

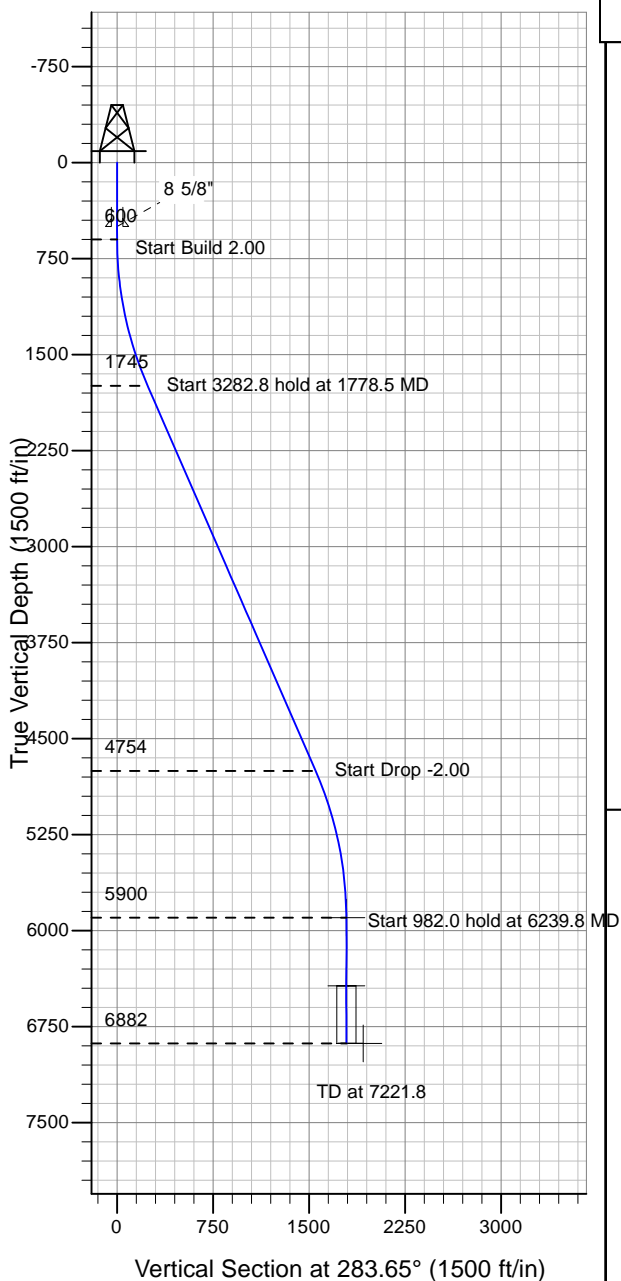
# ENSIGN

## Directional

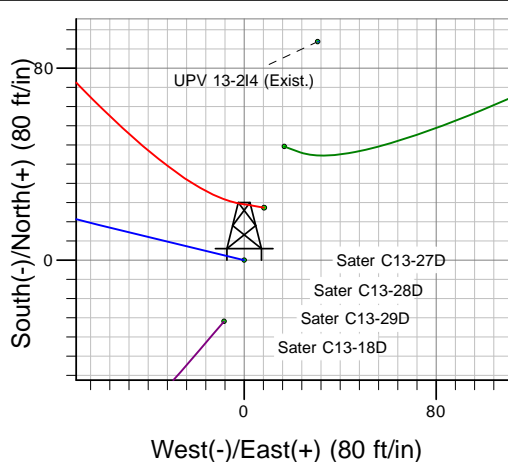
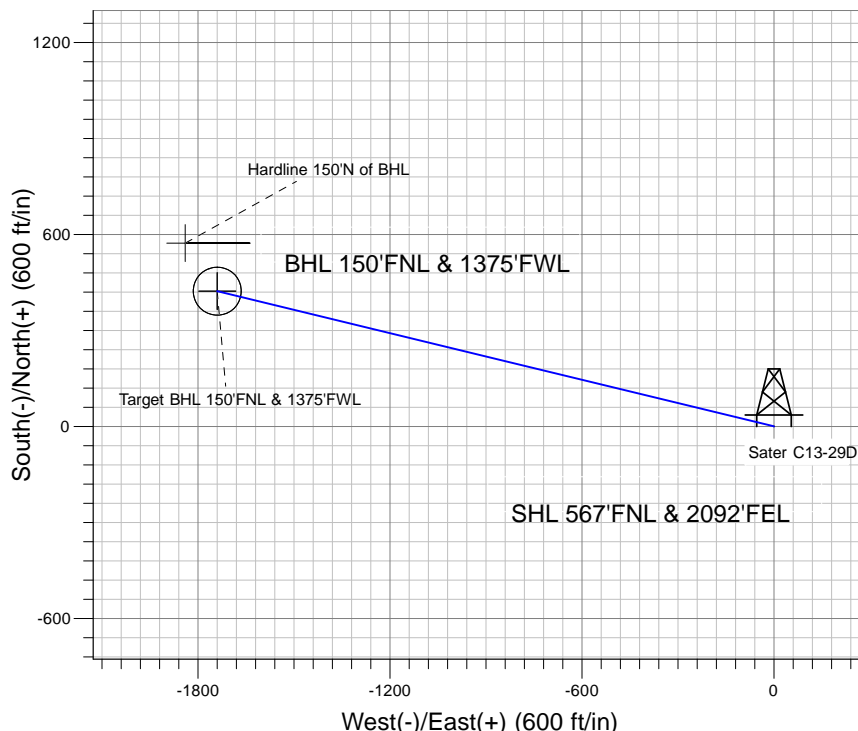
### Well Name: Sater C13-29D

