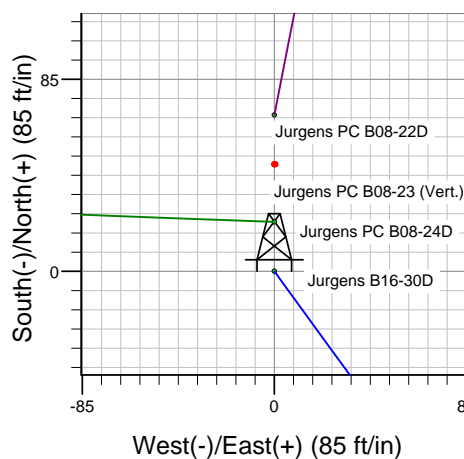
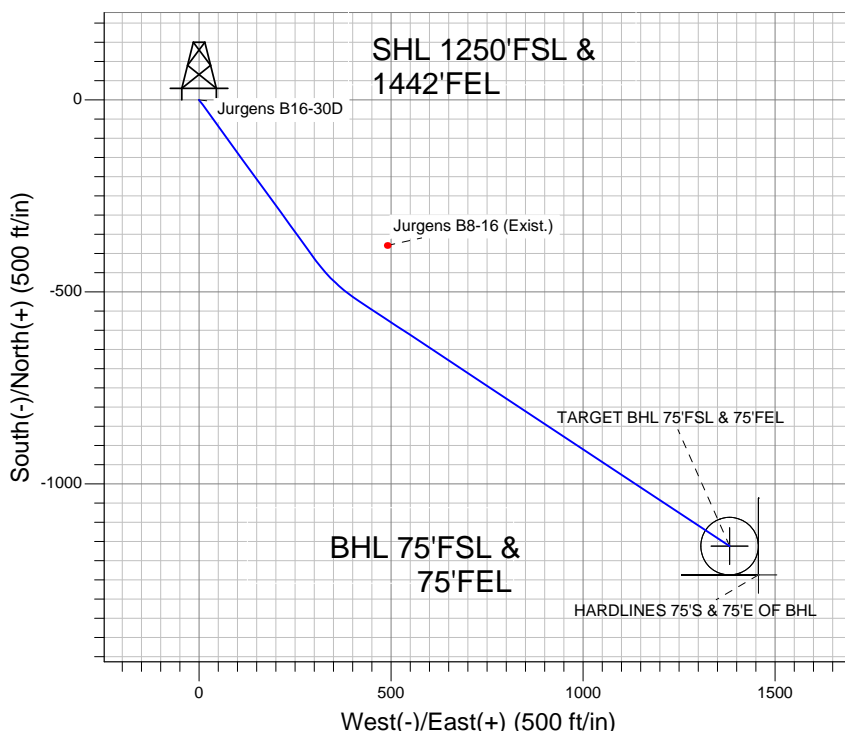
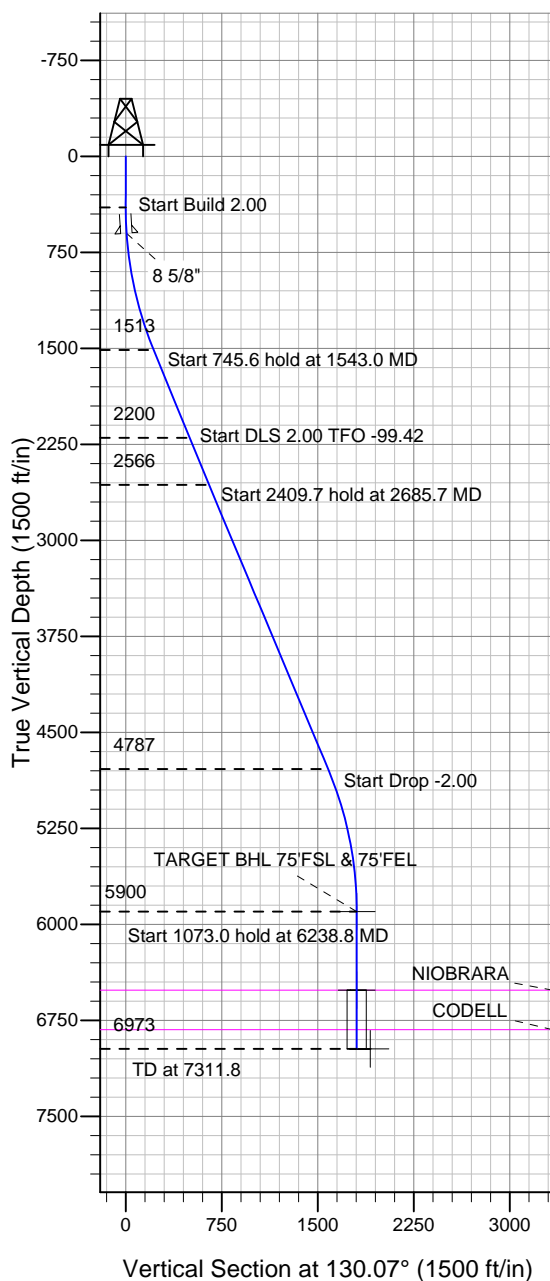


