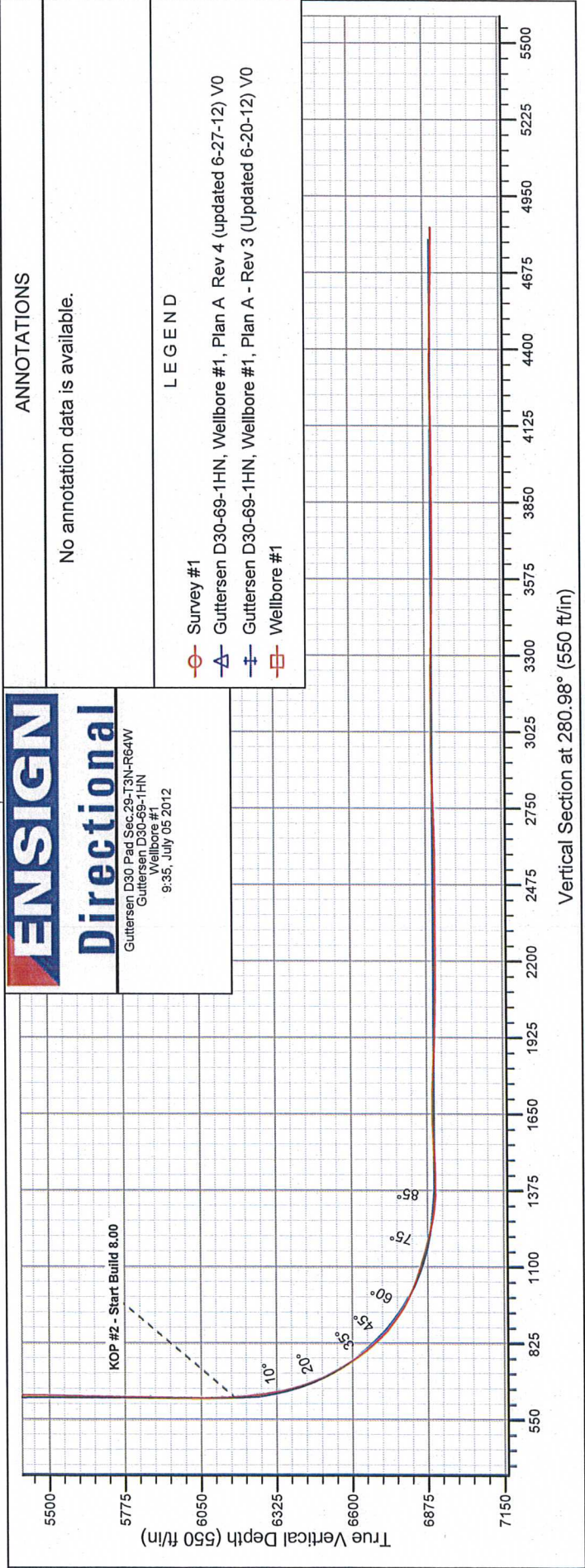


**Well Name: Guttersen D30-69-1HN**  
 Surface Location: Guttersen D30 Pad Sec.29-T3N-R64W  
 North American Datum 1983, US State Plane 1983 Colorado Northern Zone

		Ground Elevation:	4787.0	
+N/-S	0.0	Northing	1317026.23	Easting
			3256081.42	Latitude
			40.200000	Longitude
			-104.583220	
		Original Well Elev	WELL @ 4800.0ft (Original Well Elev)	

Projected Bottom Hole Location  
11050'MD 6906'TVD 943'N & 4745'W of SHL  
89.60 degree Incl @ 272.90 degree AZM





