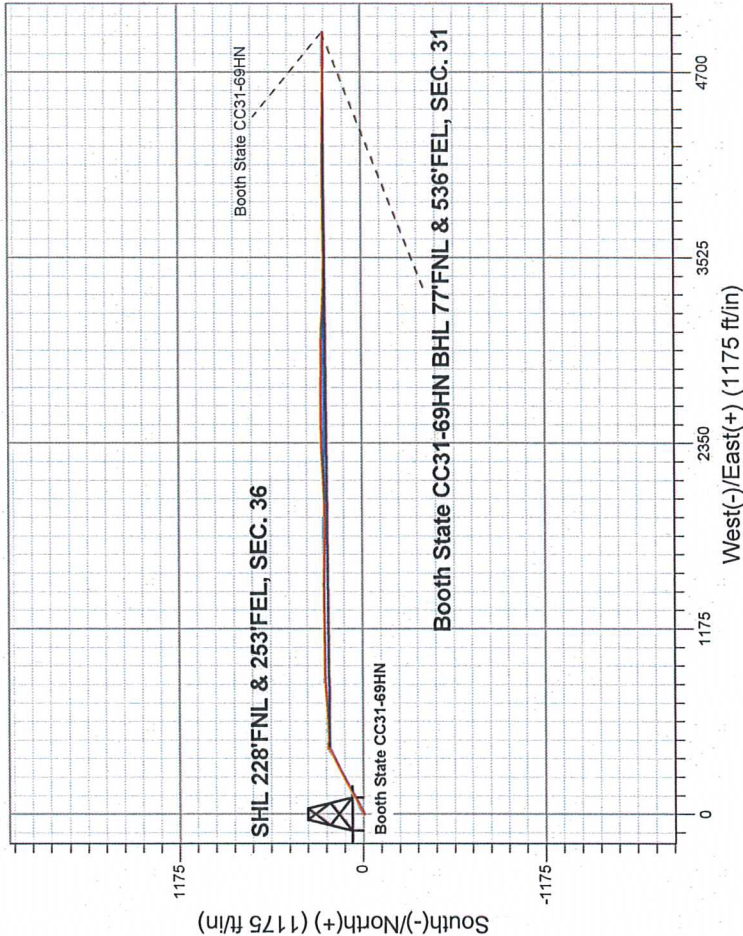


Noble Energy Inc.- Weld County, CO (Grid North)

Well Name: Booth State CC31-69HN				
Surface Location: Booth State CC Pad Sec.36-T4N-R64W				
North American Datum 1983 ; US State Plane 1983Colorado Northern Zone				
Ground Elevation: 4758.0				
+N/-S	+E/-W	Northing	Easting	Longitude
0.0	0.0	1344746.55	3281602.98	-104.490730
Original Well Elev		WELL @ 4771.0ft (Original Well Elev)		