Well Name: Jurgens B16-30D

Surface Location: Jurgens PC B08-22D Pad Sec.8-T5N-R64W
 North American Datum 1983, US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4590.0
 +N/-S 0.0 +E/-W 0.0 Northing 1393544.01 Easting 3259052.62 Latitude 40.409950 Longitude -104.569710 Slot
 Original Well EleWELL @ 4603.0ft (Original Well Elev)

NOBLE ENERGY INC WELD COUNTY CO



Jurgens PC B08-22D Pad Sec.8-T5N-R64W
 Jurgens B16-30D
 Noble Jurgens B16-30D Plan #1 (9-15-11)
 10:25, September 16 2011



Azimuths to True North
 Magnetic North: 8.73°
 Magnetic Field
 Strength: 53132.9snT
 Dip Angle: 67.08°
 Date: 9/15/2011
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 75'FSL & 75'FEL	5900.0	-1162.1	1381.3	40.406760	-104.564750	Point
TARGET CIRCLE 75'FSL & 75'FEL	6513.0	-1162.1	1381.3	40.406760	-104.564750	Circle (Radius: 75.0)
HARDLINES 75'S & 75'E OF BHL	6973.0	-1237.1	1456.3	40.406554	-104.564481	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	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	1543.0	22.86	144.00	1512.9	-182.0	132.3	2.00	144.00	218.4	
4	2288.7	22.86	144.00	2200.0	-416.4	302.5	0.00	0.00	499.6	
5	2685.7	22.87	123.47	2566.4	-521.5	412.4	2.00	-99.42	651.3	
6	5095.4	22.87	123.47	4786.7	-1037.9	1193.5	0.00	0.00	1581.5	
7	6238.8	0.00	0.00	5900.0	-1162.1	1381.3	2.00	180.00	1805.1	TARGET BHL 75'FSL & 75'FEL
8	7311.8	0.00	0.00	6973.0	-1162.1	1381.3	0.00	0.00	1805.1	



Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.8-T5N-R64W

Jurgens PC B08-22D Pad Sec.8-T5N-R64W

Jurgens B16-30D

Wellbore #1

Plan: Noble Jurgens B16-30D Plan #1 (9-15-11)

Standard Planning Report

16 September, 2011



Database:	Landmark	Local Co-ordinate Reference:	Well Jurgens B16-30D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4603.0ft (Original Well Elev)
Project:	SEC.8-T5N-R64W	MD Reference:	WELL @ 4603.0ft (Original Well Elev)
Site:	Jurgens PC B08-22D Pad Sec.8-T5N-R64W	North Reference:	True
Well:	Jurgens B16-30D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Jurgens B16-30D Plan #1 (9-15-11)		

Project	SEC.8-T5N-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						Jurgens PC B08-22D Pad Sec.8-T5N-R64W											
Site Position:						Northing:			1,393,613.24 ft			Latitude:			40.410140		
From:			Lat/Long			Easting:			3,259,051.89 ft			Longitude:			-104.569710		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.60 °		

