



Precision

Survey Report

Client	Bighorn Directional	MWD Operator	D. Barge/N. LaRubbio
Well Name	CVR-5-63-32-1724 BH	Rig Name	Nabors M-37
Location	Weld County, Colorado	End Date	6/18/2013
Start Date	6/10/2013	Proposed Direction	74.1

SUR NUM	MD ft	INC °	AZM °	TVD ft	N-S ft	E-W ft	SECT ft	DLS °/100'
TIE IN	750	0.20	69.56	749.99	2.14	2.69	3.17	0.7
1	858	0.4	104.6	857.99	2.11	3.23	3.69	0.2
2	950	4.9	9.9	949.88	5.90	4.22	5.68	5.4
3	1134	13.2	344.9	1131.48	33.98	0.09	9.41	4.9
4	1318	14.2	344.9	1310.25	76.06	-11.26	10.04	0.5
5	1505	11.3	344.0	1492.62	115.82	-22.29	10.35	1.6
6	1696	10.5	352.3	1680.18	151.06	-29.78	12.82	0.9
7	1886	13.4	348.8	1866.04	189.82	-36.38	17.12	1.6
8	2075	20.0	352.8	2046.98	243.43	-44.69	23.84	3.5
9	2265	19.4	347.7	2225.87	306.50	-55.49	30.77	1.0
10	2454	20.9	349.7	2403.30	370.34	-68.20	36.06	0.9
11	2643	21.3	351.6	2579.63	437.47	-79.25	43.87	0.4
12	2832	23.6	349.1	2754.30	508.59	-91.42	51.68	1.3
13	3021	19.2	352.8	2930.23	576.61	-102.47	59.72	2.4
14	3211	17.5	354.2	3110.57	636.04	-109.28	69.49	0.9
15	3399	16.2	342.8	3290.54	689.23	-119.89	73.88	1.9
16	3587	22.9	341.7	3467.60	749.07	-139.15	71.78	3.6
17	3777	25.4	346.7	3640.98	823.85	-160.14	72.13	1.7
18	3966	22.2	346.5	3813.88	898.03	-177.80	75.50	1.7
19	4156	18.9	351.4	3991.78	963.39	-190.79	80.95	2.0
20	4346	20.0	354.0	4170.94	1026.13	-198.79	90.48	0.7
21	4535	16.2	356.7	4350.56	1084.62	-203.69	101.82	2.1
22	4725	17.9	358.4	4532.20	1140.27	-206.03	114.85	0.9
23	4915	16.3	359.0	4713.79	1196.12	-207.31	128.94	0.8
24	5103	13.0	354.4	4895.66	1243.56	-209.83	139.54	1.9
25	5293	7.6	339.4	5082.56	1276.62	-216.34	142.35	3.2



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SUR NUM	MD ft	INC °	AZM °	TVD ft	N-S ft	E-W ft	SECT ft	DLS °/100'
26	5482	3.5	327.5	5270.64	1293.19	-223.85	139.68	2.2
27	5669	1.3	328.5	5457.47	1299.81	-228.02	137.49	1.2
28	5859	0.7	317.1	5647.44	1302.50	-229.94	136.38	0.3
29	5920	1.4	67.2	5708.43	1303.06	-229.50	136.95	2.9
30	5953	4.1	84.7	5741.39	1303.33	-227.96	138.51	8.5
31	5984	8.7	88.3	5772.19	1303.50	-224.51	141.88	14.9
32	6017	13.3	89.3	5804.57	1303.62	-218.21	147.96	14.0
33	6047	17.9	90.9	5833.46	1303.59	-210.15	155.71	15.4
34	6079	23.0	90.5	5863.44	1303.46	-198.97	166.42	15.9
35	6111	27.3	90.2	5892.39	1303.38	-185.38	179.47	13.4
36	6143	31.4	89.5	5920.28	1303.42	-169.70	194.56	12.9
37	6175	35.7	89.0	5946.94	1303.66	-152.02	211.63	13.5
38	6209	37.9	87.2	5974.17	1304.34	-131.67	231.38	7.2
39	6237	39.0	87.6	5996.10	1305.13	-114.27	248.33	4.0
40	6269	41.3	88.1	6020.55	1305.90	-93.66	268.36	7.3
41	6301	43.5	89.0	6044.18	1306.45	-72.09	289.25	7.1
42	6331	47.2	89.8	6065.26	1306.67	-50.75	309.83	12.5
43	6363	51.6	90.5	6086.08	1306.60	-26.46	333.17	13.8
44	6395	52.1	90.7	6105.85	1306.33	-1.30	357.29	1.6
45	6427	52.1	90.7	6125.51	1306.02	23.95	381.49	0.0
46	6459	51.7	90.2	6145.25	1305.83	49.13	405.65	1.8
47	6491	51.6	90.0	6165.11	1305.78	74.23	429.77	0.6
48	6523	51.4	90.0	6185.03	1305.78	99.27	453.85	0.6
49	6555	51.4	89.8	6204.99	1305.83	124.28	477.91	0.5
50	6583	51.0	90.0	6222.54	1305.86	146.10	498.90	1.5
51	6615	51.5	89.7	6242.57	1305.93	171.06	522.92	1.7



