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

Well Name: **Guttersen State D16-65-1HN**

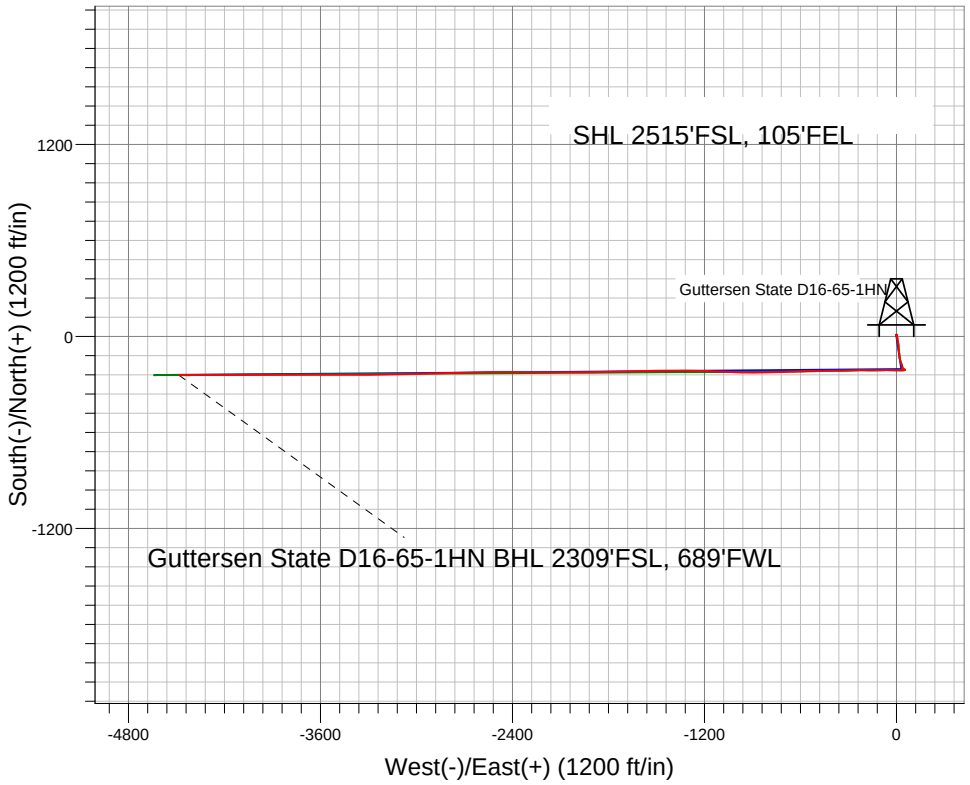
Surface Location: Guttersen State D16-65-1HN Pad Sec.16-T3N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4791.0

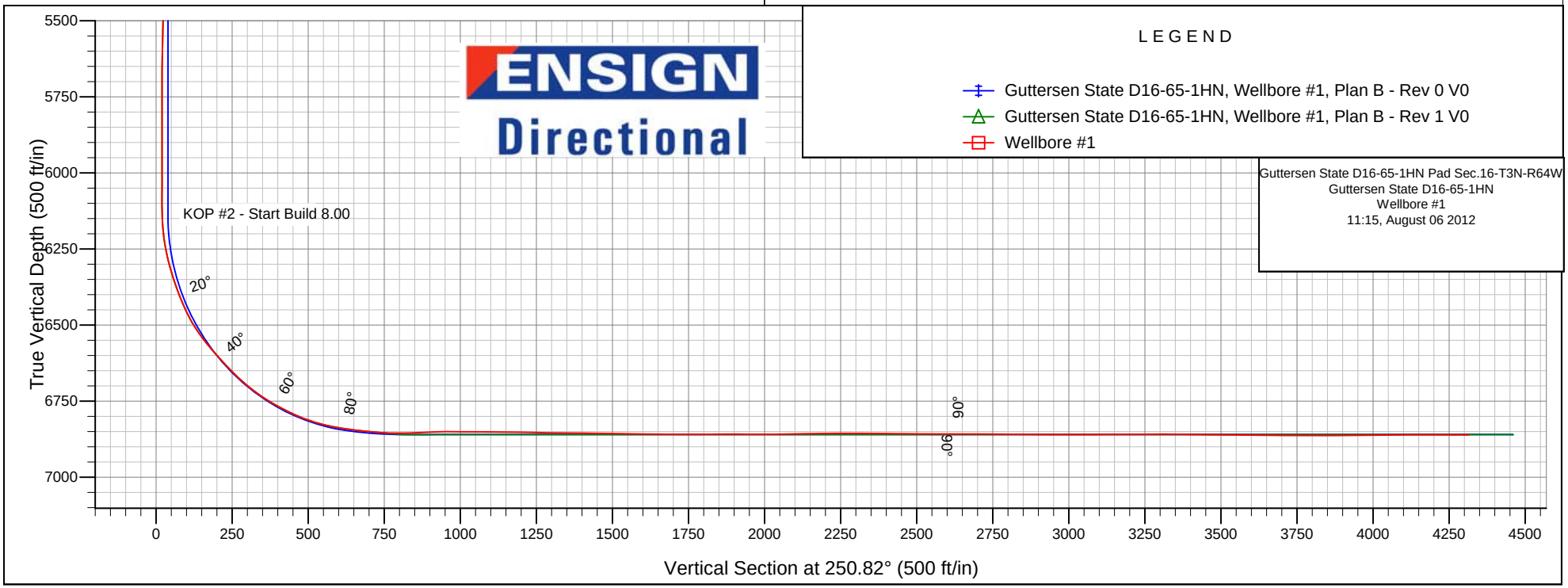
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1326239.23	3266078.05	40.225000	-104.547080	

