

# ENSIGN

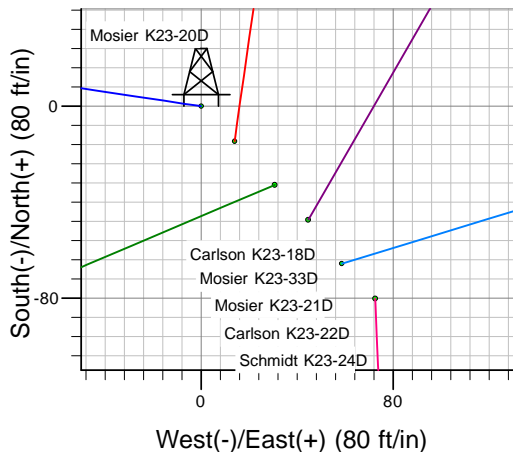
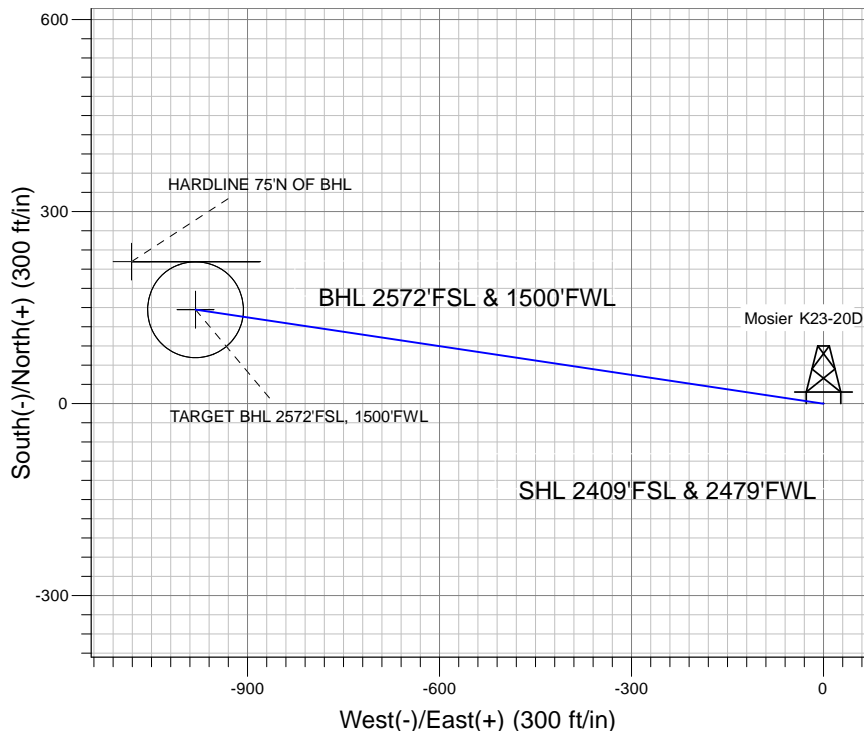
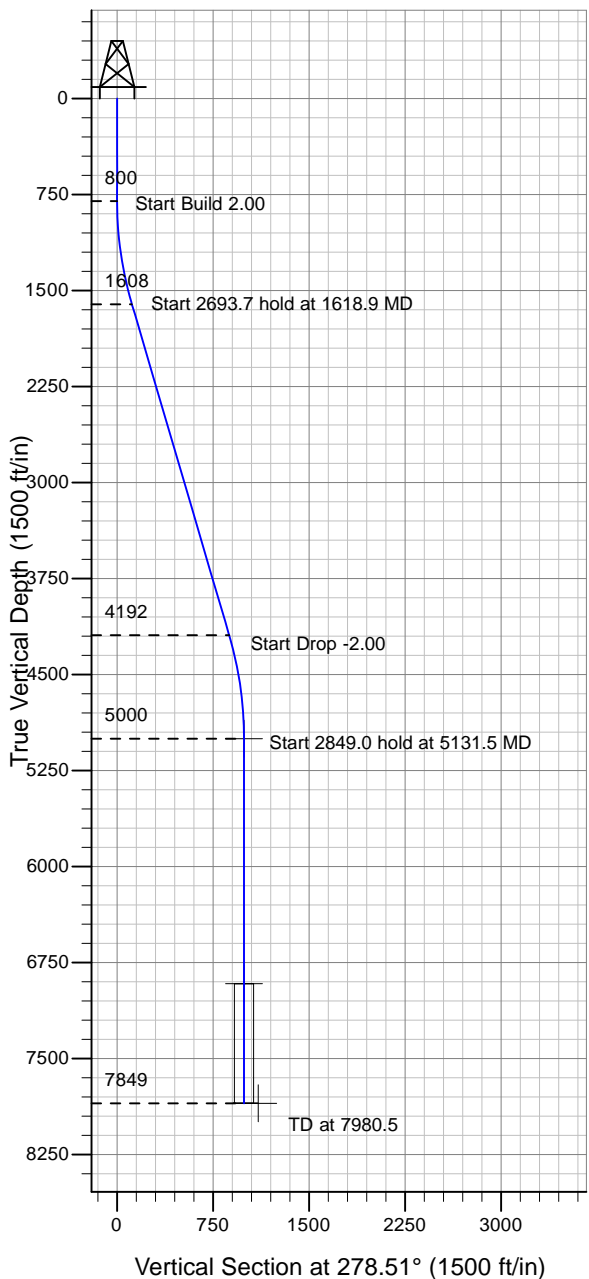
## Directional

### Well Name: Mosier K23-20D

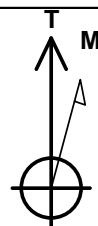
Surface Location: Schmidt K23-24D Pad Sec.23-T4N-R66W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4726.0

+N/-S+E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1351850.73 3210567.86 40° 17' 48.372 N 104° 44' 42.324 W  
 Original Well Elev WELL @ 4739.0ft (Original Well Elev)

### NOBLE ENERGY INC WELD COUNTY CO



Schmidt K23-24D Pad Sec.23-T4N-R66W  
 Mosier K23-20D  
 Noble Mosier K23-20D Plan #2 (04-15-10)  
 13:32, April 18 2010



Azimuths to True North  
 Magnetic North: 9.00°

Magnetic Field  
 Strength: 53202.5snT  
 Dip Angle: 67.01°  
 Date: 4/18/2010  
 Model: IGRF2010

