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

Well Name: Powers X22-67HN

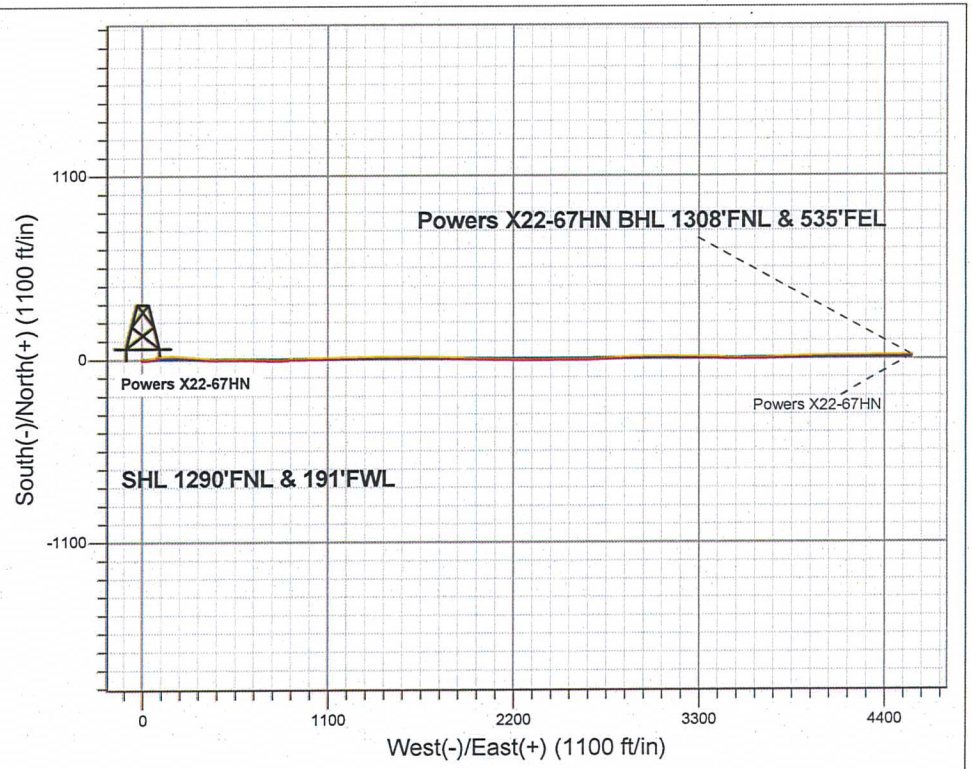
Surface Location: Powers X22-67HN Pad Sec.22-T2N-R65W
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone
Ground Elevation: 4882.0

