

Project: Mustang  
Site: CC Section 31  
Well: Booth CC30-755  
Wellbore: Booth CC30-755  
Design: Plan #1

# Northern Region - DJ Basin

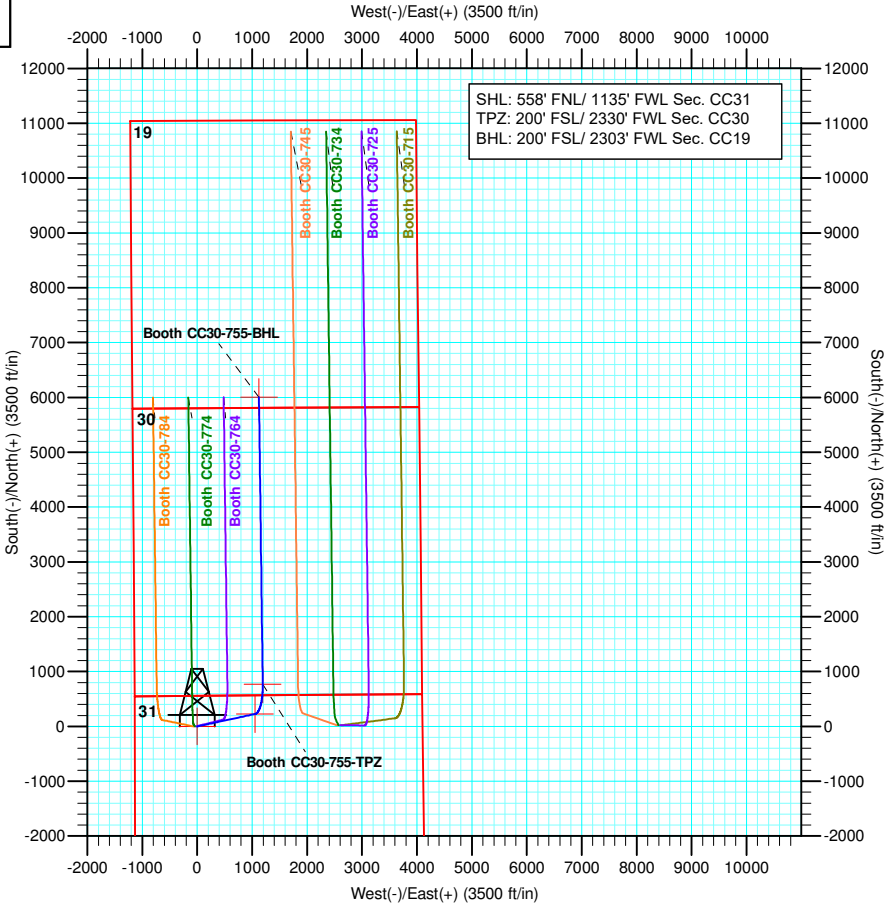
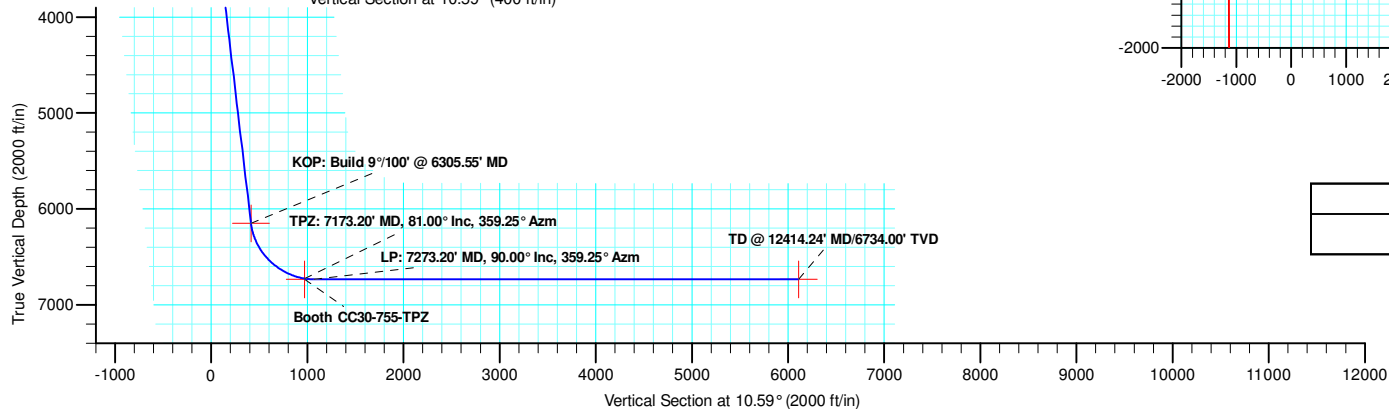
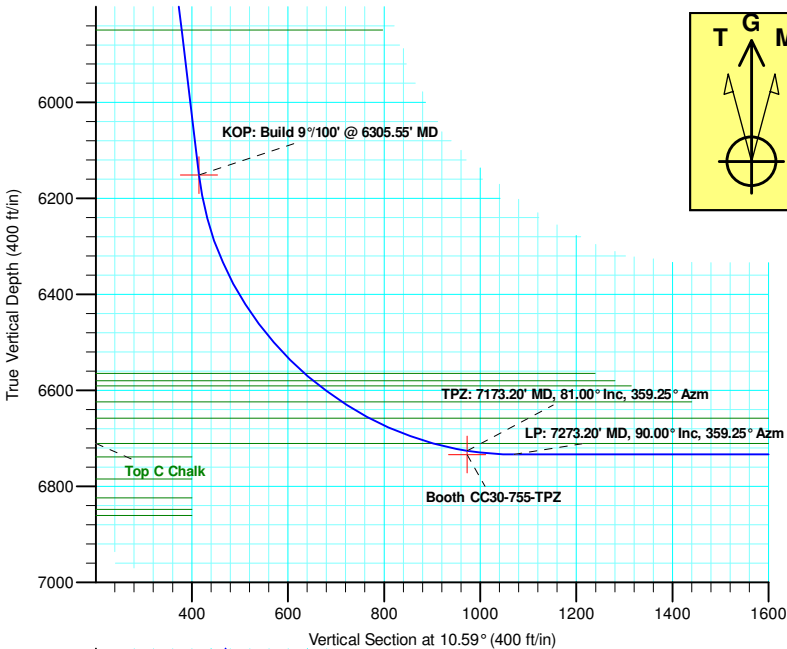
Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone  
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	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	3048.12	16.96	77.89	3035.78	26.14	121.86	2.00	77.89	48.10	
4	6305.55	16.96	77.89	6151.51	225.47	1051.05	0.00	0.00	414.84	
5	7173.20	81.00	359.25	6726.16	767.01	1191.70	9.00	-81.75	973.01	
6	7273.20	90.00	359.25	6734.00	866.59	1190.40	9.00	0.00	1070.65	
7	12414.24	90.00	359.25	6734.00	6007.19	1123.45	0.00	0.00	6111.34	Booth CC30-755-BHL

WELL DETAILS: Booth CC30-755

+N/-S	+E/-W	Northing	Ground Level: Easting	4778.00 Latitude	Longitude	Slot
0.00	0.00	1344484.54	3282991.98	40.2745670	-104.4857630	



Plan: Plan #1 (Booth CC30-755/Booth CC30-755)

