

SECTION DETAILS

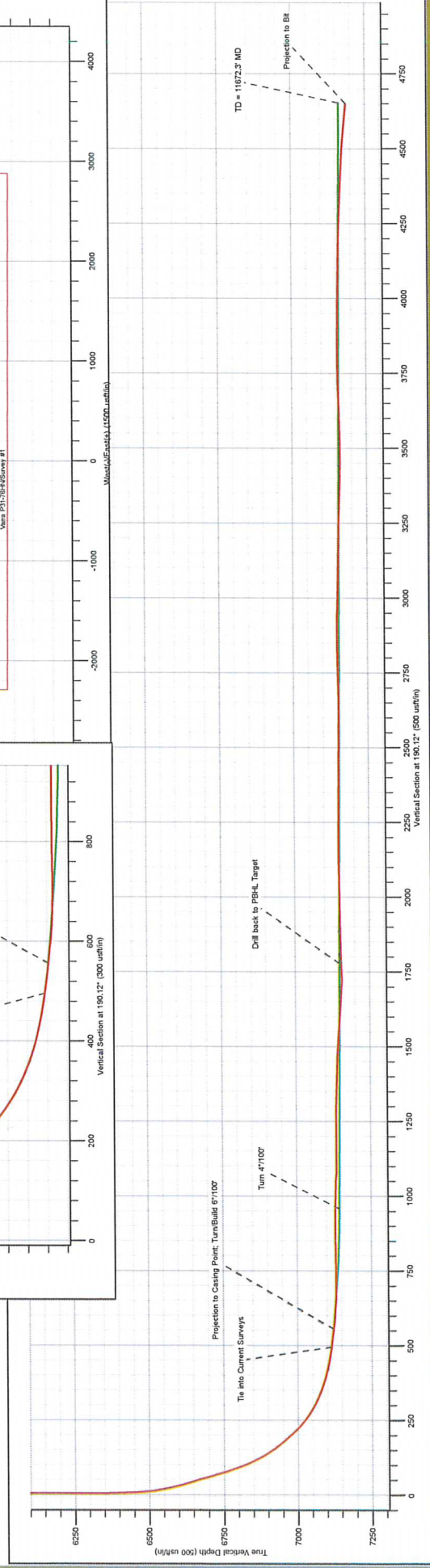
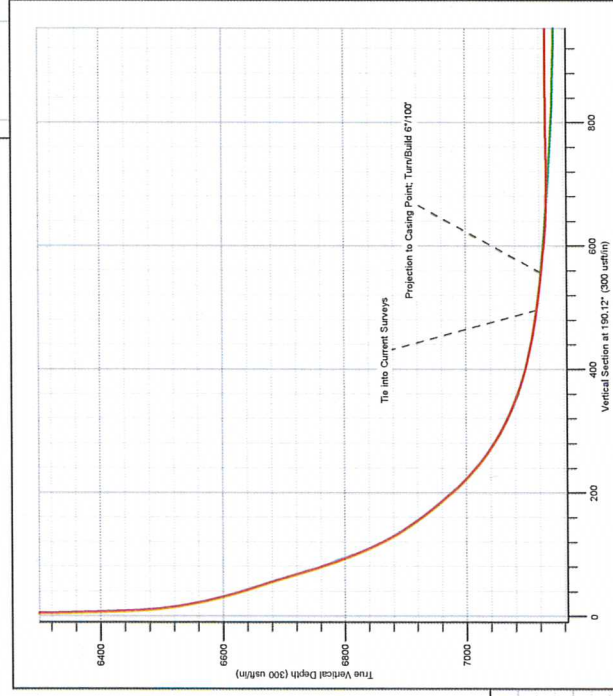
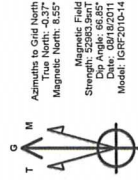
No plan data is available

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape Point
Vaia P31-76HN	7999.5	-4580.8	-839.8	40.177	-104.937	

