ENSIGN Directional

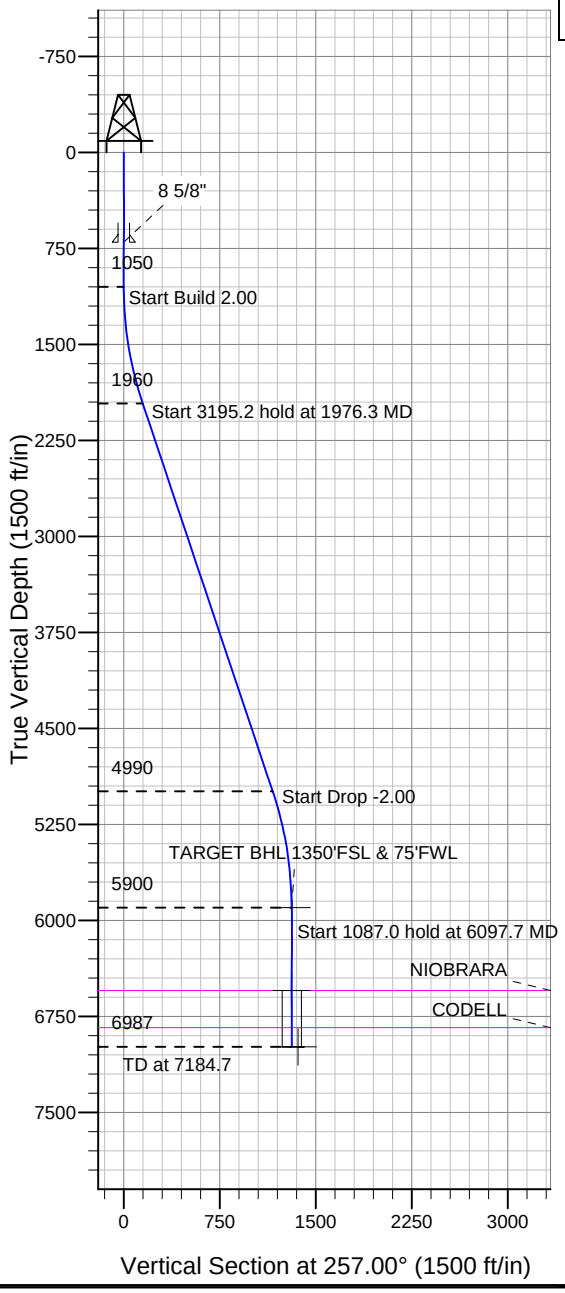
Well Name: Guttersen D02-33D

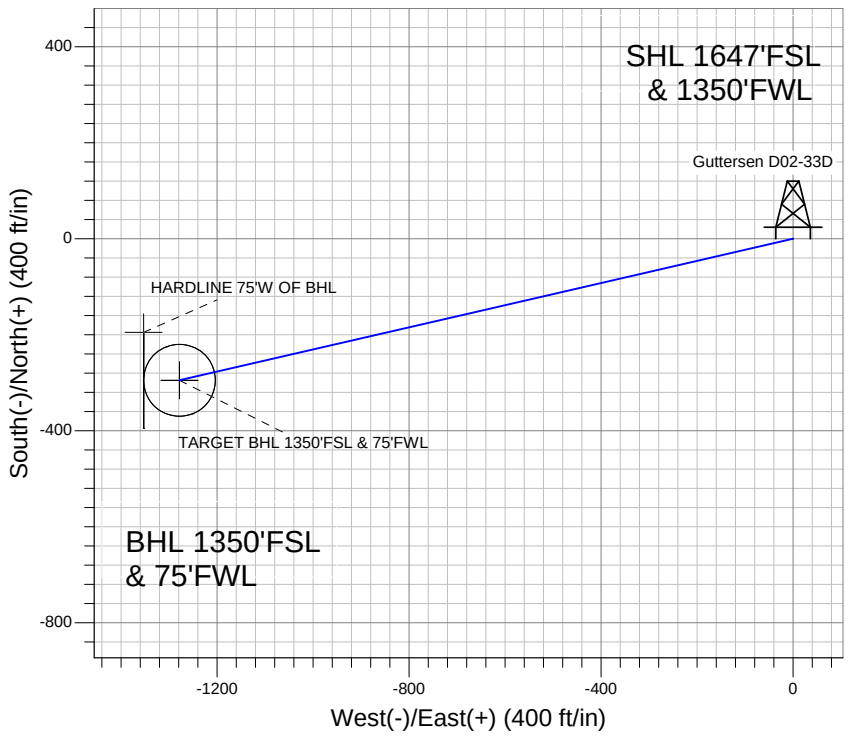
Surface Location: Guttersen D11-29D Pad Sec.2-T3N-R64W
North American Datum 1983 , US State Plane 1983Colorado Northern Zone
Ground Elevation: 4699.0

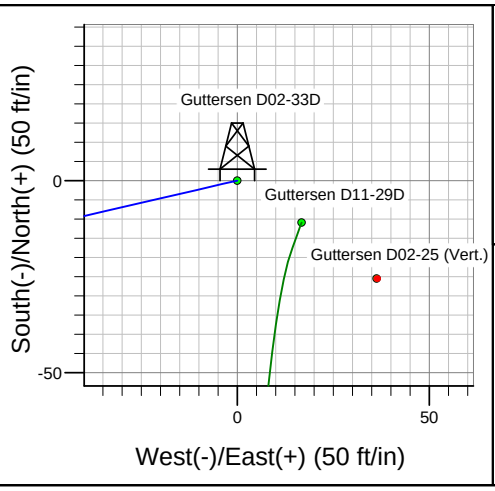
+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1336027.51	3272713.99	40.251670	-104.522930	

Original Well EleWELL @ 4712.0ft (Original Well Elev)

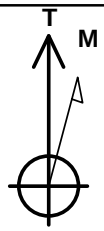
NOBLE ENERGY INC WELD COUNTY CO







Guttersen D11-29D Pad Sec.2-T3N-R64W
Guttersen D02-33D
Noble Guttersen D02-33D Plan #1 (10-11-11)
14:22, October 13 2011



Azimuths to True North
Magnetic North: 8.68°

Magnetic Field
Strength: 53046.5snT
Dip Angle: 66.96°
Date: 10/11/2011
Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1350'FSL & 75'FWL	5900.0	-295.0	-1278.4	40.250860	-104.527510	Point
TARGET CIRCLE 1350'FSL & 75'FWL	6547.0	-295.0	-1278.4	40.250860	-104.527510	Circle (Radius: 75.0)
HARDLINE 75'W OF BHL	6987.0	-195.0	-1353.4	40.251135	-104.527779	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	1050.0	0.00	0.00	1050.0	0.0	0.0	0.00	0.00	0.0	
3	1976.3	18.53	257.00	1960.2	-33.4	-144.6	2.00	257.00	148.4	
4	5171.4	18.53	257.00	4989.8	-261.7	-1133.8	0.00	0.00	1163.6	
5	6097.7	0.00	0.00	5900.0	-295.0	-1278.4	2.00	180.00	1312.0	TARGET BHL 1350'FSL & 75'FWL
6	7184.7	0.00	0.00	6987.0	-295.0	-1278.4	0.00	0.00	1312.0	