Created By: Keith Noack Date: 11:08, October 12 2018

# **Northern Region - DJ Basin**

**Mustang**

**CC Section 31**

**Booth CC30-755**

**Booth CC30-755**

**Plan: Plan #1**

## **Standard Planning Report**

**12 October, 2018**

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site:</b>	CC Section 31	<b>North Reference:</b>	Grid
<b>Well:</b>	Booth CC30-755	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Booth CC30-755		
<b>Design:</b>	Plan #1		

<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		CC Section 31			
Site Position:		Northing:	1,340,296.58 usft	Latitude:	40.2630390
From:	Map	Easting:	3,284,024.52 usft	Longitude:	-104.4822350
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.66 °

Well	Booth CC30-755					
Well Position	+N/-S	4,187.97 ft	Northing:	1,344,484.54 usft	Latitude:	40.2745670
	+E/-W	-1,032.54 ft	Easting:	3,282,991.98 usft	Longitude:	-104.4857630
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,778.00 ft

<b>Wellbore</b>	Booth CC30-755				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	10/11/2018	7.91	66.76	52,206.18131003

<b>Design</b>	Plan #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	10.59

<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
0.00	0.00	0.00	0.00	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	
3,048.12	16.96	77.89	3,035.78	26.14	121.86	2.00	2.00	0.00	77.89	
6,305.55	16.96	77.89	6,151.51	225.47	1,051.05	0.00	0.00	0.00	0.00	
7,173.20	81.00	359.25	6,726.16	767.01	1,191.70	9.00	7.38	-9.06	-81.75	
7,273.20	90.00	359.25	6,734.00	866.59	1,190.40	9.00	9.00	0.00	0.00	
12,414.24	90.00	359.25	6,734.00	6,007.19	1,123.45	0.00	0.00	0.00	0.00	Booth CC30-755-BI

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site:</b>	CC Section 31	<b>North Reference:</b>	Grid
<b>Well:</b>	Booth CC30-755	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Booth CC30-755		
<b>Design:</b>	Plan #1		

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)
0.00	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
419.00	0.00	0.00	419.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Pierre</b>									
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
685.00	0.00	0.00	685.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Upper Pierre Aquifer Top</b>									
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
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
1,605.00	0.00	0.00	1,605.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Upper Pierre Aquifer Base</b>									
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
<b>Build: 2°/100'</b>									
2,300.00	2.00	77.89	2,299.98	0.37	1.71	0.67	2.00	2.00	0.00
2,400.00	4.00	77.89	2,399.84	1.46	6.82	2.69	2.00	2.00	0.00
2,500.00	6.00	77.89	2,499.45	3.29	15.34	6.06	2.00	2.00	0.00
2,600.00	8.00	77.89	2,598.70	5.85	27.26	10.76	2.00	2.00	0.00
2,700.00	10.00	77.89	2,697.47	9.13	42.55	16.80	2.00	2.00	0.00
2,800.00	12.00	77.89	2,795.62	13.13	61.21	24.16	2.00	2.00	0.00
2,900.00	14.00	77.89	2,893.06	17.85	83.20	32.84	2.00	2.00	0.00
3,000.00	16.00	77.89	2,989.64	23.28	108.51	42.83	2.00	2.00	0.00
3,048.12	16.96	77.89	3,035.78	26.14	121.86	48.10	2.00	2.00	0.00
<b>Hold: 16.96° Inc, 77.89° Azm</b>									
3,100.00	16.96	77.89	3,085.41	29.31	136.66	53.94	0.00	0.00	0.00
3,200.00	16.96	77.89	3,181.06	35.43	165.18	65.20	0.00	0.00	0.00
3,300.00	16.96	77.89	3,276.71	41.55	193.71	76.45	0.00	0.00	0.00
3,400.00	16.96	77.89	3,372.36	47.67	222.23	87.71	0.00	0.00	0.00
3,500.00	16.96	77.89	3,468.01	53.79	250.76	98.97	0.00	0.00	0.00
3,600.00	16.96	77.89	3,563.66	59.91	279.28	110.23	0.00	0.00	0.00
3,700.00	16.96	77.89	3,659.31	66.03	307.81	121.49	0.00	0.00	0.00
3,718.50	16.96	77.89	3,677.00	67.16	313.08	123.57	0.00	0.00	0.00
<b>Parkman</b>									
3,800.00	16.96	77.89	3,754.96	72.15	336.33	132.75	0.00	0.00	0.00
3,900.00	16.96	77.89	3,850.61	78.27	364.86	144.01	0.00	0.00	0.00
4,000.00	16.96	77.89	3,946.26	84.39	393.38	155.27	0.00	0.00	0.00
4,100.00	16.96	77.89	4,041.91	90.51	421.91	166.52	0.00	0.00	0.00

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site:</b>	CC Section 31	<b>North Reference:</b>	Grid
<b>Well:</b>	Booth CC30-755	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Booth CC30-755		
<b>Design:</b>	Plan #1		

