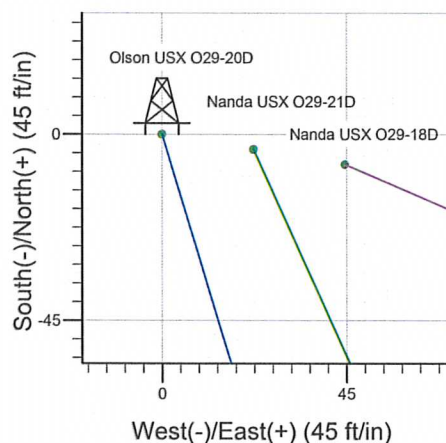
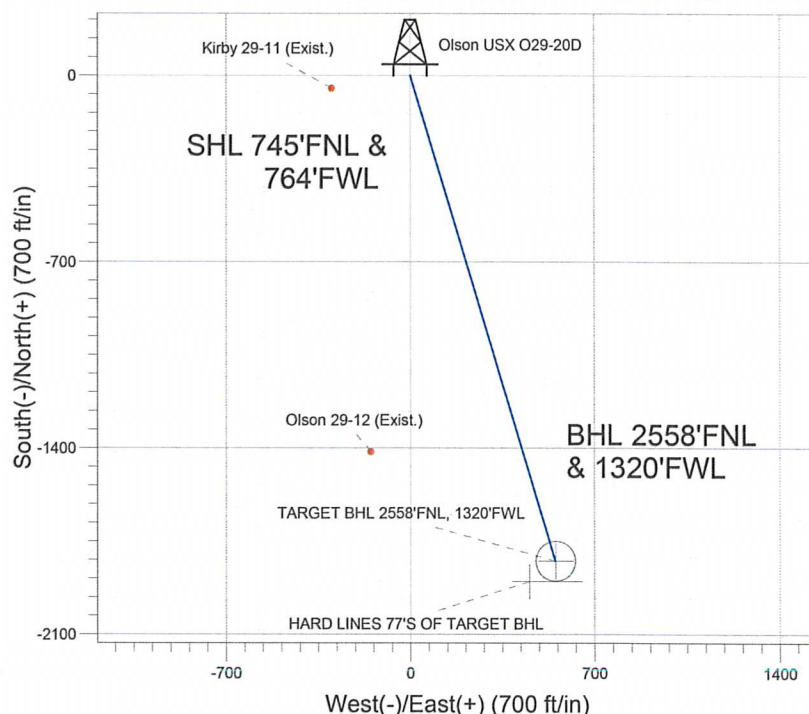
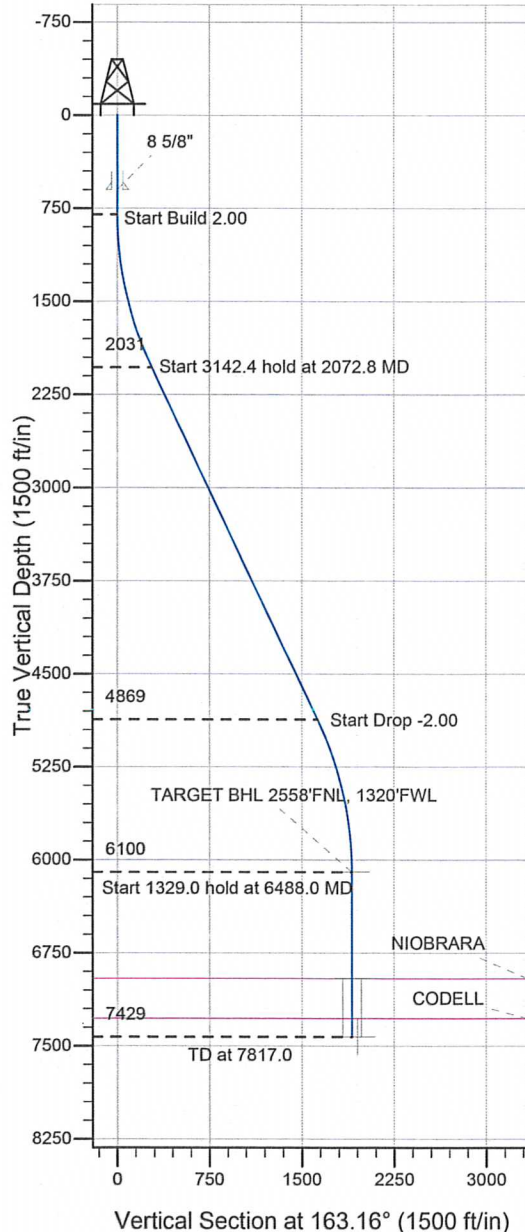