Well	Jurgens B16-30D					
Well Position	+N-S	-69.2 ft	Northing:	1,393,544.01 ft	Latitude:	40.409950
	+E-W	0.0 ft	Easting:	3,259,052.62 ft	Longitude:	-104.569710
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,590.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/15/2011	8.73	67.08	53,133

Design	Noble Jurgens B16-30D Plan #1 (9-15-11)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	130.07

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,543.0	22.86	144.00	1,512.9	-182.0	132.3	2.00	2.00	0.00	144.00	
2,288.7	22.86	144.00	2,200.0	-416.4	302.5	0.00	0.00	0.00	0.00	
2,685.7	22.87	123.47	2,566.4	-521.5	412.4	2.00	0.00	-5.17	-99.42	
5,095.4	22.87	123.47	4,786.7	-1,037.9	1,193.5	0.00	0.00	0.00	0.00	
6,238.8	0.00	0.00	5,900.0	-1,162.1	1,381.3	2.00	-2.00	0.00	180.00	TARGET BHL 75'F!
7,311.8	0.00	0.00	6,973.0	-1,162.1	1,381.3	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Jurgens B16-30D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4603.0ft (Original Well Elev)
Project:	SEC.8-T5N-R64W	MD Reference:	WELL @ 4603.0ft (Original Well Elev)
Site:	Jurgens PC B08-22D Pad Sec.8-T5N-R64W	North Reference:	True
Well:	Jurgens B16-30D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Jurgens B16-30D Plan #1 (9-15-11)		