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)
4,200.00	16.96	77.89	4,137.55	96.63	450.43	177.78	0.00	0.00	0.00
4,300.00	16.96	77.89	4,233.20	102.75	478.96	189.04	0.00	0.00	0.00
4,359.38	16.96	77.89	4,290.00	106.38	495.90	195.73	0.00	0.00	0.00
<b>Sussex</b>									
4,400.00	16.96	77.89	4,328.85	108.86	507.48	200.30	0.00	0.00	0.00
4,500.00	16.96	77.89	4,424.50	114.98	536.01	211.56	0.00	0.00	0.00
4,600.00	16.96	77.89	4,520.15	121.10	564.54	222.82	0.00	0.00	0.00
4,700.00	16.96	77.89	4,615.80	127.22	593.06	234.08	0.00	0.00	0.00
4,800.00	16.96	77.89	4,711.45	133.34	621.59	245.34	0.00	0.00	0.00
4,900.00	16.96	77.89	4,807.10	139.46	650.11	256.59	0.00	0.00	0.00
5,000.00	16.96	77.89	4,902.75	145.58	678.64	267.85	0.00	0.00	0.00
5,013.85	16.96	77.89	4,916.00	146.43	682.59	269.41	0.00	0.00	0.00
<b>Shannon</b>									
5,100.00	16.96	77.89	4,998.40	151.70	707.16	279.11	0.00	0.00	0.00
5,200.00	16.96	77.89	5,094.05	157.82	735.69	290.37	0.00	0.00	0.00
5,300.00	16.96	77.89	5,189.70	163.94	764.21	301.63	0.00	0.00	0.00
5,400.00	16.96	77.89	5,285.35	170.06	792.74	312.89	0.00	0.00	0.00
5,500.00	16.96	77.89	5,381.00	176.18	821.26	324.15	0.00	0.00	0.00
5,600.00	16.96	77.89	5,476.65	182.29	849.79	335.41	0.00	0.00	0.00
5,700.00	16.96	77.89	5,572.30	188.41	878.31	346.66	0.00	0.00	0.00
5,800.00	16.96	77.89	5,667.95	194.53	906.84	357.92	0.00	0.00	0.00
5,900.00	16.96	77.89	5,763.60	200.65	935.37	369.18	0.00	0.00	0.00
5,989.29	16.96	77.89	5,849.00	206.12	960.83	379.23	0.00	0.00	0.00
<b>Teepee Buttes</b>									
6,000.00	16.96	77.89	5,859.25	206.77	963.89	380.44	0.00	0.00	0.00
6,100.00	16.96	77.89	5,954.90	212.89	992.42	391.70	0.00	0.00	0.00
6,200.00	16.96	77.89	6,050.55	219.01	1,020.94	402.96	0.00	0.00	0.00
6,305.55	16.96	77.89	6,151.51	225.47	1,051.05	414.84	0.00	0.00	0.00
<b>KOP: Build 9°/100' @ 6305.55' MD</b>									
6,350.00	17.97	64.96	6,193.92	229.73	1,063.61	421.34	9.00	2.26	-29.10
6,400.00	19.98	52.55	6,241.22	238.20	1,077.38	432.19	9.00	4.03	-24.82
6,450.00	22.70	42.65	6,287.81	250.49	1,090.71	446.73	9.00	5.43	-19.78
6,500.00	25.89	34.93	6,333.38	266.54	1,103.50	464.86	9.00	6.39	-15.45
6,550.00	29.41	28.86	6,377.68	286.26	1,115.68	486.47	9.00	7.03	-12.13
6,600.00	33.14	24.02	6,420.41	309.50	1,127.18	511.44	9.00	7.47	-9.68
6,650.00	37.03	20.08	6,461.32	336.14	1,137.91	539.60	9.00	7.78	-7.89
6,700.00	41.03	16.79	6,500.16	366.01	1,147.83	570.78	9.00	8.00	-6.57
6,750.00	45.11	14.00	6,536.68	398.92	1,156.86	604.79	9.00	8.15	-5.58
6,791.38	48.53	11.98	6,565.00	428.32	1,163.63	634.93	9.00	8.26	-4.89
<b>Sharon Springs</b>									
6,800.00	49.24	11.58	6,570.67	434.68	1,164.95	641.42	9.00	8.31	-4.58
6,814.48	50.45	10.94	6,580.00	445.53	1,167.11	652.49	9.00	8.33	-4.45
<b>Top A Chalk</b>									
6,832.02	51.92	10.19	6,591.00	458.97	1,169.62	666.16	9.00	8.36	-4.28
<b>Top A Marl</b>									
6,850.00	53.42	9.45	6,601.90	473.05	1,172.05	680.45	9.00	8.39	-4.11
6,888.58	56.67	7.95	6,624.00	504.30	1,176.83	712.05	9.00	8.42	-3.87
<b>Top B Chalk</b>									
6,900.00	57.64	7.53	6,630.19	513.81	1,178.12	721.63	9.00	8.45	-3.68
6,950.00	61.88	5.79	6,655.37	556.70	1,183.11	764.71	9.00	8.48	-3.49
6,955.62	62.36	5.60	6,658.00	561.65	1,183.61	769.66	9.00	8.51	-3.33
<b>Top B Marl</b>									
7,000.00	66.14	4.18	6,677.28	601.47	1,187.01	809.42	9.00	8.52	-3.21

# Noble Energy, Inc.

## Planning Report

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<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site:</b>	CC Section 31	<b>North Reference:</b>	Grid
<b>Well:</b>	Booth CC30-755	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Booth CC30-755		
<b>Design:</b>	Plan #1		

### 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)
7,050.00	70.42	2.67	6,695.78	647.82	1,189.77	855.50	9.00	8.55	-3.01
7,100.00	74.71	1.25	6,710.76	695.48	1,191.40	902.65	9.00	8.58	-2.86
7,100.90	74.78	1.22	6,711.00	696.35	1,191.42	903.51	9.00	8.59	-2.79
<b>Top C Chalk</b>									
7,150.00	79.00	359.88	6,722.13	744.16	1,191.87	950.58	9.00	8.60	-2.74
7,173.20	81.00	359.25	6,726.16	767.01	1,191.70	973.01	9.00	8.60	-2.68
<b>TPZ: 7173.20' MD, 81.00° Inc, 359.25° Azm</b>									
7,200.00	83.41	359.25	6,729.79	793.55	1,191.35	999.04	9.00	9.00	0.00
7,250.00	87.91	359.25	6,733.58	843.39	1,190.70	1,047.91	9.00	9.00	0.00
7,273.20	90.00	359.25	6,734.00	866.59	1,190.40	1,070.65	9.00	9.00	0.00
<b>LP: 7273.20' MD, 90.00° Inc, 359.25° Azm</b>									
7,300.00	90.00	359.25	6,734.00	893.38	1,190.05	1,096.93	0.00	0.00	0.00
7,400.00	90.00	359.25	6,734.00	993.37	1,188.75	1,194.97	0.00	0.00	0.00
7,500.00	90.00	359.25	6,734.00	1,093.36	1,187.45	1,293.02	0.00	0.00	0.00
7,600.00	90.00	359.25	6,734.00	1,193.36	1,186.14	1,391.07	0.00	0.00	0.00
7,700.00	90.00	359.25	6,734.00	1,293.35	1,184.84	1,489.12	0.00	0.00	0.00
7,800.00	90.00	359.25	6,734.00	1,393.34	1,183.54	1,587.17	0.00	0.00	0.00
7,900.00	90.00	359.25	6,734.00	1,493.33	1,182.24	1,685.21	0.00	0.00	0.00
8,000.00	90.00	359.25	6,734.00	1,593.32	1,180.94	1,783.26	0.00	0.00	0.00
8,100.00	90.00	359.25	6,734.00	1,693.31	1,179.63	1,881.31	0.00	0.00	0.00
8,200.00	90.00	359.25	6,734.00	1,793.31	1,178.33	1,979.36	0.00	0.00	0.00
8,300.00	90.00	359.25	6,734.00	1,893.30	1,177.03	2,077.41	0.00	0.00	0.00
8,400.00	90.00	359.25	6,734.00	1,993.29	1,175.73	2,175.45	0.00	0.00	0.00
8,500.00	90.00	359.25	6,734.00	2,093.28	1,174.42	2,273.50	0.00	0.00	0.00
8,600.00	90.00	359.25	6,734.00	2,193.27	1,173.12	2,371.55	0.00	0.00	0.00
8,700.00	90.00	359.25	6,734.00	2,293.26	1,171.82	2,469.60	0.00	0.00	0.00
8,800.00	90.00	359.25	6,734.00	2,393.25	1,170.52	2,567.65	0.00	0.00	0.00
8,900.00	90.00	359.25	6,734.00	2,493.25	1,169.22	2,665.69	0.00	0.00	0.00
9,000.00	90.00	359.25	6,734.00	2,593.24	1,167.91	2,763.74	0.00	0.00	0.00
9,100.00	90.00	359.25	6,734.00	2,693.23	1,166.61	2,861.79	0.00	0.00	0.00
9,200.00	90.00	359.25	6,734.00	2,793.22	1,165.31	2,959.84	0.00	0.00	0.00
9,300.00	90.00	359.25	6,734.00	2,893.21	1,164.01	3,057.89	0.00	0.00	0.00
9,400.00	90.00	359.25	6,734.00	2,993.20	1,162.70	3,155.93	0.00	0.00	0.00
9,500.00	90.00	359.25	6,734.00	3,093.20	1,161.40	3,253.98	0.00	0.00	0.00
9,600.00	90.00	359.25	6,734.00	3,193.19	1,160.10	3,352.03	0.00	0.00	0.00
9,700.00	90.00	359.25	6,734.00	3,293.18	1,158.80	3,450.08	0.00	0.00	0.00
9,800.00	90.00	359.25	6,734.00	3,393.17	1,157.50	3,548.13	0.00	0.00	0.00
9,900.00	90.00	359.25	6,734.00	3,493.16	1,156.19	3,646.17	0.00	0.00	0.00
10,000.00	90.00	359.25	6,734.00	3,593.15	1,154.89	3,744.22	0.00	0.00	0.00
10,100.00	90.00	359.25	6,734.00	3,693.14	1,153.59	3,842.27	0.00	0.00	0.00
10,200.00	90.00	359.25	6,734.00	3,793.14	1,152.29	3,940.32	0.00	0.00	0.00
10,300.00	90.00	359.25	6,734.00	3,893.13	1,150.98	4,038.37	0.00	0.00	0.00
10,400.00	90.00	359.25	6,734.00	3,993.12	1,149.68	4,136.42	0.00	0.00	0.00
10,500.00	90.00	359.25	6,734.00	4,093.11	1,148.38	4,234.46	0.00	0.00	0.00
10,600.00	90.00	359.25	6,734.00	4,193.10	1,147.08	4,332.51	0.00	0.00	0.00
10,700.00	90.00	359.25	6,734.00	4,293.09	1,145.78	4,430.56	0.00	0.00	0.00
10,800.00	90.00	359.25	6,734.00	4,393.09	1,144.47	4,528.61	0.00	0.00	0.00
10,900.00	90.00	359.25	6,734.00	4,493.08	1,143.17	4,626.66	0.00	0.00	0.00
11,000.00	90.00	359.25	6,734.00	4,593.07	1,141.87	4,724.70	0.00	0.00	0.00
11,100.00	90.00	359.25	6,734.00	4,693.06	1,140.57	4,822.75	0.00	0.00	0.00
11,200.00	90.00	359.25	6,734.00	4,793.05	1,139.26	4,920.80	0.00	0.00	0.00
11,300.00	90.00	359.25	6,734.00	4,893.04	1,137.96	5,018.85	0.00	0.00	0.00
11,400.00	90.00	359.25	6,734.00	4,993.03	1,136.66	5,116.90	0.00	0.00	0.00

