

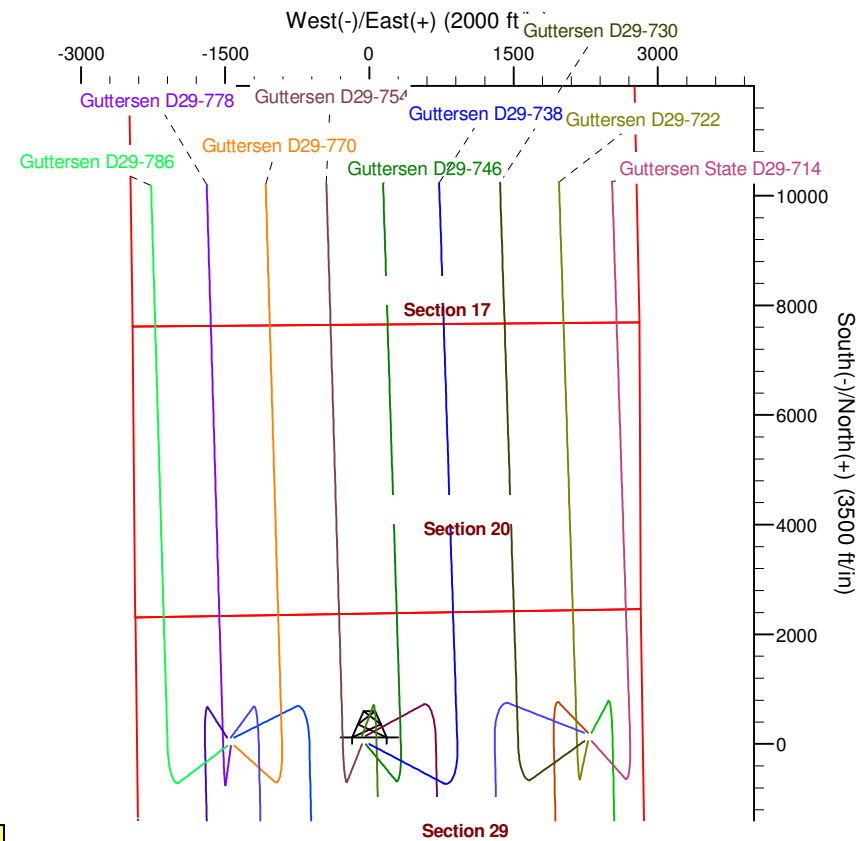
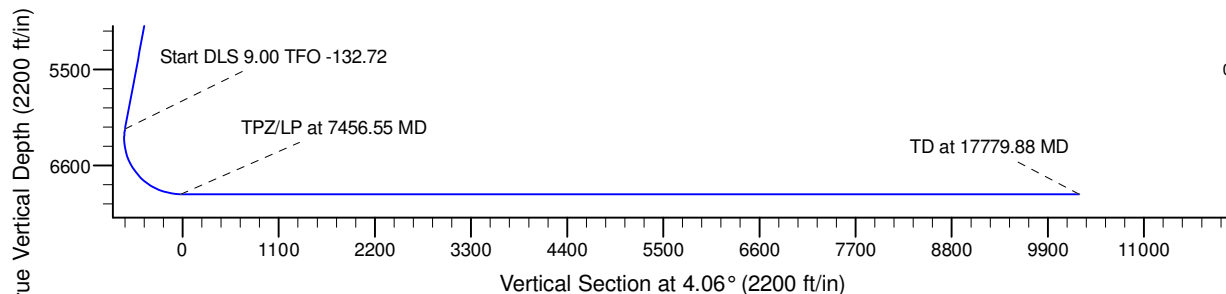
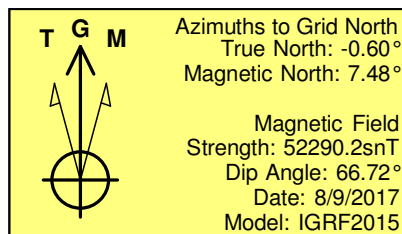
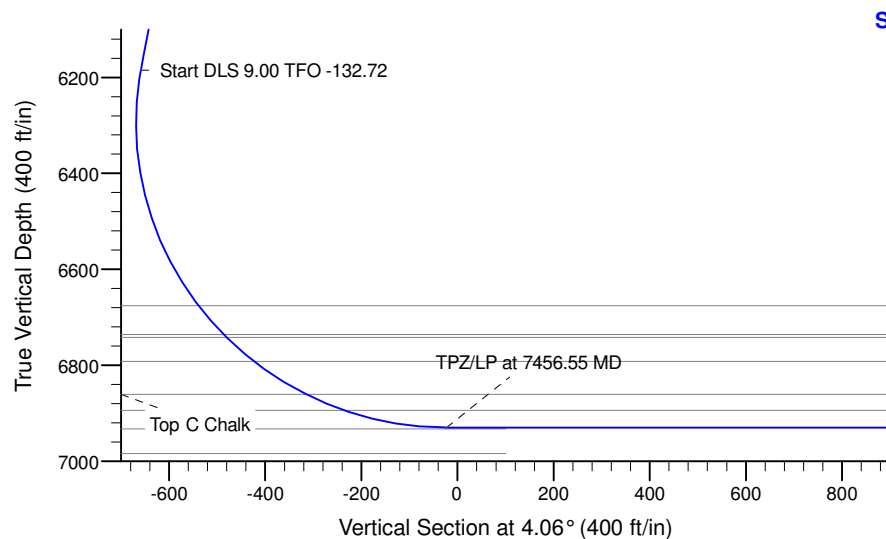
Project: Mustang  
Site: D Section 29  
Well: Gutteresen D29-738  
Wellbore: Gutteresen D29-738  
Design: Prelim - Rev 1

# Northern Region - DJ Basin

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone  
System Datum: Mean Sea Level

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	3019.82	16.40	132.85	3008.68	-79.23	85.42	2.00	132.85	-72.99	
4	6331.11	16.40	132.85	6185.30	-714.92	770.69	0.00	0.00	-658.56	
5	7456.55	90.00	358.94	6930.00	-87.81	917.00	9.00	-132.72	-22.67	GUTTERSEN D29-738 TPZ
6	17779.88	90.00	358.94	6930.00	10233.76	726.35	0.00	0.00	10259.50	GUTTERSEN D29-738 BHL



## WELL DETAILS: Gutteresen D29-738

	Northing	Easting	Latitude	Longitude
0.00	0.00	1315980.44	4788.00	-104.5759392
		3258126.18	40.1970710	

Plan: Prelim - Rev 1 (Gutteresen D29-738/Gutteresen D29-738)

Created By: Colby Baxter Date: 11:08, April 09 2018

Checked: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

Approved: \_\_\_\_\_ Date: \_\_\_\_\_

# **Northern Region - DJ Basin**

**Mustang**

**D Section 29**

**Guttersen D29-738**

**Guttersen D29-738**

**Plan: Prelim - Rev 1**

## **Standard Survey Report**

**09 April, 2018**

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Well:</b>	Guttersen D29-738	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim - Rev 1	<b>Database:</b>	EDMP

<b>Project</b>	Mustang, 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		

Site		D Section 29			
Site Position:		Northing:	1,313,628.85 usft	Latitude:	40.1907138
From:	Map	Easting:	3,254,683.41 usft	Longitude:	-104.5883496
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.59 °

Well	Guttersen D29-738					
Well Position	+N/-S	0.00 ft	Northing:	1,315,980.43 usft	Latitude:	40.1970710
	+E/-W	0.00 ft	Easting:	3,258,126.18 usft	Longitude:	-104.5759392
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,788.00 ft

<b>Wellbore</b>	Guttersen D29-738				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	8/9/2017	8.08	66.72	52,290.16863836

<b>Design</b>	Prelim - Rev 1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	4.06	

<b>Survey Tool Program</b>	<b>Date</b>	4/9/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	17,779.88	Prelim - Rev 1 (Guttersen D29-738)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis	

<b>Planned Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Well:</b>	Guttersen D29-738	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim - Rev 1	<b>Database:</b>	EDMP

### 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)
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	2.00	132.85	2,299.98	-1.19	1.28	-1.09	2.00	2.00	0.00
2,400.00	4.00	132.85	2,399.84	-4.75	5.12	-4.37	2.00	2.00	0.00
2,500.00	6.00	132.85	2,499.45	-10.67	11.51	-9.83	2.00	2.00	0.00
2,600.00	8.00	132.85	2,598.70	-18.96	20.44	-17.47	2.00	2.00	0.00
2,700.00	10.00	132.85	2,697.47	-29.60	31.91	-27.27	2.00	2.00	0.00
2,800.00	12.00	132.85	2,795.62	-42.57	45.90	-39.22	2.00	2.00	0.00
2,900.00	14.00	132.85	2,893.06	-57.87	62.39	-53.31	2.00	2.00	0.00
3,000.00	16.00	132.85	2,989.64	-75.47	81.36	-69.52	2.00	2.00	0.00
3,019.82	16.40	132.85	3,008.68	-79.23	85.42	-72.99	2.00	2.00	0.00
3,100.00	16.40	132.85	3,085.60	-94.63	102.01	-87.17	0.00	0.00	0.00
3,200.00	16.40	132.85	3,181.53	-113.82	122.70	-104.85	0.00	0.00	0.00
3,300.00	16.40	132.85	3,277.46	-133.02	143.40	-122.54	0.00	0.00	0.00
3,400.00	16.40	132.85	3,373.39	-152.22	164.09	-140.22	0.00	0.00	0.00
3,500.00	16.40	132.85	3,469.33	-171.42	184.79	-157.90	0.00	0.00	0.00
3,600.00	16.40	132.85	3,565.26	-190.61	205.48	-175.59	0.00	0.00	0.00
3,700.00	16.40	132.85	3,661.19	-209.81	226.18	-193.27	0.00	0.00	0.00
3,800.00	16.40	132.85	3,757.13	-229.01	246.87	-210.96	0.00	0.00	0.00
3,900.00	16.40	132.85	3,853.06	-248.21	267.57	-228.64	0.00	0.00	0.00
4,000.00	16.40	132.85	3,948.99	-267.40	288.26	-246.32	0.00	0.00	0.00
4,100.00	16.40	132.85	4,044.93	-286.60	308.96	-264.01	0.00	0.00	0.00
4,200.00	16.40	132.85	4,140.86	-305.80	329.65	-281.69	0.00	0.00	0.00
4,300.00	16.40	132.85	4,236.79	-325.00	350.35	-299.38	0.00	0.00	0.00
4,400.00	16.40	132.85	4,332.73	-344.19	371.05	-317.06	0.00	0.00	0.00
4,500.00	16.40	132.85	4,428.66	-363.39	391.74	-334.74	0.00	0.00	0.00
4,600.00	16.40	132.85	4,524.59	-382.59	412.44	-352.43	0.00	0.00	0.00
4,700.00	16.40	132.85	4,620.53	-401.79	433.13	-370.11	0.00	0.00	0.00
4,800.00	16.40	132.85	4,716.46	-420.98	453.83	-387.80	0.00	0.00	0.00
4,900.00	16.40	132.85	4,812.39	-440.18	474.52	-405.48	0.00	0.00	0.00
5,000.00	16.40	132.85	4,908.32	-459.38	495.22	-423.17	0.00	0.00	0.00
5,100.00	16.40	132.85	5,004.26	-478.58	515.91	-440.85	0.00	0.00	0.00
5,200.00	16.40	132.85	5,100.19	-497.77	536.61	-458.53	0.00	0.00	0.00

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Well:</b>	Guttersen D29-738	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim - Rev 1	<b>Database:</b>	EDMP

