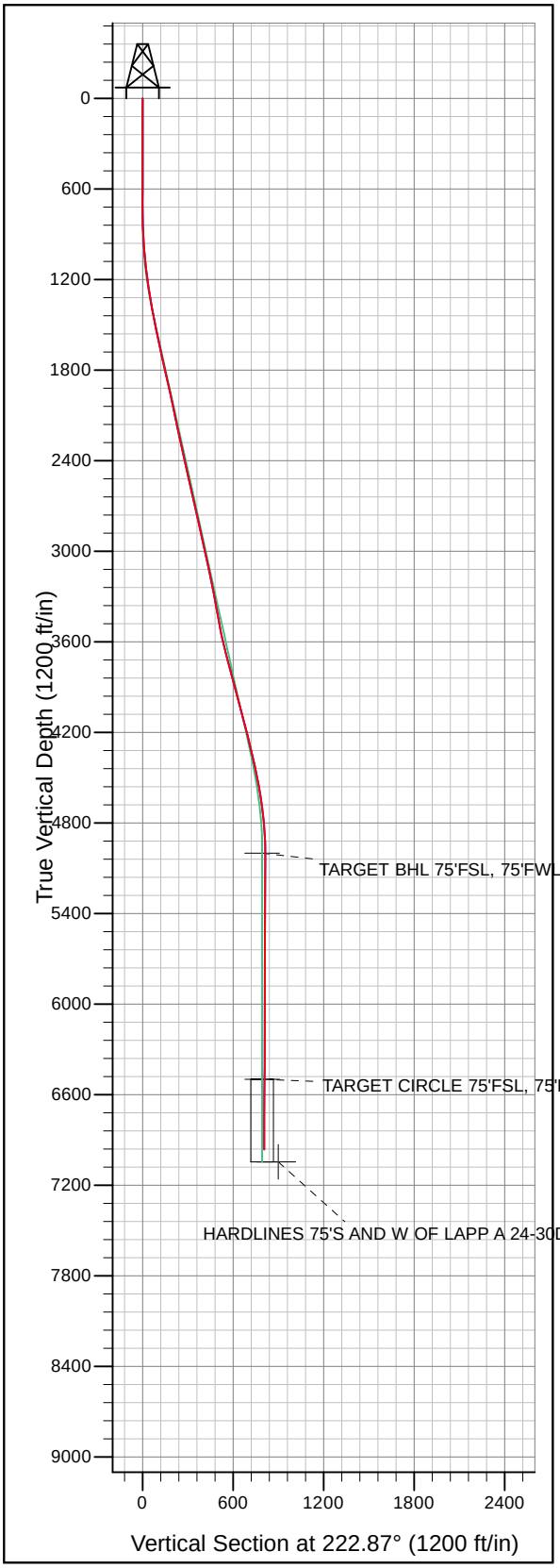
ENSIGN Directional

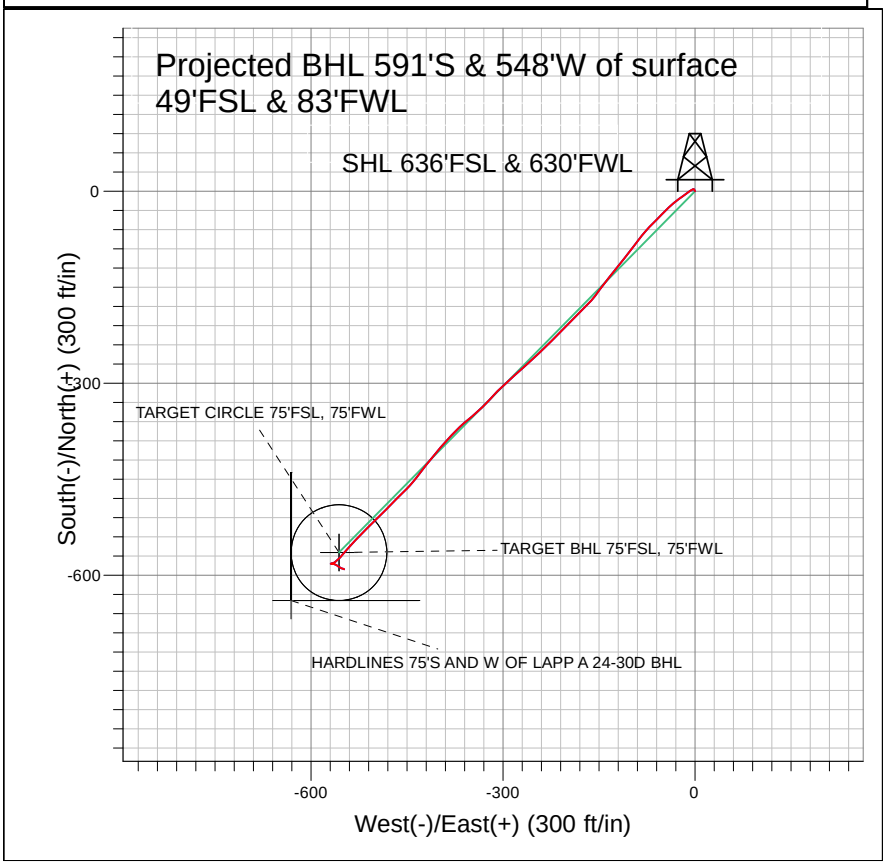
Well Name: **Lapp A 24-30D**
Surface Location: Lapp Pad Sec.13-T6N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4664.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1419503.25	3276626.43	40° 28' 50.448 N	104° 30' 20.016 W	