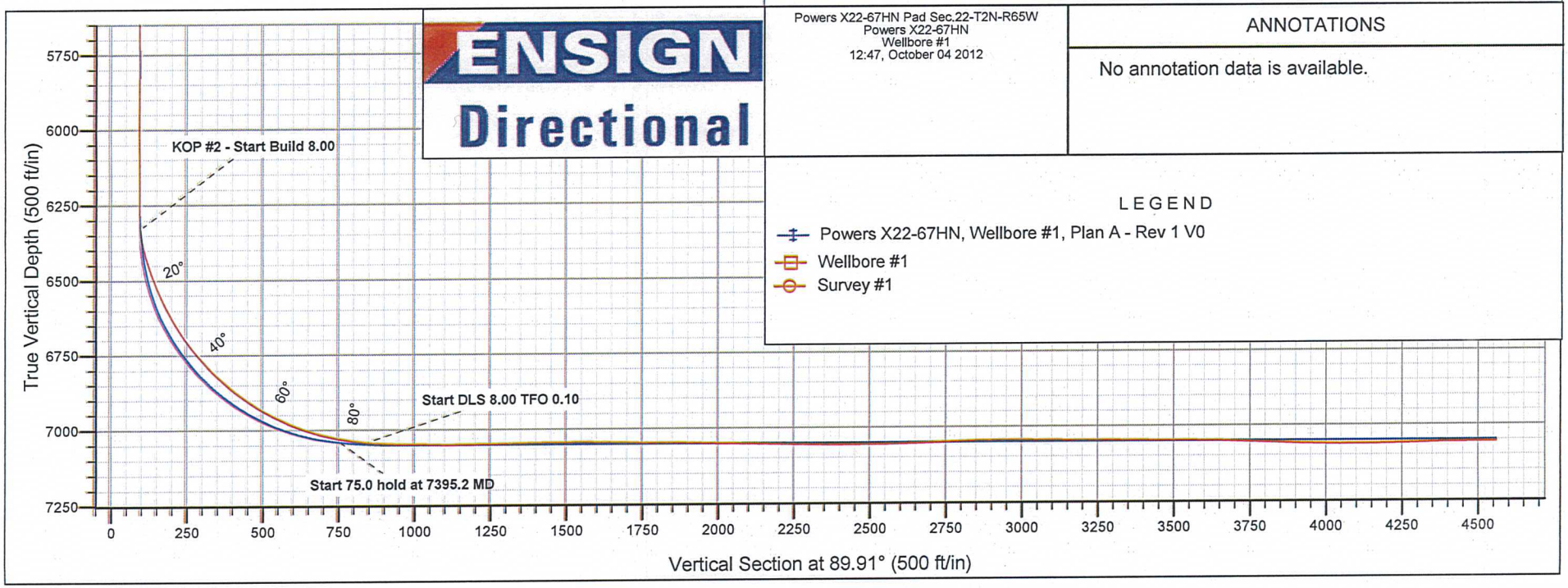
+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1290538.72	3235200.26	40.127860	-104.658870	

Original Well Elev — WELL @ 4895.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location
11162' MD 7055' TVD 19'N & 4559'E of SHL
91.50 degree Incl @ 90.00 degree AZM





Powers X22-67HN Pad Sec.22-T2N-R65W
Powers X22-67HN
Wellbore #1
12:47, October 04 2012

ANNOTATIONS

No annotation data is available.

LEGEND

- Powers X22-67HN, Wellbore #1, Plan A - Rev 1 V0
- Wellbore #1
- Survey #1

ENSIGN
Directional

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

Sec.22-T2N-R65W
Powers X22-67HN Pad Sec.22-T2N-R65W
Powers X22-67HN

Wellbore #1

Survey: Survey #1

Standard Survey Report

04 October, 2012

ENSIGN Directional

Survey Report

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	**Local Co-ordinate Reference:**	Well Powers X22-67HN
Project:	Sec.22-T2N-R65W	**TVD Reference:**	WELL @ 4895.0ft (Original Well Elev)
Site:	Powers X22-67HN Pad Sec.22-T2N-R65W	**MD Reference:**	WELL @ 4895.0ft (Original Well Elev)
Well:	Powers X22-67HN	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Landmark

Project Sec.22-T2N-R65W, 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 Powers X22-67HN Pad Sec.22-T2N-R65W

Site Position:		**Northing:**	1,290,538.73 ft	**Latitude:**	40.127860
From:	Lat/Long	**Easting:**	3,235,200.26 ft	**Longitude:**	-104.658870
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.54 °

Well Powers X22-67HN

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,290,538.72 ft	**Latitude:**	40.127860
	+E/-W	0.0 ft	**Easting:**	3,235,200.26 ft	**Longitude:**	-104.658870
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,882.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/17/2012	8.61	66.80	52,867

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 (°)
	7,050.0	0.0	0.0	89.91

Survey Program **Date** 10/4/2012

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
960.0	11,162.0	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
Powers 41-22 (Exist.)									
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
990.0	0.60	279.70	990.0	0.0	-0.2	-0.2	2.00	2.00	0.00
1,022.0	0.40	264.70	1,022.0	0.0	-0.4	-0.4	0.74	-0.63	-46.88
1,116.0	1.30	94.40	1,116.0	-0.1	0.3	0.3	1.80	0.96	-181.17
1,210.0	1.30	97.70	1,210.0	-0.3	2.4	2.4	0.08	0.00	3.51
1,302.0	1.10	89.30	1,301.9	-0.4	4.3	4.3	0.29	-0.22	-9.13
1,393.0	1.10	102.30	1,392.9	-0.6	6.1	6.1	0.27	0.00	14.29
1,485.0	1.40	96.90	1,484.9	-0.9	8.0	8.0	0.35	0.33	-5.87
1,577.0	4.00	95.60	1,576.8	-1.4	12.4	12.4	2.83	2.83	-1.41
1,669.0	5.40	96.90	1,668.5	-2.2	19.8	19.8	1.53	1.52	1.41