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 2572'FSL, 1500'FWL	5000.0	146.8	-981.2	40° 17' 49.822 N	104° 44' 54.987 W	Point
TARGET CIRCLE 2572'FSL, 1500'FWL	6914.0	146.8	-981.2	40° 17' 49.822 N	104° 44' 54.987 W	Circle (Radius: 75.0)
HARDLINE 75'N OF BHL	7849.0	221.8	-1081.2	40° 17' 50.563 N	104° 44' 56.278 W	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	1618.9	16.38	278.51	1607.8	17.2	-115.0	2.00	278.51	116.3	
4	4312.6	16.38	278.51	4192.2	129.6	-866.2	0.00	0.00	875.8	
5	5131.5	0.00	0.00	5000.0	146.8	-981.2	2.00	180.00	992.1	TARGET BHL 2572'FSL, 1500'FWL
6	7980.5	0.00	0.00	7849.0	146.8	-981.2	0.00	0.00	992.1	



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.23-T4N-R66W**

**Schmidt K23-24D Pad Sec.23-T4N-R66W**

**Mosier K23-20D**

**Wellbore #1**

**Plan: Noble Mosier K23-20D Plan #2 (04-15-10)**

## **Standard Planning Report**

**18 April, 2010**



<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Mosier K23-20D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Project:</b>	SEC.23-T4N-R66W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site:</b>	Schmidt K23-24D Pad Sec.23-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)		

<b>Project</b>	SEC.23-T4N-R66W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site						Schmidt K23-24D Pad Sec.23-T4N-R66W											
Site Position:						Northing:			1,351,771.22 ft			Latitude:			40° 17' 47.580 N		
From:			Lat/Long			Easting:			3,210,641.06 ft			Longitude:			104° 44' 41.388 W		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.49 °		

Well	Mosier K23-20D					
Well Position	+N-S	80.1 ft	Northing:	1,351,850.73 ft	Latitude:	40° 17' 48.372 N
	+E-W	-72.5 ft	Easting:	3,210,567.86 ft	Longitude:	104° 44' 42.324 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,726.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	4/18/2010	9.00	67.01	53,202

<b>Design</b>	Noble Mosier K23-20D Plan #2 (04-15-10)				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	278.51	

<b>Plan Sections</b>										
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	
1,618.9	16.38	278.51	1,607.8	17.2	-115.0	2.00	2.00	0.00	278.51	
4,312.6	16.38	278.51	4,192.2	129.6	-866.2	0.00	0.00	0.00	0.00	
5,131.5	0.00	0.00	5,000.0	146.8	-981.2	2.00	-2.00	0.00	180.00	TARGET BHL 2572
7,980.5	0.00	0.00	7,849.0	146.8	-981.2	0.00	0.00	0.00	0.00	

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<b>Project:</b>	SEC.23-T4N-R66W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site:</b>	Schmidt K23-24D Pad Sec.23-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)		

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
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	278.51	840.0	0.0	-0.3	0.3	2.00	2.00	0.00
880.0	1.60	278.51	880.0	0.2	-1.1	1.1	2.00	2.00	0.00
920.0	2.40	278.51	920.0	0.4	-2.5	2.5	2.00	2.00	0.00
960.0	3.20	278.51	959.9	0.7	-4.4	4.5	2.00	2.00	0.00
1,000.0	4.00	278.51	999.8	1.0	-6.9	7.0	2.00	2.00	0.00
1,040.0	4.80	278.51	1,039.7	1.5	-9.9	10.0	2.00	2.00	0.00
1,080.0	5.60	278.51	1,079.6	2.0	-13.5	13.7	2.00	2.00	0.00
1,120.0	6.40	278.51	1,119.3	2.6	-17.7	17.9	2.00	2.00	0.00
1,160.0	7.20	278.51	1,159.1	3.3	-22.3	22.6	2.00	2.00	0.00
1,200.0	8.00	278.51	1,198.7	4.1	-27.6	27.9	2.00	2.00	0.00
1,240.0	8.80	278.51	1,238.3	5.0	-33.4	33.7	2.00	2.00	0.00
1,280.0	9.60	278.51	1,277.8	5.9	-39.7	40.1	2.00	2.00	0.00
1,320.0	10.40	278.51	1,317.1	7.0	-46.5	47.1	2.00	2.00	0.00
1,360.0	11.20	278.51	1,356.4	8.1	-54.0	54.6	2.00	2.00	0.00
1,400.0	12.00	278.51	1,395.6	9.3	-61.9	62.6	2.00	2.00	0.00
1,440.0	12.80	278.51	1,434.7	10.5	-70.4	71.2	2.00	2.00	0.00
1,480.0	13.60	278.51	1,473.6	11.9	-79.4	80.3	2.00	2.00	0.00
1,520.0	14.40	278.51	1,512.4	13.3	-89.0	90.0	2.00	2.00	0.00
1,560.0	15.20	278.51	1,551.1	14.8	-99.1	100.2	2.00	2.00	0.00
1,600.0	16.00	278.51	1,589.6	16.4	-109.8	111.0	2.00	2.00	0.00
1,618.9	16.38	278.51	1,607.8	17.2	-115.0	116.3	2.00	2.00	0.00
1,640.0	16.38	278.51	1,628.0	18.1	-120.9	122.2	0.00	0.00	0.00
1,680.0	16.38	278.51	1,666.4	19.7	-132.0	133.5	0.00	0.00	0.00
1,720.0	16.38	278.51	1,704.8	21.4	-143.2	144.8	0.00	0.00	0.00
1,760.0	16.38	278.51	1,743.2	23.1	-154.3	156.0	0.00	0.00	0.00
1,800.0	16.38	278.51	1,781.5	24.8	-165.5	167.3	0.00	0.00	0.00
1,840.0	16.38	278.51	1,819.9	26.4	-176.6	178.6	0.00	0.00	0.00
1,880.0	16.38	278.51	1,858.3	28.1	-187.8	189.9	0.00	0.00	0.00
1,920.0	16.38	278.51	1,896.7	29.8	-198.9	201.2	0.00	0.00	0.00
1,960.0	16.38	278.51	1,935.1	31.4	-210.1	212.4	0.00	0.00	0.00
2,000.0	16.38	278.51	1,973.4	33.1	-221.2	223.7	0.00	0.00	0.00
2,040.0	16.38	278.51	2,011.8	34.8	-232.4	235.0	0.00	0.00	0.00
2,080.0	16.38	278.51	2,050.2	36.4	-243.6	246.3	0.00	0.00	0.00