### 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)
5,300.00	16.40	132.85	5,196.12	-516.97	557.30	-476.22	0.00	0.00	0.00
5,400.00	16.40	132.85	5,292.06	-536.17	578.00	-493.90	0.00	0.00	0.00
5,500.00	16.40	132.85	5,387.99	-555.37	598.69	-511.59	0.00	0.00	0.00
5,600.00	16.40	132.85	5,483.92	-574.56	619.39	-529.27	0.00	0.00	0.00
5,700.00	16.40	132.85	5,579.86	-593.76	640.08	-546.95	0.00	0.00	0.00
5,800.00	16.40	132.85	5,675.79	-612.96	660.78	-564.64	0.00	0.00	0.00
5,900.00	16.40	132.85	5,771.72	-632.16	681.47	-582.32	0.00	0.00	0.00
6,000.00	16.40	132.85	5,867.66	-651.35	702.17	-600.01	0.00	0.00	0.00
6,100.00	16.40	132.85	5,963.59	-670.55	722.86	-617.69	0.00	0.00	0.00
6,200.00	16.40	132.85	6,059.52	-689.75	743.56	-635.38	0.00	0.00	0.00
6,300.00	16.40	132.85	6,155.46	-708.95	764.25	-653.06	0.00	0.00	0.00
6,331.11	16.40	132.85	6,185.30	-714.92	770.69	-658.56	0.00	0.00	0.00
6,400.00	12.99	112.18	6,251.97	-724.46	785.00	-667.07	9.00	-4.94	-30.00
6,500.00	12.58	70.70	6,349.69	-725.11	805.74	-666.25	9.00	-0.41	-41.48
6,600.00	17.54	41.08	6,446.37	-710.12	825.96	-649.86	9.00	4.95	-29.62
6,700.00	24.82	26.22	6,539.62	-679.87	845.17	-618.33	9.00	7.29	-14.86
6,800.00	32.93	18.05	6,627.14	-635.10	862.90	-572.42	9.00	8.11	-8.17
6,900.00	41.38	12.87	6,706.79	-576.92	878.71	-513.26	9.00	8.45	-5.18
7,000.00	49.99	9.19	6,776.60	-506.75	892.22	-442.31	9.00	8.61	-3.67
7,100.00	58.69	6.35	6,834.85	-426.32	903.08	-361.32	9.00	8.70	-2.84
7,200.00	67.44	3.99	6,880.11	-337.62	911.04	-272.28	9.00	8.75	-2.36
7,300.00	76.22	1.92	6,911.26	-242.83	915.90	-177.38	9.00	8.78	-2.07
7,400.00	85.02	360.00	6,927.54	-144.28	917.53	-78.96	9.00	8.80	-1.92
7,456.55	90.00	358.94	6,930.00	-87.81	917.00	-22.67	9.00	8.80	-1.87
7,500.00	90.00	358.94	6,930.00	-44.37	916.20	20.61	0.00	0.00	0.00
7,600.00	90.00	358.94	6,930.00	55.62	914.36	120.21	0.00	0.00	0.00
7,700.00	90.00	358.94	6,930.00	155.60	912.51	219.81	0.00	0.00	0.00
7,800.00	90.00	358.94	6,930.00	255.58	910.66	319.42	0.00	0.00	0.00
7,900.00	90.00	358.94	6,930.00	355.57	908.82	419.02	0.00	0.00	0.00
8,000.00	90.00	358.94	6,930.00	455.55	906.97	518.62	0.00	0.00	0.00
8,100.00	90.00	358.94	6,930.00	555.53	905.12	618.22	0.00	0.00	0.00
8,200.00	90.00	358.94	6,930.00	655.52	903.27	717.82	0.00	0.00	0.00
8,300.00	90.00	358.94	6,930.00	755.50	901.43	817.42	0.00	0.00	0.00
8,400.00	90.00	358.94	6,930.00	855.48	899.58	917.02	0.00	0.00	0.00
8,500.00	90.00	358.94	6,930.00	955.46	897.73	1,016.62	0.00	0.00	0.00
8,600.00	90.00	358.94	6,930.00	1,055.45	895.89	1,116.23	0.00	0.00	0.00
8,700.00	90.00	358.94	6,930.00	1,155.43	894.04	1,215.83	0.00	0.00	0.00
8,800.00	90.00	358.94	6,930.00	1,255.41	892.19	1,315.43	0.00	0.00	0.00
8,900.00	90.00	358.94	6,930.00	1,355.40	890.35	1,415.03	0.00	0.00	0.00
9,000.00	90.00	358.94	6,930.00	1,455.38	888.50	1,514.63	0.00	0.00	0.00
9,100.00	90.00	358.94	6,930.00	1,555.36	886.65	1,614.23	0.00	0.00	0.00
9,200.00	90.00	358.94	6,930.00	1,655.35	884.81	1,713.83	0.00	0.00	0.00
9,300.00	90.00	358.94	6,930.00	1,755.33	882.96	1,813.43	0.00	0.00	0.00

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Well:</b>	Guttersen D29-738	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim - Rev 1	<b>Database:</b>	EDMP

### 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)
9,400.00	90.00	358.94	6,930.00	1,855.31	881.11	1,913.04	0.00	0.00	0.00
9,500.00	90.00	358.94	6,930.00	1,955.29	879.27	2,012.64	0.00	0.00	0.00
9,600.00	90.00	358.94	6,930.00	2,055.28	877.42	2,112.24	0.00	0.00	0.00
9,700.00	90.00	358.94	6,930.00	2,155.26	875.57	2,211.84	0.00	0.00	0.00
9,800.00	90.00	358.94	6,930.00	2,255.24	873.72	2,311.44	0.00	0.00	0.00
9,900.00	90.00	358.94	6,930.00	2,355.23	871.88	2,411.04	0.00	0.00	0.00
10,000.00	90.00	358.94	6,930.00	2,455.21	870.03	2,510.64	0.00	0.00	0.00
10,100.00	90.00	358.94	6,930.00	2,555.19	868.18	2,610.25	0.00	0.00	0.00
10,200.00	90.00	358.94	6,930.00	2,655.17	866.34	2,709.85	0.00	0.00	0.00
10,300.00	90.00	358.94	6,930.00	2,755.16	864.49	2,809.45	0.00	0.00	0.00
10,400.00	90.00	358.94	6,930.00	2,855.14	862.64	2,909.05	0.00	0.00	0.00
10,500.00	90.00	358.94	6,930.00	2,955.12	860.80	3,008.65	0.00	0.00	0.00
10,600.00	90.00	358.94	6,930.00	3,055.11	858.95	3,108.25	0.00	0.00	0.00
10,700.00	90.00	358.94	6,930.00	3,155.09	857.10	3,207.85	0.00	0.00	0.00
10,800.00	90.00	358.94	6,930.00	3,255.07	855.26	3,307.45	0.00	0.00	0.00
10,900.00	90.00	358.94	6,930.00	3,355.06	853.41	3,407.06	0.00	0.00	0.00
11,000.00	90.00	358.94	6,930.00	3,455.04	851.56	3,506.66	0.00	0.00	0.00
11,100.00	90.00	358.94	6,930.00	3,555.02	849.72	3,606.26	0.00	0.00	0.00
11,200.00	90.00	358.94	6,930.00	3,655.00	847.87	3,705.86	0.00	0.00	0.00
11,300.00	90.00	358.94	6,930.00	3,754.99	846.02	3,805.46	0.00	0.00	0.00
11,400.00	90.00	358.94	6,930.00	3,854.97	844.18	3,905.06	0.00	0.00	0.00
11,500.00	90.00	358.94	6,930.00	3,954.95	842.33	4,004.66	0.00	0.00	0.00
11,600.00	90.00	358.94	6,930.00	4,054.94	840.48	4,104.26	0.00	0.00	0.00
11,700.00	90.00	358.94	6,930.00	4,154.92	838.63	4,203.87	0.00	0.00	0.00
11,800.00	90.00	358.94	6,930.00	4,254.90	836.79	4,303.47	0.00	0.00	0.00
11,900.00	90.00	358.94	6,930.00	4,354.88	834.94	4,403.07	0.00	0.00	0.00
12,000.00	90.00	358.94	6,930.00	4,454.87	833.09	4,502.67	0.00	0.00	0.00
12,100.00	90.00	358.94	6,930.00	4,554.85	831.25	4,602.27	0.00	0.00	0.00
12,200.00	90.00	358.94	6,930.00	4,654.83	829.40	4,701.87	0.00	0.00	0.00
12,300.00	90.00	358.94	6,930.00	4,754.82	827.55	4,801.47	0.00	0.00	0.00
12,400.00	90.00	358.94	6,930.00	4,854.80	825.71	4,901.08	0.00	0.00	0.00
12,500.00	90.00	358.94	6,930.00	4,954.78	823.86	5,000.68	0.00	0.00	0.00
12,600.00	90.00	358.94	6,930.00	5,054.77	822.01	5,100.28	0.00	0.00	0.00
12,700.00	90.00	358.94	6,930.00	5,154.75	820.17	5,199.88	0.00	0.00	0.00
12,800.00	90.00	358.94	6,930.00	5,254.73	818.32	5,299.48	0.00	0.00	0.00
12,900.00	90.00	358.94	6,930.00	5,354.71	816.47	5,399.08	0.00	0.00	0.00
13,000.00	90.00	358.94	6,930.00	5,454.70	814.63	5,498.68	0.00	0.00	0.00
13,100.00	90.00	358.94	6,930.00	5,554.68	812.78	5,598.28	0.00	0.00	0.00
13,200.00	90.00	358.94	6,930.00	5,654.66	810.93	5,697.89	0.00	0.00	0.00
13,300.00	90.00	358.94	6,930.00	5,754.65	809.08	5,797.49	0.00	0.00	0.00
13,400.00	90.00	358.94	6,930.00	5,854.63	807.24	5,897.09	0.00	0.00	0.00
13,500.00	90.00	358.94	6,930.00	5,954.61	805.39	5,996.69	0.00	0.00	0.00
13,600.00	90.00	358.94	6,930.00	6,054.59	803.54	6,096.29	0.00	0.00	0.00

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Well:</b>	Guttersen D29-738	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim - Rev 1	<b>Database:</b>	EDMP

### 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)
13,700.00	90.00	358.94	6,930.00	6,154.58	801.70	6,195.89	0.00	0.00	0.00
13,800.00	90.00	358.94	6,930.00	6,254.56	799.85	6,295.49	0.00	0.00	0.00
13,900.00	90.00	358.94	6,930.00	6,354.54	798.00	6,395.09	0.00	0.00	0.00
14,000.00	90.00	358.94	6,930.00	6,454.53	796.16	6,494.70	0.00	0.00	0.00
14,100.00	90.00	358.94	6,930.00	6,554.51	794.31	6,594.30	0.00	0.00	0.00
14,200.00	90.00	358.94	6,930.00	6,654.49	792.46	6,693.90	0.00	0.00	0.00
14,300.00	90.00	358.94	6,930.00	6,754.48	790.62	6,793.50	0.00	0.00	0.00
14,400.00	90.00	358.94	6,930.00	6,854.46	788.77	6,893.10	0.00	0.00	0.00
14,500.00	90.00	358.94	6,930.00	6,954.44	786.92	6,992.70	0.00	0.00	0.00
14,600.00	90.00	358.94	6,930.00	7,054.42	785.08	7,092.30	0.00	0.00	0.00
14,700.00	90.00	358.94	6,930.00	7,154.41	783.23	7,191.91	0.00	0.00	0.00
14,800.00	90.00	358.94	6,930.00	7,254.39	781.38	7,291.51	0.00	0.00	0.00
14,900.00	90.00	358.94	6,930.00	7,354.37	779.54	7,391.11	0.00	0.00	0.00
15,000.00	90.00	358.94	6,930.00	7,454.36	777.69	7,490.71	0.00	0.00	0.00
15,100.00	90.00	358.94	6,930.00	7,554.34	775.84	7,590.31	0.00	0.00	0.00
15,200.00	90.00	358.94	6,930.00	7,654.32	773.99	7,689.91	0.00	0.00	0.00
15,300.00	90.00	358.94	6,930.00	7,754.30	772.15	7,789.51	0.00	0.00	0.00
15,400.00	90.00	358.94	6,930.00	7,854.29	770.30	7,889.11	0.00	0.00	0.00
15,500.00	90.00	358.94	6,930.00	7,954.27	768.45	7,988.72	0.00	0.00	0.00
15,600.00	90.00	358.94	6,930.00	8,054.25	766.61	8,088.32	0.00	0.00	0.00
15,700.00	90.00	358.94	6,930.00	8,154.24	764.76	8,187.92	0.00	0.00	0.00
15,800.00	90.00	358.94	6,930.00	8,254.22	762.91	8,287.52	0.00	0.00	0.00
15,900.00	90.00	358.94	6,930.00	8,354.20	761.07	8,387.12	0.00	0.00	0.00
16,000.00	90.00	358.94	6,930.00	8,454.19	759.22	8,486.72	0.00	0.00	0.00
16,100.00	90.00	358.94	6,930.00	8,554.17	757.37	8,586.32	0.00	0.00	0.00
16,200.00	90.00	358.94	6,930.00	8,654.15	755.53	8,685.92	0.00	0.00	0.00
16,300.00	90.00	358.94	6,930.00	8,754.13	753.68	8,785.53	0.00	0.00	0.00
16,400.00	90.00	358.94	6,930.00	8,854.12	751.83	8,885.13	0.00	0.00	0.00
16,500.00	90.00	358.94	6,930.00	8,954.10	749.99	8,984.73	0.00	0.00	0.00
16,600.00	90.00	358.94	6,930.00	9,054.08	748.14	9,084.33	0.00	0.00	0.00
16,700.00	90.00	358.94	6,930.00	9,154.07	746.29	9,183.93	0.00	0.00	0.00
16,800.00	90.00	358.94	6,930.00	9,254.05	744.44	9,283.53	0.00	0.00	0.00
16,900.00	90.00	358.94	6,930.00	9,354.03	742.60	9,383.13	0.00	0.00	0.00
17,000.00	90.00	358.94	6,930.00	9,454.01	740.75	9,482.74	0.00	0.00	0.00
17,100.00	90.00	358.94	6,930.00	9,554.00	738.90	9,582.34	0.00	0.00	0.00
17,200.00	90.00	358.94	6,930.00	9,653.98	737.06	9,681.94	0.00	0.00	0.00
17,300.00	90.00	358.94	6,930.00	9,753.96	735.21	9,781.54	0.00	0.00	0.00
17,400.00	90.00	358.94	6,930.00	9,853.95	733.36	9,881.14	0.00	0.00	0.00
17,500.00	90.00	358.94	6,930.00	9,953.93	731.52	9,980.74	0.00	0.00	0.00
17,600.00	90.00	358.94	6,930.00	10,053.91	729.67	10,080.34	0.00	0.00	0.00
17,700.00	90.00	358.94	6,930.00	10,153.90	727.82	10,179.94	0.00	0.00	0.00
17,779.88	90.00	358.94	6,930.00	10,233.76	726.35	10,259.50	0.00	0.00	0.00

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Well:</b>	Guttersen D29-738	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Prelim - Rev 1	<b>Database:</b>	EDMP

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
GUTTERSEN D29-738 I - plan hits target center - Point	0.00	0.00	6,930.00	10,233.76	726.35	1,326,214.17	3,258,852.53	40.2251415	-104.5729562
GUTTERSEN D29-738 ^ - plan hits target center - Point	0.00	0.00	6,930.00	-87.81	917.00	1,315,892.63	3,259,043.18	40.1968037	-104.5726600