Surface Location: Noble Sater C13-18D Pad Sec.13-T4N-R64W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4629.0

+N/-S+E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 414622.07 999633.22 40° 19' 5.160 N 104° 29' 49.812 W  
 Original Well Elev WELL @ 4642.0ft (Original Well Elev)



### NOBLE ENERGY INC WELD COUNTY CO



Noble Sater C13-18D Pad Sec.13-T4N-R64W  
 Sater C13-29D  
 Noble Sater C13-29D Plan #1 (7-15-10)  
 13:00, July 28 2010



Azimuths to True North  
 Magnetic North: 8.83°

Magnetic Field  
 Strength: 53212.2snT  
 Dip Angle: 67.06°  
 Date: 7/28/2010  
 Model: IGRF2010

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Target BHL 150'FNL & 1375'FWL	5900.0	422.7	-1740.1	40° 19' 9.336 N	104° 30' 12.276 W	Point
Target Circle 150'FNL & 1375'FWL	6432.0	422.7	-1740.1	40° 19' 9.336 N	104° 30' 12.276 W	Circle (Radius: 75.0)
Hardline 150'N of BHL	6882.0	572.7	-1840.1	40° 19' 10.819 N	104° 30' 13.567 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	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	1778.5	23.57	283.65	1745.5	56.4	-232.2	2.00	283.65	239.0	
4	5061.3	23.57	283.65	4754.5	366.3	-1507.8	0.00	0.00	1551.7	
5	6239.8	0.00	0.00	5900.0	422.7	-1740.1	2.00	180.00	1790.7	Target BHL 150'FNL & 1375'FWL
6	7221.8	0.00	0.00	6882.0	422.7	-1740.1	0.00	0.00	1790.7	



# **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.13-T4N-R64W**

**Noble Sater C13-18D Pad Sec.13-T4N-R64W**

**Sater C13-29D**

**Wellbore #1**

**Plan: Noble Sater C13-29D Plan #1 (7-15-10)**

## **Standard Planning Report**

**28 July, 2010**



<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Sater C13-29D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Project:</b>	SEC.13-T4N-R64W	<b>MD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Site:</b>	Noble Sater C13-18D Pad Sec.13-T4N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Sater C13-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Sater C13-29D Plan #1 (7-15-10)		

<b>Project</b>	SEC.13-T4N-R64W		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site						Noble Sater C13-18D Pad Sec.13-T4N-R64W											
Site Position:						Northing:			414,614.28 m			Latitude:			40° 19' 4.908 N		
From:			Lat/Long			Easting:			999,630.76 m			Longitude:			104° 29' 49.920 W		
Position Uncertainty:			0.0 ft			Slot Radius:			in			Grid Convergence:			0.65 °		

Well	Sater C13-29D					
Well Position	+N-S	25.5 ft	Northing:	414,622.07 m	Latitude:	40° 19' 5.160 N
	+E-W	8.4 ft	Easting:	999,633.22 m	Longitude:	104° 29' 49.812 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,629.0 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	7/28/2010	8.83	67.06	53,212