ENSIGN Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.2-T3N-R64W
Guttersen D11-29D Pad Sec.2-T3N-R64W
Guttersen D02-33D

Wellbore #1

Plan: Noble Guttersen D02-33D Plan #1 (10-11-11)

Standard Planning Report

13 October, 2011

noble energy

Database:	Landmark	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Company:	NOBLE ENERGY INC WELD COUNTY CO	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Project:	SEC.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**North Reference:**	True
Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)		

Project SEC.2-T3N-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 Guttersen D11-29D Pad Sec.2-T3N-R64W

Site Position:		**Northing:**	1,336,016.78 ft	**Latitude:**	40.251640
From:	Lat/Long	**Easting:**	3,272,730.85 ft	**Longitude:**	-104.522870
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.63 °

Well Guttersen D02-33D

Well Position	**+N/-S**	10.9 ft	**Northing:**	1,336,027.51 ft	**Latitude:**	40.251670
	+E/-W	-16.7 ft	**Easting:**	3,272,713.99 ft	**Longitude:**	-104.522930
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,699.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/11/2011	8.68	66.96	53,046

Design Noble Guttersen D02-33D Plan #1 (10-11-11)

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	257.00

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	
1,050.0	0.00	0.00	1,050.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,976.3	18.53	257.00	1,960.2	-33.4	-144.6	2.00	2.00	0.00	257.00	
5,171.4	18.53	257.00	4,989.8	-261.7	-1,133.8	0.00	0.00	0.00	0.00	
6,097.7	0.00	0.00	5,900.0	-295.0	-1,278.4	2.00	-2.00	0.00	180.00	TARGET BHL 135C
7,184.7	0.00	0.00	6,987.0	-295.0	-1,278.4	0.00	0.00	0.00	0.00	

Database:	Landmark	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Company:	NOBLE ENERGY INC WELD COUNTY CO	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Project:	SEC.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**North Reference:**	True
Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)		

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	0.00	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
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
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.00	0.00	1,040.0	0.0	0.0	0.0	0.00	0.00	0.00
1,050.0	0.00	0.00	1,050.0	0.0	0.0	0.0	0.00	0.00	0.00
1,080.0	0.60	257.00	1,080.0	0.0	-0.2	0.2	2.00	2.00	0.00
1,120.0	1.40	257.00	1,120.0	-0.2	-0.8	0.9	2.00	2.00	0.00
1,160.0	2.20	257.00	1,160.0	-0.5	-2.1	2.1	2.00	2.00	0.00
1,200.0	3.00	257.00	1,199.9	-0.9	-3.8	3.9	2.00	2.00	0.00
1,240.0	3.80	257.00	1,239.9	-1.4	-6.1	6.3	2.00	2.00	0.00
1,280.0	4.60	257.00	1,279.8	-2.1	-9.0	9.2	2.00	2.00	0.00
1,320.0	5.40	257.00	1,319.6	-2.9	-12.4	12.7	2.00	2.00	0.00
1,360.0	6.20	257.00	1,359.4	-3.8	-16.3	16.8	2.00	2.00	0.00
1,400.0	7.00	257.00	1,399.1	-4.8	-20.8	21.4	2.00	2.00	0.00
1,440.0	7.80	257.00	1,438.8	-6.0	-25.8	26.5	2.00	2.00	0.00
1,480.0	8.60	257.00	1,478.4	-7.2	-31.4	32.2	2.00	2.00	0.00
1,520.0	9.40	257.00	1,517.9	-8.7	-37.5	38.5	2.00	2.00	0.00
1,560.0	10.20	257.00	1,557.3	-10.2	-44.1	45.3	2.00	2.00	0.00
1,600.0	11.00	257.00	1,596.6	-11.8	-51.3	52.6	2.00	2.00	0.00
1,640.0	11.80	257.00	1,635.8	-13.6	-59.0	60.5	2.00	2.00	0.00
1,680.0	12.60	257.00	1,674.9	-15.5	-67.2	69.0	2.00	2.00	0.00
1,720.0	13.40	257.00	1,713.9	-17.5	-76.0	78.0	2.00	2.00	0.00
1,760.0	14.20	257.00	1,752.8	-19.7	-85.3	87.5	2.00	2.00	0.00
1,800.0	15.00	257.00	1,791.5	-22.0	-95.1	97.6	2.00	2.00	0.00
1,840.0	15.80	257.00	1,830.0	-24.3	-105.5	108.2	2.00	2.00	0.00
1,880.0	16.60	257.00	1,868.4	-26.8	-116.3	119.4	2.00	2.00	0.00
1,920.0	17.40	257.00	1,906.7	-29.5	-127.7	131.1	2.00	2.00	0.00
1,960.0	18.20	257.00	1,944.8	-32.2	-139.6	143.3	2.00	2.00	0.00
1,976.3	18.53	257.00	1,960.2	-33.4	-144.6	148.4	2.00	2.00	0.00

Database:	Landmark	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Company:	NOBLE ENERGY INC WELD COUNTY CO	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Project:	SEC.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**North Reference:**	True
Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)		