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SUR NUM	MD ft	INC °	AZM °	TVD ft	N-S ft	E-W ft	SECT ft	DLS °/100'
52	6646	54.4	89.1	6261.24	1306.19	195.80	546.78	9.5
53	6678	56.8	89.0	6279.32	1306.63	222.19	572.28	7.5
54	6710	59.8	89.5	6296.13	1306.98	249.42	598.56	9.5
55	6742	62.9	89.1	6311.47	1307.33	277.49	625.65	9.7
56	6774	65.2	90.0	6325.48	1307.55	306.26	653.38	7.6
57	6805	67.4	90.9	6337.94	1307.33	334.64	680.61	7.6
58	6837	68.3	91.2	6350.00	1306.78	364.28	708.95	2.9
59	6868	70.2	91.2	6360.98	1306.18	393.26	736.65	6.1
60	6900	75.4	90.9	6370.44	1305.62	423.81	765.88	16.3
61	6931	83.4	90.7	6376.14	1305.19	454.26	795.04	25.8
62	6956	86.0	90.5	6378.45	1304.93	479.15	818.90	10.4
63	7040	87.1	91.2	6383.50	1303.69	562.98	899.18	1.6
64	7073	87.0	90.9	6385.20	1303.09	595.93	930.70	1.0
65	7103	86.6	91.1	6386.88	1302.56	625.88	959.35	1.5
66	7164	86.4	91.2	6390.60	1301.34	686.76	1017.55	0.4
67	7260	89.3	90.9	6394.20	1299.58	782.66	1109.29	3.0
68	7355	87.9	91.2	6396.52	1297.84	877.61	1200.12	1.5
69	7450	91.8	92.3	6396.77	1294.94	972.55	1290.62	4.3
70	7545	90.0	93.2	6395.28	1290.38	1067.42	1380.59	2.1
71	7641	90.7	92.3	6394.69	1285.78	1163.31	1471.53	1.2
72	7737	89.9	91.1	6394.19	1282.93	1259.26	1563.02	1.5
73	7833	90.8	90.9	6393.60	1281.26	1355.25	1654.86	1.0
74	7928	90.5	90.5	6392.53	1280.10	1450.23	1745.88	0.5
75	8023	90.5	92.5	6391.70	1277.61	1545.19	1836.51	2.1
76	8119	89.9	91.1	6391.36	1274.59	1641.14	1927.95	1.6
77	8215	90.7	88.3	6390.86	1275.10	1737.13	2020.38	3.0



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SUR NUM	MD ft	INC °	AZM °	TVD ft	N-S ft	E-W ft	SECT ft	DLS °/100'
78	8310	90.4	87.4	6389.95	1278.66	1832.06	2112.65	1.0
79	8406	89.5	85.6	6390.03	1284.52	1927.87	2206.39	2.1
80	8501	90.6	87.0	6389.95	1290.65	2022.67	2299.23	1.9
81	8597	91.8	89.0	6387.94	1294.00	2118.58	2392.38	2.4
82	8692	91.1	89.0	6385.53	1295.66	2213.54	2484.14	0.7
83	8788	92.2	86.1	6382.77	1299.76	2309.40	2577.45	3.2
84	8883	90.0	86.7	6380.95	1305.72	2404.19	2670.23	2.4
85	8979	88.8	86.8	6381.95	1311.16	2500.03	2763.89	1.3
86	9074	90.0	87.0	6382.95	1316.30	2594.88	2856.51	1.3
87	9170	91.5	87.6	6381.69	1320.82	2690.76	2949.95	1.7
88	9265	91.5	87.0	6379.20	1325.30	2785.62	3042.39	0.6
89	9361	89.8	87.6	6378.11	1329.82	2881.51	3135.84	1.9
90	9457	91.5	88.6	6377.02	1333.00	2977.44	3228.96	2.1
91	9552	92.3	89.8	6373.87	1334.33	3072.38	3320.62	1.5
92	9648	89.2	91.1	6372.62	1333.57	3168.35	3412.70	3.5
93	9744	88.7	92.3	6374.38	1330.73	3264.29	3504.17	1.4
94	9840	90.3	92.8	6375.22	1326.45	3360.19	3595.22	1.7
95	9935	89.5	93.4	6375.38	1321.32	3455.05	3685.02	1.1
96	10031	90.7	94.1	6375.21	1315.04	3550.84	3775.41	1.4
97	10127	89.3	93.9	6375.21	1308.34	3646.61	3865.66	1.5
98	10222	90.5	94.2	6375.38	1301.63	3741.37	3954.94	1.3
99	10318	90.8	92.1	6374.29	1296.36	3837.21	4045.66	2.2
100	10413	90.4	90.9	6373.30	1293.87	3932.17	4136.29	1.3
101	10509	92.1	91.4	6371.20	1291.95	4028.13	4228.03	1.8
102	10605	91.2	91.8	6368.44	1289.27	4124.05	4319.53	1.0
103	10700	90.7	92.3	6366.86	1285.87	4218.97	4409.88	0.7



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SUR NUM	MD ft	INC °	AZM °	TVD ft	N-S ft	E-W ft	SECT ft	DLS °/100'
104	10796	90.6	93.0	6365.77	1281.43	4314.86	4500.87	0.7
105	10891	90.6	91.1	6364.78	1278.03	4409.79	4591.22	2.0
106	10923	90.5	90.5	6364.47	1277.58	4441.79	4621.86	1.9
PTB	10980	90.5	90.5	6363.97	1277.09	4498.78	4676.53	0.0