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site:</b>	CC Section 31	<b>North Reference:</b>	Grid
<b>Well:</b>	Booth CC30-755	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Booth CC30-755		
<b>Design:</b>	Plan #1		

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)
11,500.00	90.00	359.25	6,734.00	5,093.03	1,135.36	5,214.94	0.00	0.00	0.00
11,600.00	90.00	359.25	6,734.00	5,193.02	1,134.06	5,312.99	0.00	0.00	0.00
11,700.00	90.00	359.25	6,734.00	5,293.01	1,132.75	5,411.04	0.00	0.00	0.00
11,800.00	90.00	359.25	6,734.00	5,393.00	1,131.45	5,509.09	0.00	0.00	0.00
11,900.00	90.00	359.25	6,734.00	5,492.99	1,130.15	5,607.14	0.00	0.00	0.00
12,000.00	90.00	359.25	6,734.00	5,592.98	1,128.85	5,705.18	0.00	0.00	0.00
12,100.00	90.00	359.25	6,734.00	5,692.98	1,127.55	5,803.23	0.00	0.00	0.00
12,200.00	90.00	359.25	6,734.00	5,792.97	1,126.24	5,901.28	0.00	0.00	0.00
12,300.00	90.00	359.25	6,734.00	5,892.96	1,124.94	5,999.33	0.00	0.00	0.00
12,400.00	90.00	359.25	6,734.00	5,992.95	1,123.64	6,097.38	0.00	0.00	0.00
12,414.24	90.00	359.25	6,734.00	6,007.19	1,123.45	6,111.34	0.00	0.00	0.00
TD @ 12414.24' MD/6734.00' TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Booth CC30-755-SHL - hit/miss target - Shape - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,344,484.54	3,282,991.98	40.2745670	-104.4857630
Booth CC30-755-KOF - plan hits target center - Point	0.00	0.01	6,151.51	225.47	1,051.05	1,344,710.01	3,284,043.03	40.2751528	-104.4819871
Booth CC30-755-BHL - plan hits target center - Point	0.00	0.00	6,734.00	6,007.19	1,123.45	1,350,491.71	3,284,115.43	40.2910208	-104.4814896
Booth CC30-755-TPZ - plan misses target center by 7.75ft at 7174.27ft MD (6726.33 TVD, 768.06 N, 1191.68 E) - Point	0.00	0.00	6,734.00	767.01	1,191.70	1,345,251.54	3,284,183.67	40.2766349	-104.4814608

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
419.00	419.00	Pierre				
685.00	685.00	Upper Pierre Aquifer Top				
1,605.00	1,605.00	Upper Pierre Aquifer Base				
3,718.50	3,677.00	Parkman				
4,359.38	4,290.00	Sussex				
5,013.85	4,916.00	Shannon				
5,989.29	5,849.00	Teepee Buttes				
6,791.38	6,565.00	Sharon Springs				
6,814.48	6,580.00	Top A Chalk				
6,832.02	6,591.00	Top A Marl				
6,888.58	6,624.00	Top B Chalk				
6,955.62	6,658.00	Top B Marl				
7,100.90	6,711.00	Top C Chalk				

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site:</b>	CC Section 31	<b>North Reference:</b>	Grid
<b>Well:</b>	Booth CC30-755	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Booth CC30-755		
<b>Design:</b>	Plan #1		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,200.00	2,200.00	0.00	0.00	Build: 2°/100'
3,048.12	3,035.78	26.14	121.86	Hold: 16.96° Inc, 77.89° Azm
6,305.55	6,151.51	225.47	1,051.05	KOP: Build 9°/100' @ 6305.55' MD
7,173.20	6,726.16	767.01	1,191.70	TPZ: 7173.20' MD, 81.00° Inc, 359.25° Azm
7,273.20	6,734.00	866.59	1,190.40	LP: 7273.20' MD, 90.00° Inc, 359.25° Azm
12,414.24	6,734.00	6,007.19	1,123.45	TD @ 12414.24' MD/6734.00' TVD