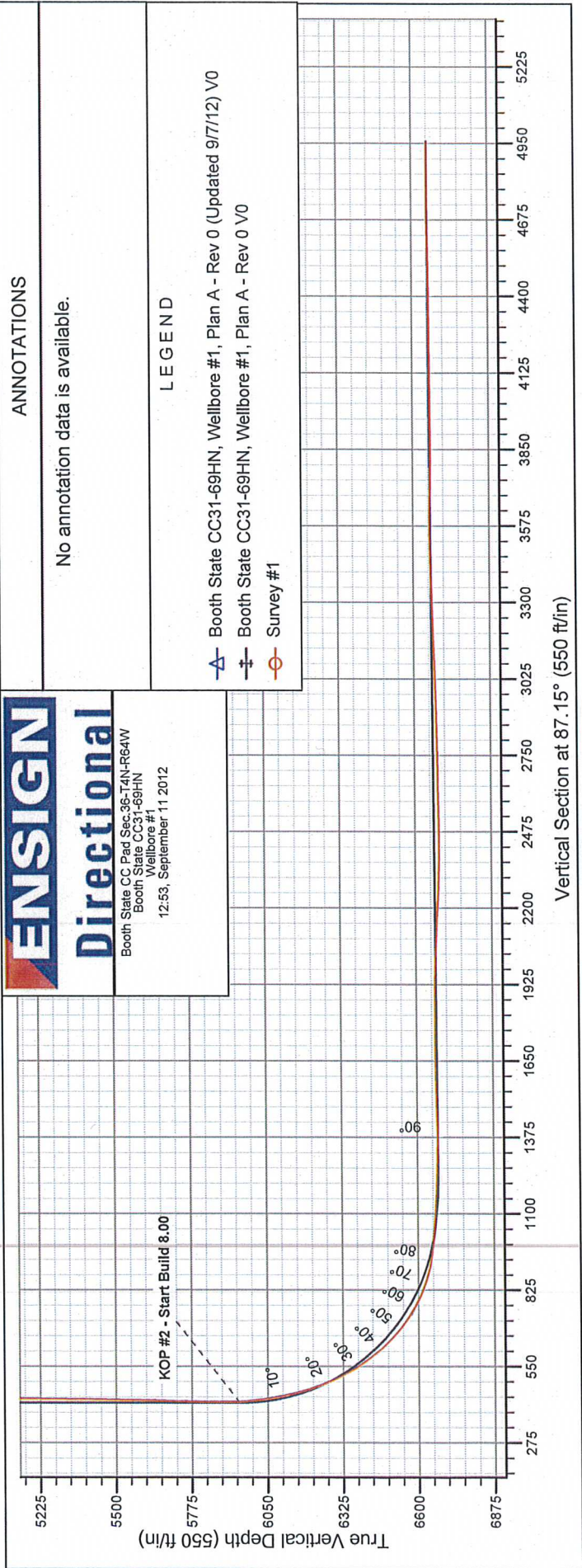
FINAL SURVEY

Projected Bottom Hole Location
10964' MD 6654' TVD 244' N & 4949' E of SHL
89.80 degree Incl @ 89.80 degree AZM





Directional
Booth State CC Pad Sec.36-T4N-R64W
Booth State CC31-69HN
Wellbore #1
12.53, September 11 2012





Directional

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

Sec.36-T4N-R64W

Booth State CC Pad Sec.36-T4N-R64W

Booth State CC31-69HN

Wellbore #1

Survey: Survey #1

Standard Survey Report

11 September, 2012

ENSIGN Directional

Ensign Directional Survey Report

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Booth State CC31-69HN
Project:	Sec.36-T4N-R64W	TVD Reference:	WELL @ 4771.0ft (Original Well Elev)
Site:	Booth State CC Pad Sec.36-T4N-R64W	MD Reference:	WELL @ 4771.0ft (Original Well Elev)
Well:	Booth State CC31-69HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	Sec.36-T4N-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	Booth State CC Pad Sec.36-T4N-R64W				
Site Position:		Northing:	1,344,783.09 ft	Latitude:	40.275430
From:	Lat/Long	Easting:	3,281,602.57 ft	Longitude:	-104.490730
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.65 °

Well		Booth State CC31-69HN				
Well Position	+N/-S	0.0 ft	Northing:	1,344,746.65 ft	Latitude:	40.275330
	+E/-W	0.0 ft	Easting:	3,281,602.98 ft	Longitude:	-104.490730
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,758.0 ft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/17/2012	8.55	66.95	52,972

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 (°)	
	6,655.0	0.0	0.0	87.15	

Survey Program	Date 9/11/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
663.0	10,964.0	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
Booth 11-31U (Exist.) - Spike State CC30-13 (Exist.) - Booth 21-31U (Exist.)									
663.0	0.00	0.00	663.0	0.0	0.0	0.0	0.00	0.00	0.00
726.0	0.50	257.20	726.0	-0.1	-0.3	-0.3	0.79	0.79	0.00
819.0	0.80	222.50	819.0	-0.6	-1.1	-1.1	0.52	0.32	-37.31
912.0	0.40	242.70	912.0	-1.3	-1.8	-1.9	0.48	-0.43	21.72
1,006.0	1.00	230.60	1,006.0	-1.9	-2.8	-2.8	0.65	0.64	-12.87
1,099.0	1.00	234.00	1,099.0	-2.9	-4.0	-4.2	0.06	0.00	3.66
1,197.0	0.80	58.00	1,197.0	-3.1	-4.2	-4.3	1.84	-0.20	-179.59
1,292.0	1.80	86.10	1,291.9	-2.6	-2.1	-2.2	1.22	1.05	29.58
1,388.0	2.90	66.40	1,387.9	-1.5	1.6	1.6	1.41	1.15	-20.52
1,481.0	4.80	60.50	1,480.6	1.3	7.2	7.2	2.08	2.04	-6.34