ANNOTATIONS

TVD	MD	Annotation
7123.0	7477.0	Casing Pt: 565' FNL/1476' FWL
7187.3	11715.0	Projection to Bit
7187.3	11715.0	BHL: 562' FSL/1461' FWL

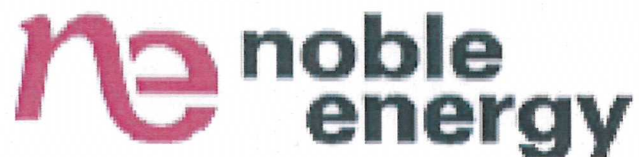


FORMATION TOP DETAILS

No formation data is available

CASING DETAILS

No casing data is available



Noble Energy, Inc.

Weld Co., CO

NENW Sec 31-T3N-R67W

Varra P31-76HN

Hz

Survey: Survey #1

Standard Survey Report

26 October, 2011



Company:	Noble Energy, Inc.	Local Co-ordinate Reference:	Well Varra P31-76HN
Project:	Weld Co., CO	TVD Reference:	Varra P31-76HN KBE @ 4828.0ft (Original Well Elev)
Site:	NENW Sec 31-T3N-R67W	MD Reference:	Varra P31-76HN KBE @ 4828.0ft (Original Well Elev)
Well:	Varra P31-76HN	North Reference:	Grid
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Hz	Database:	Local

Project	Weld Co., CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	NENW Sec 31-T3N-R67W				
Site Position:		Northing:		Latitude:	
From:	Lat/Long	Easting:		Longitude:	
Position Uncertainty:	0.0 ft	Slot Radius:		Grid Convergence:	1.00

Well	Varra P31-76HN					
Well Position	+N/-S	0.0 ft	Northing:	1,312,364.67 ft	Latitude:	40.189450
	+E/-W	0.0 ft	Easting:	3,158,242.70 ft	Longitude:	-104.933580
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,804.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010-14	2011/08/18	8.91	66.85	52,984

Design	Hz				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	190.12	

Survey Program		Date	2011/10/26	
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
749.0	11,715.0	Survey #1 (Hz)	MWD	

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	-4,828.0	0.0	0.0	0.0	0.00	0.00	0.00
749.0	1.30	183.20	748.9	-4,079.1	-8.5	-0.5	8.4	0.17	0.17	0.00
810.0	1.50	182.20	809.9	-4,018.1	-10.0	-0.5	9.9	0.33	0.33	-1.64
901.0	1.60	189.90	900.9	-3,927.1	-12.4	-0.8	12.4	0.25	0.11	8.46
993.0	1.80	191.90	992.8	-3,835.2	-15.1	-1.3	15.1	0.23	0.22	2.17
1,088.0	1.90	196.60	1,087.8	-3,740.2	-18.1	-2.1	18.1	0.19	0.11	4.95
1,182.0	1.80	203.70	1,181.7	-3,646.3	-20.9	-3.1	21.1	0.27	-0.11	7.55
1,277.0	1.50	234.00	1,276.7	-3,551.3	-23.0	-4.7	23.5	0.96	-0.32	31.89
1,371.0	1.50	287.80	1,370.7	-3,457.3	-23.4	-6.9	24.2	1.44	0.00	57.23

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Site:	NENW Sec 31-T3N-R67W	MD Reference:	Varra P31-76HN KBE @ 4828.0ft (Original Well Elev)
Well:	Varra P31-76HN	North Reference:	Grid
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Hz	Database:	Local