ENSIGN**Directional****Well Name: Olson USX O29-20D**

Surface Location: Nanda-Olson Pad Sec.29-T4N-R67W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4931.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1348790.89	3161709.27	40.289380	-104.920320	
Original Well Elev WELL @ 4944.0ft (Original Well Elev)						

NOBLE ENERGY INC WELD COUNTY CO

Nanda-Olson Pad Sec.29-T4N-R67W
 Olson USX O29-20D
 Noble Olson USX O29-20D Plan #1 (3-14-12)
 12:52, March 22 2012



Azimuths to True North
 Magnetic North: 8.84°
 Magnetic Field
 Strength: 53017.4snT
 Dip Angle: 66.91°
 Date: 3/14/2012
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 2558'FNL, 1320'FWL	6100.0	-1825.2	552.4	40.284370	-104.918340	Point
TARGET CIRCLE 2558'FNL & 1320'FWL	6958.0	-1825.2	552.4	40.284370	-104.918340	Circle (Radius: 75.0)
HARD LINES 77'S OF TARGET BHL	7429.0	-1902.2	452.4	40.284159	-104.918698	Polygon

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	2072.8	25.46	163.16	2031.3	-266.2	80.6	2.00	163.16	278.1	
4	5215.2	25.46	163.16	4868.7	-1559.0	471.8	0.00	0.00	1628.8	
5	6488.0	0.00	0.00	6100.0	-1825.2	552.4	2.00	180.00	1906.9	TARGET BHL 2558'FNL, 1320'FWL
6	7817.0	0.00	0.00	7429.0	-1825.2	552.4	0.00	0.00	1906.9	



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.29-T4N-R67W

Nanda-Olson Pad Sec.29-T4N-R67W

Olson USX O29-20D

Wellbore #1

Plan: Noble Olson USX O29-20D Plan #1 (3-14-12)

Standard Planning Report

22 March, 2012



Database: Landmark
Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.29-T4N-R67W
Site: Nanda-Olson Pad Sec.29-T4N-R67W
Well: Olson USX O29-20D
Wellbore: Wellbore #1
Design: Noble Olson USX O29-20D Plan #1 (3-14-12)

Local Co-ordinate Reference: Well Olson USX O29-20D
TVD Reference: WELL @ 4944.0ft (Original Well Elev)
MD Reference: WELL @ 4944.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Project	SEC.29-T4N-R67W		
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	Nanda-Olson Pad Sec.29-T4N-R67W				
Site Position:		Northing:	1,348,790.89 ft	Latitude:	40.289380
From:	Lat/Long	Easting:	3,161,709.17 ft	Longitude:	-104.920320
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.37 °

Well	Olson USX O29-20D					
Well Position	+N/-S	0.0 ft	Northing:	1,348,790.89 ft	Latitude:	40.289380
	+E/-W	0.1 ft	Easting:	3,161,709.27 ft	Longitude:	-104.920320
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,931.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/14/2012	8.84	66.91	53,017

Design Noble Olson USX O29-20D Plan #1 (3-14-12)

Audit Notes:

Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	163.16

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,072.8	25.46	163.16	2,031.3	-266.2	80.6	2.00	2.00	0.00	163.16	
5,215.2	25.46	163.16	4,868.7	-1,559.0	471.8	0.00	0.00	0.00	0.00	
6,488.0	0.00	0.00	6,100.0	-1,825.2	552.4	2.00	-2.00	0.00	180.00	TARGET BHL 255E
7,817.0	0.00	0.00	7,429.0	-1,825.2	552.4	0.00	0.00	0.00	0.00	

Database: Landmark
 Company: NOBLE ENERGY INC WELD COUNTY CO
 Project: SEC.29-T4N-R67W
 Site: Nanda-Olson Pad Sec.29-T4N-R67W
 Well: Olson USX O29-20D
 Wellbore: Olson USX O29-20D
 Design: Noble Olson USX O29-20D Plan #1 (3-14-12)