<b>Design</b>	Noble Sater C13-29D Plan #1 (7-15-10)			
<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	283.65

<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	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,778.5	23.57	283.65	1,745.5	56.4	-232.2	2.00	2.00	0.00	283.65	
5,061.3	23.57	283.65	4,754.5	366.3	-1,507.8	0.00	0.00	0.00	0.00	
6,239.8	0.00	0.00	5,900.0	422.7	-1,740.1	2.00	-2.00	0.00	180.00	Target BHL 150'FN
7,221.8	0.00	0.00	6,882.0	422.7	-1,740.1	0.00	0.00	0.00	0.00	

<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Sater C13-29D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Project:</b>	SEC.13-T4N-R64W	<b>MD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Site:</b>	Noble Sater C13-18D Pad Sec.13-T4N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Sater C13-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Sater C13-29D Plan #1 (7-15-10)		

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
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
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	0.80	283.65	640.0	0.1	-0.3	0.3	2.00	2.00	0.00
680.0	1.60	283.65	680.0	0.3	-1.1	1.1	2.00	2.00	0.00
720.0	2.40	283.65	720.0	0.6	-2.4	2.5	2.00	2.00	0.00
760.0	3.20	283.65	759.9	1.1	-4.3	4.5	2.00	2.00	0.00
800.0	4.00	283.65	799.8	1.6	-6.8	7.0	2.00	2.00	0.00
840.0	4.80	283.65	839.7	2.4	-9.8	10.0	2.00	2.00	0.00
880.0	5.60	283.65	879.6	3.2	-13.3	13.7	2.00	2.00	0.00
920.0	6.40	283.65	919.3	4.2	-17.3	17.9	2.00	2.00	0.00
960.0	7.20	283.65	959.1	5.3	-22.0	22.6	2.00	2.00	0.00
1,000.0	8.00	283.65	998.7	6.6	-27.1	27.9	2.00	2.00	0.00
1,040.0	8.80	283.65	1,038.3	8.0	-32.8	33.7	2.00	2.00	0.00
1,080.0	9.60	283.65	1,077.8	9.5	-39.0	40.1	2.00	2.00	0.00
1,120.0	10.40	283.65	1,117.1	11.1	-45.7	47.1	2.00	2.00	0.00
1,160.0	11.20	283.65	1,156.4	12.9	-53.0	54.6	2.00	2.00	0.00
1,200.0	12.00	283.65	1,195.6	14.8	-60.8	62.6	2.00	2.00	0.00
1,240.0	12.80	283.65	1,234.7	16.8	-69.2	71.2	2.00	2.00	0.00
1,280.0	13.60	283.65	1,273.6	19.0	-78.1	80.3	2.00	2.00	0.00
1,320.0	14.40	283.65	1,312.4	21.2	-87.5	90.0	2.00	2.00	0.00
1,360.0	15.20	283.65	1,351.1	23.7	-97.4	100.2	2.00	2.00	0.00
1,400.0	16.00	283.65	1,389.6	26.2	-107.8	111.0	2.00	2.00	0.00
1,440.0	16.80	283.65	1,428.0	28.9	-118.8	122.3	2.00	2.00	0.00
1,480.0	17.60	283.65	1,466.2	31.7	-130.3	134.1	2.00	2.00	0.00
1,520.0	18.40	283.65	1,504.3	34.6	-142.3	146.5	2.00	2.00	0.00
1,560.0	19.20	283.65	1,542.1	37.6	-154.8	159.3	2.00	2.00	0.00
1,600.0	20.00	283.65	1,579.8	40.8	-167.9	172.8	2.00	2.00	0.00
1,640.0	20.80	283.65	1,617.3	44.1	-181.4	186.7	2.00	2.00	0.00
1,680.0	21.60	283.65	1,654.6	47.5	-195.5	201.2	2.00	2.00	0.00
1,720.0	22.40	283.65	1,691.7	51.0	-210.1	216.2	2.00	2.00	0.00
1,760.0	23.20	283.65	1,728.6	54.7	-225.1	231.7	2.00	2.00	0.00
1,778.5	23.57	283.65	1,745.5	56.4	-232.2	239.0	2.00	2.00	0.00
1,800.0	23.57	283.65	1,765.2	58.4	-240.6	247.6	0.00	0.00	0.00
1,840.0	23.57	283.65	1,801.9	62.2	-256.1	263.6	0.00	0.00	0.00
1,880.0	23.57	283.65	1,838.6	66.0	-271.7	279.6	0.00	0.00	0.00
1,920.0	23.57	283.65	1,875.2	69.8	-287.2	295.6	0.00	0.00	0.00
1,960.0	23.57	283.65	1,911.9	73.5	-302.8	311.6	0.00	0.00	0.00
2,000.0	23.57	283.65	1,948.6	77.3	-318.3	327.6	0.00	0.00	0.00