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Booth State CC31-69HN
Project:	Sec.36-T4N-R64W	TVD Reference:	WELL @ 4771.0ft (Original Well Elev)
Site:	Booth State CC Pad Sec.36-T4N-R64W	MD Reference:	WELL @ 4771.0ft (Original Well Elev)
Well:	Booth State CC31-69HN	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)
1,576.0	5.50	67.80	1,575.3	5.0	14.8	15.1	1.01	0.74	7.68
1,671.0	6.70	62.20	1,669.7	9.3	24.0	24.4	1.41	1.26	-5.89
1,765.0	7.60	65.20	1,763.0	14.5	34.5	35.1	1.04	0.96	3.19
1,860.0	8.30	63.10	1,857.1	20.2	46.3	47.2	0.80	0.74	-2.21
1,954.0	9.00	58.30	1,950.0	27.1	58.6	59.9	1.07	0.74	-5.11
2,048.0	10.50	59.80	2,042.6	35.3	72.2	73.9	1.62	1.60	1.60
2,142.0	12.40	59.80	2,134.8	44.7	88.4	90.5	2.02	2.02	0.00
2,237.0	13.60	62.40	2,227.3	55.0	107.1	109.7	1.40	1.26	2.74
2,332.0	12.30	61.20	2,319.9	65.1	125.9	128.9	1.40	-1.37	-1.26
2,427.0	12.80	60.60	2,412.6	75.1	143.9	147.4	0.54	0.53	-0.63
2,522.0	14.20	60.50	2,505.0	86.0	163.2	167.3	1.47	1.47	-0.11
2,616.0	13.10	63.40	2,596.4	96.5	182.8	187.3	1.38	-1.17	3.09
2,711.0	14.60	61.70	2,688.6	106.9	202.9	208.0	1.64	1.58	-1.79
2,806.0	14.30	60.10	2,780.6	118.5	223.6	229.3	0.53	-0.32	-1.68
2,901.0	14.90	63.40	2,872.5	129.8	244.7	250.9	1.08	0.63	3.47
2,997.0	13.50	63.30	2,965.6	140.4	265.8	272.4	1.46	-1.46	-0.10
3,091.0	13.80	62.70	3,056.9	150.4	285.5	292.7	0.35	0.32	-0.64
3,186.0	12.80	59.40	3,149.4	161.0	304.7	312.3	1.32	-1.05	-3.47
3,281.0	12.40	62.60	3,242.1	171.0	322.8	330.9	0.85	-0.42	3.37
3,376.0	11.70	61.50	3,335.0	180.3	340.3	348.8	0.78	-0.74	-1.16
3,470.0	9.40	67.30	3,427.4	187.8	355.8	364.7	2.69	-2.45	6.17
3,565.0	9.00	63.40	3,521.2	194.2	369.6	378.8	0.78	-0.42	-4.11
3,660.0	8.40	70.80	3,615.1	199.8	382.8	392.2	1.34	-0.63	7.79
3,755.0	6.90	67.10	3,709.3	204.3	394.6	404.2	1.66	-1.58	-3.89
3,850.0	5.50	67.50	3,803.7	208.2	404.0	413.9	1.47	-1.47	0.42
3,945.0	3.50	63.60	3,898.4	211.3	410.8	420.8	2.13	-2.11	-4.11
4,040.0	2.00	54.30	3,993.3	213.5	414.8	424.9	1.64	-1.58	-9.79
4,135.0	0.00	105.80	4,088.3	214.5	416.1	426.3	2.11	-2.11	0.00
4,230.0	0.70	39.40	4,183.3	214.9	416.5	426.7	0.74	0.74	0.00
4,325.0	0.90	22.00	4,278.3	216.1	417.2	427.4	0.33	0.21	-18.32
4,420.0	1.60	359.50	4,373.2	218.1	417.4	427.7	0.89	0.74	-23.68
4,514.0	0.60	10.00	4,467.2	219.9	417.5	427.9	1.08	-1.06	11.17
4,609.0	1.10	47.60	4,562.2	221.0	418.3	428.7	0.76	0.53	39.58
4,704.0	1.20	54.30	4,657.2	222.2	419.7	430.3	0.18	0.11	7.05
4,799.0	0.40	27.10	4,752.2	223.1	420.7	431.3	0.91	-0.84	-28.63
4,894.0	0.90	27.60	4,847.2	224.0	421.2	431.8	0.53	0.53	0.53
4,989.0	0.90	85.20	4,942.2	224.7	422.3	432.9	0.91	0.00	60.63
5,084.0	1.10	153.80	5,037.2	224.0	423.4	434.0	1.20	0.21	72.21
5,179.0	0.90	279.30	5,132.1	223.3	423.1	433.7	1.87	-0.21	132.11
5,274.0	0.80	250.80	5,227.1	223.2	421.7	432.3	0.45	-0.11	-30.00
5,368.0	0.40	358.60	5,321.1	223.3	421.1	431.7	1.06	-0.43	114.68
5,463.0	1.70	300.60	5,416.1	224.4	419.9	430.5	1.61	1.37	-61.05
5,558.0	0.80	278.30	5,511.1	225.2	418.0	428.7	1.06	-0.95	-23.47
5,653.0	1.30	250.80	5,606.1	224.9	416.3	427.0	0.73	0.53	-28.95
5,748.0	1.80	245.40	5,701.0	223.9	414.0	424.6	0.55	0.53	-5.68
5,843.0	1.00	262.30	5,796.0	223.2	411.8	422.4	0.94	-0.84	17.79
5,938.0	0.80	321.10	5,891.0	223.6	410.5	421.2	0.95	-0.21	61.89
6,033.0	5.50	76.60	5,985.9	225.2	414.6	425.2	6.20	4.95	121.58
6,128.0	10.30	88.10	6,079.9	226.5	427.5	438.2	5.29	5.05	12.11
6,223.0	15.10	100.40	6,172.6	224.6	448.2	458.8	5.77	5.05	12.95
6,318.0	22.00	92.10	6,262.6	221.7	478.2	488.6	7.76	7.26	-8.74
6,413.0	29.00	87.50	6,348.3	222.0	519.0	529.4	7.65	7.37	-4.84
6,508.0	36.90	87.70	6,428.0	224.2	570.6	581.0	8.32	8.32	0.21
6,603.0	45.90	86.10	6,499.2	227.6	633.2	643.8	9.54	9.47	-1.68