ENSIGN Directional

Survey Report

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	**Local Co-ordinate Reference:**	Well Powers X22-67HN
Project:	Sec.22-T2N-R65W	**TVD Reference:**	WELL @ 4895.0ft (Original Well Elev)
Site:	Powers X22-67HN Pad Sec.22-T2N-R65W	**MD Reference:**	WELL @ 4895.0ft (Original Well Elev)
Well:	Powers X22-67HN	**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)
1,760.0	5.50	87.70	1,759.1	-2.5	28.5	28.5	0.97	0.11	-10.11
1,852.0	7.00	77.90	1,850.5	-1.2	38.3	38.3	2.00	1.63	-10.65
1,945.0	9.10	84.70	1,942.6	0.7	51.2	51.2	2.48	2.26	7.31
2,039.0	8.70	80.50	2,035.5	2.5	65.6	65.6	0.81	-0.43	-4.47
2,131.0	5.50	79.50	2,126.8	4.5	76.8	76.8	3.48	-3.48	-1.09
2,223.0	3.30	97.20	2,218.5	5.0	83.8	83.8	2.78	-2.39	19.24
2,318.0	2.90	72.30	2,313.4	5.4	88.8	88.8	1.47	-0.42	-26.21
2,413.0	2.00	59.40	2,408.3	6.9	92.5	92.5	1.11	-0.95	-13.58
2,508.0	2.20	25.50	2,503.2	9.4	94.7	94.7	1.30	0.21	-35.68
2,603.0	0.70	17.40	2,598.2	11.6	95.7	95.7	1.59	-1.58	-8.53
2,697.0	1.10	358.90	2,692.2	13.1	95.8	95.9	0.52	0.43	-19.68
2,793.0	1.30	339.80	2,788.1	15.0	95.4	95.5	0.46	0.21	-19.90
2,888.0	0.80	223.80	2,883.1	15.5	94.6	94.6	1.90	-0.53	-122.11
2,983.0	0.50	244.00	2,978.1	14.9	93.8	93.8	0.39	-0.32	21.26
3,078.0	0.90	242.80	3,073.1	14.4	92.7	92.8	0.42	0.42	-1.26
3,173.0	1.80	244.70	3,168.1	13.4	90.7	90.7	0.95	0.95	2.00
3,268.0	2.10	245.90	3,263.0	12.0	87.8	87.8	0.32	0.32	1.26
3,363.0	1.10	97.20	3,358.0	11.2	87.1	87.1	3.26	-1.05	-156.53
3,458.0	1.10	91.90	3,453.0	11.1	88.9	88.9	0.11	0.00	-5.58
3,553.0	1.40	137.10	3,548.0	10.2	90.6	90.6	1.05	0.32	47.58
3,648.0	1.00	143.10	3,643.0	8.7	91.9	91.9	0.44	-0.42	6.32
3,743.0	1.00	139.40	3,737.9	7.4	92.9	93.0	0.07	0.00	-3.89
3,838.0	1.00	154.30	3,832.9	6.0	93.8	93.9	0.27	0.00	15.68
3,933.0	1.30	148.90	3,927.9	4.3	94.8	94.8	0.34	0.32	-5.68