## **Directional**

### **Noble Energy Inc.- Weld County, CO (Grid North)**

**Sec.29-T3N-R64W**

**Guttersen D30 Pad Sec.29-T3N-R64W**

**Guttersen D30-69-1HN**

**Wellbore #1**

**Survey: Survey #1**

### **Standard Survey Report**

**05 July, 2012**



# ENSIGN Directional

## Ensign Directional Survey Report

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Gutteresen D30-69-1HN
Project:	Sec.29-T3N-R64W	TVD Reference:	WELL @ 4800.0ft (Original Well Elev)
Site:	Gutteresen D30 Pad Sec.29-T3N-R64W	MD Reference:	WELL @ 4800.0ft (Original Well Elev)
Well:	Gutteresen D30-69-1HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	Sec.29-T3N-R64W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site		Guttersen D30 Pad Sec.29-T3N-R64W			
Site Position:		Northing:	1,317,026.24 ft	Latitude:	40.200000
From:	Lat/Long	Easting:	3,256,081.42 ft	Longitude:	-104.583220
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.59 °

Well	Gutteresen D30-69-1HN					
Well Position	+N/-S	0.0 ft	Northing:	1,317,026.23 ft	Latitude:	40.200000
	+E/-W	0.0 ft	Easting:	3,256,081.42 ft	Longitude:	-104.583220
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,787.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/16/2012	8.63	66.89	52,949

Design	Wellbore #1				
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### 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	280.98

Survey Program	Date 7/5/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
853.0	11,050.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical 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	0.0	0.0	0.0	0.00	0.00	0.00
853.0	0.00	0.00	853.0	0.0	0.0	0.0	0.00	0.00	0.00
908.0	0.30	114.00	908.0	-0.1	0.1	-0.1	0.55	0.55	0.00
1,001.0	0.30	66.90	1,001.0	-0.1	0.6	-0.6	0.26	0.00	-50.65
1,094.0	0.30	90.80	1,094.0	0.0	1.0	-1.0	0.13	0.00	25.70
1,193.0	0.90	21.80	1,193.0	0.7	1.6	-1.4	0.85	0.61	-69.70
1,287.0	3.50	346.20	1,286.9	4.2	1.2	-0.4	3.00	2.77	-37.87
1,382.0	5.50	338.10	1,381.6	11.3	-1.2	3.3	2.20	2.11	-8.53
1,477.0	7.60	335.50	1,476.0	21.2	-5.5	9.4	2.23	2.21	-2.74
1,572.0	9.10	335.50	1,570.0	33.8	-11.2	17.5	1.58	1.58	0.00
1,667.0	10.80	342.20	1,663.6	49.1	-17.1	26.1	2.16	1.79	7.05
1,762.0	13.40	347.10	1,756.4	68.3	-22.2	34.8	2.94	2.74	5.16