ENSIGN **Directional**

Ensign Directional **Survey Report**

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Booth State CC31-69HN
Project:	Sec.36-T4N-R64W	TVD Reference:	WELL @ 4771.0ft (Original Well Elev)
Site:	Booth State CC Pad Sec.36-T4N-R64W	MD Reference:	WELL @ 4771.0ft (Original Well Elev)
Well:	Booth State CC31-69HN	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)
6,697.0	54.90	86.60	6,559.0	232.2	705.5	716.1	9.58	9.57	0.53
6,792.0	65.20	84.70	6,606.4	238.5	787.4	798.3	10.98	10.84	-2.00
6,887.0	75.30	88.40	6,638.5	243.8	876.5	887.6	11.24	10.63	3.89
6,934.0	80.90	90.50	6,648.2	244.3	922.5	933.5	12.69	11.91	4.47
6,982.0	84.20	89.60	6,654.4	244.2	970.1	981.0	7.12	6.88	-1.88
7,027.0	84.90	89.50	6,658.7	244.6	1,014.9	1,025.8	1.57	1.56	-0.22
7,078.0	85.00	89.50	6,663.1	245.0	1,065.7	1,076.5	0.20	0.20	0.00
7,101.0	86.10	88.80	6,664.9	245.3	1,088.6	1,099.5	5.66	4.78	-3.04
7,196.0	88.10	89.60	6,669.7	246.7	1,183.5	1,194.3	2.27	2.11	0.84
7,214.9	88.28	89.50	6,670.3	246.8	1,202.4	1,213.2	1.08	0.95	-0.53
Landing Point									
7,291.0	89.00	89.10	6,672.1	247.8	1,278.4	1,289.2	1.08	0.95	-0.53
7,386.0	90.00	88.90	6,673.0	249.4	1,373.4	1,384.1	1.07	1.05	-0.21
7,482.0	91.80	91.00	6,671.5	249.5	1,469.4	1,480.0	2.88	1.88	2.19
7,577.0	90.70	92.10	6,669.4	246.9	1,564.3	1,574.7	1.64	-1.16	1.16
7,672.0	91.20	91.90	6,667.8	243.6	1,659.3	1,669.3	0.57	0.53	-0.21
7,767.0	89.70	90.20	6,667.1	241.9	1,754.2	1,764.1	2.39	-1.58	-1.79
7,862.0	90.00	88.40	6,667.3	243.0	1,849.2	1,859.0	1.92	0.32	-1.89
7,957.0	88.90	89.10	6,668.2	245.1	1,944.2	1,954.0	1.37	-1.16	0.74
8,052.0	87.70	87.70	6,671.0	247.8	2,039.1	2,048.9	1.94	-1.26	-1.47
8,147.0	86.60	86.60	6,675.8	252.5	2,133.9	2,143.8	1.64	-1.16	-1.16
8,242.0	87.10	87.20	6,681.0	257.6	2,228.6	2,238.6	0.82	0.53	0.63
8,337.0	88.80	87.50	6,684.4	262.0	2,323.4	2,333.6	1.82	1.79	0.32
8,431.0	90.00	89.60	6,685.4	264.4	2,417.4	2,427.5	2.57	1.28	2.23
8,526.0	91.00	88.90	6,684.5	265.6	2,512.4	2,522.5	1.28	1.05	-0.74
8,621.0	90.70	90.90	6,683.1	265.8	2,607.4	2,617.3	2.13	-0.32	2.11
8,716.0	90.70	90.70	6,682.0	264.4	2,702.3	2,712.1	0.21	0.00	-0.21