4,028.0	0.80	25.30	4,022.9	4.0	95.6	95.6	1.96	-0.53	-130.11
4,123.0	0.70	51.00	4,117.9	5.0	96.3	96.3	0.37	-0.11	27.05
4,218.0	1.80	39.00	4,212.9	6.5	97.7	97.7	1.18	1.16	-12.63
4,314.0	0.90	347.20	4,308.8	8.4	98.5	98.5	1.49	-0.94	-53.96
4,409.0	0.90	353.90	4,403.8	9.9	98.3	98.3	0.11	0.00	7.05
4,504.0	0.80	9.80	4,498.8	11.3	98.3	98.3	0.27	-0.11	16.74
4,599.0	1.00	3.30	4,593.8	12.7	98.5	98.5	0.24	0.21	-6.84
4,694.0	0.40	22.30	4,688.8	13.9	98.6	98.7	0.67	-0.63	20.00
4,789.0	0.40	158.70	4,783.8	13.9	98.9	98.9	0.78	0.00	143.58
4,884.0	1.10	110.00	4,878.8	13.3	99.9	99.9	0.94	0.74	-51.26
4,979.0	0.80	357.40	4,973.8	13.6	100.7	100.7	1.67	-0.32	-118.53
5,074.0	0.80	163.10	5,068.8	13.6	100.8	100.9	1.67	0.00	174.42
5,169.0	1.00	78.10	5,163.8	13.2	101.8	101.9	1.29	0.21	-89.47
5,264.0	0.50	321.50	5,258.8	13.7	102.4	102.4	1.37	-0.53	-122.74
5,359.0	0.60	236.60	5,353.8	13.7	101.7	101.8	0.79	0.11	-89.37
5,454.0	0.60	246.80	5,448.8	13.3	100.9	100.9	0.11	0.00	10.74
5,549.0	0.60	200.00	5,543.8	12.6	100.2	100.2	0.50	0.00	-49.26
5,643.0	0.40	148.40	5,637.8	11.8	100.2	100.3	0.50	-0.21	-54.89
5,738.0	0.70	88.80	5,732.8	11.6	101.0	101.0	0.64	0.32	-62.74
5,833.0	0.50	340.70	5,827.8	12.0	101.4	101.4	1.03	-0.21	-113.79
5,928.0	0.40	281.80	5,922.7	12.4	101.0	101.0	0.47	-0.11	-62.00
6,023.0	0.30	282.10	6,017.7	12.6	100.4	100.4	0.11	-0.11	0.32
6,118.0	0.30	47.30	6,112.7	12.8	100.3	100.4	0.56	0.00	131.79
6,213.0	0.30	250.30	6,207.7	12.9	100.3	100.3	0.62	0.00	-165.26
6,308.0	1.50	95.30	6,302.7	12.7	101.3	101.3	1.87	1.26	-163.16
6,355.0	7.70	91.20	6,349.6	12.5	105.1	105.1	13.20	13.19	-8.72
6,403.0	13.30	87.40	6,396.7	12.7	113.8	113.8	11.75	11.67	-7.92
6,450.0	17.40	87.50	6,442.1	13.3	126.2	126.2	8.72	8.72	0.21
6,498.0	20.50	88.40	6,487.4	13.8	141.8	141.8	6.49	6.46	1.88
6,545.0	22.60	87.90	6,531.2	14.4	159.1	159.1	4.49	4.47	-1.06