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	0.80	144.00	440.0	-0.2	0.2	0.3	2.00	2.00	0.00
480.0	1.60	144.00	480.0	-0.9	0.7	1.1	2.00	2.00	0.00
520.0	2.40	144.00	520.0	-2.0	1.5	2.4	2.00	2.00	0.00
560.0	3.20	144.00	559.9	-3.6	2.6	4.3	2.00	2.00	0.00
600.0	4.00	144.00	599.8	-5.6	4.1	6.8	2.00	2.00	0.00
600.2	4.00	144.00	600.0	-5.7	4.1	6.8	0.00	0.00	0.00
8 5/8"									
640.0	4.80	144.00	639.7	-8.1	5.9	9.8	2.01	2.01	0.00
680.0	5.60	144.00	679.6	-11.1	8.0	13.3	2.00	2.00	0.00
720.0	6.40	144.00	719.3	-14.4	10.5	17.3	2.00	2.00	0.00
760.0	7.20	144.00	759.1	-18.3	13.3	21.9	2.00	2.00	0.00
800.0	8.00	144.00	798.7	-22.6	16.4	27.1	2.00	2.00	0.00
840.0	8.80	144.00	838.3	-27.3	19.8	32.7	2.00	2.00	0.00
880.0	9.60	144.00	877.8	-32.5	23.6	38.9	2.00	2.00	0.00
920.0	10.40	144.00	917.1	-38.1	27.7	45.7	2.00	2.00	0.00
960.0	11.20	144.00	956.4	-44.1	32.1	53.0	2.00	2.00	0.00
1,000.0	12.00	144.00	995.6	-50.6	36.8	60.8	2.00	2.00	0.00
1,040.0	12.80	144.00	1,034.7	-57.6	41.8	69.1	2.00	2.00	0.00
1,080.0	13.60	144.00	1,073.6	-65.0	47.2	78.0	2.00	2.00	0.00
1,120.0	14.40	144.00	1,112.4	-72.8	52.9	87.4	2.00	2.00	0.00
1,160.0	15.20	144.00	1,151.1	-81.1	58.9	97.3	2.00	2.00	0.00
1,200.0	16.00	144.00	1,189.6	-89.8	65.2	107.7	2.00	2.00	0.00
1,240.0	16.80	144.00	1,228.0	-98.9	71.9	118.7	2.00	2.00	0.00
1,280.0	17.60	144.00	1,266.2	-108.5	78.8	130.2	2.00	2.00	0.00
1,320.0	18.40	144.00	1,304.3	-118.5	86.1	142.2	2.00	2.00	0.00
1,360.0	19.20	144.00	1,342.1	-128.9	93.7	154.7	2.00	2.00	0.00
1,400.0	20.00	144.00	1,379.8	-139.8	101.6	167.7	2.00	2.00	0.00
1,440.0	20.80	144.00	1,417.3	-151.1	109.7	181.2	2.00	2.00	0.00
1,480.0	21.60	144.00	1,454.6	-162.8	118.2	195.3	2.00	2.00	0.00
1,520.0	22.40	144.00	1,491.7	-174.9	127.1	209.8	2.00	2.00	0.00
1,543.0	22.86	144.00	1,512.9	-182.0	132.3	218.4	2.00	2.00	0.00
1,560.0	22.86	144.00	1,528.6	-187.4	136.1	224.8	0.00	0.00	0.00
1,600.0	22.86	144.00	1,565.4	-200.0	145.3	239.9	0.00	0.00	0.00
1,640.0	22.86	144.00	1,602.3	-212.5	154.4	255.0	0.00	0.00	0.00
1,680.0	22.86	144.00	1,639.2	-225.1	163.5	270.1	0.00	0.00	0.00
1,720.0	22.86	144.00	1,676.0	-237.7	172.7	285.1	0.00	0.00	0.00
1,760.0	22.86	144.00	1,712.9	-250.2	181.8	300.2	0.00	0.00	0.00
1,800.0	22.86	144.00	1,749.7	-262.8	190.9	315.3	0.00	0.00	0.00
1,840.0	22.86	144.00	1,786.6	-275.4	200.1	330.4	0.00	0.00	0.00
1,880.0	22.86	144.00	1,823.4	-288.0	209.2	345.5	0.00	0.00	0.00
1,920.0	22.86	144.00	1,860.3	-300.5	218.3	360.5	0.00	0.00	0.00
1,960.0	22.86	144.00	1,897.2	-313.1	227.5	375.6	0.00	0.00	0.00
2,000.0	22.86	144.00	1,934.0	-325.7	236.6	390.7	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Jurgens B16-30D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4603.0ft (Original Well Elev)
Project:	SEC.8-T5N-R64W	MD Reference:	WELL @ 4603.0ft (Original Well Elev)
Site:	Jurgens PC B08-22D Pad Sec.8-T5N-R64W	North Reference:	True
Well:	Jurgens B16-30D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Jurgens B16-30D Plan #1 (9-15-11)		