# **Northern Region - DJ Basin**

**Mustang**

**CC Section 31**

**Booth CC30-755**

**Booth CC30-755**

**Plan #1**

## **Anticollision Summary Report**

**12 October, 2018**

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #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>	10/12/2018		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	12,414.09	Plan #1 (Booth CC30-755)	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						
C Section 24						
Elise State C24-08 (TA) - Wellbore #1 - No Surveys	12,414.24	6,623.00	4,036.12	3,727.88	13.094	CC, ES, SF
Elise State C24-11 (PR) - Wellbore #1 - No Surveys	12,414.24	6,619.00	5,742.58	5,426.40	18.162	CC, ES, SF
Elise State C24-18 (SI) - Wellbore #1 - No Surveys	12,414.24	6,603.00	6,349.13	6,038.45	20.436	CC, ES, SF
Elise State C24-19 (SI) - Wellbore #1 - Gyro Surveys	12,414.24	6,727.04	7,241.87	7,167.68	97.611	CC, ES, SF
Elise State C24-20 (PR) - Wellbore #1 - No Surveys	12,414.24	6,639.00	6,749.84	6,433.56	21.341	CC, ES, SF
Elise State C24-21 (SI) - Wellbore #1 - No Surveys	12,414.24	6,616.00	5,427.86	5,113.76	17.280	CC, ES, SF
Elise State C24-22 (PR) - Wellbore #1 - No Surveys	12,414.24	6,634.00	4,354.34	4,041.48	13.918	CC, ES, SF
Elise State C24-23 (PR) - Wellbore #1 - No Surveys	12,414.24	6,644.00	3,797.84	3,480.34	11.962	CC, ES, SF
Elise State C24-24 (SI) - Wellbore #1 - No Surveys	12,414.24	6,636.00	5,180.54	4,863.10	16.320	CC, ES, SF
Spike ST GWS C24-05 (PR) - Wellbore #1 - Gyro Survey	12,414.24	6,600.00	7,521.85	7,446.54	99.880	CC, ES, SF
Spike ST GWS C24-07 (SI) - Wellbore #1 - Gyro Surveys	12,414.24	6,564.35	5,135.44	5,063.70	71.586	CC, ES, SF
Spike ST GWS C24-13 (PA) - Wellbore #1 - Gyro Survey	12,414.24	6,547.83	6,918.87	6,841.80	89.771	CC, ES, SF
Spike ST GWS C24-14 (SI) - Wellbore #1 - Gyro Surveys	12,414.24	6,529.32	5,686.88	5,609.97	73.940	CC, ES, SF
Spike ST GWS C24-15 (PR) - Wellbore #1 - Gyro Survey	12,414.24	6,596.46	4,434.08	4,356.80	57.374	CC, ES, SF
Spike ST GWS C24-16 (SI) - Wellbore #1 - Gyro Surveys	12,414.24	6,704.82	3,041.07	2,963.31	39.106	CC, ES, SF
Spike State GWS C24-01 (PA) - Wellbore #1 - No Survey	12,414.24	6,623.00	5,307.45	5,003.63	17.469	CC, ES, SF
Spike State GWS C24-02 (SI) - Wellbore #1 - No Survey	12,414.24	6,613.00	6,116.74	5,808.83	19.866	CC, ES, SF
Spike State GWS C24-03 (SI) - Wellbore #1 - No Survey	12,414.24	6,585.00	7,095.15	6,785.35	22.902	CC, ES, SF
Spike State GWS C24-04 (SI) - Wellbore #1 - No Survey	12,414.24	6,583.00	8,145.55	7,833.93	26.139	CC, ES, SF
Spike State GWS C24-06 (PA) - Wellbore #1 - No Survey	12,414.24	6,607.00	6,355.69	6,042.11	20.269	CC, ES, SF
Spike State GWS C24-09 (SI) - Wellbore #1 - No Survey	12,414.24	6,641.00	3,563.75	3,248.61	11.309	CC, ES, SF
Spike State GWS C24-10 (PR) - Wellbore #1 - No Survey	12,414.24	6,626.00	4,630.06	4,314.19	14.658	CC, ES, SF
Spike State GWS C24-11J (PA) - Wellbore #1 - No Survey	12,414.24	6,648.00	6,338.50	6,020.20	19.914	CC, ES, SF
Spike State GWS C24-12 (SI) - Wellbore #1 - No Survey	12,414.24	6,631.00	7,037.49	6,720.23	22.182	CC, ES, SF
Spike State GWS C24-8J (PA) - Wellbore #1 - No Survey	12,414.24	6,603.00	5,225.11	4,917.48	16.985	CC, ES, SF
State C24-28 (PR) - Wellbore #1 - No Surveys	12,414.24	6,584.00	6,930.15	6,623.09	22.569	CC, ES, SF
State C24-99HZ - Wellbore #1 - Original Drilling	12,414.24	10,838.02	4,429.81	4,292.87	32.348	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 Booth CC30-755
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #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>						
C Section 25						
Booth 14-25 (SI) - Wellbore #1 - No Surveys	2,200.00	2,134.00	4,666.24	4,575.46	51.405	CC
Booth 14-25 (SI) - Wellbore #1 - No Surveys	2,300.00	2,233.98	4,667.80	4,572.67	49.071	ES
Booth 14-25 (SI) - Wellbore #1 - No Surveys	8,000.00	6,668.00	5,714.21	5,422.33	19.577	SF
Booth 9-25 (SI) - Wellbore #1 - No Surveys	8,968.54	6,688.00	2,984.25	2,687.21	10.047	CC, ES
Booth 9-25 (SI) - Wellbore #1 - No Surveys	9,100.00	6,688.00	2,987.14	2,689.58	10.038	SF
Booth C 25-19 (PR) - Wellbore #1 - No Surveys	11,069.88	6,639.00	6,228.59	5,920.68	20.229	CC
Booth C 25-19 (PR) - Wellbore #1 - No Surveys	11,100.00	6,639.00	6,228.66	5,920.57	20.217	ES
Booth C 25-19 (PR) - Wellbore #1 - No Surveys	11,800.00	6,639.00	6,271.23	5,959.02	20.086	SF
UNI UPR C 25-5 (SI) - Wellbore #1 - Gyro Surveys	353.39	245.39	6,893.24	6,891.52	4,015.082	CC
UNI UPR C 25-5 (SI) - Wellbore #1 - Gyro Surveys	1,700.00	1,545.47	6,901.83	6,890.73	622.197	ES
UNI UPR C 25-5 (SI) - Wellbore #1 - Gyro Surveys	12,414.24	6,585.79	7,299.38	7,225.55	98.875	SF
UNI UPR C 25-6 (PR) - Wellbore #1 - No Surveys	10,405.06	6,641.00	5,613.51	5,550.32	88.837	CC, ES
UNI UPR C 25-6 (PR) - Wellbore #1 - No Surveys	12,300.00	6,641.00	5,924.71	5,852.00	81.481	SF
UNI-UPR C 25-3 (PR) - Wellbore #1 - Gyro Surveys	11,673.31	6,595.33	5,688.79	5,617.11	79.361	CC
UNI-UPR C 25-3 (PR) - Wellbore #1 - Gyro Surveys	11,700.00	6,594.14	5,688.85	5,617.01	79.185	ES
UNI-UPR C 25-3 (PR) - Wellbore #1 - Gyro Surveys	12,414.24	6,562.47	5,736.76	5,660.88	75.606	SF
UNI-UPRR 4-25 (PR) - Wellbore #1 - Gyro Surveys	11,572.95	6,597.61	7,015.41	6,944.44	98.845	CC
UNI-UPRR 4-25 (PR) - Wellbore #1 - Gyro Surveys	11,600.00	6,597.81	7,015.46	6,944.32	98.606	ES
UNI-UPRR 4-25 (PR) - Wellbore #1 - Gyro Surveys	12,414.24	6,603.40	7,065.67	6,989.50	92.759	SF
UPRR 66 Amoco 1 (SI) - Wellbore #1 - No Surveys	2,200.00	2,141.00	2,632.68	2,541.63	28.914	CC
UPRR 66 Amoco 1 (SI) - Wellbore #1 - No Surveys	2,400.00	2,340.84	2,637.37	2,537.63	26.442	ES
UPRR 66 Amoco 1 (SI) - Wellbore #1 - No Surveys	8,100.00	6,675.00	3,321.53	3,028.97	11.353	SF
UPV 25-114 (PA) - Wellbore #1 - Gyro Surveys	11,617.57	6,657.23	2,992.65	2,921.31	41.950	CC, ES
UPV 25-114 (PA) - Wellbore #1 - Gyro Surveys	12,100.00	6,653.94	3,031.28	2,957.78	41.243	SF
UPV 25-214 (PR) - Wellbore #1 - Gyro Surveys	11,848.06	6,589.74	4,415.91	4,343.10	60.645	CC