8,811.0	91.40	90.50	6,680.2	263.5	2,797.3	2,807.0	0.77	0.74	-0.21
8,906.0	91.40	90.90	6,677.9	262.3	2,892.3	2,901.7	0.42	0.00	0.42
9,001.0	90.70	90.20	6,676.2	261.4	2,987.3	2,996.6	1.04	-0.74	-0.74
9,096.0	92.90	93.00	6,673.2	258.7	3,082.2	3,091.2	3.75	2.32	2.95
9,191.0	91.70	93.50	6,669.4	253.4	3,176.9	3,185.6	1.37	-1.26	0.53
9,286.0	92.80	92.80	6,665.6	248.1	3,271.7	3,280.0	1.37	1.16	-0.74
9,381.0	90.70	90.70	6,662.7	245.2	3,366.6	3,374.6	3.13	-2.21	-2.21
9,476.0	91.10	89.50	6,661.3	245.1	3,461.6	3,469.5	1.33	0.42	-1.26
9,571.0	91.30	90.90	6,659.3	244.7	3,556.6	3,564.3	1.49	0.21	1.47
9,666.0	87.80	89.50	6,660.0	244.4	3,651.6	3,659.2	3.97	-3.68	-1.47
9,760.0	88.80	88.90	6,662.8	245.7	3,745.5	3,753.1	1.24	1.06	-0.64
9,855.0	89.90	87.90	6,663.9	248.4	3,840.5	3,848.1	1.56	1.16	-1.05
9,950.0	91.60	90.00	6,662.6	250.1	3,935.4	3,943.0	2.84	1.79	2.21
10,045.0	89.60	88.80	6,661.6	251.1	4,030.4	4,037.9	2.46	-2.11	-1.26
10,140.0	90.80	90.90	6,661.3	251.4	4,125.4	4,132.8	2.55	1.26	2.21
10,235.0	90.20	91.40	6,660.5	249.4	4,220.4	4,227.6	0.82	-0.63	0.53
10,330.0	90.30	90.90	6,660.1	247.5	4,315.4	4,322.3	0.54	0.11	-0.53
10,425.0	90.50	90.50	6,659.4	246.4	4,410.3	4,417.1	0.47	0.21	-0.42
10,520.0	90.90	90.50	6,658.2	245.6	4,505.3	4,512.0	0.42	0.42	0.00
10,615.0	91.00	89.80	6,656.7	245.3	4,600.3	4,606.8	0.74	0.11	-0.74
10,710.0	91.40	91.70	6,654.7	244.1	4,695.3	4,701.6	2.04	0.42	2.00
10,805.0	89.40	89.60	6,654.0	243.0	4,790.3	4,796.4	3.05	-2.11	-2.21
10,909.0	89.80	89.80	6,654.7	243.5	4,894.3	4,900.3	0.43	0.38	0.19
10,964.0	89.80	89.80	6,654.9	243.7	4,949.3	4,955.3	0.00	0.00	0.00

Booth St. CC31-69HN BHL 75'FNL, 535'FEL

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Booth State CC31-69HN
Project:	Sec.36-T4N-R64W	TVD Reference:	WELL @ 4771.0ft (Original Well Elev)
Site:	Booth State CC Pad Sec.36-T4N-R64W	MD Reference:	WELL @ 4771.0ft (Original Well Elev)
Well:	Booth State CC31-69HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Checked By: _____	Approved By: _____	Date: _____
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