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
566.00	566.00	Pierre				
677.00	677.00	Upper Pierre Aquifer Top				
1,575.00	1,575.00	Upper Pierre Aquifer Base				
3,805.08	3,762.00	Parkman				
4,178.26	4,120.00	Sussex				
4,987.15	4,896.00	Shannon				
6,060.82	5,926.00	Teepee Buttes				
6,859.99	6,676.00	Sharon Springs				
6,940.00	6,736.00	Top A Chalk				
6,940.00	6,736.00	Top A Marl				
6,948.52	6,742.00	Top B Chalk				
7,024.50	6,792.00	Top B Marl				
7,154.04	6,861.00	Top C Chalk				
7,239.03	6,894.00	Top C Marl				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2200	2200	0	0	Start Build 2.00	
6331	6185	-79	85	Start DLS 9.00 TFO -132.72	
7457	6930	-715	771	TPZ/LP at 7456.55 MD	
17,780	6930	-88	917	TD at 17779.88 MD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



# **Northern Region - DJ Basin**

**Mustang**

**D Section 29**

**Guttersen D29-738**

**Guttersen D29-738**

**Prelim - Rev 1**

## **Anticollision Summary Report**

**09 April, 2018**

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Prelim - Rev 1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<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 10,000.00 ft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	4/9/2018		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	17,779.88	Prelim - Rev 1 (Guttersen D29-738)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
D Section 16						
Diggin State D 16-07 (SI) - Wellbore #1 - No Surveys	17,779.88	6,890.00	5,291.54	5,063.73	23.227	CC, ES, SF
Diggin State D 16-19J (PR) - Wellbore #1 - No Surveys	17,779.88	6,849.00	3,616.42	3,395.47	16.368	CC, ES, SF
Guttersen ST D 15-32 (SI) - Wellbore #1 - Gyro Surveys	17,737.46	6,888.05	7,223.21	7,108.71	63.083	CC
Guttersen ST D 15-32 (SI) - Wellbore #1 - Gyro Surveys	17,779.88	6,887.88	7,223.34	7,108.48	62.892	ES, SF
Guttersen ST D 16-21 (SI) - Wellbore #1 - Gyro Surveys	17,748.56	6,854.32	4,744.32	4,629.82	41.433	CC
Guttersen ST D 16-21 (SI) - Wellbore #1 - Gyro Surveys	17,779.88	6,854.37	4,744.43	4,629.65	41.338	ES, SF
Guttersen ST D 16-22D (SI) - Wellbore #1 - MWD Surve	17,779.88	7,015.91	5,933.32	5,816.51	50.796	CC, ES, SF
Guttersen ST D 16-33 (SI) - Wellbore #1 - No Surveys	16,691.85	6,864.00	2,063.65	1,843.99	9.395	CC
Guttersen ST D 16-33 (SI) - Wellbore #1 - No Surveys	16,700.00	6,864.00	2,063.67	1,843.94	9.392	ES
Guttersen ST D 16-33 (SI) - Wellbore #1 - No Surveys	16,800.00	6,864.00	2,066.48	1,845.93	9.370	SF
Guttersen State D 15-31 (PR) - Wellbore #1 - Gyro Surve	17,779.88	6,895.54	7,362.92	7,250.98	65.776	CC, ES, SF
Guttersen State D 16-18 (SI) - Wellbore #1 - No Surveys	17,779.88	6,864.00	4,915.50	4,691.98	21.991	CC, ES, SF
Guttersen State D 16-20 (SI) - Wellbore #1 - Gyro Survey	17,779.88	6,886.51	3,366.45	3,251.69	29.334	CC, ES, SF
Guttersen State D 16-27 (PR) - Wellbore #1 - No Survey	17,779.88	6,860.00	6,488.03	6,267.14	29.372	CC, ES, SF
Guttersen State D 16-31 (PR) - Wellbore #1 - No Survey	17,779.88	6,860.00	2,663.85	2,449.36	12.420	CC, ES, SF
Guttersen State D 16-32D (SI) - Wellbore #1 - MWD Sur	17,779.88	7,061.39	2,160.94	2,039.06	17.729	CC, ES, SF
Guttersen State D16-63-1HN - Original Drilling - Original	16,200.97	11,243.02	2,567.17	2,460.96	24.171	CC, ES
Guttersen State D16-63-1HN - Original Drilling - Original	17,600.00	11,243.02	2,923.64	2,780.43	20.415	SF
Guttersen State D16-65-1HN - Original Drilling - Original	17,511.44	11,090.02	2,736.75	2,620.63	23.568	CC, ES
Guttersen State D16-65-1HN - Original Drilling - Original	17,779.88	11,090.02	2,749.88	2,629.49	22.841	SF
Spike ST GWS D 16-01 (SI) - Wellbore #1 - Gyro Survey	17,779.88	6,869.85	7,063.53	6,953.61	64.260	CC, ES, SF
Spike ST GWS D 16-02 (P&A) - Wellbore #1 - Gyro Surv	17,779.88	6,869.21	5,643.55	5,518.16	45.009	CC, ES, SF
Spike ST GWS D 16-03 (PR) - Wellbore #1 - No Surveys	17,779.88	6,858.00	4,549.09	4,331.17	20.876	CC, ES, SF
Spike ST GWS D 16-04 (SI) - Wellbore #1 - No Surveys	17,779.88	6,853.00	3,442.66	3,232.70	16.397	CC, ES, SF
Spike ST GWS D 16-05 (PR) - Wellbore #1 - Gyro Surve	17,779.88	6,874.26	2,772.70	2,661.79	25.000	CC, ES, SF
Spike ST GWS D 16-06 (SI) - Wellbore #1 - No Surveys	17,779.88	6,866.00	4,106.92	3,880.56	18.143	CC, ES, SF
Spike ST GWS D 16-08 (PR) - Wellbore #1 - Gyro Survey	17,779.88	6,932.17	6,889.21	6,775.30	60.483	CC, ES, SF
Spike ST GWS D 16-12 (PA) - Wellbore #1 - Gyro Survey	17,393.62	6,921.80	2,560.25	2,448.44	22.898	CC
Spike ST GWS D 16-12 (PA) - Wellbore #1 - Gyro Survey	17,400.00	6,921.85	2,560.26	2,448.39	22.886	ES
Spike ST GWS D 16-12 (PA) - Wellbore #1 - Gyro Survey	17,700.00	6,924.25	2,578.52	2,464.52	22.619	SF
Spike State D16-99HZ - Original Drilling - Original Drilling	16,684.92	11,150.02	2,637.84	2,527.49	23.904	CC
Spike State D16-99HZ - Original Drilling - Original Drilling	16,700.00	11,150.02	2,637.89	2,527.37	23.869	ES
Spike State D16-99HZ - Original Drilling - Original Drilling	17,779.88	11,150.02	2,856.07	2,718.14	20.707	SF
Spike State GWS D 16-7J (PR) - Wellbore #1 - No Surve	17,779.88	6,883.00	6,189.48	5,963.89	27.436	CC, ES, SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

**Summary**

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
D Section 17						
Butterball D19-27D - Wellbore #1 - Gyro Surveys	15,374.59	7,136.52	4,536.96	4,438.43	46.049	CC
Butterball D19-27D - Wellbore #1 - Gyro Surveys	15,400.00	7,135.90	4,537.03	4,438.37	45.990	ES
Butterball D19-27D - Wellbore #1 - Gyro Surveys	16,800.00	7,102.06	4,755.52	4,647.99	44.225	SF
Guttersen State D16-33 (SI) - Wellbore #1 - No Surveys	16,691.85	6,864.00	2,063.65	1,921.37	14.505	CC
Guttersen State D16-33 (SI) - Wellbore #1 - No Surveys	16,700.00	6,864.00	2,063.67	1,921.32	14.497	ES
Guttersen State D16-33 (SI) - Wellbore #1 - No Surveys	16,900.00	6,864.00	2,074.12	1,930.31	14.422	SF
HSR LDS 6-17 (SI) - Wellbore #1 - No Surveys	17,779.88	6,862.00	1,598.19	1,455.66	11.213	CC, ES, SF
HSR LDS B5-17 (SI) - Wellbore #1 - No Surveys	17,779.88	6,863.00	2,675.33	2,528.47	18.218	CC, ES, SF
HSR Mike Guttersen 16-17X (SI) - Wellbore #1 - No Su	15,780.87	6,869.00	1,360.51	1,225.29	10.062	CC
HSR Mike Guttersen 16-17X (SI) - Wellbore #1 - No Su	15,800.00	6,869.00	1,360.64	1,225.25	10.050	ES
HSR Mike Guttersen 16-17X (SI) - Wellbore #1 - No Su	15,900.00	6,869.00	1,365.71	1,229.59	10.033	SF
HSR Weeks 10-17 - Wellbore #1 - Gyro Surveys	17,188.73	6,700.00	171.29	72.89	1.741	CC
HSR Weeks 10-17 - Wellbore #1 - Gyro Surveys	17,200.00	6,700.00	171.66	72.89	1.738	ES, SF
HSR Weeks 15-17 (SI) - Wellbore #1 - No Surveys	15,888.06	6,867.00	73.14	-62.89	0.538	Level 1, CC, ES, SF
HSR Weeks 9-17 - Wellbore #1 - Gyro Surveys	17,239.64	6,865.14	1,175.49	1,065.66	10.702	CC, ES
HSR Weeks 9-17 - Wellbore #1 - Gyro Surveys	17,300.00	6,865.11	1,177.04	1,066.69	10.666	SF
HSR-LDS 3-17 (SI) - Wellbore #1 - No Surveys	17,779.88	6,857.00	2,500.93	2,382.88	21.185	CC, ES, SF
HSR-LDS 4-17 (SI) - Wellbore #1 - No Surveys	17,779.88	6,859.00	3,163.11	3,027.05	23.247	CC, ES, SF
LDS 18-17 (SI) - Wellbore #1 - No Surveys	17,779.88	6,862.00	2,228.17	2,093.82	16.584	CC, ES, SF
LDS D17-13 - Wellbore #1 - Gyro Surveys	15,581.97	6,900.00	2,868.26	2,770.52	29.344	CC
LDS D17-13 - Wellbore #1 - Gyro Surveys	15,600.00	6,900.00	2,868.32	2,770.45	29.309	ES
LDS D17-13 - Wellbore #1 - Gyro Surveys	15,900.00	6,900.00	2,885.84	2,786.34	29.003	SF
LDS D17-18 (SI) - Wellbore #1 - No Surveys	17,779.88	6,860.00	1,518.26	1,418.89	15.278	CC, ES, SF
LDS D17-20 - Wellbore #1 - No Surveys	17,714.34	6,868.00	1,880.87	1,730.50	12.509	CC, ES
LDS D17-20 - Wellbore #1 - No Surveys	17,779.88	6,868.00	1,882.01	1,731.27	12.485	SF
LDS D17-21 - Wellbore #1 - No Surveys	17,654.11	6,864.00	736.47	586.62	4.915	CC, ES, SF
LDS D17-22 (SI) - Wellbore #1 - No Surveys	17,779.88	6,859.00	718.52	573.40	4.951	CC, ES, SF
LDS D17-24D - Wellbore #1 - LDS D17-24D - As Drilled	16,616.56	7,015.32	656.55	544.83	5.877	CC, ES, SF
LDS D17-25D - Wellbore #1 - LDS D17-25D - As Drilled	16,884.82	7,113.29	1,899.46	1,786.73	16.849	CC, ES
LDS D17-25D - Wellbore #1 - LDS D17-25D - As Drilled	16,900.00	7,113.25	1,899.52	1,786.77	16.847	SF
LDS D17-31D - LDS D17-31D - LDS D17-31D - As Drille	17,779.88	7,114.54	3,538.78	3,422.09	30.327	CC, ES, SF
LDS D17-32D - LDS D17-32D - LDS D17-32D - As Drille	17,779.88	6,920.60	3,289.24	3,175.11	28.821	CC, ES, SF
LDS D17-33 - LDS D17-33 - LDS D17-33 - As Drilled	16,650.34	6,906.76	3,050.26	2,944.22	28.766	CC, ES
LDS D17-33 - LDS D17-33 - LDS D17-33 - As Drilled	17,000.00	6,910.48	3,070.23	2,962.26	28.435	SF
LDS D17-7 - Wellbore #1 - No Surveys	17,779.88	6,858.00	759.26	669.34	8.444	CC, ES, SF
LDS D20-29D - Wellbore #1 - LDS D20-29D - As Drilled	15,060.36	7,066.88	1,930.87	1,835.78	20.306	CC, ES
LDS D20-29D - Wellbore #1 - LDS D20-29D - As Drilled	15,300.00	7,067.02	1,945.68	1,848.85	20.094	SF
LDS D20-30D - Wellbore #1 - LDS D20-30D - As Drilled	15,105.98	6,939.77	3,367.32	3,273.02	35.708	CC, ES
LDS D20-30D - Wellbore #1 - LDS D20-30D - As Drilled	15,600.00	6,935.95	3,403.37	3,306.61	35.176	SF
LDS RED D17-11 (SI) - Wellbore #1 - No Surveys	17,207.67	6,865.00	1,077.11	930.77	7.360	CC, ES, SF
LDS Red D17-12 - Wellbore #1 - No Surveys	17,413.41	6,868.00	2,731.08	2,583.10	18.455	CC, ES
LDS Red D17-12 - Wellbore #1 - No Surveys	17,600.00	6,868.00	2,737.45	2,588.37	18.362	SF
LDS Red D17-14X (SI) - Wellbore #1 - No Surveys	16,033.31	6,869.00	1,048.04	910.86	7.640	CC, ES, SF
LDS Red D17-3J - Wellbore #1 - Gyro Surveys	16,259.31	6,863.45	2,305.62	2,202.84	22.433	CC, ES
LDS Red D17-3J - Wellbore #1 - Gyro Surveys	16,500.00	6,863.90	2,318.14	2,214.15	22.291	SF
LDS White D17-1 - Wellbore #1 - Gyro Surveys	17,779.88	6,839.49	2,503.88	2,426.20	32.232	CC, ES, SF
LDS White D17-2 - Wellbore #1 - No Surveys	17,779.88	6,855.00	2,080.52	1,991.37	23.336	CC, ES, SF
LDS White D17-8 - Wellbore #1 - No Surveys	17,779.88	6,853.00	1,501.24	1,361.96	10.779	CC, ES, SF
Thomson D20-31D - Wellbore #1 - Gyro Surveys	13,795.08	7,120.89	3,406.59	3,307.79	34.479	CC
Thomson D20-31D - Wellbore #1 - Gyro Surveys	13,800.00	7,120.54	3,406.60	3,307.77	34.471	ES
Thomson D20-31D - Wellbore #1 - Gyro Surveys	14,100.00	7,097.48	3,420.15	3,320.19	34.213	SF
Weeks 20-17 (SI) - Wellbore #1 - Gyro Surveys	16,452.03	6,852.31	585.45	481.18	5.615	CC, ES
Weeks 20-17 (SI) - Wellbore #1 - Gyro Surveys	16,500.00	6,852.16	587.41	482.78	5.614	SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