<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Sater C13-29D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Project:</b>	SEC.13-T4N-R64W	<b>MD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Site:</b>	Noble Sater C13-18D Pad Sec.13-T4N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Sater C13-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Sater C13-29D Plan #1 (7-15-10)		

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)
2,040.0	23.57	283.65	1,985.2	81.1	-333.9	343.6	0.00	0.00	0.00
2,080.0	23.57	283.65	2,021.9	84.9	-349.4	359.6	0.00	0.00	0.00
2,120.0	23.57	283.65	2,058.6	88.6	-364.9	375.6	0.00	0.00	0.00
2,160.0	23.57	283.65	2,095.2	92.4	-380.5	391.5	0.00	0.00	0.00
2,200.0	23.57	283.65	2,131.9	96.2	-396.0	407.5	0.00	0.00	0.00
2,240.0	23.57	283.65	2,168.5	100.0	-411.6	423.5	0.00	0.00	0.00
2,280.0	23.57	283.65	2,205.2	103.7	-427.1	439.5	0.00	0.00	0.00
2,320.0	23.57	283.65	2,241.9	107.5	-442.7	455.5	0.00	0.00	0.00
2,360.0	23.57	283.65	2,278.5	111.3	-458.2	471.5	0.00	0.00	0.00
2,400.0	23.57	283.65	2,315.2	115.1	-473.7	487.5	0.00	0.00	0.00
2,440.0	23.57	283.65	2,351.9	118.9	-489.3	503.5	0.00	0.00	0.00
2,480.0	23.57	283.65	2,388.5	122.6	-504.8	519.5	0.00	0.00	0.00
2,520.0	23.57	283.65	2,425.2	126.4	-520.4	535.5	0.00	0.00	0.00
2,560.0	23.57	283.65	2,461.8	130.2	-535.9	551.5	0.00	0.00	0.00
2,600.0	23.57	283.65	2,498.5	134.0	-551.5	567.5	0.00	0.00	0.00
2,640.0	23.57	283.65	2,535.2	137.7	-567.0	583.5	0.00	0.00	0.00
2,680.0	23.57	283.65	2,571.8	141.5	-582.5	599.5	0.00	0.00	0.00
2,720.0	23.57	283.65	2,608.5	145.3	-598.1	615.5	0.00	0.00	0.00
2,760.0	23.57	283.65	2,645.2	149.1	-613.6	631.5	0.00	0.00	0.00
2,800.0	23.57	283.65	2,681.8	152.8	-629.2	647.5	0.00	0.00	0.00
2,840.0	23.57	283.65	2,718.5	156.6	-644.7	663.5	0.00	0.00	0.00
2,880.0	23.57	283.65	2,755.2	160.4	-660.2	679.4	0.00	0.00	0.00
2,920.0	23.57	283.65	2,791.8	164.2	-675.8	695.4	0.00	0.00	0.00
2,960.0	23.57	283.65	2,828.5	167.9	-691.3	711.4	0.00	0.00	0.00
3,000.0	23.57	283.65	2,865.1	171.7	-706.9	727.4	0.00	0.00	0.00
3,040.0	23.57	283.65	2,901.8	175.5	-722.4	743.4	0.00	0.00	0.00
3,080.0	23.57	283.65	2,938.5	179.3	-738.0	759.4	0.00	0.00	0.00
3,120.0	23.57	283.65	2,975.1	183.0	-753.5	775.4	0.00	0.00	0.00
3,160.0	23.57	283.65	3,011.8	186.8	-769.0	791.4	0.00	0.00	0.00
3,200.0	23.57	283.65	3,048.5	190.6	-784.6	807.4	0.00	0.00	0.00
3,240.0	23.57	283.65	3,085.1	194.4	-800.1	823.4	0.00	0.00	0.00
3,280.0	23.57	283.65	3,121.8	198.1	-815.7	839.4	0.00	0.00	0.00
3,320.0	23.57	283.65	3,158.4	201.9	-831.2	855.4	0.00	0.00	0.00
3,360.0	23.57	283.65	3,195.1	205.7	-846.8	871.4	0.00	0.00	0.00
3,400.0	23.57	283.65	3,231.8	209.5	-862.3	887.4	0.00	0.00	0.00
3,440.0	23.57	283.65	3,268.4	213.2	-877.8	903.4	0.00	0.00	0.00
3,480.0	23.57	283.65	3,305.1	217.0	-893.4	919.4	0.00	0.00	0.00
3,520.0	23.57	283.65	3,341.8	220.8	-908.9	935.4	0.00	0.00	0.00
3,560.0	23.57	283.65	3,378.4	224.6	-924.5	951.4	0.00	0.00	0.00
3,600.0	23.57	283.65	3,415.1	228.3	-940.0	967.3	0.00	0.00	0.00
3,640.0	23.57	283.65	3,451.7	232.1	-955.6	983.3	0.00	0.00	0.00
3,680.0	23.57	283.65	3,488.4	235.9	-971.1	999.3	0.00	0.00	0.00
3,720.0	23.57	283.65	3,525.1	239.7	-986.6	1,015.3	0.00	0.00	0.00
3,760.0	23.57	283.65	3,561.7	243.4	-1,002.2	1,031.3	0.00	0.00	0.00
3,800.0	23.57	283.65	3,598.4	247.2	-1,017.7	1,047.3	0.00	0.00	0.00
3,840.0	23.57	283.65	3,635.1	251.0	-1,033.3	1,063.3	0.00	0.00	0.00
3,880.0	23.57	283.65	3,671.7	254.8	-1,048.8	1,079.3	0.00	0.00	0.00
3,920.0	23.57	283.65	3,708.4	258.5	-1,064.3	1,095.3	0.00	0.00	0.00
3,960.0	23.57	283.65	3,745.1	262.3	-1,079.9	1,111.3	0.00	0.00	0.00
4,000.0	23.57	283.65	3,781.7	266.1	-1,095.4	1,127.3	0.00	0.00	0.00
4,040.0	23.57	283.65	3,818.4	269.9	-1,111.0	1,143.3	0.00	0.00	0.00
4,080.0	23.57	283.65	3,855.0	273.6	-1,126.5	1,159.3	0.00	0.00	0.00
4,120.0	23.57	283.65	3,891.7	277.4	-1,142.1	1,175.3	0.00	0.00	0.00
4,160.0	23.57	283.65	3,928.4	281.2	-1,157.6	1,191.3	0.00	0.00	0.00