Local Co-ordinate Reference: Well Olson USX O29-20D
 TVD Reference: WELL @ 4944.0ft (Original Well Elev)
 MD Reference: WELL @ 4944.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned 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
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.80	163.16	840.0	-0.3	0.1	0.3	2.00	2.00	0.00
880.0	1.60	163.16	880.0	-1.1	0.3	1.1	2.00	2.00	0.00
920.0	2.40	163.16	920.0	-2.4	0.7	2.5	2.00	2.00	0.00
960.0	3.20	163.16	959.9	-4.3	1.3	4.5	2.00	2.00	0.00
1,000.0	4.00	163.16	999.8	-6.7	2.0	7.0	2.00	2.00	0.00
1,040.0	4.80	163.16	1,039.7	-9.6	2.9	10.0	2.00	2.00	0.00
1,080.0	5.60	163.16	1,079.6	-13.1	4.0	13.7	2.00	2.00	0.00
1,120.0	6.40	163.16	1,119.3	-17.1	5.2	17.9	2.00	2.00	0.00
1,160.0	7.20	163.16	1,159.1	-21.6	6.5	22.6	2.00	2.00	0.00
1,200.0	8.00	163.16	1,198.7	-26.7	8.1	27.9	2.00	2.00	0.00
1,240.0	8.80	163.16	1,238.3	-32.3	9.8	33.7	2.00	2.00	0.00
1,280.0	9.60	163.16	1,277.8	-38.4	11.6	40.1	2.00	2.00	0.00
1,320.0	10.40	163.16	1,317.1	-45.0	13.6	47.1	2.00	2.00	0.00
1,360.0	11.20	163.16	1,356.4	-52.2	15.8	54.6	2.00	2.00	0.00
1,400.0	12.00	163.16	1,395.6	-59.9	18.1	62.6	2.00	2.00	0.00
1,440.0	12.80	163.16	1,434.7	-68.1	20.6	71.2	2.00	2.00	0.00
1,480.0	13.60	163.16	1,473.6	-76.9	23.3	80.3	2.00	2.00	0.00
1,520.0	14.40	163.16	1,512.4	-86.1	26.1	90.0	2.00	2.00	0.00
1,560.0	15.20	163.16	1,551.1	-95.9	29.0	100.2	2.00	2.00	0.00
1,600.0	16.00	163.16	1,589.6	-106.2	32.1	111.0	2.00	2.00	0.00
1,640.0	16.80	163.16	1,628.0	-117.0	35.4	122.3	2.00	2.00	0.00
1,680.0	17.60	163.16	1,666.2	-128.3	38.8	134.1	2.00	2.00	0.00
1,720.0	18.40	163.16	1,704.3	-140.2	42.4	146.5	2.00	2.00	0.00
1,760.0	19.20	163.16	1,742.1	-152.5	46.2	159.3	2.00	2.00	0.00
1,800.0	20.00	163.16	1,779.8	-165.4	50.0	172.8	2.00	2.00	0.00
1,840.0	20.80	163.16	1,817.3	-178.7	54.1	186.7	2.00	2.00	0.00
1,880.0	21.60	163.16	1,854.6	-192.6	58.3	201.2	2.00	2.00	0.00
1,920.0	22.40	163.16	1,891.7	-206.9	62.6	216.2	2.00	2.00	0.00
1,960.0	23.20	163.16	1,928.6	-221.7	67.1	231.7	2.00	2.00	0.00
2,000.0	24.00	163.16	1,965.2	-237.1	71.7	247.7	2.00	2.00	0.00
2,040.0	24.80	163.16	2,001.6	-252.9	76.5	264.2	2.00	2.00	0.00
2,072.8	25.46	163.16	2,031.3	-266.2	80.6	278.1	2.00	2.00	0.00

Database: Landmark
Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.29-T4N-R67W
Site: Nanda-Olson Pad Sec.29-T4N-R67W
Well: Olson USX O29-20D
Wellbore: Wellbore #1
Design: Noble Olson USX O29-20D Plan #1 (3-14-12)