Survey											
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
1,466.0	2.70	305.70	1,465.6	-3,362.4	-21.7	-9.9	23.1	1.42	1.26	18.84	
1,561.0	4.40	299.30	1,560.4	-3,267.6	-18.6	-14.9	20.9	1.83	1.79	-6.74	
1,656.0	6.00	290.00	1,655.0	-3,173.0	-15.1	-22.7	18.9	1.90	1.68	-9.79	
1,750.0	7.90	290.80	1,748.3	-3,079.7	-11.1	-33.4	16.8	2.02	2.02	0.85	
1,844.0	8.70	292.40	1,841.4	-2,986.6	-6.1	-46.0	14.1	0.89	0.85	1.70	
1,939.0	9.80	291.00	1,935.1	-2,892.9	-0.5	-60.2	11.0	1.18	1.16	-1.47	
2,033.0	8.10	290.90	2,028.0	-2,800.0	4.7	-73.9	8.3	1.81	-1.81	-0.11	
2,128.0	9.40	291.20	2,121.9	-2,706.1	9.9	-87.3	5.6	1.37	1.37	0.32	
2,226.0	9.80	289.00	2,218.5	-2,609.5	15.6	-102.7	2.7	0.55	0.41	-2.24	
2,321.0	9.80	281.80	2,312.1	-2,515.9	19.8	-118.2	1.2	1.29	0.00	-7.58	
2,416.0	10.90	279.20	2,405.6	-2,422.4	22.9	-135.0	1.2	1.26	1.16	-2.74	
2,511.0	10.60	279.00	2,498.9	-2,329.1	25.7	-152.5	1.5	0.32	-0.32	-0.21	
2,606.0	10.40	280.20	2,592.3	-2,235.7	28.6	-169.6	1.6	0.31	-0.21	1.26	
2,701.0	8.80	280.20	2,686.0	-2,142.0	31.4	-185.2	1.6	1.68	-1.68	0.00	
2,796.0	9.80	275.60	2,779.7	-2,048.3	33.5	-200.4	2.2	1.31	1.05	-4.84	
2,890.0	9.10	276.40	2,872.4	-1,955.6	35.1	-215.7	3.3	0.76	-0.74	0.85	
2,986.0	8.00	278.50	2,967.4	-1,860.6	36.9	-229.9	4.0	1.19	-1.15	2.19	
3,081.0	8.90	272.20	3,061.3	-1,766.7	38.2	-243.8	5.2	1.36	0.95	-6.63	
3,176.0	8.40	272.40	3,155.3	-1,672.7	38.8	-258.0	7.2	0.53	-0.53	0.21	
3,271.0	8.50	274.90	3,249.2	-1,578.8	39.7	-272.0	8.7	0.40	0.11	2.63	
3,366.0	9.20	273.20	3,343.1	-1,484.9	40.7	-286.5	10.3	0.79	0.74	-1.79	
3,461.0	9.20	273.60	3,436.9	-1,391.1	41.6	-301.7	12.1	0.07	0.00	0.42	
3,556.0	9.80	272.40	3,530.6	-1,297.4	42.4	-317.4	14.0	0.67	0.63	-1.26	
3,651.0	10.60	281.40	3,624.1	-1,203.9	44.5	-334.0	14.9	1.87	0.84	9.47	
3,746.0	10.20	281.50	3,717.5	-1,110.5	47.9	-350.8	14.5	0.42	-0.42	0.11	
3,841.0	10.40	281.30	3,811.0	-1,017.0	51.2	-367.5	14.1	0.21	0.21	-0.21	
3,936.0	10.30	282.20	3,904.4	-923.6	54.7	-384.2	13.6	0.20	-0.11	0.95	
4,031.0	8.80	285.90	3,998.1	-829.9	58.5	-399.5	12.6	1.71	-1.58	3.89	
4,126.0	9.50	282.90	4,091.9	-736.1	62.2	-414.1	11.5	0.89	0.74	-3.16	
4,220.0	10.10	279.80	4,184.5	-643.5	65.4	-429.8	11.2	0.85	0.64	-3.30	
4,315.0	10.20	279.80	4,278.1	-549.9	68.2	-446.3	11.2	0.11	0.11	0.00	
4,410.0	9.00	284.00	4,371.7	-456.3	71.4	-461.8	10.8	1.46	-1.26	4.42	
4,505.0	8.50	284.80	4,465.6	-362.4	75.0	-475.8	9.7	0.54	-0.53	0.84	
4,600.0	7.60	284.20	4,559.7	-268.3	78.4	-488.7	8.7	0.95	-0.95	-0.63	
4,695.0	6.80	286.20	4,653.9	-174.1	81.5	-500.2	7.7	0.88	-0.84	2.11	
4,790.0	5.10	283.70	4,748.4	-79.6	84.0	-509.7	6.8	1.81	-1.79	-2.63	
4,885.0	3.20	288.50	4,843.2	15.2	85.9	-516.3	6.1	2.03	-2.00	5.05	
4,980.0	1.50	298.70	4,938.1	110.1	87.3	-519.9	5.4	1.84	-1.79	10.74	
5,075.0	1.30	304.10	5,033.1	205.1	88.5	-521.9	4.5	0.25	-0.21	5.68	
5,170.0	1.40	309.10	5,128.0	300.0	89.9	-523.7	3.5	0.16	0.11	5.26	
5,265.0	0.60	251.30	5,223.0	395.0	90.4	-525.0	3.2	1.26	-0.84	-60.84	