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)
2,040.0	22.86	144.00	1,970.9	-338.2	245.7	405.8	0.00	0.00	0.00
2,080.0	22.86	144.00	2,007.7	-350.8	254.9	420.9	0.00	0.00	0.00
2,120.0	22.86	144.00	2,044.6	-363.4	264.0	436.0	0.00	0.00	0.00
2,160.0	22.86	144.00	2,081.5	-376.0	273.1	451.0	0.00	0.00	0.00
2,200.0	22.86	144.00	2,118.3	-388.5	282.3	466.1	0.00	0.00	0.00
2,240.0	22.86	144.00	2,155.2	-401.1	291.4	481.2	0.00	0.00	0.00
2,280.0	22.86	144.00	2,192.0	-413.7	300.5	496.3	0.00	0.00	0.00
2,288.7	22.86	144.00	2,200.0	-416.4	302.5	499.6	0.00	0.00	0.00
2,320.0	22.77	142.40	2,228.9	-426.1	309.8	511.4	2.00	-0.30	-5.10
2,360.0	22.67	140.35	2,265.8	-438.2	319.4	526.5	2.00	-0.24	-5.14
2,400.0	22.60	138.27	2,302.7	-449.9	329.5	541.7	2.00	-0.18	-5.18
2,440.0	22.55	136.19	2,339.7	-461.1	339.9	557.0	2.00	-0.11	-5.20
2,480.0	22.54	134.11	2,376.6	-472.0	350.7	572.2	2.00	-0.04	-5.22
2,520.0	22.54	132.02	2,413.5	-482.5	361.9	587.5	2.00	0.02	-5.22
2,560.0	22.58	129.94	2,450.5	-492.5	373.5	602.9	2.00	0.09	-5.21
2,600.0	22.64	127.86	2,487.4	-502.2	385.5	618.3	2.00	0.16	-5.19
2,640.0	22.73	125.80	2,524.3	-511.4	397.8	633.7	2.00	0.22	-5.15
2,680.0	22.85	123.76	2,561.2	-520.3	410.5	649.1	2.00	0.29	-5.11
2,685.7	22.87	123.47	2,566.4	-521.5	412.4	651.3	2.00	0.33	-5.08
2,720.0	22.87	123.47	2,598.0	-528.8	423.5	664.5	0.00	0.00	0.00
2,760.0	22.87	123.47	2,634.9	-537.4	436.5	680.0	0.00	0.00	0.00
2,800.0	22.87	123.47	2,671.8	-546.0	449.4	695.4	0.00	0.00	0.00
2,840.0	22.87	123.47	2,708.6	-554.6	462.4	710.9	0.00	0.00	0.00
2,880.0	22.87	123.47	2,745.5	-563.1	475.4	726.3	0.00	0.00	0.00
2,920.0	22.87	123.47	2,782.3	-571.7	488.3	741.7	0.00	0.00	0.00
2,960.0	22.87	123.47	2,819.2	-580.3	501.3	757.2	0.00	0.00	0.00
3,000.0	22.87	123.47	2,856.0	-588.9	514.3	772.6	0.00	0.00	0.00
3,040.0	22.87	123.47	2,892.9	-597.4	527.2	788.1	0.00	0.00	0.00
3,080.0	22.87	123.47	2,929.8	-606.0	540.2	803.5	0.00	0.00	0.00
3,120.0	22.87	123.47	2,966.6	-614.6	553.2	818.9	0.00	0.00	0.00
3,160.0	22.87	123.47	3,003.5	-623.1	566.1	834.4	0.00	0.00	0.00
3,200.0	22.87	123.47	3,040.3	-631.7	579.1	849.8	0.00	0.00	0.00
3,240.0	22.87	123.47	3,077.2	-640.3	592.1	865.3	0.00	0.00	0.00
3,280.0	22.87	123.47	3,114.0	-648.9	605.0	880.7	0.00	0.00	0.00
3,320.0	22.87	123.47	3,150.9	-657.4	618.0	896.1	0.00	0.00	0.00
3,360.0	22.87	123.47	3,187.7	-666.0	631.0	911.6	0.00	0.00	0.00
3,400.0	22.87	123.47	3,224.6	-674.6	643.9	927.0	0.00	0.00	0.00
3,440.0	22.87	123.47	3,261.5	-683.2	656.9	942.5	0.00	0.00	0.00
3,480.0	22.87	123.47	3,298.3	-691.7	669.9	957.9	0.00	0.00	0.00
3,520.0	22.87	123.47	3,335.2	-700.3	682.8	973.3	0.00	0.00	0.00
3,560.0	22.87	123.47	3,372.0	-708.9	695.8	988.8	0.00	0.00	0.00
3,600.0	22.87	123.47	3,408.9	-717.4	708.8	1,004.2	0.00	0.00	0.00
3,640.0	22.87	123.47	3,445.7	-726.0	721.7	1,019.7	0.00	0.00	0.00
3,680.0	22.87	123.47	3,482.6	-734.6	734.7	1,035.1	0.00	0.00	0.00
3,720.0	22.87	123.47	3,519.4	-743.2	747.7	1,050.6	0.00	0.00	0.00
3,760.0	22.87	123.47	3,556.3	-751.7	760.6	1,066.0	0.00	0.00	0.00
3,800.0	22.87	123.47	3,593.2	-760.3	773.6	1,081.4	0.00	0.00	0.00
3,840.0	22.87	123.47	3,630.0	-768.9	786.6	1,096.9	0.00	0.00	0.00
3,880.0	22.87	123.47	3,666.9	-777.5	799.5	1,112.3	0.00	0.00	0.00
3,920.0	22.87	123.47	3,703.7	-786.0	812.5	1,127.8	0.00	0.00	0.00
3,960.0	22.87	123.47	3,740.6	-794.6	825.5	1,143.2	0.00	0.00	0.00
4,000.0	22.87	123.47	3,777.4	-803.2	838.4	1,158.6	0.00	0.00	0.00
4,040.0	22.87	123.47	3,814.3	-811.7	851.4	1,174.1	0.00	0.00	0.00
4,080.0	22.87	123.47	3,851.2	-820.3	864.4	1,189.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Jurgens B16-30D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4603.0ft (Original Well Elev)
Project:	SEC.8-T5N-R64W	MD Reference:	WELL @ 4603.0ft (Original Well Elev)
Site:	Jurgens PC B08-22D Pad Sec.8-T5N-R64W	North Reference:	True
Well:	Jurgens B16-30D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Jurgens B16-30D Plan #1 (9-15-11)		