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)
2,000.0	18.53	257.00	1,982.7	-35.1	-152.0	156.0	0.00	0.00	0.00
2,040.0	18.53	257.00	2,020.6	-37.9	-164.4	168.7	0.00	0.00	0.00
2,080.0	18.53	257.00	2,058.6	-40.8	-176.8	181.4	0.00	0.00	0.00
2,120.0	18.53	257.00	2,096.5	-43.6	-189.1	194.1	0.00	0.00	0.00
2,160.0	18.53	257.00	2,134.4	-46.5	-201.5	206.8	0.00	0.00	0.00
2,200.0	18.53	257.00	2,172.4	-49.4	-213.9	219.5	0.00	0.00	0.00
2,240.0	18.53	257.00	2,210.3	-52.2	-226.3	232.2	0.00	0.00	0.00
2,280.0	18.53	257.00	2,248.2	-55.1	-238.7	244.9	0.00	0.00	0.00
2,320.0	18.53	257.00	2,286.1	-57.9	-251.1	257.7	0.00	0.00	0.00
2,360.0	18.53	257.00	2,324.1	-60.8	-263.4	270.4	0.00	0.00	0.00
2,400.0	18.53	257.00	2,362.0	-63.7	-275.8	283.1	0.00	0.00	0.00
2,440.0	18.53	257.00	2,399.9	-66.5	-288.2	295.8	0.00	0.00	0.00
2,480.0	18.53	257.00	2,437.8	-69.4	-300.6	308.5	0.00	0.00	0.00
2,520.0	18.53	257.00	2,475.8	-72.2	-313.0	321.2	0.00	0.00	0.00
2,560.0	18.53	257.00	2,513.7	-75.1	-325.4	333.9	0.00	0.00	0.00
2,600.0	18.53	257.00	2,551.6	-77.9	-337.7	346.6	0.00	0.00	0.00
2,640.0	18.53	257.00	2,589.6	-80.8	-350.1	359.3	0.00	0.00	0.00
2,680.0	18.53	257.00	2,627.5	-83.7	-362.5	372.0	0.00	0.00	0.00
2,720.0	18.53	257.00	2,665.4	-86.5	-374.9	384.7	0.00	0.00	0.00
2,760.0	18.53	257.00	2,703.3	-89.4	-387.3	397.5	0.00	0.00	0.00
2,800.0	18.53	257.00	2,741.3	-92.2	-399.7	410.2	0.00	0.00	0.00
2,840.0	18.53	257.00	2,779.2	-95.1	-412.0	422.9	0.00	0.00	0.00
2,880.0	18.53	257.00	2,817.1	-97.9	-424.4	435.6	0.00	0.00	0.00
2,920.0	18.53	257.00	2,855.0	-100.8	-436.8	448.3	0.00	0.00	0.00
2,960.0	18.53	257.00	2,893.0	-103.7	-449.2	461.0	0.00	0.00	0.00
3,000.0	18.53	257.00	2,930.9	-106.5	-461.6	473.7	0.00	0.00	0.00
3,040.0	18.53	257.00	2,968.8	-109.4	-474.0	486.4	0.00	0.00	0.00
3,080.0	18.53	257.00	3,006.8	-112.2	-486.3	499.1	0.00	0.00	0.00
3,120.0	18.53	257.00	3,044.7	-115.1	-498.7	511.8	0.00	0.00	0.00
3,160.0	18.53	257.00	3,082.6	-118.0	-511.1	524.5	0.00	0.00	0.00
3,200.0	18.53	257.00	3,120.5	-120.8	-523.5	537.2	0.00	0.00	0.00
3,240.0	18.53	257.00	3,158.5	-123.7	-535.9	550.0	0.00	0.00	0.00
3,280.0	18.53	257.00	3,196.4	-126.5	-548.3	562.7	0.00	0.00	0.00
3,320.0	18.53	257.00	3,234.3	-129.4	-560.6	575.4	0.00	0.00	0.00
3,360.0	18.53	257.00	3,272.2	-132.2	-573.0	588.1	0.00	0.00	0.00
3,400.0	18.53	257.00	3,310.2	-135.1	-585.4	600.8	0.00	0.00	0.00
3,440.0	18.53	257.00	3,348.1	-138.0	-597.8	613.5	0.00	0.00	0.00
3,480.0	18.53	257.00	3,386.0	-140.8	-610.2	626.2	0.00	0.00	0.00
3,520.0	18.53	257.00	3,424.0	-143.7	-622.6	638.9	0.00	0.00	0.00
3,560.0	18.53	257.00	3,461.9	-146.5	-634.9	651.6	0.00	0.00	0.00
3,600.0	18.53	257.00	3,499.8	-149.4	-647.3	664.3	0.00	0.00	0.00
3,640.0	18.53	257.00	3,537.7	-152.2	-659.7	677.0	0.00	0.00	0.00
3,680.0	18.53	257.00	3,575.7	-155.1	-672.1	689.8	0.00	0.00	0.00
3,720.0	18.53	257.00	3,613.6	-158.0	-684.5	702.5	0.00	0.00	0.00
3,760.0	18.53	257.00	3,651.5	-160.8	-696.9	715.2	0.00	0.00	0.00
3,800.0	18.53	257.00	3,689.4	-163.7	-709.2	727.9	0.00	0.00	0.00
3,840.0	18.53	257.00	3,727.4	-166.5	-721.6	740.6	0.00	0.00	0.00
3,880.0	18.53	257.00	3,765.3	-169.4	-734.0	753.3	0.00	0.00	0.00
3,920.0	18.53	257.00	3,803.2	-172.3	-746.4	766.0	0.00	0.00	0.00
3,960.0	18.53	257.00	3,841.2	-175.1	-758.8	778.7	0.00	0.00	0.00
4,000.0	18.53	257.00	3,879.1	-178.0	-771.2	791.4	0.00	0.00	0.00
4,040.0	18.53	257.00	3,917.0	-180.8	-783.5	804.1	0.00	0.00	0.00
4,080.0	18.53	257.00	3,954.9	-183.7	-795.9	816.8	0.00	0.00	0.00
4,120.0	18.53	257.00	3,992.9	-186.5	-808.3	829.6	0.00	0.00	0.00

Database:	Landmark	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Company:	NOBLE ENERGY INC WELD COUNTY CO	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Project:	SEC.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**North Reference:**	True
Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)		