Original Well Elev WELL @ 4804.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location
11090' MD 6861.5' TVD 243' S & 4485' W of SHL
90.0 degree Incl @ 269.7 degree AZM





LEGEND

- Guttersen State D16-65-1HN, Wellbore #1, Plan B - Rev 0 V0
- Guttersen State D16-65-1HN, Wellbore #1, Plan B - Rev 1 V0
- Wellbore #1

Guttersen State D16-65-1HN Pad Sec.16-T3N-R64W
Guttersen State D16-65-1HN
Wellbore #1
11:15, August 06 2012

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

Sec.16-T3N-R64W
Guttersen State D16-65-1HN Pad Sec.16-T3N-R64W
Guttersen State D16-65-1HN

Wellbore #1

Design: Wellbore #1

Standard Survey Report

06 August, 2012

ENSIGN Directional

Survey Report

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	**Local Co-ordinate Reference:**	Well Guttersen State D16-65-1HN
Project:	Sec.16-T3N-R64W	**TVD Reference:**	WELL @ 4804.0ft (Original Well Elev)
Site:	Guttersen State D16-65-1HN Pad Sec.16-T3N-R64W	**MD Reference:**	WELL @ 4804.0ft (Original Well Elev)
Well:	Guttersen State D16-65-1HN	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Landmark

Project Sec.16-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 State D16-65-1HN Pad Sec.16-T3N-R64W

Site Position:		**Northing:**	1,326,239.24 ft	**Latitude:**	40.225000
From:	Lat/Long	**Easting:**	3,266,078.05 ft	**Longitude:**	-104.547080
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.62 °

Well Guttersen State D16-65-1HN

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,326,239.23 ft	**Latitude:**	40.225000
	+E/-W	0.0 ft	**Easting:**	3,266,078.05 ft	**Longitude:**	-104.547080
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,791.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/19/2012	8.58	66.91	52,948

Design Wellbore #1

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	250.82

Survey Program **Date** 8/6/2012

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
781.0	11,090.0	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
781.0	0.00	0.00	781.0	0.0	0.0	0.0	0.00	0.00	0.00
823.0	0.22	331.90	823.0	0.1	0.0	0.0	0.52	0.52	0.00
1,109.0	0.31	355.54	1,109.0	1.3	-0.4	-0.1	0.05	0.03	8.27
1,385.0	0.57	8.23	1,385.0	3.4	-0.2	-0.9	0.10	0.09	4.60
1,661.0	0.48	10.48	1,661.0	5.9	0.2	-2.1	0.03	-0.03	0.82
1,937.0	1.06	1.82	1,937.0	9.6	0.5	-3.6	0.21	0.21	-3.14
2,030.0	0.74	250.57	2,029.9	10.3	-0.1	-3.3	1.61	-0.34	-119.62
2,122.0	1.38	232.37	2,121.9	9.4	-1.5	-1.7	0.78	0.70	-19.78
2,214.0	0.66	18.87	2,213.9	9.2	-2.2	-1.0	2.14	-0.78	159.24
2,405.0	0.89	85.42	2,404.9	10.4	-0.4	-3.1	0.46	0.12	34.84