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)
4,120.0	22.87	123.47	3,888.0	-828.9	877.3	1,205.0	0.00	0.00	0.00
4,160.0	22.87	123.47	3,924.9	-837.5	890.3	1,220.4	0.00	0.00	0.00
4,200.0	22.87	123.47	3,961.7	-846.0	903.3	1,235.8	0.00	0.00	0.00
4,240.0	22.87	123.47	3,998.6	-854.6	916.2	1,251.3	0.00	0.00	0.00
4,280.0	22.87	123.47	4,035.4	-863.2	929.2	1,266.7	0.00	0.00	0.00
4,320.0	22.87	123.47	4,072.3	-871.8	942.2	1,282.2	0.00	0.00	0.00
4,360.0	22.87	123.47	4,109.1	-880.3	955.1	1,297.6	0.00	0.00	0.00
4,400.0	22.87	123.47	4,146.0	-888.9	968.1	1,313.1	0.00	0.00	0.00
4,440.0	22.87	123.47	4,182.9	-897.5	981.1	1,328.5	0.00	0.00	0.00
4,480.0	22.87	123.47	4,219.7	-906.0	994.0	1,343.9	0.00	0.00	0.00
4,520.0	22.87	123.47	4,256.6	-914.6	1,007.0	1,359.4	0.00	0.00	0.00
4,560.0	22.87	123.47	4,293.4	-923.2	1,020.0	1,374.8	0.00	0.00	0.00
4,600.0	22.87	123.47	4,330.3	-931.8	1,032.9	1,390.3	0.00	0.00	0.00
4,640.0	22.87	123.47	4,367.1	-940.3	1,045.9	1,405.7	0.00	0.00	0.00
4,680.0	22.87	123.47	4,404.0	-948.9	1,058.9	1,421.1	0.00	0.00	0.00
4,720.0	22.87	123.47	4,440.9	-957.5	1,071.8	1,436.6	0.00	0.00	0.00
4,760.0	22.87	123.47	4,477.7	-966.1	1,084.8	1,452.0	0.00	0.00	0.00
4,800.0	22.87	123.47	4,514.6	-974.6	1,097.8	1,467.5	0.00	0.00	0.00
4,840.0	22.87	123.47	4,551.4	-983.2	1,110.7	1,482.9	0.00	0.00	0.00
4,880.0	22.87	123.47	4,588.3	-991.8	1,123.7	1,498.3	0.00	0.00	0.00
4,920.0	22.87	123.47	4,625.1	-1,000.3	1,136.7	1,513.8	0.00	0.00	0.00
4,960.0	22.87	123.47	4,662.0	-1,008.9	1,149.6	1,529.2	0.00	0.00	0.00
5,000.0	22.87	123.47	4,698.8	-1,017.5	1,162.6	1,544.7	0.00	0.00	0.00
5,040.0	22.87	123.47	4,735.7	-1,026.1	1,175.6	1,560.1	0.00	0.00	0.00
5,080.0	22.87	123.47	4,772.6	-1,034.6	1,188.5	1,575.5	0.00	0.00	0.00
5,095.4	22.87	123.47	4,786.7	-1,037.9	1,193.5	1,581.5	0.00	0.00	0.00
5,120.0	22.38	123.47	4,809.5	-1,043.2	1,201.4	1,590.9	2.00	-2.00	0.00
5,160.0	21.58	123.47	4,846.6	-1,051.4	1,213.9	1,605.8	2.00	-2.00	0.00
5,200.0	20.78	123.47	4,883.8	-1,059.4	1,225.9	1,620.1	2.00	-2.00	0.00
5,240.0	19.98	123.47	4,921.3	-1,067.1	1,237.6	1,633.9	2.00	-2.00	0.00
5,280.0	19.18	123.47	4,959.0	-1,074.4	1,248.7	1,647.3	2.00	-2.00	0.00
5,320.0	18.38	123.47	4,996.9	-1,081.5	1,259.5	1,660.0	2.00	-2.00	0.00
5,360.0	17.58	123.47	5,035.0	-1,088.4	1,269.8	1,672.3	2.00	-2.00	0.00
5,400.0	16.78	123.47	5,073.2	-1,094.9	1,279.6	1,684.0	2.00	-2.00	0.00
5,440.0	15.98	123.47	5,111.5	-1,101.1	1,289.0	1,695.2	2.00	-2.00	0.00
5,480.0	15.18	123.47	5,150.1	-1,107.0	1,298.0	1,705.9	2.00	-2.00	0.00
5,520.0	14.38	123.47	5,188.8	-1,112.6	1,306.5	1,716.0	2.00	-2.00	0.00
5,560.0	13.58	123.47	5,227.6	-1,118.0	1,314.6	1,725.6	2.00	-2.00	0.00
5,600.0	12.78	123.47	5,266.5	-1,123.0	1,322.2	1,734.7	2.00	-2.00	0.00
5,640.0	11.98	123.47	5,305.6	-1,127.7	1,329.3	1,743.2	2.00	-2.00	0.00
5,680.0	11.18	123.47	5,344.8	-1,132.1	1,336.0	1,751.2	2.00	-2.00	0.00
5,720.0	10.38	123.47	5,384.1	-1,136.3	1,342.3	1,758.6	2.00	-2.00	0.00
5,760.0	9.58	123.47	5,423.5	-1,140.1	1,348.0	1,765.5	2.00	-2.00	0.00
5,800.0	8.78	123.47	5,463.0	-1,143.6	1,353.4	1,771.8	2.00	-2.00	0.00
5,840.0	7.98	123.47	5,502.5	-1,146.8	1,358.2	1,777.6	2.00	-2.00	0.00
5,880.0	7.18	123.47	5,542.2	-1,149.7	1,362.6	1,782.9	2.00	-2.00	0.00
5,920.0	6.38	123.47	5,581.9	-1,152.3	1,366.6	1,787.6	2.00	-2.00	0.00
5,960.0	5.58	123.47	5,621.7	-1,154.6	1,370.0	1,791.7	2.00	-2.00	0.00
6,000.0	4.78	123.47	5,661.5	-1,156.6	1,373.0	1,795.3	2.00	-2.00	0.00
6,040.0	3.98	123.47	5,701.4	-1,158.3	1,375.6	1,798.3	2.00	-2.00	0.00
6,080.0	3.18	123.47	5,741.3	-1,159.7	1,377.7	1,800.8	2.00	-2.00	0.00
6,120.0	2.38	123.47	5,781.3	-1,160.7	1,379.3	1,802.7	2.00	-2.00	0.00
6,160.0	1.58	123.47	5,821.2	-1,161.5	1,380.4	1,804.1	2.00	-2.00	0.00
6,200.0	0.78	123.47	5,861.2	-1,162.0	1,381.1	1,804.9	2.00	-2.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Jurgens B16-30D
Company:	NOBLE ENERGY INC WELD COUNTY CO	TVD Reference:	WELL @ 4603.0ft (Original Well Elev)
Project:	SEC.8-T5N-R64W	MD Reference:	WELL @ 4603.0ft (Original Well Elev)
Site:	Jurgens PC B08-22D Pad Sec.8-T5N-R64W	North Reference:	True
Well:	Jurgens B16-30D	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Jurgens B16-30D Plan #1 (9-15-11)		