UPV 25-214 (PR) - Wellbore #1 - Gyro Surveys	11,900.00	6,591.74	4,416.22	4,343.08	60.382	ES
UPV 25-214 (PR) - Wellbore #1 - Gyro Surveys	12,414.24	6,610.50	4,452.02	4,375.96	58.532	SF
UPV 25-714 (PR) - Wellbore #1 - No Surveys	10,620.45	6,687.00	3,766.28	3,459.41	12.273	CC, ES
UPV 25-714 (PR) - Wellbore #1 - No Surveys	10,900.00	6,687.00	3,776.64	3,468.31	12.249	SF
UPV 25-814 (PA) - Wellbore #1 - Gyro Surveys	10,300.57	6,795.46	2,706.25	2,642.89	42.712	CC, ES
UPV 25-814 (PA) - Wellbore #1 - Gyro Surveys	10,700.00	6,792.95	2,735.57	2,670.51	42.047	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 Booth CC30-755
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #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
Offset Well - Wellbore - Design						
C Section 36						
Ava State C36-18 (SI) - Wellbore #1 - No Surveys	2,200.00	2,128.00	3,784.97	3,694.20	41.697	CC
Ava State C36-18 (SI) - Wellbore #1 - No Surveys	2,300.00	2,227.98	3,786.71	3,691.59	39.808	ES
Ava State C36-18 (SI) - Wellbore #1 - No Surveys	7,000.00	6,605.28	5,078.88	4,791.72	17.687	SF
Ava State C36-20 (PR) - Wellbore #1 - No Surveys	2,200.00	2,118.00	5,581.08	5,490.71	61.756	CC
Ava State C36-20 (PR) - Wellbore #1 - No Surveys	2,300.00	2,217.98	5,582.79	5,488.07	58.937	ES
Ava State C36-20 (PR) - Wellbore #1 - No Surveys	7,000.00	6,604.72	6,910.65	6,623.48	24.064	SF
Ava State C36-21 (SI) - Wellbore #1 - No Surveys	2,200.00	2,123.00	4,341.93	4,251.35	47.938	CC
Ava State C36-21 (SI) - Wellbore #1 - No Surveys	2,300.00	2,222.98	4,343.61	4,248.69	45.759	ES
Ava State C36-21 (SI) - Wellbore #1 - No Surveys	6,800.00	6,506.33	5,578.74	5,295.95	19.727	SF
Ava State C36-22 (SI) - Wellbore #1 - No Surveys	2,200.00	2,144.00	3,310.46	3,219.05	36.214	CC
Ava State C36-22 (SI) - Wellbore #1 - No Surveys	2,300.00	2,243.98	3,312.00	3,216.24	34.585	ES
Ava State C36-22 (SI) - Wellbore #1 - No Surveys	6,700.00	6,444.16	4,447.85	4,167.71	15.878	SF
Ava State C36-24 (PR) - Wellbore #1 - No Surveys	2,200.00	2,133.00	5,060.81	4,969.84	55.630	CC
Ava State C36-24 (PR) - Wellbore #1 - No Surveys	2,300.00	2,232.98	5,062.31	4,966.98	53.106	ES
Ava State C36-24 (PR) - Wellbore #1 - No Surveys	6,850.00	6,534.90	6,257.61	5,973.39	22.017	SF
Ava State C36-31 (PR) - Wellbore #1 - No Surveys	2,200.00	2,108.00	6,301.23	6,211.25	70.034	CC
Ava State C36-31 (PR) - Wellbore #1 - No Surveys	2,300.00	2,207.98	6,302.97	6,208.64	66.823	ES
Ava State C36-31 (PR) - Wellbore #1 - No Surveys	7,173.20	6,634.16	7,610.39	7,321.75	26.366	SF
Booth CC31-68-1HN (PR) - Original Drilling - Original Dri	6,539.20	8,870.20	818.86	740.83	10.494	CC
Booth CC31-68-1HN (PR) - Original Drilling - Original Dri	6,550.00	8,872.76	819.02	740.50	10.431	ES
Booth CC31-68-1HN (PR) - Original Drilling - Original Dri	6,650.00	8,894.96	835.29	752.81	10.128	SF
Booth State C36-69HN (PR) - Original Drilling - Original I	2,296.53	2,303.23	1,411.92	1,398.28	103.500	CC
Booth State C36-69HN (PR) - Original Drilling - Original I	2,300.00	2,306.97	1,411.92	1,398.25	103.308	ES
Booth State C36-69HN (PR) - Original Drilling - Original I	6,100.00	5,938.89	2,333.90	2,293.29	57.468	SF
Booth State CC30-79HN (PR) - Original Drilling - Original	2,493.78	2,594.73	1,340.22	1,324.47	85.096	CC
Booth State CC30-79HN (PR) - Original Drilling - Original	2,500.00	2,599.56	1,340.23	1,324.44	84.854	ES
Booth State CC31-69HN (PR) - Original Drilling - Original	11,800.00	11,026.00	2,243.57	2,107.00	16.428	SF
Booth State CC31-69HN (PR) - Original Drilling - Original	6,955.26	8,586.99	70.97	23.15	1.484	Level 3, CC
Booth State CC31-69HN (PR) - Original Drilling - Original	7,000.00	8,589.93	85.11	10.60	1.142	Level 2, ES, SF
State 36-0414 (PR) - Wellbore #1 - No Surveys	2,200.00	2,116.00	5,371.18	5,280.89	59.486	CC
State 36-0414 (PR) - Wellbore #1 - No Surveys	2,300.00	2,215.98	5,372.92	5,278.28	56.770	ES
State 36-0414 (PR) - Wellbore #1 - No Surveys	7,150.00	6,638.13	6,674.41	6,385.65	23.114	SF
State 36-0714 (SI) - Wellbore #1 - No Surveys	2,200.00	2,136.00	3,563.25	3,472.16	39.116	CC
State 36-0714 (SI) - Wellbore #1 - No Surveys	2,300.00	2,235.98	3,564.96	3,469.51	37.351	ES
State 36-0714 (SI) - Wellbore #1 - No Surveys	6,950.00	6,608.63	4,870.65	4,583.42	16.957	SF
State 36-1014 (SI) - Wellbore #1 - No Surveys	2,200.00	2,132.00	4,295.75	4,204.82	47.241	CC
State 36-1014 (SI) - Wellbore #1 - No Surveys	2,300.00	2,231.98	4,297.30	4,202.01	45.100	ES
State 36-1014 (SI) - Wellbore #1 - No Surveys	6,800.00	6,502.67	5,484.75	5,201.99	19.397	SF
State 36-1114 (PR) - Wellbore #1 - No Surveys	2,200.00	2,121.00	5,307.07	5,216.58	58.646	CC
State 36-1114 (PR) - Wellbore #1 - No Surveys	2,300.00	2,220.98	5,308.69	5,213.85	55.973	ES
State 36-1114 (PR) - Wellbore #1 - No Surveys	6,800.00	6,508.33	6,523.73	6,240.79	23.057	SF
State 36-1214 (PR) - Wellbore #1 - No Surveys	2,200.00	2,136.00	6,535.55	6,444.68	71.919	CC
State 36-1214 (PR) - Wellbore #1 - No Surveys	2,300.00	2,235.98	6,537.25	6,442.03	68.651	ES
State 36-1214 (PR) - Wellbore #1 - No Surveys	6,950.00	6,608.63	7,843.09	7,556.08	27.326	SF
State 36-1414 (PR) - Wellbore #1 - No Surveys	2,200.00	2,123.00	6,123.12	6,032.55	67.604	CC
State 36-1414 (PR) - Wellbore #1 - No Surveys	2,300.00	2,222.98	6,124.60	6,029.68	64.521	ES
State 36-1414 (PR) - Wellbore #1 - No Surveys	6,800.00	6,506.33	7,279.96	6,996.98	25.726	SF
State 36-1514 (PR) - Wellbore #1 - No Surveys	2,200.00	2,123.00	4,629.26	4,538.68	51.111	CC
State 36-1514 (PR) - Wellbore #1 - No Surveys	2,400.00	2,322.84	4,634.53	4,535.26	46.688	ES
State 36-1514 (PR) - Wellbore #1 - No Surveys	6,800.00	6,506.33	5,715.63	5,432.56	20.191	SF
State 36-1614 (PR) - Wellbore #1 - No Surveys	2,200.00	2,166.00	4,680.69	4,588.39	50.715	CC
State 36-1614 (PR) - Wellbore #1 - No Surveys	2,400.00	2,365.84	4,684.94	4,583.95	46.392	ES
State 36-1614 (PR) - Wellbore #1 - No Surveys	6,700.00	6,466.16	5,573.06	5,291.72	19.809	SF