**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
D Section 18						
Horton D18-20D - Horton D18-20D - Horton D18-20D - A	17,507.88	4,350.42	6,936.22	6,824.82	62.264	CC
Horton D18-20D - Horton D18-20D - Horton D18-20D - A	17,600.00	4,355.84	6,936.83	6,824.16	61.568	ES
Horton D18-20D - Horton D18-20D - Horton D18-20D - A	17,779.88	4,366.55	6,941.50	6,826.37	60.294	SF
Horton D18-22D - Horton D18-22D - Horton D18-22D - A	17,728.44	7,043.24	4,493.50	4,374.11	37.638	CC, ES
Horton D18-22D - Horton D18-22D - Horton D18-22D - A	17,779.88	7,043.27	4,493.79	4,374.13	37.554	SF
LSWD 1 - LSWD 1 - LSWD 1 - As Drilled	17,779.88	6,917.00	6,502.64	6,355.29	44.129	CC, ES, SF
Mick D18-03 - Mick D18-03 - Mick D18-03 - As Drilled	17,779.88	6,818.33	6,667.97	6,557.41	60.311	CC, ES, SF
Mick D18-04 - Wellbore #1 - Wellbore #1- As Drilled	17,779.88	6,800.01	8,108.71	7,996.68	72.378	CC, ES, SF
Mick D18-05 - Wellbore #1 - Wellbore #1- As Drilled	15,900.00	15,900.00	8,270.46	8,142.15	64.459	SF
Mick D18-05 - Wellbore #1 - Wellbore #1- As Drilled	17,779.88	6,647.17	7,829.50	7,716.02	68.999	CC, ES
Mick D18-06 - Mick D18-06 - Mick D18-06 - As Drilled	17,779.88	6,720.68	6,374.64	6,261.07	56.133	CC, ES, SF
Mick D18-11 - Mick D18-11 - Mick D18-11 - As Drilled	17,000.23	6,746.29	6,480.28	6,372.28	60.000	CC, ES
Mick D18-11 - Mick D18-11 - Mick D18-11 - As Drilled	17,779.88	6,765.85	6,526.98	6,413.63	57.584	SF
Mick D18-12 - Wellbore #1 - Wellbore #1- As Drilled	17,192.21	6,680.58	7,591.11	7,481.88	69.497	CC
Mick D18-12 - Wellbore #1 - Wellbore #1- As Drilled	17,200.00	6,680.57	7,591.12	7,481.83	69.459	ES
Mick D18-12 - Wellbore #1 - Wellbore #1- As Drilled	17,779.88	6,679.41	7,613.83	7,500.41	67.131	SF
Mick D18-13 - Wellbore #1 - Wellbore #1- As Drilled	15,953.60	7,066.21	7,675.17	7,573.92	75.802	CC
Mick D18-13 - Wellbore #1 - Wellbore #1- As Drilled	16,000.00	7,065.88	7,675.31	7,573.72	75.549	ES
Mick D18-13 - Wellbore #1 - Wellbore #1- As Drilled	17,779.88	7,053.09	7,889.44	7,776.80	70.037	SF
Mick D18-14 - Mick D18-14 - Mick D18-14 - As Drilled	15,852.03	6,742.46	6,475.31	6,376.30	65.396	CC
Mick D18-14 - Mick D18-14 - Mick D18-14 - As Drilled	15,900.00	6,742.29	6,475.49	6,376.12	65.168	ES
Mick D18-14 - Mick D18-14 - Mick D18-14 - As Drilled	17,600.00	6,737.21	6,707.09	6,597.85	61.399	SF
Mick D18-19 - Mick D18-19 - Mick D18-19 - As Drilled	17,779.88	6,798.28	7,124.95	7,011.98	63.070	CC, ES, SF
Mick D18-25 - Mick D18-25 - Mick D18-25 - As Drilled	16,479.37	6,863.62	6,992.98	6,888.43	66.891	CC
Mick D18-25 - Mick D18-25 - Mick D18-25 - As Drilled	16,500.00	6,863.42	6,993.01	6,888.31	66.795	ES
Mick D18-25 - Mick D18-25 - Mick D18-25 - As Drilled	17,779.88	6,850.72	7,112.86	7,000.03	63.042	SF
Scooter D18-02 - Scooter D18-02 - Scooter D18-02 - As	17,779.88	7,015.34	5,616.53	5,505.56	50.613	CC, ES, SF
Scooter D18-07 - Scooter D18-07 - Scooter D18-07 - As	17,779.88	6,984.71	5,283.89	5,168.90	45.952	CC, ES, SF
Scooter D18-10 - Scooter D18-10 - Scooter D18-10 - As	17,000.95	6,840.10	5,218.28	5,109.84	48.121	CC, ES
Scooter D18-10 - Scooter D18-10 - Scooter D18-10 - As	17,779.88	6,830.39	5,276.09	5,162.85	46.592	SF
Scooter D18-15 - Scooter D18-15 - Scooter D18-15 - As	15,848.03	7,044.75	5,112.35	5,011.92	50.906	CC
Scooter D18-15 - Scooter D18-15 - Scooter D18-15 - As	15,900.00	7,043.07	5,112.61	5,011.82	50.725	ES
Scooter D18-15 - Scooter D18-15 - Scooter D18-15 - As	16,900.00	7,016.02	5,219.34	5,112.94	49.052	SF
Scooter D18-16 - Scooter D18-16 - Scooter D18-16 - As	15,889.31	6,873.00	3,864.14	3,728.05	28.394	CC
Scooter D18-16 - Scooter D18-16 - Scooter D18-16 - As	15,900.00	6,873.00	3,864.15	3,727.99	28.378	ES
Scooter D18-16 - Scooter D18-16 - Scooter D18-16 - As	16,400.00	6,873.00	3,897.74	3,758.63	28.020	SF
Scooter D18-17 JI - Scooter D18-17 JI - Scooter D18-17	17,779.88	7,016.92	4,668.40	4,555.03	41.178	CC, ES, SF
Scooter D18-1JI - Scooter D18-1JI - Scooter D18-1JI - A	17,779.88	7,229.61	4,142.53	4,009.55	31.153	CC, ES, SF
Scooter D18-4J - Scooter D18-4J - Scooter D18-4J - As	16,743.33	6,750.84	4,222.37	4,116.43	39.854	CC
Scooter D18-4J - Scooter D18-4J - Scooter D18-4J - As	16,800.00	6,750.09	4,222.76	4,116.41	39.709	ES
Scooter D18-4J - Scooter D18-4J - Scooter D18-4J - As	17,400.00	6,741.94	4,273.13	4,163.39	38.941	SF
Scooter D18-78-1HN - Original Drilling - Original Drilling -	17,779.88	6,859.20	7,744.18	7,636.86	72.154	CC, ES, SF
Scooter D18-78-1HN - Original Drilling - ST01 - Original D	17,038.62	10,022.00	7,297.46	7,154.36	50.997	CC
Scooter D18-78-1HN - Original Drilling - ST01 - Original D	17,200.00	17,200.00	7,298.41	7,035.39	27.748	ES, SF
Scooter D18-79-1HN - Original Drilling - Original Drilling -	15,900.00	15,900.00	7,974.66	7,739.91	33.971	ES, SF
Scooter D18-79-1HN - Original Drilling - Original Drilling -	17,779.88	9,170.00	7,946.84	7,810.02	58.082	CC
Scooter D18-79HN - Original Drilling - Original Drilling - A	17,700.00	17,700.00	8,359.79	8,094.88	31.556	ES, SF
Scooter D18-79HN - Original Drilling - Original Drilling - A	17,779.88	9,267.04	8,358.39	8,221.83	61.209	CC
Scooter D18-8JI - Scooter D18-8JI - Scooter D18-8JI - A	17,779.88	7,251.67	3,915.31	3,787.26	30.577	CC, ES, SF
Scooter D18-9JI - Scooter D18-9JI - Scooter D18-9JI - A	17,344.17	6,895.48	3,714.56	3,601.17	32.760	CC, ES
Scooter D18-9JI - Scooter D18-9JI - Scooter D18-9JI - A	17,779.88	6,893.53	3,740.02	3,624.40	32.348	SF
Shianne D18-29D - Shianne D18-29D - Shianne D18-29D	17,779.88	6,919.50	7,448.91	7,337.89	67.101	CC, ES, SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