<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Sater C13-29D
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<b>Project:</b>	SEC.13-T4N-R64W	<b>MD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Site:</b>	Noble Sater C13-18D Pad Sec.13-T4N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Sater C13-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Sater C13-29D Plan #1 (7-15-10)		

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)
4,200.0	23.57	283.65	3,965.0	285.0	-1,173.1	1,207.3	0.00	0.00	0.00
4,240.0	23.57	283.65	4,001.7	288.7	-1,188.7	1,223.3	0.00	0.00	0.00
4,280.0	23.57	283.65	4,038.4	292.5	-1,204.2	1,239.2	0.00	0.00	0.00
4,320.0	23.57	283.65	4,075.0	296.3	-1,219.8	1,255.2	0.00	0.00	0.00
4,360.0	23.57	283.65	4,111.7	300.1	-1,235.3	1,271.2	0.00	0.00	0.00
4,400.0	23.57	283.65	4,148.3	303.8	-1,250.9	1,287.2	0.00	0.00	0.00
4,440.0	23.57	283.65	4,185.0	307.6	-1,266.4	1,303.2	0.00	0.00	0.00
4,480.0	23.57	283.65	4,221.7	311.4	-1,281.9	1,319.2	0.00	0.00	0.00
4,520.0	23.57	283.65	4,258.3	315.2	-1,297.5	1,335.2	0.00	0.00	0.00
4,560.0	23.57	283.65	4,295.0	318.9	-1,313.0	1,351.2	0.00	0.00	0.00
4,600.0	23.57	283.65	4,331.7	322.7	-1,328.6	1,367.2	0.00	0.00	0.00
4,640.0	23.57	283.65	4,368.3	326.5	-1,344.1	1,383.2	0.00	0.00	0.00
4,680.0	23.57	283.65	4,405.0	330.3	-1,359.7	1,399.2	0.00	0.00	0.00
4,720.0	23.57	283.65	4,441.7	334.0	-1,375.2	1,415.2	0.00	0.00	0.00
4,760.0	23.57	283.65	4,478.3	337.8	-1,390.7	1,431.2	0.00	0.00	0.00
4,800.0	23.57	283.65	4,515.0	341.6	-1,406.3	1,447.2	0.00	0.00	0.00
4,840.0	23.57	283.65	4,551.6	345.4	-1,421.8	1,463.2	0.00	0.00	0.00
4,880.0	23.57	283.65	4,588.3	349.1	-1,437.4	1,479.2	0.00	0.00	0.00
4,920.0	23.57	283.65	4,625.0	352.9	-1,452.9	1,495.2	0.00	0.00	0.00
4,960.0	23.57	283.65	4,661.6	356.7	-1,468.5	1,511.2	0.00	0.00	0.00
5,000.0	23.57	283.65	4,698.3	360.5	-1,484.0	1,527.1	0.00	0.00	0.00
5,040.0	23.57	283.65	4,735.0	364.3	-1,499.5	1,543.1	0.00	0.00	0.00
5,061.3	23.57	283.65	4,754.5	366.3	-1,507.8	1,551.7	0.00	0.00	0.00