Original Well Elev WELL @ 4677.0ft (Original Well Elev)

NOBLE ENERGY INC WELD COUNTY CO





LEGEND

- Lapp A 24-30D, Lapp A 24-30D, Noble Lapp A 24-30D Plan #3 (4-30-10) V0
- Lapp A 24-30D
- Survey #1

Final Survey Plot

Projected Final Survey -
7050'MD & 6964'TVD @ 805.5' VS
0.5 deg Inc 109.1 deg AZ

Project: SEC.13-T6N-R64W
Site: Lapp Pad Sec.13-T6N-R64W
Well: Lapp A 24-30D
Plan: Lapp A 24-30D

NOBLE ENERGY INC WELD COUNTY CO

SEC.13-T6N-R64W
Lapp Pad Sec.13-T6N-R64W
Lapp A 24-30D

Lapp A 24-30D

Survey: Survey #1

Standard Survey Report

26 May, 2010

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Lapp A 24-30D
Project:	SEC.13-T6N-R64W	**TVD Reference:**	WELL @ 4677.0ft (Original Well Elev)
Site:	Lapp Pad Sec.13-T6N-R64W	**MD Reference:**	WELL @ 4677.0ft (Original Well Elev)
Well:	Lapp A 24-30D	**North Reference:**	True
Wellbore:	Lapp A 24-30D	**Survey Calculation Method:**	Minimum Curvature
Design:	Lapp A 24-30D	**Database:**	EDM den0-adp01 Server Data

Project SEC.13-T6N-R64W, Weld County, Colorado

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 Lapp Pad Sec.13-T6N-R64W

Site Position:		**Northing:**	1,419,503.26 ft	**Latitude:**	40° 28' 50.448 N
From:	Lat/Long	**Easting:**	3,276,626.43 ft	**Longitude:**	104° 30' 20.016 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.64 °

Well Lapp A 24-30D

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,419,503.25 ft	**Latitude:**	40° 28' 50.448 N
	+E/-W	0.0 ft	**Easting:**	3,276,626.43 ft	**Longitude:**	104° 30' 20.016 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,664.0 ft

Wellbore Lapp A 24-30D

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/25/2008	9.04	67.25	53,489
	IGRF2010	4/1/2010	8.89	67.20	53,330

Design Lapp A 24-30D

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	222.87

Survey Program **Date** 5/26/2010

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
606.0	7,050.0	Survey #1 (Lapp A 24-30D)	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
606.0	0.50	329.10	606.0	2.3	-1.4	-0.7	0.08	0.08	0.00
685.0	0.80	339.00	685.0	3.1	-1.7	-1.1	0.40	0.38	12.53
770.0	1.50	246.60	770.0	3.2	-3.0	-0.3	2.03	0.82	-108.71
856.0	2.30	241.10	855.9	1.9	-5.5	2.3	0.95	0.93	-6.40
941.0	3.60	233.20	940.8	-0.5	-9.1	6.6	1.60	1.53	-9.29
1,027.0	4.70	234.80	1,026.6	-4.2	-14.2	12.7	1.29	1.28	1.86
1,112.0	6.30	234.60	1,111.2	-8.9	-20.8	20.7	1.88	1.88	-0.24
1,198.0	7.70	231.40	1,196.5	-15.2	-29.2	31.0	1.69	1.63	-3.72
1,283.0	9.00	227.50	1,280.6	-23.2	-38.5	43.2	1.67	1.53	-4.59
1,369.0	10.00	224.10	1,365.5	-33.1	-48.7	57.4	1.33	1.16	-3.95
1,454.0	11.00	225.80	1,449.0	-44.1	-59.6	72.9	1.23	1.18	2.00