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)
4,160.0	18.53	257.00	4,030.8	-189.4	-820.7	842.3	0.00	0.00	0.00
4,200.0	18.53	257.00	4,068.7	-192.3	-833.1	855.0	0.00	0.00	0.00
4,240.0	18.53	257.00	4,106.6	-195.1	-845.5	867.7	0.00	0.00	0.00
4,280.0	18.53	257.00	4,144.6	-198.0	-857.8	880.4	0.00	0.00	0.00
4,320.0	18.53	257.00	4,182.5	-200.8	-870.2	893.1	0.00	0.00	0.00
4,360.0	18.53	257.00	4,220.4	-203.7	-882.6	905.8	0.00	0.00	0.00
4,400.0	18.53	257.00	4,258.4	-206.5	-895.0	918.5	0.00	0.00	0.00
4,440.0	18.53	257.00	4,296.3	-209.4	-907.4	931.2	0.00	0.00	0.00
4,480.0	18.53	257.00	4,334.2	-212.3	-919.8	943.9	0.00	0.00	0.00
4,520.0	18.53	257.00	4,372.1	-215.1	-932.1	956.6	0.00	0.00	0.00
4,560.0	18.53	257.00	4,410.1	-218.0	-944.5	969.3	0.00	0.00	0.00
4,600.0	18.53	257.00	4,448.0	-220.8	-956.9	982.1	0.00	0.00	0.00
4,640.0	18.53	257.00	4,485.9	-223.7	-969.3	994.8	0.00	0.00	0.00
4,680.0	18.53	257.00	4,523.9	-226.6	-981.7	1,007.5	0.00	0.00	0.00
4,720.0	18.53	257.00	4,561.8	-229.4	-994.1	1,020.2	0.00	0.00	0.00
4,760.0	18.53	257.00	4,599.7	-232.3	-1,006.4	1,032.9	0.00	0.00	0.00
4,800.0	18.53	257.00	4,637.6	-235.1	-1,018.8	1,045.6	0.00	0.00	0.00
4,840.0	18.53	257.00	4,675.6	-238.0	-1,031.2	1,058.3	0.00	0.00	0.00
4,880.0	18.53	257.00	4,713.5	-240.8	-1,043.6	1,071.0	0.00	0.00	0.00
4,920.0	18.53	257.00	4,751.4	-243.7	-1,056.0	1,083.7	0.00	0.00	0.00
4,960.0	18.53	257.00	4,789.3	-246.6	-1,068.4	1,096.4	0.00	0.00	0.00
5,000.0	18.53	257.00	4,827.3	-249.4	-1,080.7	1,109.1	0.00	0.00	0.00
5,040.0	18.53	257.00	4,865.2	-252.3	-1,093.1	1,121.9	0.00	0.00	0.00
5,080.0	18.53	257.00	4,903.1	-255.1	-1,105.5	1,134.6	0.00	0.00	0.00
5,120.0	18.53	257.00	4,941.1	-258.0	-1,117.9	1,147.3	0.00	0.00	0.00
5,160.0	18.53	257.00	4,979.0	-260.8	-1,130.3	1,160.0	0.00	0.00	0.00
5,171.4	18.53	257.00	4,989.8	-261.7	-1,133.8	1,163.6	0.00	0.00	0.00
5,200.0	17.95	257.00	5,017.0	-263.7	-1,142.5	1,172.6	2.00	-2.00	0.00
5,240.0	17.15	257.00	5,055.1	-266.4	-1,154.3	1,184.6	2.00	-2.00	0.00
5,280.0	16.35	257.00	5,093.4	-269.0	-1,165.5	1,196.1	2.00	-2.00	0.00
5,320.0	15.55	257.00	5,131.8	-271.4	-1,176.2	1,207.1	2.00	-2.00	0.00
5,360.0	14.75	257.00	5,170.5	-273.8	-1,186.4	1,217.6	2.00	-2.00	0.00
5,400.0	13.95	257.00	5,209.2	-276.0	-1,196.1	1,227.5	2.00	-2.00	0.00
5,440.0	13.15	257.00	5,248.1	-278.1	-1,205.2	1,236.9	2.00	-2.00	0.00
5,480.0	12.35	257.00	5,287.1	-280.1	-1,213.8	1,245.7	2.00	-2.00	0.00
5,520.0	11.55	257.00	5,326.2	-282.0	-1,221.9	1,254.0	2.00	-2.00	0.00
5,560.0	10.75	257.00	5,365.5	-283.7	-1,229.4	1,261.7	2.00	-2.00	0.00
5,600.0	9.95	257.00	5,404.8	-285.3	-1,236.4	1,268.9	2.00	-2.00	0.00
5,640.0	9.15	257.00	5,444.3	-286.8	-1,242.9	1,275.6	2.00	-2.00	0.00
5,680.0	8.35	257.00	5,483.8	-288.2	-1,248.8	1,281.7	2.00	-2.00	0.00
5,720.0	7.55	257.00	5,523.4	-289.4	-1,254.2	1,287.2	2.00	-2.00	0.00
5,760.0	6.75	257.00	5,563.1	-290.6	-1,259.1	1,292.2	2.00	-2.00	0.00
5,800.0	5.95	257.00	5,602.9	-291.6	-1,263.4	1,296.6	2.00	-2.00	0.00
5,840.0	5.15	257.00	5,642.7	-292.4	-1,267.2	1,300.5	2.00	-2.00	0.00
5,880.0	4.35	257.00	5,682.5	-293.2	-1,270.4	1,303.8	2.00	-2.00	0.00
5,920.0	3.55	257.00	5,722.4	-293.8	-1,273.1	1,306.5	2.00	-2.00	0.00
5,960.0	2.75	257.00	5,762.4	-294.3	-1,275.2	1,308.7	2.00	-2.00	0.00
6,000.0	1.95	257.00	5,802.4	-294.7	-1,276.8	1,310.4	2.00	-2.00	0.00
6,040.0	1.15	257.00	5,842.3	-294.9	-1,277.9	1,311.5	2.00	-2.00	0.00
6,080.0	0.35	257.00	5,882.3	-295.0	-1,278.4	1,312.0	2.00	-2.00	0.00
6,097.7	0.00	0.00	5,900.0	-295.0	-1,278.4	1,312.0	2.00	-2.00	0.00
TARGET BHL 1350'FSL & 75'FWL									
6,120.0	0.00	0.00	5,922.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,160.0	0.00	0.00	5,962.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00

Database:	Landmark	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Company:	NOBLE ENERGY INC WELD COUNTY CO	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Project:	SEC.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**North Reference:**	True
Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)		

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)
6,200.0	0.00	0.00	6,002.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,240.0	0.00	0.00	6,042.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,280.0	0.00	0.00	6,082.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,320.0	0.00	0.00	6,122.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,360.0	0.00	0.00	6,162.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,202.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,440.0	0.00	0.00	6,242.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,480.0	0.00	0.00	6,282.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,520.0	0.00	0.00	6,322.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,560.0	0.00	0.00	6,362.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,402.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,640.0	0.00	0.00	6,442.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,680.0	0.00	0.00	6,482.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,720.0	0.00	0.00	6,522.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,744.7	0.00	0.00	6,547.0	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 1350'FSL & 75'FWL									
6,760.0	0.00	0.00	6,562.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,602.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,840.0	0.00	0.00	6,642.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,880.0	0.00	0.00	6,682.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,920.0	0.00	0.00	6,722.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
6,960.0	0.00	0.00	6,762.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,802.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
7,034.7	0.00	0.00	6,837.0	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
CODELL									
7,040.0	0.00	0.00	6,842.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
7,080.0	0.00	0.00	6,882.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
7,120.0	0.00	0.00	6,922.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
7,160.0	0.00	0.00	6,962.3	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
7,184.7	0.00	0.00	6,987.0	-295.0	-1,278.4	1,312.0	0.00	0.00	0.00
HARDLINE 75'W OF BHL									

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 1350'F:	0.00	0.00	5,900.0	-295.0	-1,278.4	1,335,718.42	3,271,438.93	40.250860	-104.527510
- plan hits target center									
- Point									
TARGET CIRCLE 13:	0.00	0.00	6,547.0	-295.0	-1,278.4	1,335,718.42	3,271,438.93	40.250860	-104.527510
- plan hits target center									
- Circle (radius 75.0)									
HARDLINE 75'W OF I	0.00	0.00	6,987.0	-195.0	-1,353.4	1,335,817.63	3,271,362.88	40.251135	-104.527779
- plan misses target center by 125.0ft at 7184.7ft MD (6987.0 TVD, -295.0 N, -1278.4 E)									
- Polygon									
Point 1			6,987.0	0.0	0.0	1,335,817.63	3,271,362.88		
Point 2			6,987.0	-200.0	0.0	1,335,617.65	3,271,365.08		
Point 3			6,987.0	0.0	0.0	1,335,817.63	3,271,362.88		

Database:	Landmark	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Company:	NOBLE ENERGY INC WELD COUNTY CO	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Project:	SEC.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**North Reference:**	True
Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
700.0	700.0	8 5/8"	8-5/8	12-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,744.7	6,547.0	NIOBRARA		0.00	
7,034.7	6,837.0	CODELL		0.00	

ENSIGN Directional

NOBLE ENERGY INC WELD COUNTY CO

SEC.2-T3N-R64W
Guttersen D11-29D Pad Sec.2-T3N-R64W
Guttersen D02-33D

Wellbore #1
Noble Guttersen D02-33D Plan #1 (10-11-11)