5,080.0	23.20	283.65	4,771.6	368.0	-1,515.0	1,559.1	2.00	-2.00	0.00
5,120.0	22.40	283.65	4,808.5	371.7	-1,530.1	1,574.6	2.00	-2.00	0.00
5,160.0	21.60	283.65	4,845.6	375.2	-1,544.6	1,589.6	2.00	-2.00	0.00
5,200.0	20.80	283.65	4,882.9	378.6	-1,558.7	1,604.0	2.00	-2.00	0.00
5,240.0	20.00	283.65	4,920.4	381.9	-1,572.2	1,618.0	2.00	-2.00	0.00
5,280.0	19.20	283.65	4,958.1	385.1	-1,585.3	1,631.4	2.00	-2.00	0.00
5,320.0	18.40	283.65	4,995.9	388.1	-1,597.8	1,644.3	2.00	-2.00	0.00
5,360.0	17.60	283.65	5,034.0	391.0	-1,609.8	1,656.6	2.00	-2.00	0.00
5,400.0	16.80	283.65	5,072.2	393.8	-1,621.3	1,668.4	2.00	-2.00	0.00
5,440.0	16.00	283.65	5,110.6	396.5	-1,632.3	1,679.7	2.00	-2.00	0.00
5,480.0	15.20	283.65	5,149.1	399.0	-1,642.7	1,690.5	2.00	-2.00	0.00
5,520.0	14.40	283.65	5,187.8	401.4	-1,652.6	1,700.7	2.00	-2.00	0.00
5,560.0	13.60	283.65	5,226.6	403.7	-1,662.0	1,710.4	2.00	-2.00	0.00
5,600.0	12.80	283.65	5,265.5	405.9	-1,670.9	1,719.5	2.00	-2.00	0.00
5,640.0	12.00	283.65	5,304.6	407.9	-1,679.3	1,728.1	2.00	-2.00	0.00
5,680.0	11.20	283.65	5,343.8	409.8	-1,687.1	1,736.1	2.00	-2.00	0.00
5,720.0	10.40	283.65	5,383.1	411.6	-1,694.4	1,743.6	2.00	-2.00	0.00
5,760.0	9.60	283.65	5,422.5	413.2	-1,701.1	1,750.6	2.00	-2.00	0.00
5,800.0	8.80	283.65	5,461.9	414.7	-1,707.3	1,757.0	2.00	-2.00	0.00
5,840.0	8.00	283.65	5,501.5	416.1	-1,713.0	1,762.8	2.00	-2.00	0.00
5,880.0	7.20	283.65	5,541.2	417.3	-1,718.1	1,768.1	2.00	-2.00	0.00
5,920.0	6.40	283.65	5,580.9	418.5	-1,722.7	1,772.8	2.00	-2.00	0.00
5,960.0	5.60	283.65	5,620.7	419.5	-1,726.8	1,777.0	2.00	-2.00	0.00
6,000.0	4.80	283.65	5,660.5	420.3	-1,730.3	1,780.6	2.00	-2.00	0.00
6,040.0	4.00	283.65	5,700.4	421.0	-1,733.3	1,783.7	2.00	-2.00	0.00
6,080.0	3.20	283.65	5,740.3	421.6	-1,735.7	1,786.2	2.00	-2.00	0.00
6,120.0	2.40	283.65	5,780.3	422.1	-1,737.6	1,788.1	2.00	-2.00	0.00
6,160.0	1.60	283.65	5,820.2	422.4	-1,739.0	1,789.5	2.00	-2.00	0.00
6,200.0	0.80	283.65	5,860.2	422.6	-1,739.8	1,790.4	2.00	-2.00	0.00
6,239.8	0.00	0.00	5,900.0	422.7	-1,740.1	1,790.7	2.00	-2.00	0.00
Target BHL 150'FNL & 1375'FWL									