Local Co-ordinate Reference: Well Olson USX O29-20D
TVD Reference: WELL @ 4944.0ft (Original Well Elev)
MD Reference: WELL @ 4944.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned 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)
2,080.0	25.46	163.16	2,037.8	-269.2	81.5	281.2	0.00	0.00	0.00
2,120.0	25.46	163.16	2,074.0	-285.6	86.4	298.4	0.00	0.00	0.00
2,160.0	25.46	163.16	2,110.1	-302.1	91.4	315.6	0.00	0.00	0.00
2,200.0	25.46	163.16	2,146.2	-318.5	96.4	332.8	0.00	0.00	0.00
2,240.0	25.46	163.16	2,182.3	-335.0	101.4	350.0	0.00	0.00	0.00
2,280.0	25.46	163.16	2,218.4	-351.4	106.4	367.2	0.00	0.00	0.00
2,320.0	25.46	163.16	2,254.5	-367.9	111.3	384.4	0.00	0.00	0.00
2,360.0	25.46	163.16	2,290.7	-384.4	116.3	401.6	0.00	0.00	0.00
2,400.0	25.46	163.16	2,326.8	-400.8	121.3	418.8	0.00	0.00	0.00
2,440.0	25.46	163.16	2,362.9	-417.3	126.3	436.0	0.00	0.00	0.00
2,480.0	25.46	163.16	2,399.0	-433.7	131.3	453.1	0.00	0.00	0.00
2,520.0	25.46	163.16	2,435.1	-450.2	136.2	470.3	0.00	0.00	0.00
2,560.0	25.46	163.16	2,471.2	-466.6	141.2	487.5	0.00	0.00	0.00
2,600.0	25.46	163.16	2,507.4	-483.1	146.2	504.7	0.00	0.00	0.00
2,640.0	25.46	163.16	2,543.5	-499.5	151.2	521.9	0.00	0.00	0.00
2,680.0	25.46	163.16	2,579.6	-516.0	156.2	539.1	0.00	0.00	0.00
2,720.0	25.46	163.16	2,615.7	-532.5	161.1	556.3	0.00	0.00	0.00
2,760.0	25.46	163.16	2,651.8	-548.9	166.1	573.5	0.00	0.00	0.00
2,800.0	25.46	163.16	2,687.9	-565.4	171.1	590.7	0.00	0.00	0.00
2,840.0	25.46	163.16	2,724.1	-581.8	176.1	607.9	0.00	0.00	0.00
2,880.0	25.46	163.16	2,760.2	-598.3	181.1	625.1	0.00	0.00	0.00
2,920.0	25.46	163.16	2,796.3	-614.7	186.0	642.3	0.00	0.00	0.00
2,960.0	25.46	163.16	2,832.4	-631.2	191.0	659.5	0.00	0.00	0.00
3,000.0	25.46	163.16	2,868.5	-647.6	196.0	676.7	0.00	0.00	0.00
3,040.0	25.46	163.16	2,904.6	-664.1	201.0	693.8	0.00	0.00	0.00
3,080.0	25.46	163.16	2,940.8	-680.6	206.0	711.0	0.00	0.00	0.00
3,120.0	25.46	163.16	2,976.9	-697.0	210.9	728.2	0.00	0.00	0.00
3,160.0	25.46	163.16	3,013.0	-713.5	215.9	745.4	0.00	0.00	0.00
3,200.0	25.46	163.16	3,049.1	-729.9	220.9	762.6	0.00	0.00	0.00
3,240.0	25.46	163.16	3,085.2	-746.4	225.9	779.8	0.00	0.00	0.00
3,280.0	25.46	163.16	3,121.3	-762.8	230.9	797.0	0.00	0.00	0.00
3,320.0	25.46	163.16	3,157.5	-779.3	235.8	814.2	0.00	0.00	0.00
3,360.0	25.46	163.16	3,193.6	-795.7	240.8	831.4	0.00	0.00	0.00
3,400.0	25.46	163.16	3,229.7	-812.2	245.8	848.6	0.00	0.00	0.00
3,440.0	25.46	163.16	3,265.8	-828.7	250.8	865.8	0.00	0.00	0.00
3,480.0	25.46	163.16	3,301.9	-845.1	255.8	883.0	0.00	0.00	0.00
3,520.0	25.46	163.16	3,338.0	-861.6	260.7	900.2	0.00	0.00	0.00
3,560.0	25.46	163.16	3,374.2	-878.0	265.7	917.4	0.00	0.00	0.00
3,600.0	25.46	163.16	3,410.3	-894.5	270.7	934.5	0.00	0.00	0.00
3,640.0	25.46	163.16	3,446.4	-910.9	275.7	951.7	0.00	0.00	0.00
3,680.0	25.46	163.16	3,482.5	-927.4	280.7	968.9	0.00	0.00	0.00
3,720.0	25.46	163.16	3,518.6	-943.8	285.6	986.1	0.00	0.00	0.00
3,760.0	25.46	163.16	3,554.7	-960.3	290.6	1,003.3	0.00	0.00	0.00
3,800.0	25.46	163.16	3,590.9	-976.8	295.6	1,020.5	0.00	0.00	0.00
3,840.0	25.46	163.16	3,627.0	-993.2	300.6	1,037.7	0.00	0.00	0.00
3,880.0	25.46	163.16	3,663.1	-1,009.7	305.6	1,054.9	0.00	0.00	0.00
3,920.0	25.46	163.16	3,699.2	-1,026.1	310.5	1,072.1	0.00	0.00	0.00
3,960.0	25.46	163.16	3,735.3	-1,042.6	315.5	1,089.3	0.00	0.00	0.00
4,000.0	25.46	163.16	3,771.4	-1,059.0	320.5	1,106.5	0.00	0.00	0.00
4,040.0	25.46	163.16	3,807.6	-1,075.5	325.5	1,123.7	0.00	0.00	0.00
4,080.0	25.46	163.16	3,843.7	-1,091.9	330.5	1,140.9	0.00	0.00	0.00
4,120.0	25.46	163.16	3,879.8	-1,108.4	335.4	1,158.0	0.00	0.00	0.00
4,160.0	25.46	163.16	3,915.9	-1,124.9	340.4	1,175.2	0.00	0.00	0.00
4,200.0	25.46	163.16	3,952.0	-1,141.3	345.4	1,192.4	0.00	0.00	0.00