# **ENSIGN** Directional

## Ensign Directional Survey Report

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Guttersen D30-69-1HN
Project:	Sec.29-T3N-R64W	TVD Reference:	WELL @ 4800.0ft (Original Well Elev)
Site:	Guttersen D30 Pad Sec.29-T3N-R64W	MD Reference:	WELL @ 4800.0ft (Original Well Elev)
Well:	Guttersen D30-69-1HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,856.0	14.30	345.00	1,847.7	90.1	-27.7	44.3	1.10	0.96	-2.23
1,950.0	16.90	346.20	1,938.2	114.6	-33.9	55.2	2.79	2.77	1.28
2,044.0	16.60	344.30	2,028.2	140.8	-40.8	66.9	0.66	-0.32	-2.02
2,138.0	16.60	338.30	2,118.3	166.2	-49.4	80.2	1.82	0.00	-6.38
2,233.0	18.30	337.80	2,209.0	192.6	-60.1	95.7	1.80	1.79	-0.53
2,328.0	18.50	333.00	2,299.1	219.9	-72.6	113.1	1.61	0.21	-5.05
2,423.0	17.80	333.80	2,389.4	246.3	-85.8	131.2	0.78	-0.74	0.84
2,518.0	18.20	337.30	2,479.7	273.0	-98.0	148.2	1.21	0.42	3.68
2,613.0	18.80	333.40	2,569.8	300.4	-110.5	165.7	1.45	0.63	-4.11
2,708.0	19.30	333.00	2,659.6	328.1	-124.5	184.7	0.54	0.53	-0.42
2,803.0	19.40	332.00	2,749.3	356.0	-139.1	204.3	0.36	0.11	-1.05
2,898.0	18.80	328.00	2,839.0	382.9	-154.6	224.7	1.52	-0.63	-4.21
2,993.0	19.80	330.40	2,928.7	409.9	-170.6	245.6	1.34	1.05	2.53
3,088.0	19.00	332.30	3,018.3	437.6	-185.8	265.7	1.07	-0.84	2.00
3,182.0	18.40	332.70	3,107.3	464.3	-199.7	284.5	0.65	-0.64	0.43
3,277.0	17.40	333.20	3,197.7	490.3	-213.0	302.5	1.06	-1.05	0.53
3,372.0	16.20	337.30	3,288.7	515.2	-224.5	318.5	1.77	-1.26	4.32
3,467.0	16.50	335.30	3,379.8	539.7	-235.2	333.7	0.67	0.32	-2.11
3,562.0	16.10	336.70	3,471.0	564.0	-246.1	349.0	0.59	-0.42	1.47
3,657.0	17.30	336.40	3,562.0	589.1	-257.0	364.5	1.27	1.26	-0.32
3,752.0	16.80	339.40	3,652.8	614.9	-267.4	379.7	1.06	-0.53	3.16
3,847.0	17.40	338.00	3,743.6	640.9	-277.6	394.6	0.77	0.63	-1.47
3,942.0	18.10	336.20	3,834.1	667.6	-288.9	410.8	0.94	0.74	-1.89
4,037.0	18.40	334.80	3,924.3	694.6	-301.2	428.0	0.56	0.32	-1.47
4,132.0	17.40	335.30	4,014.7	721.1	-313.5	445.2	1.06	-1.05	0.53
4,227.0	17.20	333.90	4,105.4	746.6	-325.6	461.9	0.49	-0.21	-1.47
4,322.0	17.10	330.40	4,196.2	771.4	-338.7	479.5	1.09	-0.11	-3.68
4,417.0	16.20	328.50	4,287.2	794.8	-352.5	497.5	1.11	-0.95	-2.00
4,512.0	16.60	328.30	4,378.4	817.7	-366.6	515.7	0.43	0.42	-0.21
4,607.0	16.60	331.60	4,469.4	841.2	-380.2	533.5	0.99	0.00	3.47
4,702.0	17.10	329.50	4,560.3	865.1	-393.7	551.3	0.83	0.53	-2.21
4,796.0	17.00	332.70	4,650.2	889.3	-407.0	569.0	1.00	-0.11	3.40
4,891.0	13.60	330.90	4,741.8	911.4	-418.9	584.8	3.61	-3.58	-1.89
4,986.0	12.70	329.70	4,834.3	930.1	-429.6	598.9	0.99	-0.95	-1.26
5,081.0	10.60	326.00	4,927.4	946.4	-439.7	611.9	2.35	-2.21	-3.89
5,176.0	10.00	335.00	5,020.9	961.1	-448.1	623.0	1.81	-0.63	9.47
5,271.0	8.50	349.90	5,114.6	975.5	-452.8	630.3	2.96	-1.58	15.68
5,366.0	6.90	4.90	5,208.8	988.1	-453.5	633.5	2.69	-1.68	15.79
5,461.0	3.70	359.80	5,303.4	996.9	-453.1	634.7	3.40	-3.37	-5.37
5,556.0	1.30	355.40	5,398.3	1,001.0	-453.2	635.6	2.53	-2.53	-4.63
5,651.0	0.60	18.60	5,493.3	1,002.6	-453.1	635.8	0.83	-0.74	24.42
5,746.0	1.40	72.00	5,588.2	1,003.4	-451.8	634.7	1.21	0.84	56.21
5,841.0	1.10	116.50	5,683.2	1,003.3	-449.9	632.8	1.04	-0.32	46.84
5,935.0	0.60	110.20	5,777.2	1,002.8	-448.6	631.4	0.54	-0.53	-6.70
6,030.0	0.90	91.00	5,872.2	1,002.6	-447.4	630.2	0.41	0.32	-20.21
6,125.0	0.50	110.50	5,967.2	1,002.4	-446.3	629.1	0.48	-0.42	20.53
6,220.0	0.30	124.90	6,062.2	1,002.1	-445.7	628.4	0.23	-0.21	15.16
6,315.0	2.60	273.50	6,157.2	1,002.1	-447.7	630.4	3.01	2.42	156.42
6,410.0	7.40	293.70	6,251.8	1,004.7	-455.4	638.5	5.31	5.05	21.26
6,506.0	12.40	295.80	6,346.3	1,011.7	-470.4	654.5	5.22	5.21	2.19
6,600.0	19.20	281.00	6,436.7	1,019.0	-494.7	679.7	8.35	7.23	-15.74
6,695.0	28.10	273.80	6,523.7	1,023.5	-532.4	717.6	9.83	9.37	-7.58
6,790.0	34.40	264.50	6,604.9	1,022.4	-581.5	765.6	8.34	6.63	-9.79



Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Guttersen D30-69-1HN
Project:	Sec.29-T3N-R64W	TVD Reference:	WELL @ 4800.0ft (Original Well Elev)
Site:	Guttersen D30 Pad Sec.29-T3N-R64W	MD Reference:	WELL @ 4800.0ft (Original Well Elev)
Well:	Guttersen D30-69-1HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,885.0	42.90	262.60	6,679.1	1,015.7	-640.4	822.2	9.03	8.95	-2.00
6,980.0	52.40	266.60	6,743.0	1,009.3	-710.2	889.5	10.47	10.00	4.21
7,075.0	61.90	268.70	6,794.5	1,006.1	-789.9	967.0	10.17	10.00	2.21
7,170.0	70.50	265.90	6,832.8	1,001.9	-876.6	1,051.4	9.44	9.05	-2.95
7,217.0	72.60	267.10	6,847.6	999.2	-921.1	1,094.6	5.08	4.47	2.55
7,251.0	72.90	266.60	6,857.7	997.4	-953.5	1,126.0	1.66	0.88	-1.47
7,303.0	76.00	267.00	6,871.7	994.6	-1,003.5	1,174.6	6.01	5.96	0.77
7,348.0	75.50	267.10	6,882.7	992.4	-1,047.1	1,216.9	1.13	-1.11	0.22
7,396.0	79.80	266.80	6,893.0	989.9	-1,093.9	1,262.4	8.98	8.96	-0.63
7,443.0	83.60	267.00	6,899.8	987.4	-1,140.3	1,307.5	8.10	8.09	0.43
7,491.0	87.90	268.70	6,903.3	985.6	-1,188.1	1,354.1	9.63	8.96	3.54
7,538.0	91.30	269.40	6,903.7	984.8	-1,235.1	1,400.1	7.39	7.23	1.49
7,586.0	91.60	269.10	6,902.5	984.2	-1,283.1	1,447.1	0.88	0.63	-0.63
7,681.0	92.70	268.50	6,898.9	982.2	-1,378.0	1,539.9	1.32	1.16	-0.63
7,776.0	91.50	268.70	6,895.4	979.9	-1,472.9	1,632.6	1.28	-1.26	0.21
7,871.0	87.80	268.20	6,896.0	977.3	-1,567.9	1,725.3	3.93	-3.89	-0.53
7,966.0	88.00	267.80	6,899.5	974.0	-1,662.7	1,817.8	0.47	0.21	-0.42
8,061.0	88.00	268.50	6,902.8	970.9	-1,757.6	1,910.4	0.74	0.00	0.74
8,156.0	89.00	268.70	6,905.3	968.6	-1,852.6	2,003.2	1.07	1.05	0.21
8,250.0	89.60	269.60	6,906.4	967.2	-1,946.6	2,095.2	1.15	0.64	0.96
8,345.0	90.30	269.20	6,906.5	966.2	-2,041.5	2,188.2	0.85	0.74	-0.42
8,440.0	90.00	268.90	6,906.3	964.6	-2,136.5	2,281.2	0.45	-0.32	-0.32
8,535.0	89.90	270.10	6,906.3	963.8	-2,231.5	2,374.3	1.27	-0.11	1.26
8,630.0	89.80	271.50	6,906.6	965.1	-2,326.5	2,467.8	1.48	-0.11	1.47
8,725.0	89.70	271.00	6,907.0	967.2	-2,421.5	2,561.4	0.54	-0.11	-0.53
8,820.0	92.10	270.30	6,905.5	968.3	-2,516.5	2,654.8	2.63	2.53	-0.74
8,915.0	91.80	267.10	6,902.3	966.1	-2,611.4	2,747.6	3.38	-0.32	-3.37