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	**Local Co-ordinate Reference:**	Well Guttersen State D16-65-1HN
Project:	Sec.16-T3N-R64W	**TVD Reference:**	WELL @ 4804.0ft (Original Well Elev)
Site:	Guttersen State D16-65-1HN Pad Sec.16-T3N-R64W	**MD Reference:**	WELL @ 4804.0ft (Original Well Elev)
Well:	Guttersen State D16-65-1HN	**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)
2,500.0	1.71	142.01	2,499.9	9.3	1.2	-4.2	1.50	0.86	59.57
2,595.0	3.44	168.43	2,594.8	5.4	2.7	-4.3	2.16	1.82	27.81
2,691.0	4.33	169.71	2,690.6	-1.0	3.9	-3.4	0.93	0.93	1.33
2,786.0	6.62	174.00	2,785.1	-9.9	5.1	-1.6	2.45	2.41	4.52
2,881.0	9.36	167.77	2,879.2	-22.9	7.3	0.6	3.02	2.88	-6.56
2,976.0	11.49	170.15	2,972.6	-39.8	10.6	3.1	2.29	2.24	2.51
3,071.0	12.81	177.30	3,065.5	-59.7	12.7	7.6	2.10	1.39	7.53
3,166.0	14.39	173.74	3,157.8	-81.9	14.5	13.2	1.88	1.66	-3.75
3,261.0	13.52	173.34	3,250.0	-104.7	17.1	18.3	0.92	-0.92	-0.42
3,356.0	11.96	173.83	3,342.7	-125.5	19.4	22.9	1.65	-1.64	0.52
3,450.0	13.20	167.63	3,434.4	-145.7	22.8	26.4	1.95	1.32	-6.60
3,545.0	8.59	160.01	3,527.7	-162.9	27.5	27.6	5.07	-4.85	-8.02
3,640.0	8.16	158.64	3,621.7	-175.9	32.4	27.2	0.50	-0.45	-1.44
3,735.0	6.36	160.90	3,715.9	-187.1	36.6	27.0	1.92	-1.89	2.38
3,830.0	4.09	171.46	3,810.5	-195.5	38.8	27.6	2.59	-2.39	11.12
3,925.0	2.33	178.40	3,905.4	-200.7	39.3	28.8	1.89	-1.85	7.31
4,020.0	0.81	198.76	4,000.3	-203.3	39.2	29.8	1.68	-1.60	21.43
4,305.0	1.10	234.54	4,285.3	-206.8	36.3	33.7	0.23	0.10	12.55
4,400.0	0.61	67.36	4,380.3	-207.1	36.0	34.0	1.79	-0.52	-175.98
4,685.0	1.42	32.30	4,665.2	-203.6	39.3	29.8	0.35	0.28	-12.30
4,780.0	0.40	120.05	4,760.2	-202.7	40.2	28.6	1.54	-1.07	92.37
5,065.0	0.13	152.32	5,045.2	-203.5	41.2	27.9	0.10	-0.09	11.32
5,350.0	1.08	110.88	5,330.2	-204.8	43.9	25.8	0.35	0.33	-14.54
5,636.0	1.56	107.28	5,616.1	-206.9	50.1	20.6	0.17	0.17	-1.26