Database: Landmark
Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.29-T4N-R67W
Site: Nanda-Olson Pad Sec.29-T4N-R67W
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Design: Noble Olson USX O29-20D Plan #1 (3-14-12)

Local Co-ordinate Reference: Well Olson USX O29-20D
TVD Reference: WELL @ 4944.0ft (Original Well Elev)
MD Reference: WELL @ 4944.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned 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)
4,240.0	25.46	163.16	3,988.1	-1,157.8	350.4	1,209.6	0.00	0.00	0.00
4,280.0	25.46	163.16	4,024.3	-1,174.2	355.4	1,226.8	0.00	0.00	0.00
4,320.0	25.46	163.16	4,060.4	-1,190.7	360.3	1,244.0	0.00	0.00	0.00
4,360.0	25.46	163.16	4,096.5	-1,207.1	365.3	1,261.2	0.00	0.00	0.00
4,400.0	25.46	163.16	4,132.6	-1,223.6	370.3	1,278.4	0.00	0.00	0.00
4,440.0	25.46	163.16	4,168.7	-1,240.0	375.3	1,295.6	0.00	0.00	0.00
4,480.0	25.46	163.16	4,204.8	-1,256.5	380.3	1,312.8	0.00	0.00	0.00
4,520.0	25.46	163.16	4,241.0	-1,273.0	385.2	1,330.0	0.00	0.00	0.00
4,560.0	25.46	163.16	4,277.1	-1,289.4	390.2	1,347.2	0.00	0.00	0.00
4,600.0	25.46	163.16	4,313.2	-1,305.9	395.2	1,364.4	0.00	0.00	0.00
4,640.0	25.46	163.16	4,349.3	-1,322.3	400.2	1,381.6	0.00	0.00	0.00
4,680.0	25.46	163.16	4,385.4	-1,338.8	405.2	1,398.7	0.00	0.00	0.00
4,720.0	25.46	163.16	4,421.5	-1,355.2	410.1	1,415.9	0.00	0.00	0.00
4,760.0	25.46	163.16	4,457.7	-1,371.7	415.1	1,433.1	0.00	0.00	0.00
4,800.0	25.46	163.16	4,493.8	-1,388.1	420.1	1,450.3	0.00	0.00	0.00
4,840.0	25.46	163.16	4,529.9	-1,404.6	425.1	1,467.5	0.00	0.00	0.00
4,880.0	25.46	163.16	4,566.0	-1,421.1	430.1	1,484.7	0.00	0.00	0.00
4,920.0	25.46	163.16	4,602.1	-1,437.5	435.0	1,501.9	0.00	0.00	0.00
4,960.0	25.46	163.16	4,638.2	-1,454.0	440.0	1,519.1	0.00	0.00	0.00
5,000.0	25.46	163.16	4,674.4	-1,470.4	445.0	1,536.3	0.00	0.00	0.00
5,040.0	25.46	163.16	4,710.5	-1,486.9	450.0	1,553.5	0.00	0.00	0.00
5,080.0	25.46	163.16	4,746.6	-1,503.3	455.0	1,570.7	0.00	0.00	0.00
5,120.0	25.46	163.16	4,782.7	-1,519.8	459.9	1,587.9	0.00	0.00	0.00
5,160.0	25.46	163.16	4,818.8	-1,536.2	464.9	1,605.1	0.00	0.00	0.00