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Site:	Powers X22-67HN Pad Sec.22-T2N-R65W	MD Reference:	WELL @ 4895.0ft (Original Well Elev)
Well:	Powers X22-67HN	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)
6,593.0	25.20	90.00	6,575.0	14.7	178.5	178.5	5.70	5.42	4.38
6,640.0	29.50	91.60	6,616.8	14.4	200.1	200.1	9.28	9.15	3.40
6,688.0	31.70	94.40	6,658.1	13.1	224.5	224.5	5.46	4.58	5.83
6,735.0	33.90	95.80	6,697.6	10.8	249.8	249.8	4.95	4.68	2.98
6,783.0	38.70	94.60	6,736.3	8.3	278.1	278.1	10.11	10.00	-2.50
6,830.0	42.10	94.80	6,772.1	5.8	308.5	308.5	7.24	7.23	0.43
6,878.0	44.50	96.00	6,807.0	2.7	341.2	341.2	5.29	5.00	2.50
6,925.0	47.80	93.90	6,839.5	-0.2	375.0	375.0	7.72	7.02	-4.47
6,973.0	51.40	92.10	6,870.7	-2.1	411.5	411.5	8.02	7.50	-3.75
7,020.0	54.80	89.50	6,898.9	-2.6	449.1	449.1	8.48	7.23	-5.53
7,068.0	57.90	88.90	6,925.5	-2.1	489.0	489.0	6.54	6.46	-1.25
7,115.0	61.10	89.70	6,949.3	-1.6	529.5	529.5	6.96	6.81	1.70
7,163.0	64.50	90.70	6,971.3	-1.7	572.2	572.2	7.32	7.08	2.08
7,210.0	68.70	90.70	6,989.9	-2.3	615.3	615.3	8.94	8.94	0.00
7,258.0	71.80	91.20	7,006.1	-3.0	660.5	660.5	6.53	6.46	1.04
7,305.0	75.50	91.40	7,019.4	-4.0	705.6	705.5	7.88	7.87	0.43
7,354.0	79.60	91.20	7,029.9	-5.1	753.4	753.4	8.38	8.37	-0.41
7,396.0	82.00	90.40	7,036.6	-5.7	794.8	794.8	6.02	5.71	-1.90
7,458.0	84.20	85.10	7,044.1	-3.3	856.3	856.3	9.20	3.55	-8.55
7,493.1	86.44	87.94	7,047.0	-1.2	891.3	891.3	10.28	6.38	8.09
Powers X22-67HN Landing Pt.									
7,505.0	87.20	88.90	7,047.6	-0.8	903.1	903.1	10.28	6.40	8.06
7,553.0	88.80	88.80	7,049.3	0.1	951.1	951.1	3.34	3.33	-0.21
7,600.0	89.70	88.80	7,049.9	1.1	998.0	998.0	1.91	1.91	0.00
7,647.0	90.20	89.10	7,050.0	2.0	1,045.0	1,045.0	1.24	1.06	0.64
7,694.0	89.60	88.90	7,050.0	2.8	1,092.0	1,092.0	1.35	-1.28	-0.43
7,743.0	90.00	88.90	7,050.2	3.7	1,141.0	1,141.0	0.82	0.82	0.00
7,838.0	91.10	89.50	7,049.3	5.1	1,236.0	1,236.0	1.32	1.16	0.63
7,933.0	90.60	88.10	7,047.9	7.0	1,331.0	1,331.0	1.56	-0.53	-1.47
8,028.0	91.20	89.50	7,046.4	9.0	1,425.9	1,425.9	1.60	0.63	1.47
8,123.0	90.70	90.20	7,044.8	9.3	1,520.9	1,520.9	0.91	-0.53	0.74
8,219.0	89.00	90.70	7,045.1	8.5	1,616.9	1,616.9	1.85	-1.77	0.52
8,313.0	88.30	91.40	7,047.3	6.8	1,710.9	1,710.9	1.05	-0.74	0.74
8,408.0	90.50	90.70	7,048.3	5.1	1,805.8	1,805.8	2.43	2.32	-0.74
8,503.0	88.90	91.60	7,048.8	3.2	1,900.8	1,900.8	1.93	-1.68	0.95
8,598.0	88.90	91.40	7,050.6	0.7	1,995.8	1,995.8	0.21	0.00	-0.21
8,693.0	89.70	91.20	7,051.8	-1.5	2,090.7	2,090.7	0.87	0.84	-0.21
8,788.0	89.00	90.90	7,052.8	-3.2	2,185.7	2,185.7	0.80	-0.74	-0.32
8,883.0	88.40	90.70	7,055.0	-4.5	2,280.7	2,280.7	0.67	-0.63	-0.21
8,978.0	89.10	88.20	7,057.1	-3.6	2,375.6	2,375.6	2.73	0.74	-2.63
9,073.0	91.00	89.80	7,057.0	-2.0	2,470.6	2,470.6	2.61	2.00	1.68
9,167.0	91.10	89.50	7,055.3	-1.4	2,564.6	2,564.6	0.34	0.11	-0.32
9,262.0	91.50	88.80	7,053.1	0.0	2,659.6	2,659.6	0.85	0.42	-0.74
9,357.0	92.50	87.90	7,049.8	2.7	2,754.5	2,754.5	1.42	1.05	-0.95
9,452.0	90.90	88.10	7,047.0	6.1	2,849.4	2,849.4	1.70	-1.68	0.21
9,547.0	90.30	87.90	7,046.0	9.4	2,944.3	2,944.3	0.67	-0.63	-0.21
9,642.0	89.30	89.30	7,046.3	11.7	3,039.3	3,039.3	1.81	-1.05	1.47
9,737.0	90.10	90.50	7,046.8	11.9	3,134.3	3,134.3	1.52	0.84	1.26
9,832.0	89.40	91.60	7,047.2	10.1	3,229.2	3,229.3	1.37	-0.74	1.16
9,927.0	90.20	91.60	7,047.5	7.5	3,324.2	3,324.2	0.84	0.84	0.00
10,022.0	88.50	90.50	7,048.6	5.7	3,419.2	3,419.2	2.13	-1.79	-1.16
10,118.0	90.60	91.60	7,049.4	4.0	3,515.2	3,515.2	2.47	2.19	1.15
10,212.0	89.50	88.90	7,049.3	3.6	3,609.1	3,609.1	3.10	-1.17	-2.87