5,730.0	0.55	151.53	5,710.1	-207.7	51.6	19.5	1.31	-1.07	47.07
6,016.0	0.37	175.91	5,996.1	-209.8	52.3	19.5	0.09	-0.06	8.52
6,111.0	0.34	146.95	6,091.1	-210.3	52.5	19.6	0.19	-0.03	-30.48
6,159.0	1.58	243.06	6,139.1	-210.8	52.0	20.2	3.44	2.58	200.23
6,206.0	5.40	261.18	6,186.0	-211.4	49.2	23.0	8.36	8.13	38.55
6,254.0	9.56	262.94	6,233.6	-212.2	43.0	29.1	8.68	8.67	3.67
6,301.0	13.49	267.72	6,279.6	-212.9	33.7	38.2	8.60	8.36	10.17
6,349.0	17.93	270.67	6,325.8	-213.1	20.7	50.5	9.40	9.25	6.15
6,396.0	20.43	272.09	6,370.2	-212.7	5.2	64.9	5.41	5.32	3.02
6,444.0	23.52	271.35	6,414.7	-212.1	-12.7	81.7	6.46	6.44	-1.54
6,491.0	27.09	272.02	6,457.2	-211.5	-32.8	100.5	7.62	7.60	1.43
6,539.0	32.60	270.56	6,498.8	-211.0	-56.7	122.9	11.58	11.48	-3.04
6,586.0	37.84	268.57	6,537.2	-211.3	-83.8	148.5	11.41	11.15	-4.23
6,634.0	41.80	268.25	6,574.1	-212.1	-114.5	177.8	8.26	8.25	-0.67
6,681.0	43.72	269.94	6,608.6	-212.6	-146.4	208.1	4.76	4.09	3.60
6,729.0	45.42	270.78	6,642.8	-212.4	-180.1	239.9	3.75	3.54	1.75
6,775.0	48.55	270.27	6,674.2	-212.1	-213.7	271.5	6.85	6.80	-1.11
6,823.0	52.68	268.73	6,704.6	-212.4	-250.8	306.7	8.95	8.60	-3.21
6,870.0	56.64	268.28	6,731.8	-213.4	-289.1	343.2	8.46	8.43	-0.96
6,918.0	60.73	269.59	6,756.7	-214.2	-330.1	382.1	8.83	8.52	2.73
6,965.0	64.09	269.30	6,778.5	-214.6	-371.7	421.6	7.17	7.15	-0.62
7,013.0	67.68	269.42	6,798.1	-215.1	-415.5	463.1	7.48	7.48	0.25
7,060.0	72.21	268.20	6,814.2	-216.0	-459.7	505.1	9.94	9.64	-2.60
7,108.0	76.64	269.10	6,827.1	-217.1	-505.9	549.1	9.40	9.23	1.88
7,155.0	80.15	268.57	6,836.6	-218.0	-551.9	592.9	7.55	7.47	-1.13
7,180.0	81.92	268.67	6,840.4	-218.6	-576.6	616.4	7.09	7.08	0.40
7,236.0	84.02	268.67	6,847.3	-219.9	-632.2	669.3	3.75	3.75	0.00
7,273.0	84.70	268.30	6,850.9	-220.9	-669.0	704.4	2.09	1.84	-1.00
7,320.0	87.20	267.80	6,854.3	-222.5	-715.8	749.2	5.42	5.32	-1.06