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Lapp A 24-30D
Project:	SEC.13-T6N-R64W	**TVD Reference:**	WELL @ 4677.0ft (Original Well Elev)
Site:	Lapp Pad Sec.13-T6N-R64W	**MD Reference:**	WELL @ 4677.0ft (Original Well Elev)
Well:	Lapp A 24-30D	**North Reference:**	True
Wellbore:	Lapp A 24-30D	**Survey Calculation Method:**	Minimum Curvature
Design:	Lapp A 24-30D	**Database:**	EDM den0-adp01 Server Data

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)
1,540.0	11.80	224.00	1,533.3	-56.1	-71.6	89.9	1.02	0.93	-2.09
1,625.0	12.50	218.00	1,616.4	-69.7	-83.3	107.7	1.70	0.82	-7.06
1,711.0	12.30	216.20	1,700.4	-84.4	-94.5	126.1	0.51	-0.23	-2.09
1,796.0	12.70	218.60	1,783.4	-99.0	-105.6	144.4	0.77	0.47	2.82
1,882.0	13.10	218.90	1,867.3	-114.0	-117.7	163.6	0.47	0.47	0.35
1,967.0	12.20	219.00	1,950.2	-128.4	-129.4	182.1	1.06	-1.06	0.12
2,053.0	11.90	216.60	2,034.3	-142.6	-140.4	200.0	0.68	-0.35	-2.79
2,138.0	12.00	216.20	2,117.5	-156.8	-150.8	217.5	0.15	0.12	-0.47
2,224.0	12.20	221.90	2,201.5	-170.8	-162.2	235.5	1.41	0.23	6.63
2,309.0	12.30	224.90	2,284.6	-183.9	-174.6	253.5	0.76	0.12	3.53
2,395.0	12.50	224.10	2,368.6	-197.0	-187.5	272.0	0.31	0.23	-0.93
2,480.0	12.80	226.70	2,451.5	-210.1	-200.7	290.6	0.76	0.35	3.06
2,566.0	12.50	222.90	2,535.5	-223.4	-214.0	309.4	1.03	-0.35	-4.42
2,651.0	12.70	225.50	2,618.4	-236.7	-226.9	327.9	0.71	0.24	3.06
2,737.0	12.30	227.20	2,702.4	-249.6	-240.4	346.5	0.63	-0.47	1.98
2,822.0	12.80	226.70	2,785.3	-262.2	-253.9	364.9	0.60	0.59	-0.59
2,908.0	13.20	227.60	2,869.1	-275.3	-268.1	384.2	0.52	0.47	1.05
2,993.0	11.50	228.40	2,952.2	-287.5	-281.6	402.3	2.01	-2.00	0.94
3,079.0	12.80	227.30	3,036.2	-299.7	-295.0	420.3	1.54	1.51	-1.28
3,164.0	12.90	225.30	3,119.1	-312.7	-308.7	439.2	0.54	0.12	-2.35
3,249.0	11.20	223.20	3,202.2	-325.4	-321.1	456.9	2.07	-2.00	-2.47
3,335.0	9.90	223.30	3,286.8	-336.9	-331.9	472.7	1.51	-1.51	0.12
3,420.0	10.50	229.70	3,370.4	-347.2	-342.8	487.7	1.51	0.71	7.53
3,506.0	11.10	231.70	3,454.9	-357.4	-355.2	503.6	0.82	0.70	2.33
3,591.0	11.10	225.10	3,538.3	-368.3	-367.5	519.9	1.49	0.00	-7.76
3,677.0	13.50	223.60	3,622.3	-381.4	-380.3	538.2	2.82	2.79	-1.74
3,762.0	14.30	222.00	3,704.9	-396.4	-394.1	558.6	1.04	0.94	-1.88
3,848.0	14.90	220.00	3,788.1	-412.7	-408.3	580.3	0.91	0.70	-2.33
3,933.0	15.30	216.60	3,870.1	-430.1	-422.0	602.4	1.14	0.47	-4.00
4,019.0	15.80	217.80	3,953.0	-448.5	-436.0	625.3	0.69	0.58	1.40
4,104.0	14.00	225.60	4,035.1	-464.8	-450.4	647.1	3.17	-2.12	9.18
4,190.0	14.00	224.10	4,118.6	-479.6	-465.1	667.9	0.42	0.00	-1.74
4,275.0	14.40	225.10	4,201.0	-494.4	-479.7	688.7	0.55	0.47	1.18
4,361.0	14.00	225.00	4,284.4	-509.3	-494.7	709.8	0.47	-0.47	-0.12
4,446.0	13.60	225.50	4,366.9	-523.6	-509.1	730.1	0.49	-0.47	0.59
4,532.0	12.80	224.30	4,450.6	-537.5	-522.9	749.7	0.98	-0.93	-1.40
4,617.0	10.20	223.30	4,533.9	-549.7	-534.7	766.6	3.07	-3.06	-1.18
4,703.0	8.60	220.70	4,618.8	-560.1	-544.1	780.7	1.92	-1.86	-3.02
4,788.0	8.00	220.30	4,702.9	-569.4	-552.1	792.9	0.71	-0.71	-0.47
4,874.0	5.20	230.20	4,788.3	-576.5	-558.9	802.8	3.50	-3.26	11.51
4,959.0	3.60	236.40	4,873.1	-580.4	-564.1	809.2	1.96	-1.88	7.29
5,045.0	2.00	267.20	4,958.9	-582.0	-567.9	812.9	2.49	-1.86	35.81
5,085.9	0.90	270.02	4,999.8	-582.1	-568.9	813.6	2.69	-2.69	6.90
TARGET BHL 75'FSL, 75'FWL									
5,130.0	0.30	69.30	5,043.9	-582.0	-569.1	813.8	2.69	-1.36	361.00
5,301.0	0.50	80.90	5,214.9	-581.7	-568.0	812.8	0.13	0.12	6.78
5,472.0	0.70	117.30	5,385.9	-582.1	-566.3	811.9	0.25	0.12	21.29
5,643.0	1.10	97.00	5,556.9	-582.8	-563.8	810.7	0.30	0.23	-11.87
5,814.0	0.70	121.90	5,727.9	-583.5	-561.2	809.5	0.32	-0.23	14.56
5,985.0	0.90	130.30	5,898.9	-584.9	-559.3	809.2	0.14	0.12	4.91
6,156.0	0.70	119.80	6,069.8	-586.3	-557.4	808.9	0.14	-0.12	-6.14
6,327.0	0.50	135.30	6,240.8	-587.4	-556.0	808.7	0.15	-0.12	9.06
6,498.0	0.80	104.80	6,411.8	-588.2	-554.3	808.2	0.26	0.18	-17.84
6,584.0	0.80	111.28	6,497.8	-588.6	-553.1	807.7	0.10	-0.01	7.53

