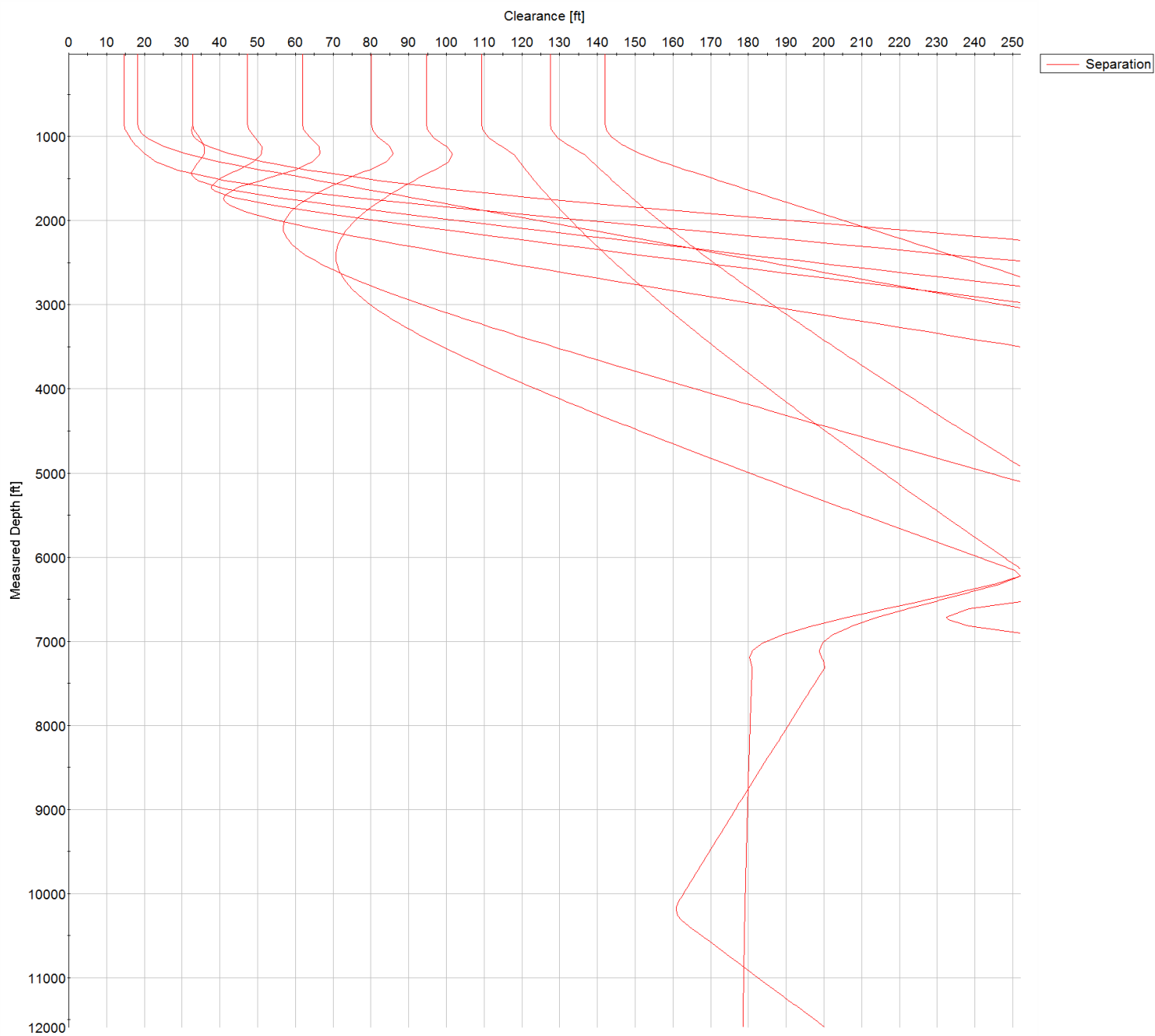


SYS DRILL
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