<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Sater C13-29D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Project:</b>	SEC.13-T4N-R64W	<b>MD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Site:</b>	Noble Sater C13-18D Pad Sec.13-T4N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Sater C13-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Sater C13-29D Plan #1 (7-15-10)		

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)
6,240.0	0.00	0.00	5,900.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,280.0	0.00	0.00	5,940.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,320.0	0.00	0.00	5,980.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,360.0	0.00	0.00	6,020.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,400.0	0.00	0.00	6,060.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,440.0	0.00	0.00	6,100.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,480.0	0.00	0.00	6,140.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,520.0	0.00	0.00	6,180.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,560.0	0.00	0.00	6,220.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,600.0	0.00	0.00	6,260.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,640.0	0.00	0.00	6,300.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,680.0	0.00	0.00	6,340.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,720.0	0.00	0.00	6,380.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,760.0	0.00	0.00	6,420.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,771.8	0.00	0.00	6,432.0	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
<b>Niobrara - Target Circle 150'FNL &amp; 1375'FWL</b>									
6,800.0	0.00	0.00	6,460.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,840.0	0.00	0.00	6,500.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,880.0	0.00	0.00	6,540.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,920.0	0.00	0.00	6,580.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
6,960.0	0.00	0.00	6,620.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
7,000.0	0.00	0.00	6,660.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
7,040.0	0.00	0.00	6,700.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
7,071.8	0.00	0.00	6,732.0	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
<b>Codell</b>									
7,080.0	0.00	0.00	6,740.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
7,120.0	0.00	0.00	6,780.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
7,160.0	0.00	0.00	6,820.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
7,200.0	0.00	0.00	6,860.2	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
7,221.8	0.00	0.00	6,882.0	422.7	-1,740.1	1,790.7	0.00	0.00	0.00
<b>Hardline 150'N of BHL</b>									

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (m)	Easting (m)	Latitude	Longitude
- hit/miss target									
- Shape									
Target BHL 150'FNL & 1375'FWL	0.00	0.00	5,900.0	422.7	-1,740.1	414,744.89	999,101.45	40° 19' 9.336 N	104° 30' 12.276 W
- plan hits target center									
- Point									
Hardline 150'N of BHL	0.00	0.00	6,882.0	572.7	-1,840.1	414,790.28	999,070.45	40° 19' 10.819 N	104° 30' 13.567 W
- plan misses target center by 180.3ft at 7221.8ft MD (6882.0 TVD, 422.7 N, -1740.1 E)									
- Polygon									
Point 1			6,882.0	0.0	0.0	414,790.28	999,070.45		
Point 2			6,882.0	0.0	200.0	414,790.97	999,131.40		
Target Circle 150'FNL	0.00	0.00	6,432.0	422.7	-1,740.1	414,744.89	999,101.45	40° 19' 9.336 N	104° 30' 12.276 W
- plan hits target center									
- Circle (radius 75.0)									



<b>Database:</b>	EDM den0-adp01 Server Data	<b>Local Co-ordinate Reference:</b>	Well Sater C13-29D
<b>Company:</b>	NOBLE ENERGY INC WELD COUNTY CO	<b>TVD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Project:</b>	SEC.13-T4N-R64W	<b>MD Reference:</b>	WELL @ 4642.0ft (Original Well Elev)
<b>Site:</b>	Noble Sater C13-18D Pad Sec.13-T4N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Sater C13-29D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Noble Sater C13-29D Plan #1 (7-15-10)		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
500.0	500.0	8 5/8"	8.625	12.250	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,771.8	6,432.0	Niobrara		0.00	
7,071.8	6,732.0	Codell		0.00	