Anticollision Report

13 October, 2011

noble energy

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Project:	SEC.2-T3N-R64W	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Reference Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)	**Offset TVD Reference:**	Offset Datum

Reference Noble Guttersen D02-33D Plan #1 (:

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 10/13/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	7,184.7	Noble Guttersen D02-33D Plan #1 (10-11-	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Guttersen D11-29D Pad Sec.2-T3N-R64W						
Guttersen D11-29D - Wellbore #1 - Noble Guttersen D11	834.9	835.9	20.0	16.5	5.664	CC
Guttersen D11-29D - Wellbore #1 - Noble Guttersen D11	900.0	900.9	20.1	16.3	5.278	ES
Guttersen D11-29D - Wellbore #1 - Noble Guttersen D11	1,000.0	1,000.6	21.3	17.0	5.049	SF
LF Ranch 2-2 (Exist.) - Wellbore #1 - Design #1	3,099.8	3,028.5	563.8	545.0	29.971	CC
LF Ranch 2-2 (Exist.) - Wellbore #1 - Design #1	3,100.0	3,028.7	563.8	545.0	29.968	ES
LF Ranch 2-2 (Exist.) - Wellbore #1 - Design #1	4,000.0	3,882.1	632.2	606.7	24.762	SF

Offset Design Guttersen D11-29D Pad Sec.2-T3N-R64W - Guttersen D11-29D - Wellbore #1 - Noble Guttersen D11-2 **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	123.12	-10.9	16.7	20.0	20.0	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	123.12	-10.9	16.7	20.0	19.8	0.23	88.084	
200.0	200.0	201.0	201.0	0.3	0.3	123.12	-10.9	16.7	20.0	19.3	0.68	29.556	
300.0	300.0	301.0	301.0	0.6	0.6	123.12	-10.9	16.7	20.0	18.9	1.13	17.757	
400.0	400.0	401.0	401.0	0.8	0.8	123.12	-10.9	16.7	20.0	18.4	1.58	12.691	
500.0	500.0	501.0	501.0	1.0	1.0	123.12	-10.9	16.7	20.0	18.0	2.03	9.874	
600.0	600.0	601.0	601.0	1.2	1.2	123.12	-10.9	16.7	20.0	17.5	2.47	8.080	
700.0	700.0	701.0	701.0	1.5	1.5	123.12	-10.9	16.7	20.0	17.1	2.92	6.838	
800.0	800.0	801.0	801.0	1.7	1.7	123.12	-10.9	16.7	20.0	16.6	3.37	5.927	
834.9	834.9	835.9	835.9	1.8	1.8	123.12	-10.9	16.7	20.0	16.5	3.53	5.664	CC
900.0	900.0	900.9	900.9	1.9	1.9	124.37	-11.4	16.6	20.1	16.3	3.81	5.278	ES
1,000.0	1,000.0	1,000.6	1,000.6	2.1	2.1	133.57	-14.6	15.4	21.3	17.0	4.21	5.049	SF
1,050.0	1,050.0	1,050.4	1,050.2	2.2	2.2	140.65	-17.5	14.4	22.7	18.2	4.41	5.132	
1,100.0	1,100.0	1,100.0	1,099.7	2.4	2.3	-109.80	-21.2	13.2	25.1	20.5	4.62	5.448	
1,200.0	1,199.9	1,198.5	1,197.7	2.5	2.5	-102.97	-31.0	11.1	33.8	28.8	5.01	6.743	
1,300.0	1,299.7	1,296.4	1,294.7	2.8	2.7	-101.69	-44.2	9.2	46.6	41.1	5.43	8.567	
1,400.0	1,399.1	1,393.3	1,390.2	3.0	3.0	-102.78	-60.4	7.5	63.2	57.3	5.89	10.726	
1,500.0	1,498.2	1,488.9	1,483.8	3.2	3.3	-104.61	-79.6	6.0	83.7	77.3	6.39	13.096	
1,600.0	1,596.6	1,583.0	1,575.3	3.5	3.6	-106.50	-101.5	4.8	108.1	101.1	6.94	15.572	
1,700.0	1,694.4	1,675.3	1,664.4	3.9	4.0	-108.20	-125.9	3.8	136.4	128.8	7.55	18.059	
1,800.0	1,791.5	1,765.7	1,750.7	4.2	4.5	-109.62	-152.5	3.0	168.6	160.3	8.23	20.477	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Project:	SEC.2-T3N-R64W	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Reference Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)	**Offset TVD Reference:**	Offset Datum