**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
D Section 19						
Butterball 13-19 - Butterball 13-19 - Butterball 13-19 - As	11,971.34	6,987.98	7,648.08	7,576.83	107.335	CC
Butterball 13-19 - Butterball 13-19 - Butterball 13-19 - As	12,000.00	6,988.65	7,648.13	7,576.69	107.046	ES
Butterball 13-19 - Butterball 13-19 - Butterball 13-19 - As	15,200.00	7,102.28	8,301.35	8,211.57	92.462	SF
Butterball 14-19 - Butterball 14-19 - Butterball 14-19 - As	2,297.10	2,498.91	7,440.94	7,424.39	449.441	CC
Butterball 14-19 - Butterball 14-19 - Butterball 14-19 - As	2,300.00	2,502.03	7,440.95	7,424.37	448.874	ES
Butterball 14-19 - Butterball 14-19 - Butterball 14-19 - As	14,100.00	7,131.51	8,328.18	8,246.58	102.060	SF
Butterball 23-19 - Butterball 23-19 - Butterball 23-19 - As	11,905.16	6,992.59	6,495.94	6,425.11	91.713	CC, ES
Butterball 23-19 - Butterball 23-19 - Butterball 23-19 - As	14,300.00	6,999.51	6,923.32	6,839.17	82.271	SF
Butterball B04-19 - Butterball B04-19 - Butterball B04-19	11,284.18	7,002.08	8,113.99	8,047.33	121.719	CC
Butterball B04-19 - Butterball B04-19 - Butterball B04-19	11,300.00	7,002.00	8,114.01	8,047.25	121.538	ES
Butterball B04-19 - Butterball B04-19 - Butterball B04-19	15,100.00	6,976.92	8,966.44	8,878.87	102.393	SF
Butterball D18-75HN - Original Drilling - Original Drilling -	17,400.00	17,400.00	5,763.94	5,502.29	22.029	ES, SF
Butterball D18-75HN - Original Drilling - Original Drilling -	17,567.39	9,007.83	5,762.19	5,624.06	41.718	CC
Butterball D19-17D - Butterball D19-17D - Butterball D19	14,173.05	7,481.60	4,332.38	4,241.28	47.559	CC
Butterball D19-17D - Butterball D19-17D - Butterball D19	14,200.00	7,481.90	4,332.46	4,241.17	47.455	ES
Butterball D19-17D - Butterball D19-17D - Butterball D19	17,100.00	7,514.86	5,228.34	5,076.99	34.544	SF
Butterball D19-18D - Butterball D19-18D - Butterball D19	14,200.17	6,961.71	6,093.76	6,006.41	69.759	CC, ES
Butterball D19-18D - Butterball D19-18D - Butterball D19	16,100.00	6,959.12	6,383.05	6,284.41	64.710	SF
Butterball D19-19D - Butterball D19-19D - Butterball D19	13,639.15	7,001.35	7,108.40	7,023.25	83.482	CC
Butterball D19-19D - Butterball D19-19D - Butterball D19	13,700.00	7,001.96	7,108.66	7,023.10	83.083	ES
Butterball D19-19D - Butterball D19-19D - Butterball D19	16,000.00	7,026.45	7,490.16	7,391.96	76.275	SF
Butterball D19-20D - Butterball D19-20D - Butterball D19	12,665.80	7,086.63	6,990.28	6,912.38	89.734	CC
Butterball D19-20D - Butterball D19-20D - Butterball D19	12,700.00	7,086.74	6,990.37	6,912.20	89.431	ES
Butterball D19-20D - Butterball D19-20D - Butterball D19	15,600.00	7,104.94	7,581.12	7,483.69	77.805	SF
Butterball D19-22D - Wellbore #1 - Wellbore #1 - As Drill	12,656.40	6,978.30	4,610.40	4,532.38	59.096	CC
Butterball D19-22D - Wellbore #1 - Wellbore #1 - As Drill	12,700.00	6,978.71	4,610.60	4,532.35	58.917	ES
Butterball D19-22D - Wellbore #1 - Wellbore #1 - As Drill	13,700.00	6,988.37	4,727.03	4,644.09	56.998	SF
Butterball D19-75HN - Original Drilling - Original Drilling -	12,800.00	12,800.00	5,587.97	5,439.12	37.542	SF
Butterball D19-75HN - Original Drilling - Original Drilling -	14,100.00	14,100.00	5,524.66	5,385.57	39.720	ES
Butterball D19-75HN - Original Drilling - Original Drilling -	14,794.76	6,633.60	5,502.38	5,413.21	61.708	CC
Butterball D24-19 - Butterball D24-19 - Butterball D24-19	224.79	185.79	6,326.28	6,325.23	6,040.569	CC
Butterball D24-19 - Butterball D24-19 - Butterball D24-19	400.00	323.73	6,326.74	6,324.58	2,933.237	ES
Butterball D24-19 - Butterball D24-19 - Butterball D24-19	13,400.00	7,027.04	7,067.84	6,990.58	91.482	SF
Butterball H24-69HN - Original Drilling - Original Drilling -	15,300.70	6,326.00	5,120.51	5,028.59	55.705	CC, ES
Butterball H24-69HN - Original Drilling - Original Drilling -	16,500.00	6,326.00	5,259.08	5,160.38	53.286	SF
Champlin 366 Amoco F 1 - Wellbore #1 - Wellbore #1 - A	11,546.17	6,896.30	4,635.35	4,567.39	68.200	CC
Champlin 366 Amoco F 1 - Wellbore #1 - Wellbore #1 - A	11,600.00	6,896.29	4,635.67	4,567.36	67.870	ES
Champlin 366 Amoco F 1 - Wellbore #1 - Wellbore #1 - A	12,900.00	6,895.88	4,829.01	4,753.85	64.245	SF
Dechant D19-32D - Dechant D19-32D - Dechant D19-32	12,555.45	7,699.64	8,448.10	8,328.48	70.625	CC, ES
Dechant D19-32D - Dechant D19-32D - Dechant D19-32	14,300.00	14,300.00	8,600.99	8,387.97	40.377	SF
Graznak 01-19 - Graznak 01-19 - Graznak 01-19 - As Dr	11,231.12	6,895.00	7,365.96	7,263.86	72.144	CC
Graznak 01-19 - Graznak 01-19 - Graznak 01-19 - As Dr	11,300.00	6,895.00	7,366.28	7,263.75	71.843	ES
Graznak 01-19 - Graznak 01-19 - Graznak 01-19 - As Dr	13,700.00	6,895.00	7,768.70	7,652.37	66.777	SF
Higgins D19-720 - Original Drilling - Original Drilling - As	15,118.25	6,949.46	3,933.70	3,844.01	43.857	CC, ES
Higgins D19-720 - Original Drilling - Original Drilling - As	15,800.00	6,949.73	3,992.34	3,898.80	42.677	SF
Higgins D19-720 - Sidetrack Curve/Horizontal - ST01 - A	13,343.78	13,343.78	4,022.58	3,925.05	41.241	SF
Higgins D19-720 - Sidetrack Curve/Horizontal - ST01 - A	15,039.03	6,901.76	3,921.03	3,832.09	44.086	CC, ES
Independence D18-712 - Independence D18-712 - Plan 1	17,779.88	10,023.74	3,337.96	3,210.86	26.264	CC, ES, SF
Independence D18-717 - Independence D18-717 - Plan 1	17,779.88	9,821.89	3,715.04	3,589.12	29.503	CC, ES, SF
Independence D18-725 - Independence D18-725 - Plan 1	17,779.88	9,872.83	4,253.79	4,127.83	33.769	CC, ES, SF
Independence D18-732 - Independence D18-732 - Plan 1	17,779.88	9,835.54	4,687.01	4,560.88	37.160	CC, ES, SF
Independence D18-739 - Independence D18-739 - Plan 1	14,653.06	6,153.21	5,014.03	4,926.93	57.563	CC
Independence D18-739 - Independence D18-739 - Plan 1	17,779.88	9,913.74	5,044.93	4,918.62	39.942	ES, SF

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



**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

**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
D Section 19						
Independence D18-744 - Independence D18-744 - Plan 1	14,636.09	5,670.22	5,337.67	5,252.98	63.024	CC
Independence D18-744 - Independence D18-744 - Plan 1	14,700.00	5,667.33	5,338.05	5,252.91	62.696	ES
Independence D18-744 - Independence D18-744 - Plan 1	17,779.88	9,960.17	5,443.61	5,316.91	42.965	SF
Independence D18-759 - Independence D18-759 - Plan 1	17,779.88	9,769.98	6,139.49	6,013.78	48.837	CC, ES, SF
Independence D18-767 - Independence D18-767 - Plan 1	17,779.88	9,771.29	6,708.87	6,583.34	53.445	CC, ES, SF
Independence D30-711 - Independence D30-711 - Plan 1	15,200.96	7,536.92	3,298.35	3,201.57	34.080	CC, ES
Independence D30-711 - Independence D30-711 - Plan 1	16,000.00	7,200.00	3,351.54	3,250.29	33.102	SF
Independence D30-718 - Independence D30-718 - Plan 1	15,248.31	7,337.71	3,676.33	3,580.27	38.272	CC
Independence D30-718 - Independence D30-718 - Plan 1	15,300.00	7,309.75	3,676.50	3,580.09	38.133	ES
Independence D30-718 - Independence D30-718 - Plan 1	16,200.00	6,934.09	3,745.27	3,644.00	36.983	SF
Independence D30-724 - Independence D30-724 - Plan 1	15,329.96	7,142.31	4,131.20	4,035.28	43.067	CC
Independence D30-724 - Independence D30-724 - Plan 1	15,400.00	7,100.00	4,131.42	4,035.03	42.862	ES
Independence D30-724 - Independence D30-724 - Plan 1	16,400.00	6,686.91	4,209.54	4,107.90	41.416	SF
Independence D30-731 - Independence D30-731 - Plan 1	15,627.74	6,788.52	4,476.02	4,378.50	45.897	CC
Independence D30-731 - Independence D30-731 - Plan 1	15,700.00	6,750.00	4,476.40	4,378.47	45.710	ES
Independence D30-731 - Independence D30-731 - Plan 1	16,500.00	6,550.00	4,543.58	4,441.51	44.511	SF
Independence D30-737 - Independence D30-737 - Plan 1	15,300.00	15,300.00	4,951.56	4,825.02	39.128	ES, SF
Independence D30-737 - Independence D30-737 - Plan 1	15,799.50	6,339.23	4,926.35	4,829.04	50.626	CC
Independence D30-743 - Independence D30-743 - Plan 1	15,699.87	5,923.93	5,215.04	5,120.57	55.203	CC
Independence D30-743 - Independence D30-743 - Plan 1	15,700.00	5,923.96	5,215.04	5,120.57	55.203	ES
Independence D30-743 - Independence D30-743 - Plan 1	17,100.00	6,256.13	5,389.49	5,284.85	51.504	SF
Independence D30-758 - Independence D30-758 - Plan 1	5,695.05	15,511.72	6,144.88	6,051.44	65.766	CC
Independence D30-758 - Independence D30-758 - Plan 1	5,700.00	15,512.67	6,144.88	6,051.42	65.748	ES
Independence D30-758 - Independence D30-758 - Plan 1	17,300.00	6,731.19	6,439.12	6,331.59	59.884	SF
Independence D30-765 - Independence D30-765 - Plan 1	15,552.52	7,092.02	6,622.07	6,523.80	67.390	CC
Independence D30-765 - Independence D30-765 - Plan 1	15,600.00	7,063.21	6,622.16	6,523.60	67.190	ES
Independence D30-765 - Independence D30-765 - Plan 1	17,500.00	6,671.46	6,853.46	6,744.42	62.850	SF
Independence D30-770 - Independence D30-770 - Plan 1	5,507.91	15,433.31	6,932.55	6,841.34	76.007	CC, ES
Independence D30-770 - Independence D30-770 - Plan 1	17,700.00	6,400.00	7,263.85	7,154.58	66.473	SF
Independence D30-777 - Independence D30-777 - Plan 1	15,703.33	5,912.02	7,343.48	7,248.60	77.399	CC
Independence D30-777 - Independence D30-777 - Plan 1	15,800.00	5,935.75	7,344.08	7,248.36	76.724	ES
Independence D30-777 - Independence D30-777 - Plan 1	17,779.88	6,273.05	7,616.28	7,506.62	69.455	SF
Independence State D30-784 - Independence State D30	15,455.25	5,018.69	7,652.08	7,563.51	86.391	CC
Independence State D30-784 - Independence State D30	15,500.00	5,029.59	7,652.21	7,563.24	86.007	ES
Independence State D30-784 - Independence State D30	17,779.88	5,584.48	7,977.35	7,871.01	75.016	SF
LDS White D19-10 - LDS White D19-10 - LDS White D19	11,993.52	6,909.33	5,441.75	5,370.69	76.574	CC
LDS White D19-10 - LDS White D19-10 - LDS White D19	12,000.00	6,909.33	5,441.76	5,370.65	76.528	ES
LDS White D19-10 - LDS White D19-10 - LDS White D19	13,700.00	6,910.85	5,703.05	5,622.57	70.860	SF
LDS White D19-15 - LDS White D19-15 - LDS White D19	1,718.10	1,677.11	5,347.27	5,335.67	460.628	CC
LDS White D19-15 - LDS White D19-15 - LDS White D19	10,600.00	6,839.70	5,391.90	5,330.33	87.569	ES
LDS White D19-15 - LDS White D19-15 - LDS White D19	12,500.00	6,832.59	5,723.35	5,651.97	80.184	SF
LDS White D19-16 - Wellbore #1 - Wellbore #1 - As Drill	10,600.28	6,910.01	4,101.42	4,039.50	66.247	CC, ES
LDS White D19-16 - Wellbore #1 - Wellbore #1 - As Drill	11,700.00	6,906.98	4,246.29	4,178.85	62.960	SF
Mile High 02-19 - Wellbore #1 - Wellbore #1 - As Drilled	13,574.58	6,898.39	4,911.09	4,828.67	59.587	CC
Mile High 02-19 - Wellbore #1 - Wellbore #1 - As Drilled	13,600.00	6,898.47	4,911.15	4,828.56	59.461	ES
Mile High 02-19 - Wellbore #1 - Wellbore #1 - As Drilled	14,800.00	6,903.65	5,061.66	4,972.30	56.645	SF
Sean D19-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,064.85	6,885.00	3,767.19	3,581.91	20.333	CC
Sean D19-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,100.00	6,885.00	3,767.35	3,581.85	20.309	ES
Sean D19-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,500.00	6,885.00	3,792.24	3,604.40	20.189	SF
Turk Blue D19-02J - Turk Blue D19-02J - Turk Blue D19-	14,272.90	6,936.35	6,898.86	6,811.06	78.578	CC
Turk Blue D19-02J - Turk Blue D19-02J - Turk Blue D19-	14,300.00	6,936.23	6,898.91	6,810.92	78.406	ES
Turk Blue D19-02J - Turk Blue D19-02J - Turk Blue D19-	16,500.00	6,925.36	7,249.42	7,148.77	72.030	SF
Turk Blue D19-04 - Turk Blue D19-04 - Turk Blue D19-04	14,711.41	6,903.12	7,762.87	7,671.90	85.341	CC

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 19						
Turk Blue D19-04 - Turk Blue D19-04 - Turk Blue D19-04	14,800.00	6,903.84	7,763.37	7,671.76	84.745	ES
Turk Blue D19-04 - Turk Blue D19-04 - Turk Blue D19-04	17,400.00	6,921.17	8,215.25	8,108.51	76.968	SF
Turk Blue D19-05 - Turk Blue D19-05 - Turk Blue D19-05	13,067.29	7,099.91	7,752.91	7,673.31	97.407	CC
Turk Blue D19-05 - Turk Blue D19-05 - Turk Blue D19-05	13,100.00	7,100.51	7,752.98	7,673.15	97.128	ES
Turk Blue D19-05 - Turk Blue D19-05 - Turk Blue D19-05	16,100.00	7,155.40	8,324.77	8,227.64	85.700	SF
Turk Blue D19-06 - Turk Blue D19-06 - Turk Blue D19-06	13,132.52	6,924.90	6,492.52	6,413.26	81.912	CC
Turk Blue D19-06 - Turk Blue D19-06 - Turk Blue D19-06	13,200.00	6,925.64	6,492.87	6,413.14	81.434	ES
Turk Blue D19-06 - Turk Blue D19-06 - Turk Blue D19-06	15,300.00	6,948.74	6,844.72	6,753.00	74.626	SF
Turk White D19-01 - Wellbore #1 - Wellbore #1 - As Drill	14,584.76	6,880.76	3,765.36	3,675.44	41.874	CC
Turk White D19-01 - Wellbore #1 - Wellbore #1 - As Drill	14,600.00	6,880.69	3,765.39	3,675.37	41.826	ES
Turk White D19-01 - Wellbore #1 - Wellbore #1 - As Drill	15,200.00	6,877.83	3,815.29	3,721.90	40.851	SF
Turk White D19-02 - Wellbore #1 - Wellbore #1 - As Drill	14,693.04	6,909.23	5,221.75	5,130.86	57.449	CC
Turk White D19-02 - Wellbore #1 - Wellbore #1 - As Drill	14,700.00	6,909.25	5,221.76	5,130.81	57.417	ES
Turk White D19-02 - Wellbore #1 - Wellbore #1 - As Drill	15,900.00	6,912.88	5,359.43	5,261.53	54.746	SF
Turk White D19-08 - Wellbore #1 - Wellbore #1 - As Drill	13,104.19	6,881.09	3,897.12	3,818.27	49.423	CC, ES
Turk White D19-08 - Wellbore #1 - Wellbore #1 - As Drill	13,900.00	6,886.74	3,977.54	3,894.27	47.764	SF