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

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<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #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
Offset Well - Wellbore - Design						
C Section 36						
State 36-214 (SI) - Wellbore #1 - No Surveys	2,200.00	2,124.00	3,120.20	3,029.58	34.434	CC
State 36-214 (SI) - Wellbore #1 - No Surveys	2,300.00	2,223.98	3,121.93	3,026.96	32.875	ES
State 36-214 (SI) - Wellbore #1 - No Surveys	7,050.00	6,619.78	4,392.12	4,104.28	15.259	SF
State 36-314 (SI) - Wellbore #1 - No Surveys	2,200.00	2,114.00	4,414.03	4,323.82	48.929	CC
State 36-314 (SI) - Wellbore #1 - No Surveys	2,300.00	2,213.98	4,415.76	4,321.19	46.696	ES
State 36-314 (SI) - Wellbore #1 - No Surveys	7,173.20	6,640.16	5,687.12	5,398.23	19.686	SF
State 36-614 (PR) - Wellbore #1 - No Surveys	2,200.00	2,110.00	4,580.00	4,489.95	50.859	CC
State 36-614 (PR) - Wellbore #1 - No Surveys	2,300.00	2,209.98	4,581.75	4,487.34	48.533	ES
State 36-614 (PR) - Wellbore #1 - No Surveys	7,050.00	6,605.78	5,908.06	5,620.78	20.565	SF
State 36-814 (SI) - Wellbore #1 - No Surveys	2,200.00	2,155.00	2,156.23	2,064.38	23.475	CC
State 36-814 (SI) - Wellbore #1 - No Surveys	2,300.00	2,254.98	2,157.85	2,061.64	22.430	ES
State 36-814 (SI) - Wellbore #1 - No Surveys	6,750.00	6,508.32	3,352.40	3,069.63	11.855	SF
State 36-914 (PR) - Wellbore #1 - No Surveys	2,200.00	2,163.00	3,535.75	3,443.57	38.360	CC
State 36-914 (PR) - Wellbore #1 - No Surveys	2,400.00	2,362.84	3,540.80	3,439.93	35.104	ES
State 36-914 (PR) - Wellbore #1 - No Surveys	6,650.00	6,424.32	4,516.33	4,236.95	16.166	SF
State B14-36 (PA) - Wellbore #1 - No Surveys	2,200.00	2,130.00	6,595.01	6,504.15	72.590	CC
State B14-36 (PA) - Wellbore #1 - No Surveys	2,300.00	2,229.98	6,596.63	6,501.42	69.289	ES
State B14-36 (PA) - Wellbore #1 - No Surveys	6,950.00	6,585.37	7,889.76	7,603.39	27.551	SF
State B41-36 (SI) - Wellbore #1 - No Surveys	2,200.00	2,146.00	2,162.64	2,071.15	23.637	CC
State B41-36 (SI) - Wellbore #1 - No Surveys	2,300.00	2,245.98	2,164.39	2,068.54	22.582	ES
State B41-36 (SI) - Wellbore #1 - No Surveys	6,800.00	6,516.67	3,399.06	3,115.94	12.006	SF
State C36-01 (SI) - Wellbore #1 - No Surveys	2,200.00	2,146.00	1,609.65	1,518.16	17.593	CC
State C36-01 (SI) - Wellbore #1 - No Surveys	2,300.00	2,245.98	1,611.34	1,515.49	16.812	ES
State C36-01 (SI) - Wellbore #1 - No Surveys	6,900.00	6,576.19	2,818.39	2,532.65	9.863	SF
State C36-04 (PR) - Wellbore #1 - No Surveys	2,200.00	2,117.00	5,936.91	5,846.58	65.722	CC
State C36-04 (PR) - Wellbore #1 - No Surveys	2,300.00	2,216.98	5,938.62	5,843.94	62.721	ES
State C36-04 (PR) - Wellbore #1 - No Surveys	7,250.00	6,650.58	7,188.39	6,898.94	24.834	SF
State C36-13 (SI) - Wellbore #1 - No Surveys	2,200.00	2,145.00	7,293.29	7,201.83	79.749	CC
State C36-13 (SI) - Wellbore #1 - No Surveys	2,300.00	2,244.98	7,294.89	7,199.08	76.144	ES
State C36-13 (SI) - Wellbore #1 - No Surveys	7,000.00	6,622.28	8,610.65	8,322.70	29.903	SF
State C36-15 (PR) - Wellbore #1 - No Surveys	2,200.00	2,144.00	5,371.94	5,280.52	58.765	CC
State C36-15 (PR) - Wellbore #1 - No Surveys	2,400.00	2,343.84	5,377.27	5,277.17	53.716	ES
State C36-15 (PR) - Wellbore #1 - No Surveys	6,800.00	6,514.67	6,462.08	6,178.67	22.801	SF
State C36-32D (SI) - Wellbore #1 - As Drilled	100.00	49.39	6,579.88	6,579.66	10,000.000	CC
State C36-32D (SI) - Wellbore #1 - As Drilled	500.00	422.04	6,580.93	6,578.64	2,871.188	ES
State C36-32D (SI) - Wellbore #1 - As Drilled	7,100.00	6,871.09	8,058.44	8,004.22	148.632	SF
State C36-33D (SI) - Wellbore #1 - Original Drilling	960.00	913.00	6,579.75	6,574.62	1,282.679	CC
State C36-33D (SI) - Wellbore #1 - Original Drilling	1,000.00	913.00	6,579.87	6,574.60	1,247.815	ES
State C36-33D (SI) - Wellbore #1 - Original Drilling	7,050.00	6,737.46	8,541.68	8,493.91	178.797	SF
State C36-99HZ (PR) - Wellbore #1 - As Drilled	5,817.59	10,537.02	4,387.25	4,271.50	37.903	CC, ES
State C36-99HZ (PR) - Wellbore #1 - As Drilled	6,305.55	10,537.02	4,414.30	4,296.32	37.415	SF
State D01-30D (SI) - Wellbore #1 - Original Drilling	100.00	48.92	6,585.55	6,585.34	10,000.000	CC
State D01-30D (SI) - Wellbore #1 - Original Drilling	500.00	418.04	6,586.73	6,584.45	2,885.318	ES
State D01-30D (SI) - Wellbore #1 - Original Drilling	6,650.00	2,822.01	9,077.73	9,045.37	280.514	SF