9,010.0	91.50	267.10	6,899.5	961.3	-2,706.2	2,839.8	0.32	-0.32	0.00
9,105.0	90.70	265.90	6,897.7	955.5	-2,801.0	2,931.7	1.52	-0.84	-1.26
9,200.0	89.80	267.50	6,897.3	950.0	-2,895.9	3,023.8	1.93	-0.95	1.68
9,295.0	89.90	268.20	6,897.6	946.5	-2,990.8	3,116.3	0.74	0.11	0.74
9,390.0	90.00	267.50	6,897.6	942.9	-3,085.7	3,208.8	0.74	0.11	-0.74
9,485.0	89.00	267.10	6,898.5	938.4	-3,180.6	3,301.1	1.13	-1.05	-0.42
9,580.0	89.40	267.80	6,899.8	934.2	-3,275.5	3,393.5	0.85	0.42	0.74
9,675.0	88.80	268.50	6,901.3	931.1	-3,370.4	3,486.1	0.97	-0.63	0.74
9,770.0	89.20	270.50	6,902.9	930.3	-3,465.4	3,579.2	2.15	0.42	2.11
9,865.0	89.30	269.10	6,904.2	930.0	-3,560.4	3,672.4	1.48	0.11	-1.47
9,960.0	90.70	268.00	6,904.2	927.6	-3,655.4	3,765.1	1.87	1.47	-1.16
10,054.0	90.80	269.80	6,903.0	925.8	-3,749.3	3,857.0	1.92	0.11	1.91
10,149.0	89.50	269.90	6,902.7	925.5	-3,844.3	3,950.3	1.37	-1.37	0.11
10,244.0	90.90	271.90	6,902.4	927.0	-3,939.3	4,043.8	2.57	1.47	2.11
10,340.0	90.80	271.70	6,901.0	930.0	-4,035.3	4,138.5	0.23	-0.10	-0.21
10,434.0	91.10	269.40	6,899.4	930.9	-4,129.2	4,231.0	2.47	0.32	-2.45
10,529.0	90.50	270.60	6,898.1	930.9	-4,224.2	4,324.2	1.41	-0.63	1.26
10,624.0	88.50	269.80	6,898.9	931.3	-4,319.2	4,417.5	2.27	-2.11	-0.84
10,719.0	90.00	272.80	6,900.1	933.4	-4,414.2	4,511.2	3.53	1.58	3.16
10,814.0	87.90	270.10	6,901.9	935.8	-4,509.1	4,604.8	3.60	-2.21	-2.84
10,909.0	89.70	271.50	6,903.9	937.2	-4,604.1	4,698.3	2.40	1.89	1.47
10,990.0	89.60	272.90	6,904.4	940.3	-4,685.0	4,778.3	1.73	-0.12	1.73
Guttersen D30-69-1HN BHL 284°FNL, 757°FWL									
11,050.0	89.60	272.90	6,904.8	943.3	-4,744.9	4,837.7	0.00	0.00	0.00

<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Guttersen D30-69-1HN
<b>Project:</b>	Sec.29-T3N-R64W	<b>TVD Reference:</b>	WELL @ 4800.0ft (Original Well Elev)
<b>Site:</b>	Guttersen D30 Pad Sec.29-T3N-R64W	<b>MD Reference:</b>	WELL @ 4800.0ft (Original Well Elev)
<b>Well:</b>	Guttersen D30-69-1HN	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

Checked By: _____	Approved By: _____	Date: _____
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