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 20						
Bohlender D20-2J - Wellbore #1 - No Surveys	13,575.74	6,880.00	2,262.62	2,144.10	19.090	CC
Bohlender D20-2J - Wellbore #1 - No Surveys	13,600.00	6,880.00	2,262.75	2,144.08	19.067	ES
Bohlender D20-2J - Wellbore #1 - No Surveys	13,800.00	6,880.00	2,273.71	2,154.00	18.994	SF
Bohlender D20-3 - Wellbore #1 - Gyro Surveys	14,584.49	6,886.16	1,326.23	1,236.27	14.743	CC, ES
Bohlender D20-3 - Wellbore #1 - Gyro Surveys	14,700.00	6,885.80	1,331.25	1,240.85	14.727	SF
Bohlender D20-4 (P&A) - Wellbore #1 - No Surveys	14,719.39	6,882.00	2,682.32	2,477.58	13.101	CC, ES
Bohlender D20-4 (P&A) - Wellbore #1 - No Surveys	14,900.00	6,882.00	2,688.39	2,482.58	13.062	SF
Bohlender D20-6 - Wellbore#1 - Gyro Surveys	13,239.08	6,914.78	1,306.69	1,226.70	16.336	CC, ES
Bohlender D20-6 - Wellbore#1 - Gyro Surveys	13,300.00	6,914.12	1,308.11	1,227.84	16.296	SF
Butterball D19-27D - Butterball D19-27D - Butterball D19	15,374.59	7,136.52	4,536.96	4,438.43	46.049	CC
Butterball D19-27D - Butterball D19-27D - Butterball D19	15,400.00	7,135.90	4,537.03	4,438.37	45.990	ES
Butterball D19-27D - Butterball D19-27D - Butterball D19	16,800.00	7,102.06	4,755.52	4,647.99	44.226	SF
Duncan D20-1 (P&A) - Wellbore #1 - No Surveys	14,649.08	6,881.00	1,487.50	1,283.32	7.285	CC, ES
Duncan D20-1 (P&A) - Wellbore #1 - No Surveys	14,700.00	6,881.00	1,488.38	1,283.75	7.274	SF
Duncan D20-10 - Wellbore #1 - Gyro Surveys	11,534.50	6,891.95	312.34	244.44	4.600	CC, ES, SF
Duncan D20-11 (SI) - Wellbore #1 - No Surveys	11,956.90	6,887.00	1,237.57	1,130.64	11.574	CC, ES
Duncan D20-11 (SI) - Wellbore #1 - No Surveys	12,000.00	6,887.00	1,238.32	1,131.19	11.559	SF
Duncan D20-12 (SI) - Wellbore #1 - No Surveys	11,920.68	6,885.00	2,614.84	2,508.17	24.515	CC, ES
Duncan D20-12 (SI) - Wellbore #1 - No Surveys	12,200.00	6,885.00	2,629.71	2,521.54	24.311	SF
Duncan D20-13 (SI) - Wellbore #1 - No Surveys	10,384.81	6,890.00	2,659.15	2,562.39	27.483	CC
Duncan D20-13 (SI) - Wellbore #1 - No Surveys	10,400.00	6,890.00	2,659.19	2,562.36	27.461	ES
Duncan D20-13 (SI) - Wellbore #1 - No Surveys	10,700.00	6,890.00	2,677.76	2,579.46	27.241	SF
Duncan D20-14 (SI) - Wellbore #1 - Gyro Surveys	10,912.35	6,944.36	1,633.27	1,569.08	25.446	CC, ES
Duncan D20-14 (SI) - Wellbore #1 - Gyro Surveys	11,100.00	6,941.32	1,644.01	1,579.05	25.308	SF
Duncan D20-15 (P&A) - Wellbore #1 - Gyro Surveys	10,552.00	6,909.42	163.50	101.86	2.653	CC, ES, SF
Duncan D20-16 (SI) - Wellbore #1 - Gyro Surveys	10,520.37	6,892.82	1,479.67	1,418.30	24.113	CC, ES
Duncan D20-16 (SI) - Wellbore #1 - Gyro Surveys	10,700.00	6,892.23	1,490.53	1,428.00	23.838	SF
Duncan D20-2 - Wellbore #1 - Gyro Surveys	14,567.16	6,872.45	59.15	-30.62	0.659	Level 1, CC, ES, SF
Duncan D20-7 - Wellbore #1 - Gyro Surveys	13,547.29	6,874.23	334.84	252.76	4.079	CC, ES, SF
Duncan D20-8 - Wellbore #1 - Gyro Surveys	13,148.25	6,897.51	1,412.38	1,333.11	17.818	CC, ES
Duncan D20-8 - Wellbore #1 - Gyro Surveys	13,300.00	6,897.21	1,420.51	1,340.11	17.669	SF
Duncan D20-9 (P&A) - Wellbore #1 - Gyro Surveys	11,900.43	6,911.09	1,450.36	1,380.01	20.618	CC, ES
Duncan D20-9 (P&A) - Wellbore #1 - Gyro Surveys	12,100.00	6,912.06	1,464.02	1,392.30	20.413	SF
E Ranches (P&A) - Wellbore #1 - No Surveys	10,590.18	6,882.00	2,154.70	1,979.20	12.277	CC
E Ranches (P&A) - Wellbore #1 - No Surveys	10,600.00	6,882.00	2,154.73	1,979.17	12.274	ES
E Ranches (P&A) - Wellbore #1 - No Surveys	10,700.00	6,882.00	2,157.50	1,981.44	12.254	SF
Guttersen 10-20 - Wellbore #1 - Gyro Surveys	12,085.89	6,878.17	172.54	101.73	2.437	CC, ES, SF
LDS D20-30D - LDS D20-30D - LDS D20-30D - As Drille	15,109.57	6,923.99	3,369.93	3,274.22	35.210	CC, ES
LDS D20-30D - LDS D20-30D - LDS D20-30D - As Drille	15,500.00	6,920.83	3,392.47	3,294.84	34.751	SF

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



**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 28						
O'SH D 28-7 (P&A) - Wellbore #1 - No Surveys	7,948.76	6,922.00	5,212.96	5,048.32	31.664	CC, ES
O'SH D 28-7 (P&A) - Wellbore #1 - No Surveys	8,500.00	6,922.00	5,242.02	5,075.93	31.561	SF
Spike ST GWS D 28-12 (SI) - Wellbore #1 - Gyro Surve	7,013.72	6,778.96	2,529.16	2,480.81	52.312	CC, ES
Spike ST GWS D 28-12 (SI) - Wellbore #1 - Gyro Surve	7,200.00	6,873.56	2,541.44	2,492.53	51.962	SF
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	10,027.81	6,966.49	3,310.63	3,251.01	55.533	CC, ES
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	11,000.00	6,962.14	3,450.42	3,384.47	52.316	SF
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	9,897.20	6,996.54	1,855.89	1,797.35	31.703	CC
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	9,900.00	6,996.53	1,855.89	1,797.34	31.696	ES
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	10,100.00	6,995.61	1,866.94	1,807.53	31.424	SF
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	8,781.29	6,992.86	4,405.69	4,349.92	78.994	CC
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	8,800.00	6,993.00	4,405.73	4,349.89	78.907	ES
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	10,200.00	7,003.25	4,628.47	4,567.04	75.342	SF
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	7,456.50	6,928.99	4,497.25	4,445.12	86.275	CC
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	7,456.55	6,928.99	4,497.25	4,445.12	86.275	ES
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	9,000.00	6,937.33	4,754.76	4,698.24	84.127	SF
Guttersen State D28-24D (SI) - Wellbore #1 - MWD Surv	6,917.83	6,840.06	4,635.50	4,583.31	88.825	CC, ES
Guttersen State D28-24D (SI) - Wellbore #1 - MWD Surv	7,150.00	7,015.07	4,651.49	4,598.59	87.925	SF
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	10,092.84	6,949.27	4,485.11	4,423.68	73.007	CC
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	10,100.00	6,949.29	4,485.12	4,423.64	72.952	ES
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	11,700.00	6,953.89	4,764.37	4,693.14	66.890	SF
Guttersen State D28-79HN - Wellbore #1 - Actual	9,405.33	11,086.00	2,038.61	1,923.22	17.666	CC, ES
Guttersen State D28-79HN - Wellbore #1 - Actual	9,500.00	11,086.00	2,040.81	1,925.08	17.634	SF
HSR Guttersen State 10-28 (SI) - Wellbore #1 - Gyro Su	7,177.87	6,929.58	4,965.96	4,916.85	101.130	CC, ES
HSR Guttersen State 10-28 (SI) - Wellbore #1 - Gyro Su	7,400.00	6,991.74	4,979.86	4,930.39	100.667	SF
HSR Guttersen State 7-28 (PR) - Wellbore #1 - Gyro Sur	8,006.82	6,643.13	5,002.39	4,952.85	100.974	CC, ES
HSR Guttersen State 7-28 (PR) - Wellbore #1 - Gyro Sur	14,500.00	14,500.00	8,195.63	8,096.78	82.918	SF
O'SH D 28-1 (SI) - Wellbore #1 - Gyro Surveys	8,905.07	6,928.36	6,221.11	6,167.99	117.131	CC, ES
O'SH D 28-1 (SI) - Wellbore #1 - Gyro Surveys	12,100.00	6,943.51	6,993.53	6,924.38	101.128	SF
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	9,288.48	6,935.09	5,244.87	5,190.53	96.510	CC
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	9,300.00	6,935.10	5,244.89	5,190.49	96.412	ES
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,936.83	5,731.65	5,665.35	86.444	SF
O'SH D 28-8 (SI) - Wellbore #1 - Gyro Surveys	7,866.82	6,820.22	6,565.69	6,516.00	132.128	CC, ES
O'SH D 28-8 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,740.05	7,651.96	7,585.81	115.673	SF
Spike ST GWS D 28-4 (SI) - Wellbore #1 - Gyro Surveys	9,499.19	6,896.48	2,627.73	2,572.04	47.186	CC
Spike ST GWS D 28-4 (SI) - Wellbore #1 - Gyro Surveys	9,500.00	6,896.49	2,627.73	2,572.04	47.182	ES
Spike ST GWS D 28-4 (SI) - Wellbore #1 - Gyro Surveys	10,100.00	6,899.76	2,695.54	2,636.73	45.837	SF
Spike State D 28-13 (SI) - Wellbore #1 - Gyro Surveys	6,659.39	6,512.30	3,110.13	3,063.82	67.164	CC, ES
Spike State D 28-13 (SI) - Wellbore #1 - Gyro Surveys	6,950.00	6,751.89	3,150.65	3,102.86	65.919	SF
Spike State D28-05 (PR) - Wellbore #1 - Gyro Surveys	8,156.17	6,900.35	2,469.08	2,418.72	49.026	CC, ES
Spike State D28-05 (PR) - Wellbore #1 - Gyro Surveys	8,600.00	6,896.49	2,508.65	2,456.95	48.527	SF
Spike State D28-06 (SI) - Wellbore #1 - Gyro Surveys	8,096.86	6,848.42	4,159.84	4,109.51	82.658	CC
Spike State D28-06 (SI) - Wellbore #1 - Gyro Surveys	8,100.00	6,848.39	4,159.84	4,109.51	82.646	ES
Spike State D28-06 (SI) - Wellbore #1 - Gyro Surveys	9,500.00	6,836.35	4,390.09	4,334.73	79.304	SF
Spike State D28-11 (SI) - Wellbore #1 - Gyro Surveys	7,188.45	6,934.46	4,088.00	4,038.83	83.152	CC, ES
Spike State D28-11 (SI) - Wellbore #1 - Gyro Surveys	7,350.00	6,969.09	4,096.03	4,046.60	82.866	SF
Spike State GWS D 28-14 (P&A) - Wellbore #1 - Gyro Su	6,703.25	6,387.93	4,492.94	4,446.75	97.264	CC, ES
Spike State GWS D 28-14 (P&A) - Wellbore #1 - Gyro Su	7,100.00	6,674.24	4,551.05	4,503.06	94.840	SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersten D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersten D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersten D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