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Site:	NENW Sec 31-T3N-R67W	MD Reference:	Varra P31-76HN KBE @ 4828.0ft (Original Well Elev)
Well:	Varra P31-76HN	North Reference:	Grid
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Hz	Database:	Local

Survey											
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,360.0	0.90	272.60	5,318.0	490.0	90.3	-526.2	3.5	0.43	0.32	22.42	
5,455.0	1.00	280.90	5,413.0	585.0	90.5	-527.8	3.6	0.18	0.11	8.74	
5,550.0	1.40	282.80	5,508.0	680.0	90.9	-529.7	3.6	0.42	0.42	2.00	
5,645.0	0.70	221.70	5,603.0	775.0	90.7	-531.3	4.0	1.29	-0.74	-64.32	
5,740.0	0.60	214.10	5,698.0	870.0	89.9	-531.9	4.9	0.14	-0.11	-8.00	
5,835.0	0.50	220.90	5,793.0	965.0	89.2	-532.5	5.8	0.13	-0.11	7.16	
5,930.0	0.50	270.20	5,887.9	1,059.9	88.9	-533.2	6.2	0.44	0.00	51.89	
6,025.0	0.60	291.60	5,982.9	1,154.9	89.0	-534.0	6.2	0.24	0.11	22.53	
6,120.0	0.80	282.10	6,077.9	1,249.9	89.4	-535.2	6.0	0.24	0.21	-10.00	
6,215.0	0.80	278.30	6,172.9	1,344.9	89.6	-536.5	6.0	0.06	0.00	-4.00	
6,310.0	0.80	278.00	6,267.9	1,439.9	89.8	-537.8	6.1	0.00	0.00	-0.32	
6,336.0	0.80	279.20	6,293.9	1,465.9	89.8	-538.1	6.1	0.06	0.00	4.62	
6,374.0	1.10	249.70	6,331.9	1,503.9	89.8	-538.7	6.3	1.48	0.79	-77.63	
6,406.0	1.60	216.50	6,363.9	1,535.9	89.3	-539.3	6.8	2.84	1.56	-103.75	
6,437.0	2.50	185.60	6,394.9	1,566.9	88.3	-539.6	7.9	4.50	2.90	-99.68	
6,469.0	2.10	196.60	6,426.9	1,598.9	87.0	-539.8	9.2	1.86	-1.25	34.38	
6,501.0	2.80	219.70	6,458.8	1,630.8	85.9	-540.5	10.4	3.74	2.19	72.19	
6,532.0	5.90	214.90	6,489.7	1,661.7	84.0	-541.9	12.5	10.06	10.00	-15.48	
6,564.0	9.10	210.80	6,521.5	1,693.5	80.4	-544.1	16.4	10.13	10.00	-12.81	
6,596.0	11.70	212.70	6,552.9	1,724.9	75.5	-547.2	21.8	8.19	8.13	5.94	
6,627.0	14.50	215.20	6,583.1	1,755.1	69.7	-551.1	28.2	9.21	9.03	8.06	
6,659.0	16.10	209.50	6,614.0	1,786.0	62.6	-555.6	36.0	6.86	5.00	-17.81	
6,691.0	17.60	202.90	6,644.6	1,816.6	54.3	-559.7	44.9	7.59	4.69	-20.63	
6,723.0	18.60	200.00	6,675.0	1,847.0	45.0	-563.3	54.7	4.21	3.13	-9.06	
6,754.0	17.10	206.70	6,704.5	1,876.5	36.3	-567.1	63.9	8.20	-4.84	21.61	
6,786.0	16.80	207.60	6,735.2	1,907.2	28.0	-571.3	72.8	1.25	-0.94	2.81	
6,818.0	19.20	210.60	6,765.6	1,937.6	19.4	-576.1	82.2	8.04	7.50	9.38	
6,850.0	21.50	214.30	6,795.6	1,967.6	10.0	-582.1	92.4	8.23	7.19	11.56	
6,881.0	23.70	214.40	6,824.2	1,996.2	0.2	-588.8	103.3	7.10	7.10	0.32	
6,911.0	28.00	216.30	6,851.2	2,023.2	-10.5	-596.4	115.1	14.60	14.33	6.33	
6,943.0	31.60	216.70	6,879.0	2,051.0	-23.3	-605.9	129.4	11.27	11.25	1.25	
6,974.0	35.60	214.70	6,904.8	2,076.8	-37.2	-615.9	144.8	13.39	12.90	-6.45	
7,006.0	39.70	213.70	6,930.1	2,102.1	-53.4	-626.9	162.7	12.95	12.81	-3.13	
7,037.0	41.90	216.20	6,953.6	2,125.6	-70.0	-638.5	181.1	8.84	7.10	8.06	
7,069.0	44.30	215.30	6,976.9	2,148.9	-87.7	-651.2	200.8	7.74	7.50	-2.81	
7,101.0	48.30	215.20	6,999.0	2,171.0	-106.6	-664.6	221.7	12.50	12.50	-0.31	
7,132.0	52.80	214.70	7,018.7	2,190.7	-126.2	-678.3	243.4	14.57	14.52	-1.61	
7,164.0	57.40	213.60	7,037.0	2,209.0	-148.0	-693.0	267.4	14.65	14.38	-3.44	
7,195.0	61.80	213.00	7,052.7	2,224.7	-170.3	-707.7	292.0	14.29	14.19	-1.94	
7,227.0	66.20	211.90	7,066.7	2,238.7	-194.6	-723.1	318.6	14.09	13.75	-3.44	
7,259.0	68.60	210.90	7,079.0	2,251.0	-219.8	-738.5	346.1	8.04	7.50	-3.13	
7,291.0	72.90	206.10	7,089.6	2,261.6	-246.3	-752.9	374.8	19.52	13.44	-15.00	