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<b>Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)		

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)
2,120.0	16.38	278.51	2,088.6	38.1	-254.7	257.5	0.00	0.00	0.00
2,160.0	16.38	278.51	2,126.9	39.8	-265.9	268.8	0.00	0.00	0.00
2,200.0	16.38	278.51	2,165.3	41.4	-277.0	280.1	0.00	0.00	0.00
2,240.0	16.38	278.51	2,203.7	43.1	-288.2	291.4	0.00	0.00	0.00
2,280.0	16.38	278.51	2,242.1	44.8	-299.3	302.7	0.00	0.00	0.00
2,320.0	16.38	278.51	2,280.4	46.4	-310.5	313.9	0.00	0.00	0.00
2,360.0	16.38	278.51	2,318.8	48.1	-321.6	325.2	0.00	0.00	0.00
2,400.0	16.38	278.51	2,357.2	49.8	-332.8	336.5	0.00	0.00	0.00
2,440.0	16.38	278.51	2,395.6	51.5	-344.0	347.8	0.00	0.00	0.00
2,480.0	16.38	278.51	2,433.9	53.1	-355.1	359.1	0.00	0.00	0.00
2,520.0	16.38	278.51	2,472.3	54.8	-366.3	370.3	0.00	0.00	0.00
2,560.0	16.38	278.51	2,510.7	56.5	-377.4	381.6	0.00	0.00	0.00
2,600.0	16.38	278.51	2,549.1	58.1	-388.6	392.9	0.00	0.00	0.00
2,640.0	16.38	278.51	2,587.5	59.8	-399.7	404.2	0.00	0.00	0.00
2,680.0	16.38	278.51	2,625.8	61.5	-410.9	415.5	0.00	0.00	0.00
2,720.0	16.38	278.51	2,664.2	63.1	-422.0	426.7	0.00	0.00	0.00
2,760.0	16.38	278.51	2,702.6	64.8	-433.2	438.0	0.00	0.00	0.00
2,800.0	16.38	278.51	2,741.0	66.5	-444.4	449.3	0.00	0.00	0.00
2,840.0	16.38	278.51	2,779.3	68.1	-455.5	460.6	0.00	0.00	0.00
2,880.0	16.38	278.51	2,817.7	69.8	-466.7	471.9	0.00	0.00	0.00
2,920.0	16.38	278.51	2,856.1	71.5	-477.8	483.1	0.00	0.00	0.00
2,960.0	16.38	278.51	2,894.5	73.1	-489.0	494.4	0.00	0.00	0.00
3,000.0	16.38	278.51	2,932.8	74.8	-500.1	505.7	0.00	0.00	0.00
3,040.0	16.38	278.51	2,971.2	76.5	-511.3	517.0	0.00	0.00	0.00
3,080.0	16.38	278.51	3,009.6	78.2	-522.4	528.3	0.00	0.00	0.00
3,120.0	16.38	278.51	3,048.0	79.8	-533.6	539.5	0.00	0.00	0.00
3,160.0	16.38	278.51	3,086.4	81.5	-544.8	550.8	0.00	0.00	0.00
3,200.0	16.38	278.51	3,124.7	83.2	-555.9	562.1	0.00	0.00	0.00
3,240.0	16.38	278.51	3,163.1	84.8	-567.1	573.4	0.00	0.00	0.00
3,280.0	16.38	278.51	3,201.5	86.5	-578.2	584.6	0.00	0.00	0.00
3,320.0	16.38	278.51	3,239.9	88.2	-589.4	595.9	0.00	0.00	0.00
3,360.0	16.38	278.51	3,278.2	89.8	-600.5	607.2	0.00	0.00	0.00
3,400.0	16.38	278.51	3,316.6	91.5	-611.7	618.5	0.00	0.00	0.00
3,440.0	16.38	278.51	3,355.0	93.2	-622.8	629.8	0.00	0.00	0.00
3,480.0	16.38	278.51	3,393.4	94.8	-634.0	641.0	0.00	0.00	0.00
3,520.0	16.38	278.51	3,431.7	96.5	-645.1	652.3	0.00	0.00	0.00
3,560.0	16.38	278.51	3,470.1	98.2	-656.3	663.6	0.00	0.00	0.00
3,600.0	16.38	278.51	3,508.5	99.8	-667.5	674.9	0.00	0.00	0.00
3,640.0	16.38	278.51	3,546.9	101.5	-678.6	686.2	0.00	0.00	0.00
3,680.0	16.38	278.51	3,585.3	103.2	-689.8	697.4	0.00	0.00	0.00
3,720.0	16.38	278.51	3,623.6	104.9	-700.9	708.7	0.00	0.00	0.00
3,760.0	16.38	278.51	3,662.0	106.5	-712.1	720.0	0.00	0.00	0.00
3,800.0	16.38	278.51	3,700.4	108.2	-723.2	731.3	0.00	0.00	0.00
3,840.0	16.38	278.51	3,738.8	109.9	-734.4	742.6	0.00	0.00	0.00
3,880.0	16.38	278.51	3,777.1	111.5	-745.5	753.8	0.00	0.00	0.00
3,920.0	16.38	278.51	3,815.5	113.2	-756.7	765.1	0.00	0.00	0.00
3,960.0	16.38	278.51	3,853.9	114.9	-767.9	776.4	0.00	0.00	0.00
4,000.0	16.38	278.51	3,892.3	116.5	-779.0	787.7	0.00	0.00	0.00
4,040.0	16.38	278.51	3,930.6	118.2	-790.2	799.0	0.00	0.00	0.00
4,080.0	16.38	278.51	3,969.0	119.9	-801.3	810.2	0.00	0.00	0.00
4,120.0	16.38	278.51	4,007.4	121.5	-812.5	821.5	0.00	0.00	0.00
4,160.0	16.38	278.51	4,045.8	123.2	-823.6	832.8	0.00	0.00	0.00
4,200.0	16.38	278.51	4,084.2	124.9	-834.8	844.1	0.00	0.00	0.00
4,240.0	16.38	278.51	4,122.5	126.5	-845.9	855.4	0.00	0.00	0.00

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<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Project:</b>	SEC.23-T4N-R66W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site:</b>	Schmidt K23-24D Pad Sec.23-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)		