**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
D Section 29						
Guttersten D29-30D - Wellbore #1 - Design #1	800.47	794.48	2,319.06	2,313.80	440.704	CC
Guttersten D29-30D - Wellbore #1 - Design #1	900.00	878.37	2,319.21	2,313.29	391.792	ES
Guttersten D29-30D - Wellbore #1 - Design #1	10,500.00	7,079.26	3,287.65	3,219.51	48.252	SF
Guttersten D29-31D - Wellbore #1 - Guttersten D29-31D	100.00	64.25	1,823.97	1,823.73	7,569.998	CC
Guttersten D29-31D - Wellbore #1 - Guttersten D29-31D	400.00	356.32	1,824.91	1,823.07	991.634	ES
Guttersten D29-31D - Wellbore #1 - Guttersten D29-31D	9,300.00	6,981.16	3,241.95	3,185.20	57.119	SF
Guttersten D29-33D - Wellbore #1 - Guttersten D29-33D -	908.24	898.24	2,198.31	2,193.50	457.079	CC
Guttersten D29-33D - Wellbore #1 - Guttersten D29-33D -	1,000.00	980.35	2,198.45	2,193.03	405.879	ES
Guttersten D29-33D - Wellbore #1 - Guttersten D29-33D -	6,700.00	6,740.33	3,228.69	3,174.47	59.546	SF
Guttersten D29-65HN - Original Drilling - Original Drilling	7,100.00	9,627.41	94.89	-2.03	0.979	Level 1, ES, SF
Guttersten D29-65HN - Original Drilling - Original Drilling	7,155.90	9,631.46	79.27	21.23	1.366	Level 3, CC
Guttersten D29-67HN - Original Drilling - Original Drilling	8,600.00	9,486.48	48.42	-32.23	0.600	Level 1, ES, SF
Guttersten D29-67HN - Original Drilling - Original Drilling	8,639.50	9,486.49	28.01	-11.61	0.707	Level 1, CC
Guttersten D29-69HN - Original Drilling - Original Drilling	9,874.08	9,650.02	30.07	-19.19	0.610	Level 1, CC
Guttersten D29-69HN - Original Drilling - Original Drilling	9,900.00	9,650.02	39.70	-37.84	0.512	Level 1, ES, SF
Guttersten D29-722 - Guttersten D29-722 - Prelim - Rev 1	7,506.62	7,374.24	1,245.55	1,195.19	24.732	CC
Guttersten D29-722 - Guttersten D29-722 - Prelim - Rev 1	17,779.88	17,642.20	1,246.05	1,063.96	6.843	ES, SF
Guttersten D29-730 - Guttersten D29-730 - Prelim - Rev 1	7,509.87	7,288.67	644.94	595.23	12.975	CC
Guttersten D29-730 - Guttersten D29-730 - Prelim - Rev 1	17,779.88	17,558.68	645.44	463.68	3.551	ES, SF
Guttersten D29-746 - Guttersten D29-746 - Prelim - Rev 1	2,200.00	2,188.00	38.01	22.74	2.490	CC, ES
Guttersten D29-746 - Guttersten D29-746 - Prelim - Rev 1	2,300.00	2,288.47	38.71	22.76	2.427	SF
Guttersten D29-754 - Guttersten D29-754 - Prelim - Rev 1	2,200.00	2,188.00	75.01	59.75	4.915	CC, ES
Guttersten D29-754 - Guttersten D29-754 - Prelim - Rev 1	2,300.00	2,287.41	76.59	60.65	4.803	SF
Guttersten D29-770 - Guttersten D29-770 - Prelim - Rev 1	2,200.00	2,192.00	1,403.18	1,387.91	91.843	CC
Guttersten D29-770 - Guttersten D29-770 - Prelim - Rev 1	2,600.00	2,724.08	1,404.70	1,386.38	76.694	ES
Guttersten D29-770 - Guttersten D29-770 - Prelim - Rev 1	17,779.88	17,534.91	1,808.03	1,627.05	9.990	SF
Guttersten D29-778 - Guttersten D29-778 - Prelim - Rev 1	2,200.00	2,192.00	1,440.19	1,424.91	94.265	CC, ES
Guttersten D29-778 - Guttersten D29-778 - Prelim - Rev 1	17,779.88	17,667.96	2,417.76	2,235.41	13.258	SF
Guttersten D29-786 - Guttersten D29-786 - Prelim - Rev 1	2,200.00	2,192.00	1,478.20	1,462.92	96.753	CC, ES
Guttersten D29-786 - Guttersten D29-786 - Prelim - Rev 1	17,779.88	17,550.71	2,998.45	2,816.93	16.519	SF
Guttersten D29-99HZ - Wellbore #1 - MWD Surveys	6,684.49	9,407.18	1,020.62	926.65	10.860	CC
Guttersten D29-99HZ - Wellbore #1 - MWD Surveys	6,700.00	9,410.13	1,020.92	926.38	10.798	ES
Guttersten D29-99HZ - Wellbore #1 - MWD Surveys	6,800.00	9,429.24	1,037.19	939.44	10.611	SF
Guttersten D30-68-1HN - Original Drilling - Original Drilling	1,027.76	1,013.08	2,286.53	2,281.01	413.951	CC, ES
Guttersten D30-68-1HN - Original Drilling - Original Drilling	9,900.00	6,317.01	3,445.45	3,392.46	65.016	SF
Guttersten D30-69-1HN - Original Drilling - Original Drilling	1,187.90	1,169.92	2,295.58	2,288.95	345.920	CC
Guttersten D30-69-1HN - Original Drilling - Original Drilling	1,200.00	1,180.51	2,295.59	2,288.87	341.757	ES
Guttersten D30-69-1HN - Original Drilling - Original Drilling	10,600.00	6,506.01	3,563.65	3,499.98	55.965	SF
Guttersten State D29-714 - Guttersten D29-714 - Prelim -	7,289.66	7,131.04	1,798.48	1,748.42	35.922	CC
Guttersten State D29-714 - Guttersten D29-714 - Prelim -	17,779.88	17,735.31	1,801.18	1,619.78	9.929	ES, SF
Guttersten State Y05-719 - Guttersten Y05-719 - Prelim -	7,435.72	7,563.84	1,614.70	1,564.42	32.114	CC, ES
Guttersten State Y05-719 - Guttersten Y05-719 - Prelim -	8,200.00	6,854.59	1,624.79	1,573.70	31.802	SF
Guttersten Y05-726 - Guttersten Y05-726 - Prelim - Rev 1	7,400.00	7,614.31	1,002.76	952.41	19.917	SF
Guttersten Y05-726 - Guttersten Y05-726 - Prelim - Rev 1	7,436.75	7,577.63	1,002.54	952.21	19.919	CC, ES
Guttersten Y05-734 - Guttersten Y05-734 - Prelim - Rev 1	7,436.21	7,643.42	389.50	338.61	7.654	CC, ES, SF
Guttersten Y05-749 - Guttersten Y05-749 - Prelim - Rev 1	2,200.00	2,194.00	154.04	138.76	10.078	CC, ES
Guttersten Y05-749 - Guttersten Y05-749 - Prelim - Rev 1	7,215.49	7,803.44	219.73	168.35	4.277	SF
Guttersten Y05-756 - Guttersten Y05-756 - Prelim - Rev 1	2,200.00	2,194.00	166.42	151.13	10.887	CC, ES
Guttersten Y05-756 - Guttersten Y05-756 - Prelim - Rev 1	2,300.00	2,289.87	169.20	153.23	10.596	SF
Guttersten Y05-771 - Guttersten Y05-771 - Prelim - Rev 1	2,714.12	2,918.80	1,402.03	1,382.64	72.335	CC, ES
Guttersten Y05-771 - Guttersten Y05-771 - Prelim - Rev 1	6,850.00	8,080.14	1,509.58	1,458.18	29.370	SF
Guttersten Y05-779 - Guttersten Y05-779 - Prelim - Rev 1	2,200.00	2,192.00	1,445.57	1,430.30	94.618	CC, ES
Guttersten Y05-779 - Guttersten Y05-779 - Prelim - Rev 1	6,900.00	8,078.25	2,046.02	1,995.13	40.201	SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

**Summary**

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
D Section 29						
Guttersen Y05-786 - Guttersen Y05-786 - Prelim - Rev 1	2,200.00	2,196.00	1,483.37	1,468.08	97.000	CC, ES
Guttersen Y05-786 - Guttersen Y05-786 - Prelim - Rev 1	6,850.00	8,010.84	2,585.60	2,535.36	51.462	SF
Jessie D29-1J - Wellbore #1 - Gyro Surveys	8,950.47	6,894.14	301.85	248.61	5.670	CC, ES, SF
Jessie D29-4J - Wellbore #1 - Gyro Surveys	6,542.96	6,356.36	688.48	643.05	15.156	CC
Jessie D29-4J - Wellbore #1 - Gyro Surveys	6,550.00	6,362.87	688.51	643.04	15.141	ES
Jessie D29-4J - Wellbore #1 - Gyro Surveys	6,600.00	6,409.11	690.74	644.93	15.081	SF
Kate Red D29-03J - Kate Red D29-03J - Kate Red D29-0	2,397.41	2,388.00	2,005.31	1,988.81	121.584	CC
Kate Red D29-03J - Kate Red D29-03J - Kate Red D29-0	2,500.00	2,475.38	2,005.86	1,988.72	117.037	ES
Kate Red D29-03J - Kate Red D29-03J - Kate Red D29-0	6,750.00	6,562.66	2,432.56	2,385.19	51.348	SF
Kate Red D29-11 - Wellbore #1 - Gyro Surveys	3,671.31	3,609.06	1,021.91	996.66	40.472	CC
Kate Red D29-11 - Wellbore #1 - Gyro Surveys	3,700.00	3,636.11	1,021.95	996.49	40.152	ES
Kate Red D29-11 - Wellbore #1 - Gyro Surveys	6,500.00	6,320.46	1,338.98	1,293.29	29.306	SF
Kate Red D29-13 - Wellbore #1 - Gyro Surveys	3,433.25	3,384.37	2,957.83	2,934.24	125.373	CC
Kate Red D29-13 - Wellbore #1 - Gyro Surveys	3,500.00	3,441.24	2,957.96	2,933.92	123.059	ES
Kate Red D29-13 - Wellbore #1 - Gyro Surveys	6,750.00	6,603.50	3,192.15	3,144.45	66.919	SF
Kate Red D29-14 - Wellbore #1 - Gyro Surveys	6,351.23	6,210.05	1,974.02	1,929.04	43.884	CC, ES
Kate Red D29-14 - Wellbore #1 - Gyro Surveys	6,550.00	6,377.63	1,999.47	1,953.16	43.178	SF
Kate Red D29-2J - Wellbore #1 - Kate Red D29-2J	1,368.99	1,328.02	1,895.57	1,886.43	207.359	CC
Kate Red D29-2J - Wellbore #1 - Kate Red D29-2J	2,000.00	1,946.45	1,897.02	1,883.46	139.906	ES
Kate Red D29-2J - Wellbore #1 - Kate Red D29-2J	9,200.00	6,906.10	2,194.58	2,140.46	40.551	SF
Kate Red D29-3 - Wellbore #1 - Kate Red D29-3	9,285.60	6,896.05	1,283.12	1,228.42	23.456	CC, ES
Kate Red D29-3 - Wellbore #1 - Kate Red D29-3	9,400.00	6,895.62	1,288.21	1,233.12	23.383	SF
Kate Red D29-5 - Wellbore #1 - Gyro Surveys	100.00	55.99	1,783.75	1,783.52	7,939.730	CC
Kate Red D29-5 - Wellbore #1 - Gyro Surveys	600.00	551.79	1,786.45	1,782.77	485.992	ES
Kate Red D29-5 - Wellbore #1 - Gyro Surveys	8,300.00	6,929.46	2,682.54	2,631.49	52.545	SF
Kate Red D29-6 - Wellbore #1 - Gyro Surveys	1,897.63	1,855.65	571.85	558.96	44.394	CC
Kate Red D29-6 - Wellbore #1 - Gyro Surveys	2,000.00	1,955.10	572.13	558.53	42.087	ES
Kate Red D29-6 - Wellbore #1 - Gyro Surveys	8,000.00	6,908.03	1,309.96	1,259.73	26.080	SF
Kate White D29-1 - Wellbore #1 - Gyro Surveys	9,320.62	6,903.45	1,387.41	1,332.57	25.295	CC, ES
Kate White D29-1 - Wellbore #1 - Gyro Surveys	9,500.00	6,903.11	1,398.96	1,343.19	25.085	SF
Kate White D29-15 - Wellbore #1 - Gyro Surveys	6,452.60	6,306.55	1,414.02	1,368.70	31.203	CC, ES
Kate White D29-15 - Wellbore #1 - Gyro Surveys	6,600.00	6,447.02	1,431.36	1,385.03	30.897	SF
Kate White D29-16 - Wellbore #1 - Gyro Surveys	6,565.87	6,391.94	2,021.02	1,975.44	44.339	CC, ES
Kate White D29-16 - Wellbore #1 - Gyro Surveys	6,750.00	6,567.30	2,042.02	1,995.31	43.721	SF
Kate White D29-7 - Wellbore #1 - Gyro Surveys	7,920.57	6,901.05	177.45	127.28	3.538	CC, ES, SF
Kate White D29-8 - Wellbore #1 - Gyro Surveys	7,937.80	6,911.02	1,309.75	1,259.64	26.136	CC, ES
Kate White D29-8 - Wellbore #1 - Gyro Surveys	8,000.00	6,909.63	1,311.22	1,260.99	26.105	SF
Kate White D29-9 (SI) - Wellbore #1 - Gyro Surveys	6,817.09	6,584.83	1,372.60	1,325.35	29.049	CC, ES
Kate White D29-9 (SI) - Wellbore #1 - Gyro Surveys	6,950.00	6,680.92	1,379.99	1,332.16	28.849	SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