Offset Design Guttersen D11-29D Pad Sec.2-T3N-R64W - Guttersen D11-29D - Wellbore #1 - Noble Guttersen D11-2 — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
1,900.0	1,887.6	1,854.0	1,834.2	4.7	5.0	-110.77	-181.1	2.4	204.5	195.6	8.98	22.771	
1,976.3	1,960.2	1,919.8	1,895.9	5.1	5.3	-111.47	-204.1	2.1	234.4	224.8	9.60	24.412	
2,000.0	1,982.7	1,940.0	1,914.7	5.2	5.5	-111.84	-211.5	2.0	244.1	234.3	9.81	24.886	
2,100.0	2,077.5	2,030.9	1,999.2	5.8	6.1	-113.15	-244.9	1.7	285.4	274.7	10.72	26.625	
2,200.0	2,172.4	2,121.8	2,083.8	6.4	6.7	-114.14	-278.3	1.4	326.8	315.1	11.66	28.027	
2,300.0	2,267.2	2,212.7	2,168.3	7.0	7.3	-114.90	-311.7	1.1	368.2	355.5	12.62	29.162	
2,400.0	2,362.0	2,303.6	2,252.9	7.6	7.9	-115.51	-345.1	0.7	409.6	396.0	13.61	30.092	
2,500.0	2,456.8	2,394.6	2,337.5	8.2	8.5	-116.01	-378.5	0.4	451.1	436.5	14.62	30.863	
2,600.0	2,551.6	2,485.5	2,422.0	8.9	9.2	-116.42	-411.9	0.1	492.6	477.0	15.63	31.509	
2,700.0	2,646.4	2,576.4	2,506.6	9.5	9.8	-116.77	-445.3	-0.2	534.2	517.5	16.66	32.056	
2,800.0	2,741.3	2,667.3	2,591.2	10.2	10.4	-117.07	-478.7	-0.6	575.7	558.0	17.70	32.524	
2,900.0	2,836.1	2,758.3	2,675.7	10.8	11.1	-117.33	-512.1	-0.9	617.3	598.5	18.75	32.927	
3,000.0	2,930.9	2,849.2	2,760.3	11.5	11.7	-117.56	-545.5	-1.2	658.8	639.0	19.80	33.278	
3,100.0	3,025.7	2,940.1	2,844.9	12.1	12.4	-117.76	-578.9	-1.5	700.4	679.5	20.85	33.584	
3,200.0	3,120.5	3,031.0	2,929.4	12.8	13.0	-117.94	-612.3	-1.9	742.0	720.1	21.92	33.855	
3,300.0	3,215.4	3,122.0	3,014.0	13.4	13.7	-118.09	-645.7	-2.2	783.6	760.6	22.98	34.095	
3,400.0	3,310.2	3,212.9	3,098.6	14.1	14.3	-118.24	-679.1	-2.5	825.1	801.1	24.05	34.308	
3,500.0	3,405.0	3,303.8	3,183.1	14.8	15.0	-118.36	-712.5	-2.8	866.7	841.6	25.12	34.500	
3,600.0	3,499.8	3,394.7	3,267.7	15.4	15.7	-118.48	-745.9	-3.2	908.3	882.1	26.20	34.672	
3,700.0	3,594.6	3,485.7	3,352.3	16.1	16.3	-118.59	-779.3	-3.5	949.9	922.7	27.27	34.828	
3,800.0	3,689.4	3,576.6	3,436.8	16.8	17.0	-118.69	-812.7	-3.8	991.5	963.2	28.35	34.970	
3,900.0	3,784.3	3,667.5	3,521.4	17.5	17.6	-118.78	-846.1	-4.1	1,033.1	1,003.7	29.43	35.099	
4,000.0	3,879.1	3,758.4	3,606.0	18.1	18.3	-118.86	-879.5	-4.5	1,074.7	1,044.2	30.52	35.217	
4,100.0	3,973.9	3,849.4	3,690.5	18.8	19.0	-118.94	-912.9	-4.8	1,116.3	1,084.7	31.60	35.325	
4,200.0	4,068.7	3,940.3	3,775.1	19.5	19.6	-119.01	-946.3	-5.1	1,157.9	1,125.3	32.69	35.425	
4,300.0	4,163.5	4,031.2	3,859.7	20.1	20.3	-119.07	-979.7	-5.4	1,199.6	1,165.8	33.77	35.517	
4,400.0	4,258.4	4,122.1	3,944.2	20.8	20.9	-119.13	-1,013.1	-5.8	1,241.2	1,206.3	34.86	35.602	
4,500.0	4,353.2	4,213.1	4,028.8	21.5	21.6	-119.19	-1,046.5	-6.1	1,282.8	1,246.8	35.95	35.681	
4,600.0	4,448.0	4,304.0	4,113.4	22.2	22.3	-119.25	-1,079.9	-6.4	1,324.4	1,287.3	37.04	35.755	
4,700.0	4,542.8	4,394.9	4,197.9	22.8	22.9	-119.30	-1,113.3	-6.7	1,366.0	1,327.9	38.13	35.823	
4,800.0	4,637.6	4,485.8	4,282.5	23.5	23.6	-119.35	-1,146.7	-7.1	1,407.6	1,368.4	39.22	35.887	
4,900.0	4,732.5	4,576.7	4,367.1	24.2	24.3	-119.39	-1,180.1	-7.4	1,449.2	1,408.9	40.32	35.947	
5,000.0	4,827.3	4,667.7	4,451.6	24.9	24.9	-119.43	-1,213.5	-7.7	1,490.8	1,449.4	41.41	36.003	
5,100.0	4,922.1	4,758.6	4,536.2	25.5	25.6	-119.47	-1,246.9	-8.0	1,532.5	1,490.0	42.50	36.056	
5,171.4	4,989.8	4,823.5	4,596.6	26.0	26.1	-119.50	-1,270.7	-8.3	1,562.2	1,518.9	43.28	36.092	
5,200.0	5,017.0	4,849.5	4,620.8	26.2	26.3	-119.73	-1,280.3	-8.3	1,574.0	1,530.4	43.63	36.080	
5,300.0	5,112.6	4,941.0	4,705.9	26.7	26.9	-120.44	-1,313.9	-8.7	1,614.4	1,569.7	44.72	36.102	
5,400.0	5,209.2	5,033.1	4,791.5	27.1	27.6	-121.00	-1,347.7	-9.0	1,653.1	1,607.4	45.76	36.123	
5,500.0	5,306.7	5,147.9	4,898.5	27.5	28.3	-121.35	-1,389.4	-9.4	1,690.0	1,643.2	46.80	36.113	
5,600.0	5,404.8	5,308.8	5,050.7	27.8	29.1	-121.51	-1,441.4	-9.9	1,722.4	1,674.6	47.83	36.015	
5,700.0	5,503.6	5,475.2	5,211.0	28.1	29.8	-121.63	-1,486.0	-10.3	1,749.3	1,700.6	48.75	35.887	
5,800.0	5,602.9	5,646.2	5,378.1	28.3	30.3	-121.72	-1,522.2	-10.7	1,770.5	1,720.9	49.54	35.737	
5,900.0	5,702.5	5,821.0	5,550.9	28.5	30.8	-121.78	-1,548.8	-11.0	1,785.7	1,735.5	50.20	35.572	
6,000.0	5,802.4	5,998.4	5,727.5	28.7	31.2	-121.82	-1,564.9	-11.1	1,794.8	1,744.1	50.70	35.398	
6,097.7	5,900.0	6,172.0	5,901.0	28.8	31.4	135.18	-1,570.1	-11.2	1,797.7	1,746.7	51.05	35.215	
6,100.0	5,902.3	6,174.4	5,903.3	28.8	31.4	135.18	-1,570.1	-11.2	1,797.7	1,746.7	51.05	35.212	
6,200.0	6,002.3	6,274.4	6,003.3	28.9	31.4	135.18	-1,570.1	-11.2	1,797.7	1,746.5	51.25	35.078	
6,300.0	6,102.3	6,374.4	6,103.3	29.0	31.5	135.18	-1,570.1	-11.2	1,797.7	1,746.3	51.45	34.944	
6,400.0	6,202.3	6,474.4	6,203.3	29.1	31.6	135.18	-1,570.1	-11.2	1,797.7	1,746.1	51.64	34.810	
6,500.0	6,302.3	6,574.4	6,303.3	29.2	31.7	135.18	-1,570.1	-11.2	1,797.7	1,745.9	51.85	34.674	
6,600.0	6,402.3	6,674.4	6,403.3	29.3	31.7	135.18	-1,570.1	-11.2	1,797.7	1,745.7	52.05	34.537	
6,700.0	6,502.3	6,774.4	6,503.3	29.4	31.8	135.18	-1,570.1	-11.2	1,797.7	1,745.5	52.26	34.400	

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Project:	SEC.2-T3N-R64W	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Reference Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)	**Offset TVD Reference:**	Offset Datum

Offset Design Guttersen D11-29D Pad Sec.2-T3N-R64W - Guttersen D11-29D - Wellbore #1 - Noble Guttersen D11-2