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)
4,280.0	16.38	278.51	4,160.9	128.2	-857.1	866.6	0.00	0.00	0.00
4,312.6	16.38	278.51	4,192.2	129.6	-866.2	875.8	0.00	0.00	0.00
4,320.0	16.23	278.51	4,199.3	129.9	-868.2	877.9	2.00	-2.00	0.00
4,360.0	15.43	278.51	4,237.8	131.5	-879.0	888.8	2.00	-2.00	0.00
4,400.0	14.63	278.51	4,276.4	133.0	-889.3	899.2	2.00	-2.00	0.00
4,440.0	13.83	278.51	4,315.2	134.5	-899.0	909.0	2.00	-2.00	0.00
4,480.0	13.03	278.51	4,354.1	135.9	-908.2	918.3	2.00	-2.00	0.00
4,520.0	12.23	278.51	4,393.1	137.2	-916.9	927.1	2.00	-2.00	0.00
4,560.0	11.43	278.51	4,432.3	138.4	-925.0	935.3	2.00	-2.00	0.00
4,600.0	10.63	278.51	4,471.5	139.5	-932.5	942.9	2.00	-2.00	0.00
4,640.0	9.83	278.51	4,510.9	140.6	-939.6	950.0	2.00	-2.00	0.00
4,680.0	9.03	278.51	4,550.3	141.5	-946.0	956.6	2.00	-2.00	0.00
4,720.0	8.23	278.51	4,589.9	142.4	-952.0	962.6	2.00	-2.00	0.00
4,760.0	7.43	278.51	4,629.5	143.2	-957.4	968.0	2.00	-2.00	0.00
4,800.0	6.63	278.51	4,669.2	143.9	-962.2	972.9	2.00	-2.00	0.00
4,840.0	5.83	278.51	4,709.0	144.6	-966.5	977.3	2.00	-2.00	0.00
4,880.0	5.03	278.51	4,748.8	145.1	-970.2	981.0	2.00	-2.00	0.00
4,920.0	4.23	278.51	4,788.7	145.6	-973.4	984.3	2.00	-2.00	0.00
4,960.0	3.43	278.51	4,828.6	146.0	-976.1	986.9	2.00	-2.00	0.00
5,000.0	2.63	278.51	4,868.5	146.3	-978.2	989.1	2.00	-2.00	0.00
5,040.0	1.83	278.51	4,908.5	146.6	-979.7	990.6	2.00	-2.00	0.00
5,080.0	1.03	278.51	4,948.5	146.7	-980.7	991.6	2.00	-2.00	0.00
5,120.0	0.23	278.51	4,988.5	146.8	-981.1	992.1	2.00	-2.00	0.00
5,131.5	0.00	0.00	5,000.0	146.8	-981.2	992.1	2.00	-2.00	0.00
TARGET BHL 2572'FSL, 1500'FWL									
5,160.0	0.00	0.00	5,028.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,200.0	0.00	0.00	5,068.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,240.0	0.00	0.00	5,108.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,280.0	0.00	0.00	5,148.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,320.0	0.00	0.00	5,188.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,360.0	0.00	0.00	5,228.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,268.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,440.0	0.00	0.00	5,308.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,480.0	0.00	0.00	5,348.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,520.0	0.00	0.00	5,388.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,560.0	0.00	0.00	5,428.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,468.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,640.0	0.00	0.00	5,508.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,680.0	0.00	0.00	5,548.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,720.0	0.00	0.00	5,588.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,760.0	0.00	0.00	5,628.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,668.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,840.0	0.00	0.00	5,708.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,880.0	0.00	0.00	5,748.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,920.0	0.00	0.00	5,788.5	146.8	-981.2	992.1	0.00	0.00	0.00
5,960.0	0.00	0.00	5,828.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,000.0	0.00	0.00	5,868.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,040.0	0.00	0.00	5,908.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,080.0	0.00	0.00	5,948.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,120.0	0.00	0.00	5,988.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,160.0	0.00	0.00	6,028.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,200.0	0.00	0.00	6,068.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,240.0	0.00	0.00	6,108.5	146.8	-981.2	992.1	0.00	0.00	0.00

<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Mosier K23-20D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Project:</b>	SEC.23-T4N-R66W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site:</b>	Schmidt K23-24D Pad Sec.23-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)		

**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)
6,280.0	0.00	0.00	6,148.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,320.0	0.00	0.00	6,188.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,360.0	0.00	0.00	6,228.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,400.0	0.00	0.00	6,268.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,440.0	0.00	0.00	6,308.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,480.0	0.00	0.00	6,348.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,520.0	0.00	0.00	6,388.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,560.0	0.00	0.00	6,428.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,600.0	0.00	0.00	6,468.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,640.0	0.00	0.00	6,508.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,680.0	0.00	0.00	6,548.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,720.0	0.00	0.00	6,588.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,760.0	0.00	0.00	6,628.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,800.0	0.00	0.00	6,668.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,840.0	0.00	0.00	6,708.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,880.0	0.00	0.00	6,748.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,920.0	0.00	0.00	6,788.5	146.8	-981.2	992.1	0.00	0.00	0.00
6,960.0	0.00	0.00	6,828.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,000.0	0.00	0.00	6,868.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,040.0	0.00	0.00	6,908.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,045.5	0.00	0.00	6,914.0	146.8	-981.2	992.1	0.00	0.00	0.00
<b>NIOBRARA - TARGET CIRCLE 2572'FSL, 1500'FWL</b>									
7,080.0	0.00	0.00	6,948.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,120.0	0.00	0.00	6,988.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,160.0	0.00	0.00	7,028.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,200.0	0.00	0.00	7,068.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,240.0	0.00	0.00	7,108.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,280.0	0.00	0.00	7,148.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,320.0	0.00	0.00	7,188.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,360.0	0.00	0.00	7,228.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,370.5	0.00	0.00	7,239.0	146.8	-981.2	992.1	0.00	0.00	0.00
<b>CODELL</b>									
7,400.0	0.00	0.00	7,268.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,440.0	0.00	0.00	7,308.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,480.0	0.00	0.00	7,348.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,520.0	0.00	0.00	7,388.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,560.0	0.00	0.00	7,428.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,600.0	0.00	0.00	7,468.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,640.0	0.00	0.00	7,508.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,680.0	0.00	0.00	7,548.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,720.0	0.00	0.00	7,588.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,760.0	0.00	0.00	7,628.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,770.5	0.00	0.00	7,639.0	146.8	-981.2	992.1	0.00	0.00	0.00
<b>D-SAND</b>									
7,800.0	0.00	0.00	7,668.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,830.5	0.00	0.00	7,699.0	146.8	-981.2	992.1	0.00	0.00	0.00
<b>J-SAND</b>									
7,840.0	0.00	0.00	7,708.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,880.0	0.00	0.00	7,748.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,920.0	0.00	0.00	7,788.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,960.0	0.00	0.00	7,828.5	146.8	-981.2	992.1	0.00	0.00	0.00
7,980.5	0.00	0.00	7,849.0	146.8	-981.2	992.1	0.00	0.00	0.00
<b>HARDLINE 75'N OF BHL</b>									