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7,322.0	75.70	202.40	7,098.0	2,270.0	-273.5	-765.1	403.7	14.61	9.03	-11.94
7,354.0	78.60	200.00	7,105.1	2,277.1	-302.6	-776.4	434.3	11.64	9.06	-7.50
7,386.0	80.60	197.50	7,110.9	2,282.9	-332.4	-786.5	465.4	9.90	6.25	-7.81
7,417.0	81.90	195.70	7,115.6	2,287.6	-361.8	-795.3	495.9	7.11	4.19	-5.81
7,479.0	84.00	194.00	7,123.2	2,295.2	-421.2	-811.0	557.2	4.34	3.39	-2.74
7,511.0	83.70	192.90	7,126.6	2,298.6	-452.2	-818.5	588.9	3.54	-0.94	-3.44
7,542.0	85.30	190.70	7,129.6	2,301.6	-482.4	-824.8	619.8	8.75	5.16	-7.10
7,574.0	87.40	189.20	7,131.6	2,303.6	-513.8	-830.3	651.7	8.06	6.56	-4.69
7,606.0	89.80	186.20	7,132.4	2,304.4	-545.5	-834.6	683.7	12.00	7.50	-9.38
7,637.0	90.60	185.50	7,132.3	2,304.3	-576.4	-837.7	714.6	3.43	2.58	-2.26
7,669.0	90.50	184.90	7,132.0	2,304.0	-608.2	-840.6	746.5	1.90	-0.31	-1.88
7,701.0	90.60	184.50	7,131.7	2,303.7	-640.1	-843.2	778.3	1.29	0.31	-1.25
7,732.0	90.60	183.60	7,131.4	2,303.4	-671.0	-845.4	809.1	2.90	0.00	-2.90
7,764.0	90.60	181.80	7,131.0	2,303.0	-703.0	-846.9	840.9	5.62	0.00	-5.63
7,796.0	90.50	179.90	7,130.7	2,302.7	-735.0	-847.4	872.4	5.95	-0.31	-5.94
7,827.0	89.90	179.00	7,130.6	2,302.6	-766.0	-847.1	902.9	3.49	-1.94	-2.90
7,859.0	90.10	177.00	7,130.6	2,302.6	-798.0	-846.0	934.2	6.28	0.63	-6.25
7,891.0	89.50	175.60	7,130.7	2,302.7	-829.9	-843.9	965.3	4.76	-1.88	-4.38
7,922.0	88.30	173.00	7,131.3	2,303.3	-860.8	-840.9	995.1	9.24	-3.87	-8.39
7,954.0	88.10	171.60	7,132.3	2,304.3	-892.4	-836.6	1,025.5	4.42	-0.63	-4.38
7,986.0	87.10	169.00	7,133.7	2,305.7	-924.0	-831.2	1,055.6	8.70	-3.13	-8.13