5,200.0	25.46	163.16	4,854.9	-1,552.7	469.9	1,622.3	0.00	0.00	0.00
5,215.2	25.46	163.16	4,868.7	-1,559.0	471.8	1,628.8	0.00	0.00	0.00
5,240.0	24.96	163.16	4,891.1	-1,569.1	474.9	1,639.3	2.00	-2.00	0.00
5,280.0	24.16	163.16	4,927.5	-1,585.0	479.7	1,656.0	2.00	-2.00	0.00
5,320.0	23.36	163.16	4,964.1	-1,600.4	484.3	1,672.1	2.00	-2.00	0.00
5,360.0	22.56	163.16	5,000.9	-1,615.3	488.9	1,687.7	2.00	-2.00	0.00
5,400.0	21.76	163.16	5,038.0	-1,629.8	493.2	1,702.8	2.00	-2.00	0.00
5,440.0	20.96	163.16	5,075.2	-1,643.7	497.5	1,717.3	2.00	-2.00	0.00
5,480.0	20.16	163.16	5,112.7	-1,657.2	501.5	1,731.4	2.00	-2.00	0.00
5,520.0	19.36	163.16	5,150.3	-1,670.1	505.4	1,744.9	2.00	-2.00	0.00
5,560.0	18.56	163.16	5,188.1	-1,682.6	509.2	1,757.9	2.00	-2.00	0.00
5,600.0	17.76	163.16	5,226.1	-1,694.5	512.8	1,770.4	2.00	-2.00	0.00
5,640.0	16.96	163.16	5,264.3	-1,705.9	516.3	1,782.3	2.00	-2.00	0.00
5,680.0	16.16	163.16	5,302.7	-1,716.8	519.6	1,793.7	2.00	-2.00	0.00
5,720.0	15.36	163.16	5,341.2	-1,727.2	522.7	1,804.6	2.00	-2.00	0.00
5,760.0	14.56	163.16	5,379.8	-1,737.1	525.7	1,814.9	2.00	-2.00	0.00
5,800.0	13.76	163.16	5,418.6	-1,746.5	528.5	1,824.7	2.00	-2.00	0.00
5,840.0	12.96	163.16	5,457.5	-1,755.3	531.2	1,833.9	2.00	-2.00	0.00
5,880.0	12.16	163.16	5,496.6	-1,763.6	533.7	1,842.6	2.00	-2.00	0.00
5,920.0	11.36	163.16	5,535.7	-1,771.4	536.1	1,850.8	2.00	-2.00	0.00
5,960.0	10.56	163.16	5,575.0	-1,778.7	538.3	1,858.4	2.00	-2.00	0.00
6,000.0	9.76	163.16	5,614.4	-1,785.5	540.4	1,865.4	2.00	-2.00	0.00
6,040.0	8.96	163.16	5,653.8	-1,791.7	542.2	1,872.0	2.00	-2.00	0.00
6,080.0	8.16	163.16	5,693.4	-1,797.4	544.0	1,877.9	2.00	-2.00	0.00
6,120.0	7.36	163.16	5,733.0	-1,802.6	545.5	1,883.3	2.00	-2.00	0.00
6,160.0	6.56	163.16	5,772.7	-1,807.2	546.9	1,888.2	2.00	-2.00	0.00
6,200.0	5.76	163.16	5,812.5	-1,811.3	548.2	1,892.4	2.00	-2.00	0.00
6,240.0	4.96	163.16	5,852.3	-1,814.9	549.3	1,896.2	2.00	-2.00	0.00
6,280.0	4.16	163.16	5,892.2	-1,817.9	550.2	1,899.4	2.00	-2.00	0.00
6,320.0	3.36	163.16	5,932.1	-1,820.4	550.9	1,902.0	2.00	-2.00	0.00