<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Mosier K23-20D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Project:</b>	SEC.23-T4N-R66W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site:</b>	Schmidt K23-24D Pad Sec.23-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)		

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
HARDLINE 75'N OF E	0.00	0.00	7,849.0	221.8	-1,081.2	1,352,063.31	3,209,484.86	40° 17' 50.563 N	104° 44' 56.278 W
- plan misses target center by 125.0ft at 7980.5ft MD (7849.0 TVD, 146.8 N, -981.2 E)									
- Polygon									
Point 1			7,849.0	0.0	0.0	1,352,063.31	3,209,484.86		
Point 2			7,849.0	0.0	200.0	1,352,065.01	3,209,684.84		
TARGET BHL 2572'F:	0.00	0.00	5,000.0	146.8	-981.2	1,351,989.14	3,209,585.53	40° 17' 49.822 N	104° 44' 54.987 W
- plan hits target center									
- Point									
TARGET CIRCLE 257	0.00	0.00	6,914.0	146.8	-981.2	1,351,989.17	3,209,585.49	40° 17' 49.822 N	104° 44' 54.987 W
- plan hits target center									
- Circle (radius 75.0)									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
7,045.5	6,914.0	NIOBRARA		0.00		
7,370.5	7,239.0	CODELL		0.00		
7,770.5	7,639.0	D-SAND		0.00		
7,830.5	7,699.0	J-SAND		0.00		





# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.23-T4N-R66W**

**Schmidt K23-24D Pad Sec.23-T4N-R66W**

**Mosier K23-20D**

**Wellbore #1**

**Noble Mosier K23-20D Plan #2 (04-15-10)**

## **Anticollision Report**

**18 April, 2010**



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Mosier K23-20D
<b>Project:</b>	SEC.23-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Reference Site:</b>	Schmidt K23-24D Pad Sec.23-T4N-R66W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM den0-adp01 Server Data
<b>Reference Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Noble Mosier K23-20D Plan #2 (04-15-10)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.0ft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 2,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 4/18/2010			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	7,980.5	Noble Mosier K23-20D Plan #2 (04-15-10)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Schmidt K23-24D Pad Sec.23-T4N-R66W						
Carlson K23-18D - Wellbore #1 - Noble Carlson K23-18E	800.0	800.0	20.2	16.8	6.035	CC, ES
Carlson K23-18D - Wellbore #1 - Noble Carlson K23-18E	900.0	900.0	21.6	17.8	5.707	SF

<b>Offset Design</b>												
Schmidt K23-24D Pad Sec.23-T4N-R66W - Carlson K23-18D - Wellbore #1 - Noble Carlson K23-18D PI												
Survey Program: 0-MWD												
<b>Reference</b>		<b>Offset</b>		<b>Semi Major Axis</b>			<b>Distance</b>					
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>
0.0	0.0	0.0	0.0	0.0	0.0	136.26	-14.6	13.9	20.2			
100.0	100.0	100.0	100.0	0.1	0.1	136.26	-14.6	13.9	20.2	20.0	0.20	103.153
200.0	200.0	200.0	200.0	0.3	0.3	136.26	-14.6	13.9	20.2	19.5	0.65	31.269
300.0	300.0	300.0	300.0	0.5	0.5	136.26	-14.6	13.9	20.2	19.1	1.09	18.428
400.0	400.0	400.0	400.0	0.8	0.8	136.26	-14.6	13.9	20.2	18.6	1.54	13.063
500.0	500.0	500.0	500.0	1.0	1.0	136.26	-14.6	13.9	20.2	18.2	1.99	10.118
600.0	600.0	600.0	600.0	1.2	1.2	136.26	-14.6	13.9	20.2	17.7	2.44	8.256
700.0	700.0	700.0	700.0	1.4	1.4	136.26	-14.6	13.9	20.2	17.3	2.89	6.973
800.0	800.0	800.0	800.0	1.7	1.7	136.26	-14.6	13.9	20.2	16.8	3.34	6.035 CC, ES
900.0	900.0	900.0	900.0	1.9	1.9	-145.07	-14.6	13.9	21.6	17.8	3.78	5.707 SF
1,000.0	999.8	999.8	999.8	2.1	2.1	-151.64	-14.6	13.9	26.0	21.8	4.21	6.184
1,100.0	1,099.5	1,099.9	1,099.8	2.3	2.3	-161.39	-12.8	14.2	33.4	28.7	4.64	7.191
1,200.0	1,198.7	1,199.3	1,199.1	2.6	2.6	-172.88	-7.7	14.9	44.1	39.1	5.06	8.712
1,300.0	1,297.5	1,297.7	1,297.2	2.9	2.8	176.95	0.7	16.1	59.4	53.9	5.49	10.820
1,400.0	1,395.6	1,394.9	1,393.6	3.2	3.0	169.00	12.3	17.8	79.8	73.8	5.94	13.420
1,500.0	1,493.1	1,490.5	1,488.1	3.6	3.3	162.99	26.9	19.8	105.1	98.7	6.43	16.351
1,600.0	1,589.6	1,584.2	1,580.1	4.0	3.6	158.44	44.2	22.3	135.3	128.3	6.95	19.452
1,700.0	1,685.6	1,676.0	1,669.8	4.5	3.9	155.00	64.0	25.1	169.2	161.6	7.56	22.383
1,800.0	1,781.5	1,766.5	1,757.4	5.0	4.2	151.98	86.3	28.3	204.8	196.5	8.22	24.912
1,900.0	1,877.5	1,855.4	1,842.7	5.6	4.6	149.24	110.9	31.8	242.1	233.2	8.93	27.114
2,000.0	1,973.4	1,942.7	1,925.7	6.1	5.0	146.73	137.6	35.6	281.4	271.7	9.69	29.043
2,100.0	2,069.4	2,028.2	2,006.2	6.7	5.5	144.43	166.1	39.7	322.5	312.0	10.48	30.776
2,200.0	2,165.3	2,116.4	2,088.6	7.3	6.0	142.29	197.4	44.1	365.1	353.8	11.32	32.255
2,300.0	2,261.3	2,206.0	2,172.3	7.8	6.5	140.56	229.2	48.6	408.2	396.0	12.18	33.519
2,400.0	2,357.2	2,295.6	2,255.9	8.4	7.1	139.15	261.0	53.2	451.5	438.5	13.05	34.606