8,017.0	88.10	167.20	7,135.0	2,307.0	-954.3	-824.8	1,084.3	6.64	3.23	-5.81
8,049.0	89.10	165.20	7,135.8	2,307.8	-985.3	-817.2	1,113.6	6.99	3.13	-6.25
8,081.0	89.50	164.20	7,136.2	2,308.2	-1,016.2	-808.7	1,142.5	3.37	1.25	-3.13
8,112.0	89.80	163.70	7,136.3	2,308.3	-1,046.0	-800.2	1,170.3	1.88	0.97	-1.61
8,144.0	91.00	162.00	7,136.1	2,308.1	-1,076.6	-790.7	1,198.7	6.50	3.75	-5.31
8,176.0	91.10	159.50	7,135.5	2,307.5	-1,106.8	-780.2	1,226.6	7.82	0.31	-7.81
8,207.0	89.90	158.10	7,135.3	2,307.3	-1,135.7	-769.0	1,253.1	5.95	-3.87	-4.52
8,239.0	89.10	157.30	7,135.5	2,307.5	-1,165.3	-756.8	1,280.1	3.54	-2.50	-2.50
8,270.0	88.40	157.40	7,136.2	2,308.2	-1,193.9	-744.9	1,306.2	2.28	-2.26	0.32
8,302.0	88.20	157.60	7,137.2	2,309.2	-1,223.4	-732.6	1,333.1	0.88	-0.63	0.63
8,334.0	88.30	157.30	7,138.1	2,310.1	-1,253.0	-720.4	1,360.0	0.99	0.31	-0.94
8,365.0	88.80	154.70	7,138.9	2,310.9	-1,281.3	-707.8	1,385.7	8.54	1.61	-8.39
8,397.0	89.70	151.70	7,139.3	2,311.3	-1,309.8	-693.3	1,411.3	9.79	2.81	-9.38
8,428.0	88.90	148.60	7,139.7	2,311.7	-1,336.7	-677.9	1,435.0	10.33	-2.58	-10.00
8,460.0	88.10	150.70	7,140.6	2,312.6	-1,364.3	-661.8	1,459.3	7.02	-2.50	6.56
8,492.0	87.20	153.70	7,141.9	2,313.9	-1,392.6	-646.9	1,484.6	9.78	-2.81	9.38
8,524.0	86.20	156.00	7,143.7	2,315.7	-1,421.5	-633.3	1,510.6	7.83	-3.13	7.19
8,555.0	86.40	157.30	7,145.7	2,317.7	-1,449.9	-621.0	1,536.5	4.23	0.65	4.19
8,587.0	86.50	158.10	7,147.7	2,319.7	-1,479.5	-608.9	1,563.4	2.51	0.31	2.50
8,619.0	86.30	160.80	7,149.7	2,321.7	-1,509.4	-597.7	1,590.9	8.44	-0.63	8.44
8,650.0	86.60	164.10	7,151.6	2,323.6	-1,538.9	-588.4	1,618.3	10.67	0.97	10.65