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)
6,238.8	0.00	0.00	5,900.0	-1,162.1	1,381.3	1,805.1	2.00	-2.00	0.00
TARGET BHL 75'FSL & 75'FEL									
6,240.0	0.00	0.00	5,901.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,280.0	0.00	0.00	5,941.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,320.0	0.00	0.00	5,981.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,360.0	0.00	0.00	6,021.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,400.0	0.00	0.00	6,061.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,440.0	0.00	0.00	6,101.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,480.0	0.00	0.00	6,141.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,520.0	0.00	0.00	6,181.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,560.0	0.00	0.00	6,221.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,600.0	0.00	0.00	6,261.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,640.0	0.00	0.00	6,301.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,680.0	0.00	0.00	6,341.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,720.0	0.00	0.00	6,381.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,760.0	0.00	0.00	6,421.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,800.0	0.00	0.00	6,461.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,840.0	0.00	0.00	6,501.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,851.8	0.00	0.00	6,513.0	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 75'FSL & 75'FEL									
6,880.0	0.00	0.00	6,541.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,920.0	0.00	0.00	6,581.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
6,960.0	0.00	0.00	6,621.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
7,000.0	0.00	0.00	6,661.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
7,040.0	0.00	0.00	6,701.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
7,080.0	0.00	0.00	6,741.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
7,120.0	0.00	0.00	6,781.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
7,160.0	0.00	0.00	6,821.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
7,161.8	0.00	0.00	6,823.0	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
CODELL									
7,200.0	0.00	0.00	6,861.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
7,240.0	0.00	0.00	6,901.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
7,280.0	0.00	0.00	6,941.2	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
7,311.8	0.00	0.00	6,973.0	-1,162.1	1,381.3	1,805.1	0.00	0.00	0.00
HARDLINES 75'S & 75'E OF BHL									