Offset Site Error: 0.0 ft
Offset Well Error: 0.0 ft

Survey Program: 0-MWD

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,800.0	6,602.3	6,874.4	6,603.3	29.5	31.9	135.18	-1,570.1	-11.2	1,797.7	1,745.3	52.47	34.261	
6,900.0	6,702.3	6,974.4	6,703.3	29.6	32.0	135.18	-1,570.1	-11.2	1,797.7	1,745.0	52.69	34.122	
7,000.0	6,802.3	7,074.4	6,803.3	29.7	32.1	135.18	-1,570.1	-11.2	1,797.7	1,744.8	52.90	33.982	
7,100.0	6,902.3	7,174.4	6,903.3	29.8	32.2	135.18	-1,570.1	-11.2	1,797.7	1,744.6	53.12	33.841	
7,149.4	6,951.7	7,223.7	6,952.7	29.9	32.2	135.18	-1,570.1	-11.2	1,797.7	1,744.5	53.23	33.771	
7,184.7	6,987.0	7,242.0	6,971.0	29.9	32.2	135.18	-1,570.1	-11.2	1,797.8	1,744.5	53.29	33.734	

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Project:	SEC.2-T3N-R64W	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Reference Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)	**Offset TVD Reference:**	Offset Datum

Offset Design Guttersen D11-29D Pad Sec.2-T3N-R64W - LF Ranch 2-2 (Exist.) - Wellbore #1 - Design #1

Offset Site Error: 0.0 ft
Offset Well Error: 0.0 ft

Survey Program: 0-MWD

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.0	-151.12	-663.0	-365.7	757.2				
100.0	100.0	103.0	103.0	0.1	0.1	-151.12	-663.0	-365.7	757.2	756.9	0.23	3,270.633	
200.0	200.0	203.0	203.0	0.3	0.3	-151.12	-663.0	-365.7	757.2	756.5	0.68	1,111.799	
300.0	300.0	303.0	303.0	0.6	0.6	-151.12	-663.0	-365.7	757.2	756.1	1.13	669.732	
400.0	400.0	403.0	403.0	0.8	0.8	-151.12	-663.0	-365.7	757.2	755.6	1.58	479.197	
500.0	500.0	503.0	503.0	1.0	1.0	-151.12	-663.0	-365.7	757.2	755.2	2.03	373.062	
600.0	600.0	603.0	603.0	1.2	1.2	-151.12	-663.0	-365.7	757.2	754.7	2.48	305.417	
700.0	700.0	703.0	703.0	1.5	1.5	-151.12	-663.0	-365.7	757.2	754.3	2.93	258.538	
800.0	800.0	803.0	803.0	1.7	1.7	-151.12	-663.0	-365.7	757.2	753.8	3.38	224.135	
900.0	900.0	903.0	903.0	1.9	1.9	-151.12	-663.0	-365.7	757.2	753.4	3.83	197.813	
1,000.0	1,000.0	1,003.0	1,003.0	2.1	2.1	-151.12	-663.0	-365.7	757.2	752.9	4.28	177.023	
1,050.0	1,050.0	1,053.0	1,053.0	2.2	2.3	-151.12	-663.0	-365.7	757.2	752.7	4.50	168.185	
1,100.0	1,100.0	1,103.0	1,103.0	2.4	2.4	-48.16	-663.0	-365.7	756.9	752.2	4.72	160.422	
1,200.0	1,199.9	1,202.9	1,202.9	2.5	2.6	-48.39	-663.0	-365.7	754.6	749.4	5.14	146.899	
1,300.0	1,299.7	1,302.7	1,302.7	2.8	2.8	-48.86	-663.0	-365.7	749.9	744.4	5.56	134.835	
1,400.0	1,399.1	1,402.1	1,402.1	3.0	3.0	-49.56	-663.0	-365.7	743.1	737.1	6.00	123.911	
1,500.0	1,498.2	1,501.2	1,501.2	3.2	3.3	-50.53	-663.0	-365.7	734.1	727.7	6.45	113.861	
1,600.0	1,596.6	1,599.6	1,599.6	3.5	3.5	-51.75	-663.0	-365.7	723.1	716.2	6.92	104.477	
1,700.0	1,694.4	1,697.4	1,697.4	3.9	3.7	-53.26	-663.0	-365.7	710.3	702.9	7.43	95.612	
1,800.0	1,791.5	1,794.5	1,794.5	4.2	3.9	-55.06	-663.0	-365.7	695.8	687.8	7.98	87.171	
1,900.0	1,887.6	1,890.6	1,890.6	4.7	4.1	-57.18	-663.0	-365.7	680.0	671.5	8.60	79.113	
1,976.3	1,960.2	1,963.2	1,963.2	5.1	4.3	-59.02	-663.0	-365.7	667.3	658.2	9.11	73.227	
2,000.0	1,982.7	1,985.7	1,985.7	5.2	4.4	-59.56	-663.0	-365.7	663.3	654.0	9.29	71.436	
2,100.0	2,077.5	2,080.5	2,080.5	5.8	4.6	-61.89	-663.0	-365.7	647.1	637.1	10.04	64.464	
2,200.0	2,172.4	2,175.4	2,175.4	6.4	4.8	-64.32	-663.0	-365.7	632.2	621.3	10.83	58.357	
2,300.0	2,267.2	2,270.2	2,270.2	7.0	5.0	-66.86	-663.0	-365.7	618.4	606.8	11.66	53.036	
2,400.0	2,362.0	2,365.0	2,365.0	7.6	5.2	-69.50	-663.0	-365.7	606.1	593.6	12.52	48.419	
2,500.0	2,456.8	2,459.8	2,459.8	8.2	5.4	-72.23	-663.0	-365.7	595.2	581.8	13.40	44.424	
2,600.0	2,551.6	2,554.6	2,554.6	8.9	5.6	-75.05	-663.0	-365.7	585.8	571.5	14.29	40.979	
2,700.0	2,646.4	2,649.4	2,649.4	9.5	5.8	-77.94	-663.0	-365.7	577.9	562.7	15.20	38.019	
2,800.0	2,741.3	2,744.3	2,744.3	10.2	6.1	-80.90	-663.0	-365.7	571.8	555.7	16.11	35.485	
2,900.0	2,836.1	2,839.1	2,839.1	10.8	6.3	-83.91	-663.0	-365.7	567.4	550.4	17.02	33.328	
3,000.0	2,930.9	2,933.9	2,933.9	11.5	6.5	-86.95	-663.0	-365.7	564.7	546.8	17.93	31.501	
3,099.8	3,025.5	3,028.5	3,028.5	12.1	6.7	-90.00	-663.0	-365.7	563.8	545.0	18.81	29.971	CC
3,100.0	3,025.7	3,028.7	3,028.7	12.1	6.7	-90.01	-663.0	-365.7	563.8	545.0	18.81	29.968	ES
3,200.0	3,120.5	3,123.5	3,123.5	12.8	6.9	-93.07	-663.0	-365.7	564.7	545.0	19.68	28.692	
3,300.0	3,215.4	3,218.4	3,218.4	13.4	7.1	-96.11	-663.0	-365.7	567.4	546.9	20.52	27.644	
3,400.0	3,310.2	3,313.2	3,313.2	14.1	7.3	-99.11	-663.0	-365.7	571.8	550.5	21.34	26.797	
3,500.0	3,405.0	3,408.0	3,408.0	14.8	7.5	-102.07	-663.0	-365.7	578.0	555.9	22.12	26.127	
3,600.0	3,499.8	3,502.8	3,502.8	15.4	7.8	-104.96	-663.0	-365.7	585.8	562.9	22.87	25.613	
3,700.0	3,594.6	3,597.6	3,597.6	16.1	8.0	-107.78	-663.0	-365.7	595.2	571.6	23.59	25.235	
3,800.0	3,689.4	3,692.4	3,692.4	16.8	8.2	-110.51	-663.0	-365.7	606.1	581.9	24.27	24.977	
3,900.0	3,784.3	3,787.3	3,787.3	17.5	8.4	-113.15	-663.0	-365.7	618.5	593.6	24.92	24.824	
4,000.0	3,879.1	3,882.1	3,882.1	18.1	8.6	-115.69	-663.0	-365.7	632.2	606.7	25.53	24.762	SF
4,100.0	3,973.9	3,976.9	3,976.9	18.8	8.8	-118.12	-663.0	-365.7	647.2	621.1	26.12	24.779	
4,200.0	4,068.7	4,071.7	4,071.7	19.5	9.0	-120.45	-663.0	-365.7	663.4	636.7	26.68	24.864	
4,300.0	4,163.5	4,166.5	4,166.5	20.1	9.3	-122.67	-663.0	-365.7	680.7	653.5	27.22	25.008	
4,400.0	4,258.4	4,261.4	4,261.4	20.8	9.5	-124.79	-663.0	-365.7	699.0	671.2	27.73	25.203	
4,500.0	4,353.2	4,356.2	4,356.2	21.5	9.7	-126.80	-663.0	-365.7	718.2	690.0	28.23	25.441	
4,600.0	4,448.0	4,451.0	4,451.0	22.2	9.9	-128.72	-663.0	-365.7	738.3	709.6	28.71	25.716	
4,700.0	4,542.8	4,545.8	4,545.8	22.8	10.1	-130.53	-663.0	-365.7	759.2	730.0	29.18	26.020	
4,800.0	4,637.6	4,640.6	4,640.6	23.5	10.3	-132.25	-663.0	-365.7	780.8	751.2	29.63	26.351	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Project:	SEC.2-T3N-R64W	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Reference Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)	**Offset TVD Reference:**	Offset Datum