ENSIGN Directional

Survey Report

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Powers X22-67HN
Project:	Sec.22-T2N-R65W	TVD Reference:	WELL @ 4895.0ft (Original Well Elev)
Site:	Powers X22-67HN Pad Sec.22-T2N-R65W	MD Reference:	WELL @ 4895.0ft (Original Well Elev)
Well:	Powers X22-67HN	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)
10,307.0	87.20	88.90	7,052.0	5.4	3,704.1	3,704.1	2.42	-2.42	0.00
10,403.0	87.50	88.20	7,056.5	7.8	3,799.9	3,799.9	0.79	0.31	-0.73
10,498.0	88.40	88.20	7,059.9	10.8	3,894.8	3,894.8	0.95	0.95	0.00
10,593.0	89.30	88.90	7,061.8	13.2	3,989.8	3,989.8	1.20	0.95	0.74
10,688.0	89.80	89.50	7,062.5	14.5	4,084.8	4,084.8	0.82	0.53	0.63
10,783.0	91.00	90.20	7,061.9	14.8	4,179.8	4,179.8	1.46	1.26	0.74
10,878.0	91.50	89.10	7,059.8	15.3	4,274.7	4,274.8	1.27	0.53	-1.16
10,973.0	91.00	89.30	7,057.7	16.7	4,369.7	4,369.7	0.57	-0.53	0.21
11,068.0	90.20	89.30	7,056.7	17.8	4,464.7	4,464.7	0.84	-0.84	0.00
11,107.0	90.70	88.80	7,056.4	18.5	4,503.7	4,503.7	1.81	1.28	-1.28
11,161.6	91.49	89.99	7,055.4	19.1	4,558.3	4,558.3	2.62	1.45	2.18
Powers X22-67HN BHL 1320'FNL, 535'FEL									
11,162.0	91.50	90.00	7,055.4	19.1	4,558.7	4,558.7	2.62	1.45	2.18

Wellbore Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Powers 41-22 (Exist.)	0.00	0.00	-15.0	319.6	4,088.2	1,290,858.34	3,239,288.33	40.128630	-104.644240
- survey misses target center by 4100.7ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 150.0)									
Powers X22-67HN BH	0.00	0.00	7,050.0	7.2	4,558.3	1,290,545.95	3,239,758.35	40.127760	-104.642570
- survey misses target center by 13.0ft at 11161.6ft MD (7055.4 TVD, 19.1 N, 4558.3 E)									
- Circle (radius 35.0)									
Powers X22-67HN La	0.00	0.00	7,050.0	1.4	890.9	1,290,540.12	3,236,091.12	40.127841	-104.655684
- survey misses target center by 4.0ft at 7493.1ft MD (7047.0 TVD, -1.2 N, 891.3 E)									
- Circle (radius 35.0)									

Checked By: _____ Approved By: _____ Date: _____