**Summary**

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
D Section 32						
HP D32-21D - Wellbore #1 - MWD Surveys	6,438.03	6,409.00	4,809.96	4,761.51	99.282	CC, ES
HP D32-21D - Wellbore #1 - MWD Surveys	6,750.00	6,639.61	4,886.85	4,836.70	97.455	SF
HP D32-23D - Wellbore #1 - MWD Surveys	6,472.48	6,447.39	5,914.93	5,866.84	123.011	CC, ES
HP D32-23D - Wellbore #1 - MWD Surveys	6,800.00	6,738.42	5,997.16	5,947.12	119.848	SF
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	6,480.79	6,699.73	4,783.81	4,736.61	101.362	CC, ES
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	6,750.00	6,892.86	4,841.43	4,792.91	99.775	SF
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	6,404.19	6,241.23	3,203.13	3,157.97	70.933	CC, ES
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	6,700.00	6,511.02	3,267.55	3,220.48	69.414	SF
HP Farms D32-18D - Wellbore #1 - MWD Surveys	6,435.35	6,485.80	3,571.77	3,515.51	63.494	CC, ES
HP Farms D32-18D - Wellbore #1 - MWD Surveys	6,650.00	6,703.85	3,607.01	3,549.47	62.684	SF
HP Farms D32-24D - Wellbore #1 - MWD Surveys	6,450.01	6,626.80	6,159.29	6,100.63	104.995	CC, ES
HP Farms D32-24D - Wellbore #1 - MWD Surveys	6,700.00	6,788.31	6,209.20	6,149.39	103.810	SF
Norris 14-32 - Wellbore #1 - Projection Survey	6,405.56	6,266.39	7,504.73	7,426.51	95.945	CC, ES
Norris 14-32 - Wellbore #1 - Projection Survey	6,950.00	6,752.04	7,709.64	7,625.73	91.878	SF
Norris A Unit 2 - Wellbore #1 - Projection Survey	6,412.91	6,278.56	6,600.04	6,521.72	84.272	CC, ES
Norris A Unit 2 - Wellbore #1 - Projection Survey	6,900.00	6,720.79	6,769.01	6,685.48	81.037	SF
Norris D32-1 (SI) - Wellbore #1 - Gyro Surveys	6,518.83	6,382.10	3,236.16	3,190.71	71.207	CC, ES
Norris D32-1 (SI) - Wellbore #1 - Gyro Surveys	6,800.00	6,667.64	3,292.23	3,245.02	69.742	SF
Norris D32-10 - Wellbore #1 - Gyro Surveys	6,443.76	6,167.87	5,593.43	5,548.62	124.830	CC
Norris D32-10 - Wellbore #1 - Gyro Surveys	6,450.00	6,172.05	5,593.46	5,548.62	124.723	ES
Norris D32-10 - Wellbore #1 - Gyro Surveys	6,900.00	6,753.53	5,742.83	5,694.82	119.617	SF
Norris D32-15 - Wellbore #1 - Gyro Surveys	6,473.10	6,509.65	6,891.00	6,845.01	149.830	CC, ES
Norris D32-15 - Wellbore #1 - Gyro Surveys	6,750.00	6,800.00	6,949.71	6,901.89	145.332	SF
Norris D32-1J - Wellbore #1 - Gyro Surveys	6,507.31	6,487.13	3,850.45	3,804.67	84.094	CC, ES
Norris D32-1J - Wellbore #1 - Gyro Surveys	6,800.00	6,788.32	3,913.36	3,865.72	82.144	SF
Norris D32-2 - Wellbore #1 - Gyro Surveys	6,456.39	6,312.29	2,835.14	2,789.85	62.591	CC, ES
Norris D32-2 - Wellbore #1 - Gyro Surveys	6,750.00	6,585.46	2,903.96	2,856.81	61.586	SF
Norris D32-2J - Wellbore #1 - Gyro Surveys	6,410.03	6,413.88	3,787.01	3,741.19	82.654	CC, ES
Norris D32-2J - Wellbore #1 - Gyro Surveys	6,700.00	6,613.10	3,846.83	3,799.33	80.981	SF
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	6,339.82	6,185.67	3,854.41	3,707.26	26.194	CC
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	6,350.00	6,195.47	3,854.47	3,707.09	26.153	ES
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	6,800.00	6,619.14	3,975.14	3,817.85	25.273	SF
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,387.36	6,312.84	4,927.46	4,882.04	108.490	CC, ES
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,800.00	6,614.88	5,043.58	4,995.81	105.593	SF
Norris D32-6 - Wellbore #1 - Gyro Surveys	6,401.43	6,180.75	4,436.21	4,391.29	98.767	CC, ES
Norris D32-6 - Wellbore #1 - Gyro Surveys	6,700.00	6,440.70	4,502.93	4,456.12	96.193	SF
Norris D32-7 - Wellbore #1 - Gyro Surveys	6,445.80	6,208.26	4,194.01	4,149.08	93.359	CC
Norris D32-7 - Wellbore #1 - Gyro Surveys	6,450.00	6,213.43	4,194.02	4,149.06	93.289	ES
Norris D32-7 - Wellbore #1 - Gyro Surveys	6,750.00	6,458.44	4,266.92	4,220.17	91.278	SF
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	6,486.78	6,293.79	5,761.75	5,716.54	127.439	CC, ES
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	6,900.00	6,694.20	5,886.70	5,839.03	123.487	SF
Y Section 05						
Olsen Red Y05-02D - Olsen Red Y05-02D - Olsen Red Y	6,431.21	6,316.79	8,591.09	8,545.70	189.283	CC, ES
Olsen Red Y05-02D - Olsen Red Y05-02D - Olsen Red Y	6,800.00	6,800.00	8,693.38	8,645.22	180.485	SF
Olsen Y5-05JI - Olsen Y5-05JI - Olsen Y5-05JI - As Drille	6,418.77	6,282.28	9,779.38	9,744.85	283.213	CC, ES
Olsen Y5-05JI - Olsen Y5-05JI - Olsen Y5-05JI - As Drille	6,950.00	6,755.04	9,980.83	9,944.07	271.543	SF
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	6,456.49	6,371.16	9,425.47	9,346.45	119.269	CC, ES
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	7,000.00	6,840.60	9,644.24	9,559.81	114.227	SF
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	6,474.68	6,405.96	9,528.44	9,449.16	120.187	CC, ES
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	7,000.00	6,857.60	9,732.13	9,647.67	115.218	SF
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille						Out of range
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins US						Out of range

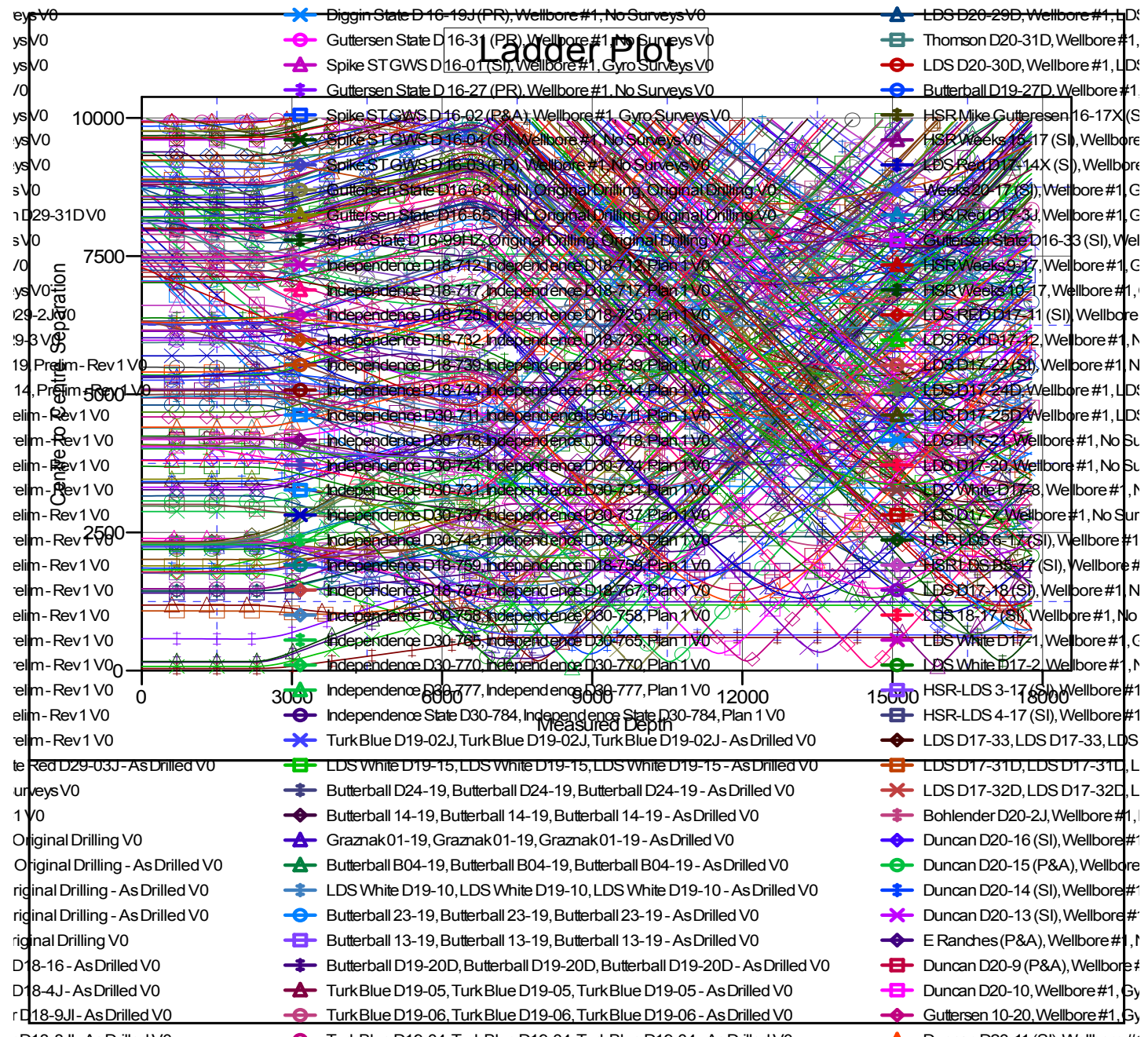
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

Grid Convergence at Surface is: 0.60°



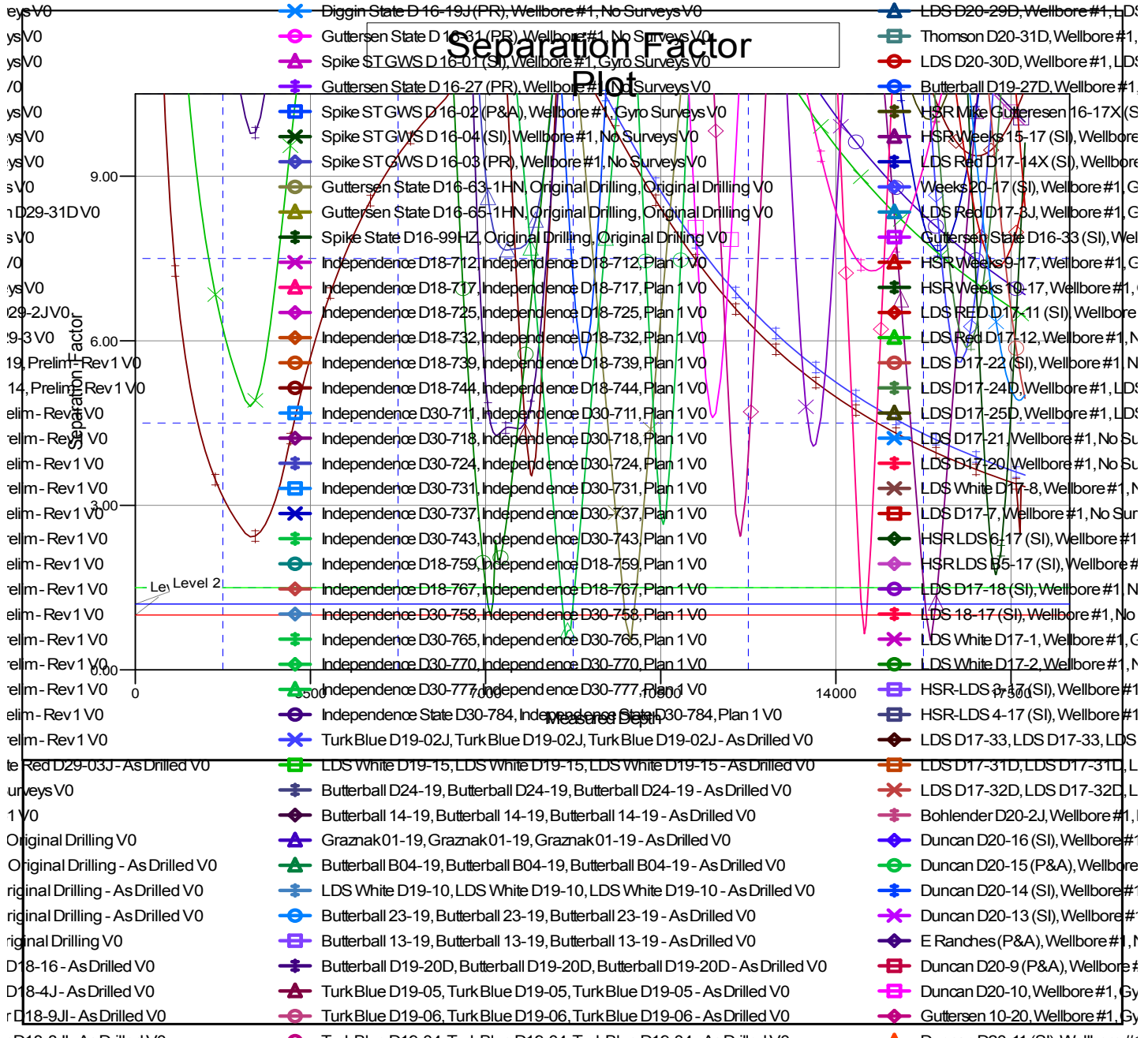
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

**Noble Energy, Inc.**  
**Anticollision Summary Report**

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen D29-738
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4818.00ft
<b>Reference Site:</b>	D Section 29	<b>MD Reference:</b>	Well @ 4818.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen D29-738	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen D29-738	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Prelim - Rev 1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to Well @ 4818.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: Guttersen D29-738  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.60°



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