Company:	Noble Energy, Inc.	Local Co-ordinate Reference:	Well Varra P31-76HN
Project:	Weld Co., CO	TVD Reference:	Varra P31-76HN KBE @ 4828.0ft (Original Well Elev)
Site:	NENW Sec 31-T3N-R67W	MD Reference:	Varra P31-76HN KBE @ 4828.0ft (Original Well Elev)
Well:	Varra P31-76HN	North Reference:	Grid
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Hz	Database:	Local

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,682.0	86.60	164.60	7,153.5	2,325.5	-1,569.6	-579.7	1,647.0	1.56	0.00	1.56
8,714.0	86.90	167.60	7,155.3	2,327.3	-1,600.6	-572.1	1,676.2	9.41	0.94	9.38
8,745.0	87.80	170.60	7,156.8	2,328.8	-1,631.0	-566.2	1,705.1	10.09	2.90	9.68
8,777.0	90.30	172.90	7,157.3	2,329.3	-1,662.7	-561.6	1,735.5	10.61	7.81	7.19
8,809.0	92.30	176.30	7,156.6	2,328.6	-1,694.5	-558.6	1,766.3	12.32	6.25	10.63
8,840.0	92.00	178.40	7,155.4	2,327.4	-1,725.5	-557.2	1,796.5	6.84	-0.97	6.77
8,872.0	91.50	180.10	7,154.4	2,326.4	-1,757.5	-556.8	1,827.9	5.54	-1.56	5.31
8,904.0	90.50	181.20	7,153.9	2,325.9	-1,789.4	-557.1	1,859.5	4.65	-3.13	3.44
8,935.0	89.90	181.10	7,153.8	2,325.8	-1,820.4	-557.7	1,890.1	1.96	-1.94	-0.32
8,967.0	90.70	184.00	7,153.6	2,325.6	-1,852.4	-559.2	1,921.8	9.40	2.50	9.06
8,999.0	91.10	186.40	7,153.1	2,325.1	-1,884.3	-562.1	1,953.7	7.60	1.25	7.50
9,030.0	91.30	186.50	7,152.5	2,324.5	-1,915.1	-565.5	1,984.6	0.72	0.65	0.32
9,062.0	90.90	185.70	7,151.8	2,323.8	-1,946.9	-568.9	2,016.5	2.79	-1.25	-2.50
9,094.0	91.20	185.80	7,151.3	2,323.3	-1,978.7	-572.2	2,048.4	0.99	0.94	0.31
9,125.0	91.20	185.50	7,150.6	2,322.6	-2,009.5	-575.2	2,079.3	0.97	0.00	-0.97
9,157.0	91.70	185.30	7,149.8	2,321.8	-2,041.4	-578.2	2,111.2	1.68	1.56	-0.63
9,188.0	90.00	187.80	7,149.3	2,321.3	-2,072.2	-581.8	2,142.2	9.75	-5.48	8.06
9,220.0	90.50	188.00	7,149.2	2,321.2	-2,103.9	-586.2	2,174.1	1.68	1.56	0.63
9,252.0	90.10	187.50	7,149.0	2,321.0	-2,135.6	-590.5	2,206.1	2.00	-1.25	-1.56
9,347.0	88.70	189.00	7,150.0	2,322.0	-2,229.6	-604.1	2,301.0	2.16	-1.47	1.58
9,441.0	89.70	196.70	7,151.3	2,323.3	-2,321.2	-625.0	2,394.9	8.26	1.06	8.19
9,536.0	89.80	197.20	7,151.7	2,323.7	-2,412.0	-652.7	2,489.2	0.54	0.11	0.53
9,631.0	89.50	194.00	7,152.3	2,324.3	-2,503.5	-678.2	2,583.7	3.38	-0.32	-3.37
9,726.0	90.50	191.50	7,152.3	2,324.3	-2,596.2	-699.2	2,678.6	2.83	1.05	-2.63
9,821.0	92.40	188.60	7,149.9	2,321.9	-2,689.7	-715.8	2,773.6	3.65	2.00	-3.05