Database: Landmark
Company: NOBLE ENERGY INC WELD COUNTY CO
Project: SEC.8-T5N-R64W
Site: Jurgens PC B08-22D Pad Sec.8-T5N-R64W
Well: Jurgens B16-30D
Wellbore: Wellbore #1
Design: Noble Jurgens B16-30D Plan #1 (9-15-11)

Local Co-ordinate Reference: Well Jurgens B16-30D
TVD Reference: WELL @ 4603.0ft (Original Well Elev)
MD Reference: WELL @ 4603.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
TARGET BHL 75'FSL	0.00	0.00	5,900.0	-1,162.1	1,381.3	1,392,396.51	3,260,446.01	40.406760	-104.564750
- plan hits target center									
- Point									
TARGET CIRCLE 75'	0.00	0.00	6,513.0	-1,162.1	1,381.3	1,392,396.51	3,260,446.01	40.406760	-104.564750
- plan hits target center									
- Circle (radius 75.0)									
HARDLINES 75'S & 7	0.00	0.00	6,973.0	-1,237.1	1,456.3	1,392,322.31	3,260,521.76	40.406554	-104.564481
- plan misses target center by 106.0ft at 7311.8ft MD (6973.0 TVD, -1162.1 N, 1381.3 E)									
- Polygon									
Point 1			6,973.0	0.0	0.0	1,392,322.31	3,260,521.76		
Point 2			6,973.0	0.0	-200.0	1,392,320.22	3,260,321.78		
Point 3			6,973.0	0.0	0.0	1,392,322.31	3,260,521.76		
Point 4			6,973.0	200.0	0.0	1,392,522.29	3,260,519.66		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
600.2	600.0	8 5/8"	8-5/8	12-1/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,851.8	6,513.0	NIOBRARA		0.00	
7,161.8	6,823.0	CODELL		0.00	