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	**Local Co-ordinate Reference:**	Well Guttersen State D16-65-1HN
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Site:	Guttersen State D16-65-1HN Pad Sec.16-T3N-R64W	**MD Reference:**	WELL @ 4804.0ft (Original Well Elev)
Well:	Guttersen State D16-65-1HN	**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)
7,368.0	90.00	267.60	6,855.4	-224.4	-763.8	795.1	5.85	5.83	-0.42
7,415.0	91.90	269.40	6,854.6	-225.6	-810.7	839.9	5.57	4.04	3.83
7,462.0	92.80	269.20	6,852.7	-226.2	-857.7	884.4	1.96	1.91	-0.43
7,505.0	91.10	269.70	6,851.3	-226.6	-900.7	925.1	4.12	-3.95	1.16
7,556.0	89.80	271.10	6,850.9	-226.3	-951.6	973.2	3.75	-2.55	2.75
7,604.0	89.70	272.00	6,851.1	-225.0	-999.6	1,018.0	1.89	-0.21	1.88
7,652.0	89.60	273.00	6,851.4	-222.9	-1,047.6	1,062.7	2.09	-0.21	2.08
7,747.0	89.80	272.20	6,851.9	-218.6	-1,142.5	1,150.9	0.87	0.21	-0.84
7,842.0	88.50	271.50	6,853.3	-215.5	-1,237.4	1,239.5	1.55	-1.37	-0.74
7,937.0	89.50	270.20	6,854.9	-214.1	-1,332.4	1,328.8	1.73	1.05	-1.37
8,032.0	89.40	270.10	6,855.8	-213.8	-1,427.4	1,418.4	0.15	-0.11	-0.11
8,127.0	89.30	269.20	6,856.9	-214.4	-1,522.4	1,508.3	0.95	-0.11	-0.95
8,222.0	89.30	267.80	6,858.1	-216.9	-1,617.3	1,598.8	1.47	0.00	-1.47
8,317.0	89.40	268.50	6,859.2	-220.0	-1,712.3	1,689.5	0.74	0.11	0.74
8,412.0	90.20	268.50	6,859.5	-222.5	-1,807.2	1,780.0	0.84	0.84	0.00
8,507.0	90.40	269.50	6,859.0	-224.1	-1,902.2	1,870.3	1.07	0.21	1.05
8,602.0	89.40	270.10	6,859.2	-224.5	-1,997.2	1,960.1	1.23	-1.05	0.63
8,697.0	91.00	270.10	6,858.8	-224.3	-2,092.2	2,049.8	1.68	1.68	0.00
8,792.0	91.00	269.70	6,857.2	-224.5	-2,187.2	2,139.5	0.42	0.00	-0.42
8,887.0	90.00	270.40	6,856.3	-224.4	-2,282.2	2,229.2	1.28	-1.05	0.74
8,982.0	90.10	270.90	6,856.3	-223.3	-2,377.2	2,318.6	0.54	0.11	0.53
9,077.0	89.30	269.50	6,856.7	-223.0	-2,472.2	2,408.2	1.70	-0.84	-1.47
9,172.0	89.40	268.50	6,857.8	-224.6	-2,567.2	2,498.4	1.06	0.11	-1.05
9,267.0	90.30	269.40	6,858.1	-226.4	-2,662.2	2,588.7	1.34	0.95	0.95
9,362.0	89.60	268.50	6,858.2	-228.1	-2,757.1	2,679.0	1.20	-0.74	-0.95
9,457.0	89.70	269.00	6,858.7	-230.2	-2,852.1	2,769.4	0.54	0.11	0.53
9,552.0	89.30	268.00	6,859.6	-232.7	-2,947.1	2,859.9	1.13	-0.42	-1.05
9,647.0	90.00	268.30	6,860.1	-235.7	-3,042.0	2,950.6	0.80	0.74	0.32
9,742.0	90.30	269.00	6,859.9	-238.0	-3,137.0	3,041.0	0.80	0.32	0.74
9,838.0	90.20	268.80	6,859.5	-239.8	-3,233.0	3,132.3	0.23	-0.10	-0.21
9,933.0	90.20	269.50	6,859.1	-241.2	-3,328.0	3,222.4	0.74	0.00	0.74
10,028.0	90.20	270.80	6,858.8	-241.0	-3,423.0	3,312.1	1.37	0.00	1.37
10,123.0	89.30	270.20	6,859.2	-240.1	-3,518.0	3,401.5	1.14	-0.95	-0.63
10,218.0	88.90	269.20	6,860.7	-240.6	-3,612.9	3,491.4	1.13	-0.42	-1.05
10,313.0	89.40	269.70	6,862.1	-241.6	-3,707.9	3,581.4	0.74	0.53	0.53
10,408.0	89.70	270.80	6,862.9	-241.1	-3,802.9	3,671.0	1.20	0.32	1.16
10,503.0	90.00	270.80	6,863.1	-239.8	-3,897.9	3,760.3	0.32	0.32	0.00
10,598.0	90.00	269.70	6,863.1	-239.4	-3,992.9	3,849.9	1.16	0.00	-1.16
10,692.0	90.20	268.10	6,863.0	-241.2	-4,086.9	3,939.2	1.72	0.21	-1.70
10,787.0	91.10	270.20	6,861.9	-242.6	-4,181.9	4,029.4	2.40	0.95	2.21
10,882.0	90.20	270.80	6,860.8	-241.8	-4,276.9	4,118.8	1.14	-0.95	0.63
10,977.0	89.60	269.20	6,861.0	-241.8	-4,371.8	4,208.6	1.80	-0.63	-1.68
11,030.0	90.00	269.40	6,861.2	-242.4	-4,424.8	4,258.8	0.84	0.75	0.38
11,090.0	90.00	269.70	6,861.2	-242.9	-4,484.8	4,315.6	0.50	0.00	0.50
Guttersen State D16-65-1HN BHL 2310'FSL, 535'FWL									

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	**Local Co-ordinate Reference:**	Well Guttersen State D16-65-1HN
Project:	Sec.16-T3N-R64W	**TVD Reference:**	WELL @ 4804.0ft (Original Well Elev)
Site:	Guttersen State D16-65-1HN Pad Sec.16-T3N-R64W	**MD Reference:**	WELL @ 4804.0ft (Original Well Elev)
Well:	Guttersen State D16-65-1HN	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Landmark

Checked By: _____ Approved By: _____ Date: _____