9,916.0	89.90	185.80	7,148.0	2,320.0	-2,783.9	-727.7	2,868.4	3.95	-2.63	-2.95
10,011.0	87.90	184.40	7,149.8	2,321.8	-2,878.5	-736.1	2,963.0	2.57	-2.11	-1.47
10,106.0	88.60	184.40	7,152.7	2,324.7	-2,973.2	-743.4	3,057.5	0.74	0.74	0.00
10,201.0	89.30	183.40	7,154.5	2,326.5	-3,067.9	-749.8	3,151.9	1.28	0.74	-1.05
10,296.0	88.50	182.20	7,156.3	2,328.3	-3,162.8	-754.5	3,246.1	1.52	-0.84	-1.26
10,391.0	87.60	181.60	7,159.5	2,331.5	-3,257.7	-757.6	3,340.1	1.14	-0.95	-0.63
10,486.0	88.90	180.60	7,162.4	2,334.4	-3,352.6	-759.5	3,433.9	1.73	1.37	-1.05
10,581.0	91.50	182.90	7,162.1	2,334.1	-3,447.6	-762.4	3,527.9	3.65	2.74	2.42
10,676.0	91.60	182.50	7,159.5	2,331.5	-3,542.4	-766.8	3,622.0	0.43	0.11	-0.42
10,770.0	92.30	181.60	7,156.3	2,328.3	-3,636.3	-770.2	3,715.1	1.21	0.74	-0.96
10,865.0	90.30	182.10	7,154.2	2,326.2	-3,731.2	-773.3	3,809.0	2.17	-2.11	0.53
10,960.0	89.10	184.20	7,154.7	2,326.7	-3,826.1	-778.5	3,903.3	2.55	-1.26	2.21
11,055.0	89.40	183.80	7,155.9	2,327.9	-3,920.8	-785.1	3,997.8	0.53	0.32	-0.42
11,150.0	88.90	182.80	7,157.3	2,329.3	-4,015.7	-790.6	4,092.1	1.18	-0.53	-1.05
11,245.0	88.10	182.10	7,159.8	2,331.8	-4,110.5	-794.6	4,186.2	1.12	-0.84	-0.74
11,340.0	87.80	181.90	7,163.2	2,335.2	-4,205.4	-797.9	4,280.2	0.38	-0.32	-0.21

Company:	Noble Energy, Inc.	Local Co-ordinate Reference:	Well Varra P31-76HN
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Site:	NENW Sec 31-T3N-R67W	MD Reference:	Varra P31-76HN KBE @ 4828.0ft (Original Well Elev)
Well:	Varra P31-76HN	North Reference:	Grid
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Hz	Database:	Local

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Subsea Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,435.0	87.40	181.80	7,167.2	2,339.2	-4,300.3	-801.0	4,374.1	0.43	-0.42	-0.11
11,530.0	86.80	180.80	7,172.0	2,344.0	-4,395.1	-803.2	4,467.9	1.23	-0.63	-1.05
11,624.0	84.90	181.60	7,178.8	2,350.8	-4,488.9	-805.1	4,560.5	2.19	-2.02	0.85
11,650.0	84.60	181.80	7,181.2	2,353.2	-4,514.7	-805.9	4,586.1	1.38	-1.15	0.77
Projection to Bit										
11,715.0	84.60	181.80	7,187.3	2,359.3	-4,579.4	-807.9	4,650.1	0.00	0.00	0.00

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,715.0	7,187.3	-4,579.4	-807.9	Projection to Bit

Checked By: _____	Approved By: _____	Date: _____
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