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

<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Mosier K23-20D
<b>Project:</b>	SEC.23-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Reference Site:</b>	Schmidt K23-24D Pad Sec.23-T4N-R66W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM den0-adp01 Server Data
<b>Reference Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0ft
Survey Program: 0-MWDD												Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,500.0	2,453.1	2,385.2	2,339.6	9.0	7.7	137.99	292.9	57.7	495.0	481.1	13.92	35.549	
2,600.0	2,549.1	2,474.9	2,423.2	9.6	8.2	137.01	324.7	62.2	538.6	523.8	14.81	36.374	
2,700.0	2,645.0	2,564.5	2,506.9	10.2	8.8	136.18	356.6	66.7	582.4	566.7	15.70	37.100	
2,800.0	2,741.0	2,654.1	2,590.6	10.8	9.4	135.47	388.4	71.3	626.2	609.6	16.59	37.742	
2,900.0	2,836.9	2,743.8	2,674.2	11.3	10.0	134.85	420.2	75.8	670.1	652.6	17.49	38.315	
3,000.0	2,932.8	2,833.4	2,757.9	11.9	10.6	134.30	452.1	80.3	714.0	695.7	18.39	38.827	
3,100.0	3,028.8	2,923.0	2,841.5	12.5	11.2	133.82	483.9	84.9	758.0	738.7	19.29	39.288	
3,200.0	3,124.7	3,012.6	2,925.2	13.1	11.8	133.39	515.7	89.4	802.1	781.9	20.20	39.704	
3,300.0	3,220.7	3,102.3	3,008.9	13.7	12.4	133.00	547.6	93.9	846.1	825.0	21.11	40.082	
3,400.0	3,316.6	3,191.9	3,092.5	14.3	13.0	132.66	579.4	98.4	890.2	868.2	22.02	40.425	
3,500.0	3,412.6	3,281.5	3,176.2	14.9	13.6	132.34	611.2	103.0	934.4	911.4	22.94	40.740	
3,600.0	3,508.5	3,371.1	3,259.8	15.5	14.3	132.06	643.1	107.5	978.5	954.7	23.85	41.028	
3,700.0	3,604.4	3,460.8	3,343.5	16.1	14.9	131.79	674.9	112.0	1,022.7	997.9	24.77	41.293	
3,800.0	3,700.4	3,550.4	3,427.2	16.7	15.5	131.55	706.7	116.6	1,066.8	1,041.2	25.68	41.538	
3,900.0	3,796.3	3,640.0	3,510.8	17.3	16.1	131.33	738.6	121.1	1,111.0	1,084.4	26.60	41.765	
4,000.0	3,892.3	3,729.7	3,594.5	17.9	16.7	131.13	770.4	125.6	1,155.2	1,127.7	27.52	41.976	
4,100.0	3,988.2	3,819.3	3,678.1	18.5	17.3	130.94	802.2	130.1	1,199.4	1,171.0	28.44	42.172	
4,200.0	4,084.2	3,908.9	3,761.8	19.1	18.0	130.76	834.1	134.7	1,243.7	1,214.3	29.36	42.354	
4,300.0	4,180.1	3,998.5	3,845.5	19.7	18.6	130.60	865.9	139.2	1,287.9	1,257.6	30.29	42.525	
4,400.0	4,276.4	4,088.5	3,929.4	20.2	19.2	131.04	897.9	143.8	1,331.4	1,300.1	31.27	42.583	
4,500.0	4,373.6	4,179.3	4,014.2	20.6	19.8	131.41	930.1	148.3	1,372.8	1,340.6	32.18	42.664	
4,600.0	4,471.5	4,270.7	4,099.6	21.0	20.5	131.65	962.6	153.0	1,412.1	1,379.1	33.05	42.725	
4,700.0	4,570.1	4,362.8	4,185.5	21.3	21.1	131.76	995.3	157.6	1,449.4	1,415.5	33.89	42.773	
4,800.0	4,669.2	4,455.4	4,271.9	21.5	21.7	131.75	1,028.2	162.3	1,484.7	1,450.0	34.68	42.816	
4,900.0	4,768.7	4,548.3	4,358.6	21.7	22.4	131.62	1,061.2	167.0	1,517.9	1,482.5	35.42	42.857	
5,000.0	4,868.5	4,641.4	4,445.6	21.9	23.0	131.40	1,094.3	171.7	1,549.1	1,513.0	36.11	42.902	
5,100.0	4,968.5	4,734.7	4,532.7	22.0	23.7	131.08	1,127.4	176.4	1,578.3	1,541.6	36.74	42.955	
5,200.0	5,068.5	4,828.1	4,619.8	22.1	24.3	48.90	1,160.6	181.1	1,606.2	1,568.9	37.32	43.042	
5,300.0	5,168.5	4,921.4	4,706.9	22.2	25.0	48.10	1,193.7	185.8	1,634.3	1,596.4	37.88	43.145	
5,400.0	5,268.5	5,014.8	4,794.0	22.4	25.6	47.33	1,226.9	190.6	1,662.7	1,624.3	38.43	43.264	
5,500.0	5,368.5	5,108.1	4,881.2	22.5	26.3	46.58	1,260.0	195.3	1,691.4	1,652.4	38.98	43.396	
5,600.0	5,468.5	5,201.5	4,968.3	22.6	26.9	45.86	1,293.2	200.0	1,720.3	1,680.8	39.51	43.541	
5,700.0	5,568.5	5,294.8	5,055.4	22.7	27.6	45.15	1,326.3	204.7	1,749.5	1,709.5	40.04	43.696	
5,800.0	5,668.5	5,388.1	5,142.6	22.8	28.3	44.47	1,359.5	209.4	1,779.0	1,738.4	40.56	43.860	
5,900.0	5,768.5	5,481.2	5,233.9	22.9	29.2	43.40	1,414.0	217.2	1,807.5	1,766.2	41.25	43.821	
6,000.0	5,868.5	5,575.2	5,329.2	23.1	30.1	42.34	1,470.9	225.3	1,831.0	1,789.1	41.92	43.674	
6,100.0	5,968.5	5,664.1	5,424.6	23.2	30.9	41.55	1,515.3	231.6	1,848.8	1,806.2	42.54	43.461	
6,200.0	6,068.5	5,751.0	5,510.4	23.3	31.5	41.03	1,545.0	235.8	1,860.4	1,817.4	43.08	43.188	
6,300.0	6,168.5	5,837.9	5,601.2	23.4	31.8	40.80	1,558.7	237.8	1,865.7	1,822.2	43.53	42.860	
6,400.0	6,268.5	5,924.8	5,686.5	23.5	32.0	40.79	1,559.6	237.9	1,866.0	1,822.2	43.83	42.573	
6,500.0	6,368.5	6,011.7	5,771.3	23.7	32.0	40.79	1,559.6	237.9	1,866.0	1,821.9	44.10	42.316	
6,600.0	6,468.5	6,098.6	5,856.8	23.8	32.1	40.79	1,559.6	237.9	1,866.0	1,821.7	44.37	42.059	
6,700.0	6,568.5	6,185.5	5,942.3	23.9	32.2	40.79	1,559.6	237.9	1,866.0	1,821.4	44.64	41.803	
6,800.0	6,668.5	6,272.4	6,027.9	24.1	32.3	40.79	1,559.6	237.9	1,866.0	1,821.1	44.91	41.547	
6,900.0	6,768.5	6,359.3	6,113.4	24.2	32.4	40.79	1,559.6	237.9	1,866.0	1,820.8	45.19	41.292	
7,000.0	6,868.5	6,446.2	6,198.9	24.3	32.5	40.79	1,559.6	237.9	1,866.0	1,820.6	45.47	41.037	
7,100.0	6,968.5	6,533.1	6,284.4	24.5	32.6	40.79	1,559.6	237.9	1,866.0	1,820.3	45.75	40.784	
7,200.0	7,068.5	6,620.0	6,369.9	24.6	32.7	40.79	1,559.6	237.9	1,866.0	1,820.0	46.04	40.530	
7,300.0	7,168.5	6,706.9	6,455.8	24.8	32.8	40.79	1,559.6	237.9	1,866.0	1,819.7	46.33	40.278	
7,400.0	7,268.5	6,793.8	6,541.7	24.9	32.9	40.79	1,559.6	237.9	1,866.0	1,819.4	46.62	40.027	
7,500.0	7,368.5	6,880.7	6,627.6	25.0	33.0	40.79	1,559.6	237.9	1,866.0	1,819.1	46.91	39.777	
7,600.0	7,468.5	6,967.6	6,713.5	25.2	33.1	40.79	1,559.6	237.9	1,866.0	1,818.8	47.21	39.528	