Database: Landmark
Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.29-T4N-R67W
Site: Nanda-Olson Pad Sec.29-T4N-R67W
Well: Olson USX O29-20D
Wellbore: Wellbore #1
Design: Noble Olson USX O29-20D Plan #1 (3-14-12)

Local Co-ordinate Reference: Well Olson USX O29-20D
TVD Reference: WELL @ 4944.0ft (Original Well Elev)
MD Reference: WELL @ 4944.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned 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)
6,360.0	2.56	163.16	5,972.0	-1,822.4	551.5	1,904.1	2.00	-2.00	0.00
6,400.0	1.76	163.16	6,012.0	-1,823.9	552.0	1,905.6	2.00	-2.00	0.00
6,440.0	0.96	163.16	6,052.0	-1,824.8	552.2	1,906.5	2.00	-2.00	0.00
6,480.0	0.16	163.16	6,092.0	-1,825.1	552.4	1,906.9	2.00	-2.00	0.00
6,488.0	0.00	0.00	6,100.0	-1,825.2	552.4	1,906.9	2.00	-2.00	-2,038.71
TARGET BHL 2558'FNL, 1320'FWL									
6,520.0	0.00	0.00	6,132.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,560.0	0.00	0.00	6,172.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,212.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,640.0	0.00	0.00	6,252.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,680.0	0.00	0.00	6,292.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,720.0	0.00	0.00	6,332.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,760.0	0.00	0.00	6,372.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,412.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,840.0	0.00	0.00	6,452.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,880.0	0.00	0.00	6,492.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,920.0	0.00	0.00	6,532.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
6,960.0	0.00	0.00	6,572.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,612.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,040.0	0.00	0.00	6,652.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,080.0	0.00	0.00	6,692.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,120.0	0.00	0.00	6,732.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,160.0	0.00	0.00	6,772.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,200.0	0.00	0.00	6,812.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,240.0	0.00	0.00	6,852.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,280.0	0.00	0.00	6,892.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,320.0	0.00	0.00	6,932.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,346.0	0.00	0.00	6,958.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 2558'FNL & 1320'FWL									
7,360.0	0.00	0.00	6,972.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,400.0	0.00	0.00	7,012.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,440.0	0.00	0.00	7,052.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,480.0	0.00	0.00	7,092.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,520.0	0.00	0.00	7,132.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,560.0	0.00	0.00	7,172.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,212.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,640.0	0.00	0.00	7,252.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,667.0	0.00	0.00	7,279.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
CODELL									
7,680.0	0.00	0.00	7,292.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,720.0	0.00	0.00	7,332.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,760.0	0.00	0.00	7,372.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,412.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
7,817.0	0.00	0.00	7,429.0	-1,825.2	552.4	1,906.9	0.00	0.00	0.00
HARD LINES 77'S OF TARGET BHL									

Database: Landmark
Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.29-T4N-R67W
Site: Nanda-Olson Pad Sec.29-T4N-R67W
Well: Olson USX O29-20D
Wellbore: Wellbore #1
Design: Noble Olson USX O29-20D Plan #1 (3-14-12)

Local Co-ordinate Reference: Well Olson USX O29-20D
TVD Reference: WELL @ 4944.0ft (Original Well Elev)
MD Reference: WELL @ 4944.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

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 2558'F - plan hits target center - Point	0.00	0.00	6,100.0	-1,825.2	552.4	1,346,969.46	3,162,273.53	40.284370	-104.918340
HARD LINES 77'S OF - plan misses target center by 126.2ft at 7817.0ft MD (7429.0 TVD, -1825.2 N, 552.4 E) - Polygon	0.00	0.00	7,429.0	-1,902.2	452.4	1,346,891.77	3,162,174.04	40.284159	-104.918698
Point 1			7,429.0	0.0	0.0	1,346,891.77	3,162,174.04		
Point 2			7,429.0	0.0	200.0	1,346,893.07	3,162,374.03		
TARGET CIRCLE 2558'F - plan hits target center - Circle (radius 75.0)	0.00	0.00	6,958.0	-1,825.2	552.4	1,346,969.46	3,162,273.53	40.284370	-104.918340

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
600.0	600.0	8 5/8"	8-5/8	12-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,346.0	6,958.0	NIOBRARA		0.00	
7,667.0	7,279.0	CODELL		0.00	