Offset Design Guttersen D11-29D Pad Sec.2-T3N-R64W - LF Ranch 2-2 (Exist.) - Wellbore #1 - Design #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,732.5	4,735.5	4,735.5	24.2	10.5	-133.89	-663.0	-365.7	803.1	773.1	30.08	26.702	
5,000.0	4,827.3	4,830.3	4,830.3	24.9	10.7	-135.44	-663.0	-365.7	826.1	795.6	30.52	27.071	
5,100.0	4,922.1	4,925.1	4,925.1	25.5	11.0	-136.90	-663.0	-365.7	849.6	818.6	30.95	27.453	
5,171.4	4,989.8	4,992.8	4,992.8	26.0	11.1	-137.90	-663.0	-365.7	866.7	835.4	31.25	27.732	
5,200.0	5,017.0	5,020.0	5,020.0	26.2	11.2	-138.38	-663.0	-365.7	873.5	842.1	31.35	27.859	
5,300.0	5,112.6	5,115.6	5,115.6	26.7	11.4	-139.90	-663.0	-365.7	896.0	864.3	31.66	28.304	
5,400.0	5,209.2	5,212.2	5,212.2	27.1	11.6	-141.18	-663.0	-365.7	916.2	884.2	31.96	28.665	
5,500.0	5,306.7	5,309.7	5,309.7	27.5	11.8	-142.26	-663.0	-365.7	933.9	901.7	32.27	28.943	
5,600.0	5,404.8	5,407.8	5,407.8	27.8	12.0	-143.14	-663.0	-365.7	949.1	916.6	32.57	29.138	
5,700.0	5,503.6	5,506.6	5,506.6	28.1	12.3	-143.84	-663.0	-365.7	961.7	928.8	32.88	29.253	
5,800.0	5,602.9	5,605.9	5,605.9	28.3	12.5	-144.38	-663.0	-365.7	971.5	938.4	33.17	29.287	
5,900.0	5,702.5	5,705.5	5,705.5	28.5	12.7	-144.75	-663.0	-365.7	978.6	945.1	33.46	29.243	
6,000.0	5,802.4	5,805.4	5,805.4	28.7	12.9	-144.98	-663.0	-365.7	982.8	949.0	33.75	29.123	
6,097.7	5,900.0	5,903.0	5,903.0	28.8	13.2	111.96	-663.0	-365.7	984.2	950.1	34.02	28.928	
6,100.0	5,902.3	5,905.3	5,905.3	28.8	13.2	111.96	-663.0	-365.7	984.2	950.1	34.03	28.921	
6,200.0	6,002.3	6,005.3	6,005.3	28.9	13.4	111.96	-663.0	-365.7	984.2	949.8	34.38	28.630	
6,300.0	6,102.3	6,105.3	6,105.3	29.0	13.6	111.96	-663.0	-365.7	984.2	949.4	34.72	28.342	
6,400.0	6,202.3	6,205.3	6,205.3	29.1	13.8	111.96	-663.0	-365.7	984.2	949.1	35.07	28.060	
6,500.0	6,302.3	6,305.3	6,305.3	29.2	14.1	111.96	-663.0	-365.7	984.2	948.7	35.43	27.781	
6,600.0	6,402.3	6,405.3	6,405.3	29.3	14.3	111.96	-663.0	-365.7	984.2	948.4	35.78	27.507	
6,700.0	6,502.3	6,505.3	6,505.3	29.4	14.5	111.96	-663.0	-365.7	984.2	948.0	36.13	27.237	
6,800.0	6,602.3	6,605.3	6,605.3	29.5	14.7	111.96	-663.0	-365.7	984.2	947.7	36.49	26.971	
6,900.0	6,702.3	6,705.3	6,705.3	29.6	15.0	111.96	-663.0	-365.7	984.2	947.3	36.85	26.709	
7,000.0	6,802.3	6,805.3	6,805.3	29.7	15.2	111.96	-663.0	-365.7	984.2	946.9	37.21	26.451	
7,100.0	6,902.3	6,905.3	6,905.3	29.8	15.4	111.96	-663.0	-365.7	984.2	946.6	37.57	26.197	
7,148.3	6,950.6	6,953.6	6,953.6	29.9	15.5	111.96	-663.0	-365.7	984.2	946.4	37.74	26.075	
7,184.7	6,987.0	6,971.0	6,971.0	29.9	15.6	111.96	-663.0	-365.7	984.3	946.5	37.83	26.019	

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
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Reference Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
Reference Design:	Noble Guttersen D02-33D Plan #1 (10-11-11)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4712.0ft (Original Well Elev) Coordinates are relative to: Guttersen D02-33D
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.63°

Company:	NOBLE ENERGY INC WELD COUNTY CO	**Local Co-ordinate Reference:**	Well Guttersen D02-33D
Project:	SEC.2-T3N-R64W	**TVD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Reference Site:	Guttersen D11-29D Pad Sec.2-T3N-R64W	**MD Reference:**	WELL @ 4712.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Guttersen D02-33D	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	Landmark
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