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

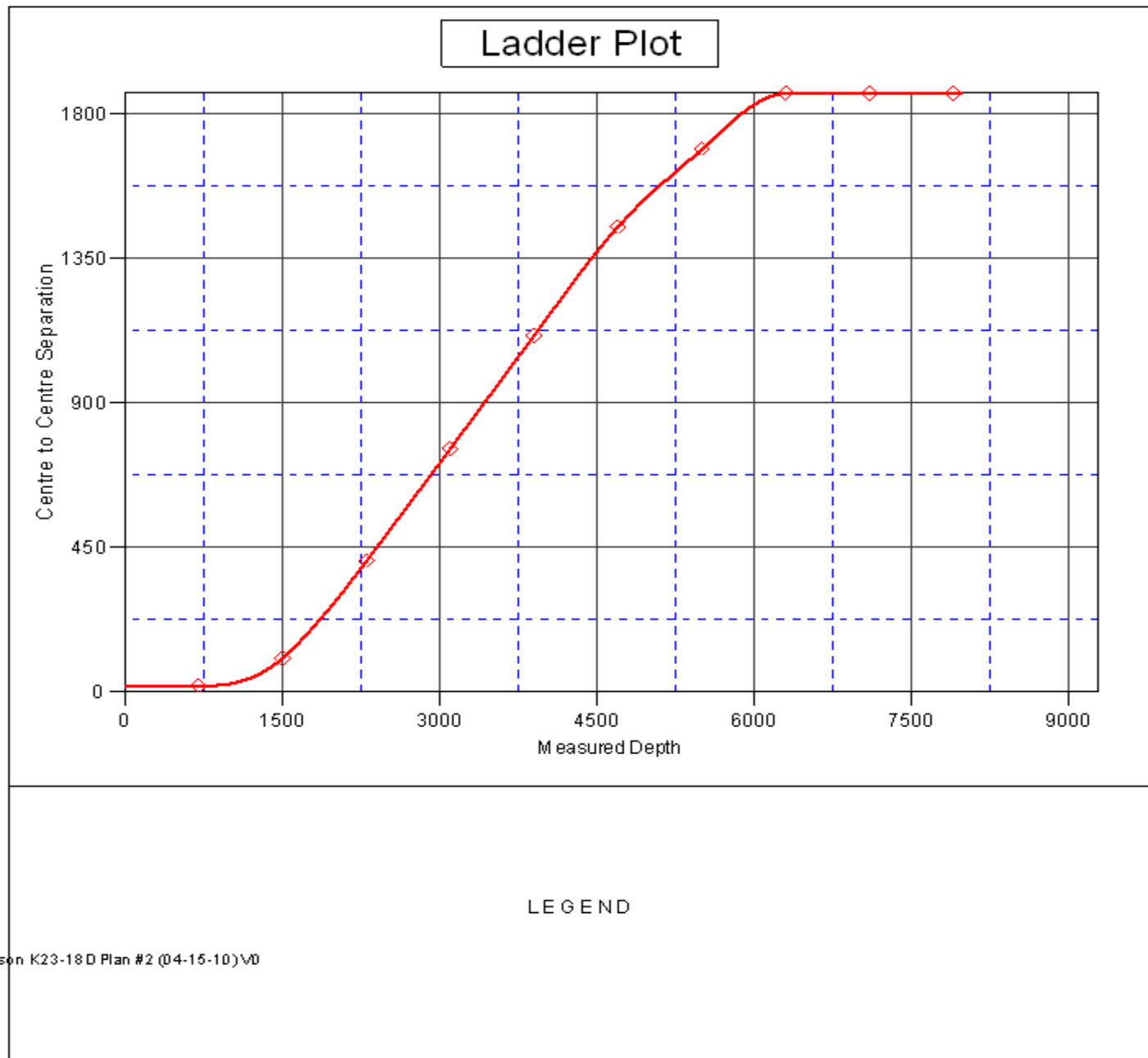
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Mosier K23-20D
<b>Project:</b>	SEC.23-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Reference Site:</b>	Schmidt K23-24D Pad Sec.23-T4N-R66W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM den0-adp01 Server Data
<b>Reference Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Schmidt K23-24D Pad Sec.23-T4N-R66W - Carlson K23-18D - Wellbore #1 - Noble Carlson K23-18D PI										Offset Site Error:		0.0 ft	
Survey Program: 0-MWD												Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
7,700.0	7,568.5	7,839.6	7,568.5	25.3	33.2	40.79	1,559.6	237.9	1,866.0	1,818.5	47.51	39.279			
7,800.0	7,668.5	7,939.6	7,668.5	25.5	33.3	40.79	1,559.6	237.9	1,866.0	1,818.2	47.81	39.032			
7,900.0	7,768.5	8,039.6	7,768.5	25.6	33.4	40.79	1,559.6	237.9	1,866.0	1,817.9	48.11	38.787			
7,980.5	7,849.0	8,120.1	7,849.0	25.7	33.5	40.79	1,559.6	237.9	1,866.0	1,817.7	48.36	38.590			