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Lapp A 24-30D
Project:	SEC.13-T6N-R64W	**TVD Reference:**	WELL @ 4677.0ft (Original Well Elev)
Site:	Lapp Pad Sec.13-T6N-R64W	**MD Reference:**	WELL @ 4677.0ft (Original Well Elev)
Well:	Lapp A 24-30D	**North Reference:**	True
Wellbore:	Lapp A 24-30D	**Survey Calculation Method:**	Minimum Curvature
Design:	Lapp A 24-30D	**Database:**	EDM den0-adp01 Server Data

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)
TARGET CIRCLE 75'FSL, 75'FWL									
6,668.0	0.80	117.60	6,581.8	-589.1	-552.1	807.3	0.10	0.01	7.53
6,839.0	0.60	109.50	6,752.8	-589.9	-550.2	806.7	0.13	-0.12	-4.74
7,002.0	0.50	109.10	6,915.8	-590.4	-548.7	806.0	0.06	-0.06	-0.25
7,050.0	0.50	109.10	6,963.8	-590.6	-548.3	805.9	0.00	0.00	0.00
HARDLINES 75'S AND W OF LAPP A 24-30D BHL									

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
TARGET BHL 75'FSL	0.00	0.00	5,000.0	-564.7	-556.4	1,418,932.39	3,276,076.42	40° 28' 44.868 N	104° 30' 27.216 W
- survey misses target center by 21.4ft at 5085.7ft MD (4999.7 TVD, -582.1 N, -568.9 E)									
- Point									
TARGET CIRCLE 75'	0.00	0.00	6,498.0	-564.7	-556.4	1,418,932.37	3,276,076.42	40° 28' 44.868 N	104° 30' 27.216 W
- survey misses target center by 24.1ft at 6584.0ft MD (6497.8 TVD, -588.6 N, -553.1 E)									
- Circle (radius 75.0)									
HARDLINES 75'S AN	0.00	0.00	7,045.0	-639.7	-631.4	1,418,856.53	3,276,002.26	40° 28' 44.127 N	104° 30' 28.187 W
- survey misses target center by 126.1ft at 7050.0ft MD (6963.8 TVD, -590.6 N, -548.3 E)									
- Polygon									
Point 1			7,045.0	0.0	0.0	1,418,856.53	3,276,002.26		
Point 2			7,045.0	0.0	200.0	1,418,858.78	3,276,202.24		
Point 3			7,045.0	0.0	0.0	1,418,856.53	3,276,002.26		
Point 4			7,045.0	200.0	0.0	1,419,056.51	3,276,000.02		

Checked By: _____ Approved By: _____ Date: _____