**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.23-T4N-R66W  
**Reference Site:** Schmidt K23-24D Pad Sec.23-T4N-R66W  
**Site Error:** 0.0ft  
**Reference Well:** Mosier K23-20D  
**Well Error:** 0.0ft  
**Reference Wellbore:** Wellbore #1  
**Reference Design:** Noble Mosier K23-20D Plan #2 (04-15-10)

**Local Co-ordinate Reference:** Well Mosier K23-20D  
**TVD Reference:** WELL @ 4739.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4739.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** EDM den0-adp01 Server Data  
**Offset TVD Reference:** Offset Datum

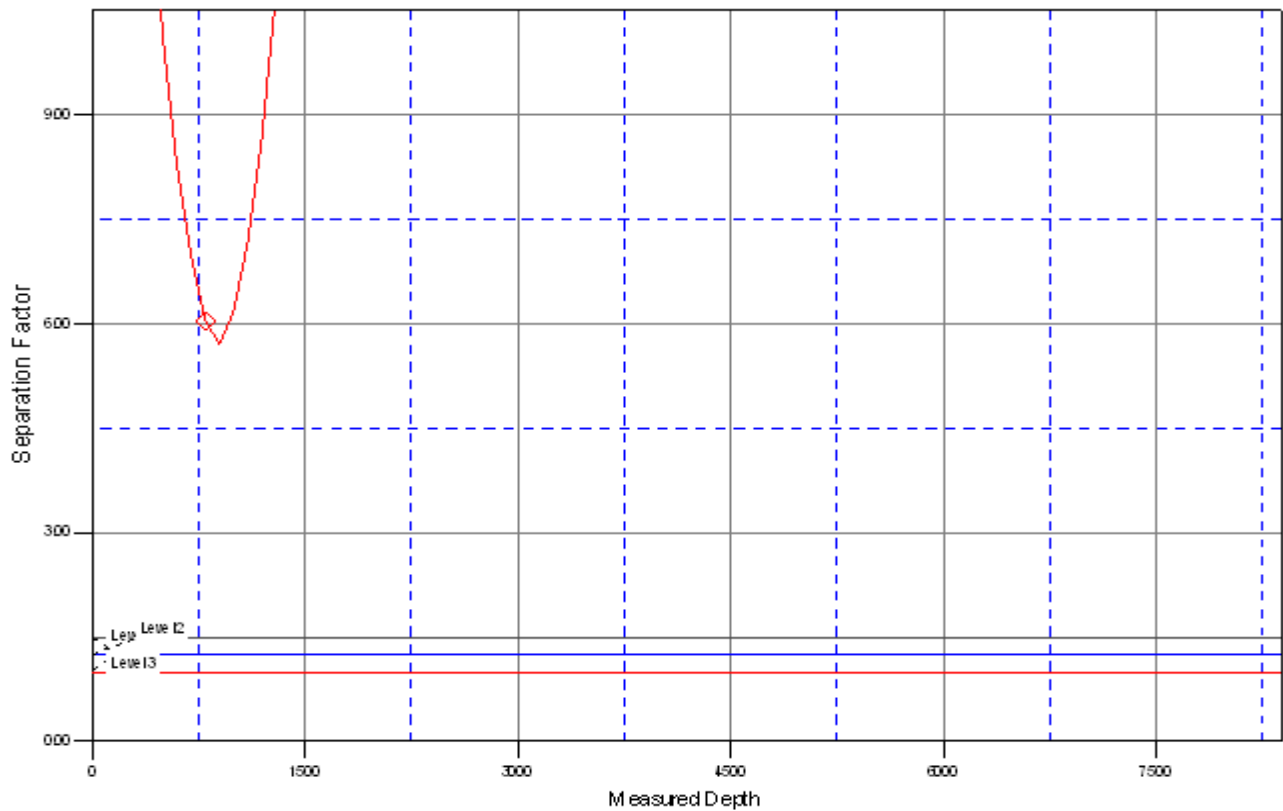
Reference Depths are relative to WELL @ 4739.0ft (Original Well Elev) Coordinates are relative to: Mosier K23-20D  
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.49°



<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>Local Co-ordinate Reference:</b>	Well Mosier K23-20D
<b>Project:</b>	SEC.23-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Reference Site:</b>	Schmidt K23-24D Pad Sec.23-T4N-R66W	<b>MD Reference:</b>	WELL @ 4739.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Mosier K23-20D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM den0-adp01 Server Data
<b>Reference Design:</b>	Noble Mosier K23-20D Plan #2 (04-15-10)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4739.0ft (Original Well Elev) Coordinates are relative to: Mosier K23-20D  
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.49°

## Separation Factor Plot



## LEGEND

rsion K23-18 D Plan #2 (04-15-10)\V0