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



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<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #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
Offset Well - Wellbore - Design						
CC Section 19						
CAPITAL #31-19(PR) - CAPITAL #31-19 - No Surveys	12,414.24	6,598.00	4,475.49	4,316.34	28.120	CC, ES, SF
Sater #19E-203(PR) - Sater #19E-203 - Wellbore #1 - As	12,414.24	11,029.02	2,269.73	2,131.91	16.469	CC, ES, SF
Sater #19E-223(PR) - Sater #19E-223 - Wellbore #1 - As	12,414.24	10,910.02	1,810.99	1,672.68	13.094	CC, ES, SF
Sater #19E-323(PR) - Sater #19E-323 - Wellbore #1 - As	12,414.24	10,978.02	2,060.27	1,920.78	14.770	CC, ES, SF
Sater #19J-203(PR) - Sater #19J-203 - Wellbore #1 - As	12,414.24	11,073.02	1,031.48	892.55	7.424	CC, ES, SF
Sater #19J-323(PR) - Sater #19J-323 - Wellbore #1 - As	12,414.24	11,033.02	741.76	608.00	5.546	CC, ES, SF
Sater #19J-443(PR) - Sater #19J-443 - Wellbore #1 - As	12,414.24	11,159.02	1,466.96	1,331.49	10.828	CC, ES, SF
Sater #19M-243ST(PR) - Sater #19M-243OH - Wellbore	12,414.24	11,157.02	317.57	257.42	5.279	CC, ES, SF
Sater #19M-243ST(PR) - Sater #19M-243ST - Wellbore	12,414.24	10,809.02	325.98	263.63	5.228	CC, ES, SF
Sater #19M-443(PR) - Sater #19M-443 - Wellbore #1 - A	12,414.24	11,075.02	380.46	285.23	3.995	CC, ES, SF
Sater #19-NU(PR) - Sater #19-NU - No Surveys	12,414.24	6,596.00	3,643.63	3,484.69	22.924	CC, ES, SF
Sater #19-PU(SI) - Sater #19-PU - No Surveys	12,414.24	6,636.00	1,032.73	872.66	6.452	CC, ES, SF
SATER #24-19U(PR) - SATER #24-19U - No Surveys	12,414.24	6,656.00	561.31	383.64	3.159	CC, ES, SF
Sater USX CC #19-01(PR) - Sater USX CC #19-01 - No	12,414.24	6,608.00	4,825.63	4,661.70	29.437	CC, ES, SF
Sater USX CC #19-07(PR) - Sater USX CC #19-07 - No	12,414.24	6,610.00	3,266.37	3,106.55	20.438	CC, ES, SF
Sater USX CC #19-08(PR) - Sater USX CC #19-08 - No	12,414.24	6,634.00	3,709.88	3,541.13	21.984	CC, ES, SF
SATER USX CC #19-09(PR) - SATER USX CC #19-09 -	12,414.24	6,624.00	2,797.36	2,621.20	15.879	CC, ES, SF
Sater USX CC #19-10(PR) - Sater USX CC #19-10 - No	12,414.24	6,618.00	2,096.44	1,932.95	12.823	CC, ES, SF
SATER USX CC #19-15(PR) - SATER USX CC #19-15 -	12,414.24	6,659.00	1,086.85	907.72	6.068	CC, ES, SF
Sater USX CC #19-16(PR) - Sater USX CC #19-16 - No	12,414.24	6,643.00	2,278.05	2,092.23	12.260	CC, ES, SF
Sater USX CC #19-17(PR) - Sater USX CC #19-17 - No	12,414.24	6,607.00	4,030.20	3,868.09	24.862	CC, ES, SF
Sater USX CC #19-23(PR) - Sater USX CC #19-23 - No	12,414.24	6,630.00	1,943.53	1,766.69	10.990	CC, ES, SF
CC Section 20						
GUTTERSEN STATE CC #20-03(SI) - Wellbore #1 - No	12,414.24	6,681.00	6,533.59	6,433.05	64.983	CC, ES, SF
GUTTERSEN STATE CC #20-05(SI) - Wellbore #1 - Gyr	12,414.24	6,528.09	4,693.23	4,629.45	73.586	CC, ES, SF
GUTTERSEN STATE CC #20-06(SI) - Wellbore #1 - Gyr	12,414.24	6,715.84	5,728.51	5,659.76	83.331	CC, ES, SF
GUTTERSEN STATE CC #20-13(PR) - Wellbore #1 - Gy	12,414.24	6,538.14	3,415.75	3,339.67	44.898	CC, ES, SF
Guttersen State CC #20-14(SI) - Wellbore #1 - Gyro	12,414.24	6,638.94	4,915.41	4,838.69	64.066	CC, ES, SF
GUTTERSEN STATE CC #20-30D(SI) - Wellbore #1 - G	12,414.24	6,781.18	5,803.26	5,740.49	92.456	CC, ES, SF
GUTTERSEN STATE CC #20-31D(SI) - Wellbore #1 - G	12,414.24	6,697.15	4,694.29	4,634.52	78.541	CC, ES, SF
GUTTERSEN STATE CC #20-32D(PR) - Wellbore #1 - C	12,414.24	6,802.15	3,590.64	3,519.00	50.117	CC, ES, SF
GUTTERSEN STATE CC #20-33D(PR) - Wellbore #1 - C	12,300.00	12,300.00	3,077.41	2,986.19	33.739	SF
GUTTERSEN STATE CC #20-33D(PR) - Wellbore #1 - C	12,414.24	6,712.13	3,037.33	2,960.34	39.452	CC, ES
GUTTERSEN STATE CC #20-4(SI) - Wellbore #1 - Gyro	12,414.24	6,490.07	5,611.44	5,552.54	95.267	CC, ES, SF
Guttersen State CC 20-11(SI) - Wellbore #1 - Gyro	12,414.24	6,545.58	5,180.52	5,107.18	70.638	CC, ES, SF
Guttersen State CC 20-12(PR) - Wellbore #1 - Gyro	12,414.24	6,676.21	3,901.51	3,831.29	55.554	CC, ES, SF
Guttersen State CC20-30D - Wellbore #1 - Wellbore #1-	12,414.24	6,781.51	5,826.87	5,764.15	92.903	CC, ES, SF
STATE #11(SI) - Wellbore #1 - Gyro	12,414.24	6,689.53	4,284.09	4,208.55	56.707	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 Booth CC30-755
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #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
Offset Well - Wellbore - Design						
CC Section 29						
GUTTERSEN #13-29U(PA) - Wellbore #1 - Gyro	8,931.50	6,534.86	3,562.63	3,508.11	65.341	CC, ES
GUTTERSEN #13-29U(PA) - Wellbore #1 - Gyro	10,100.00	6,534.85	3,749.37	3,687.96	61.063	SF
GUTTERSEN #14-29U(PR) - Wellbore #1 - Gyro	7,653.94	6,741.88	3,593.45	3,543.71	72.247	CC, ES
GUTTERSEN #14-29U(PR) - Wellbore #1 - Gyro	8,900.00	6,747.56	3,803.35	3,748.21	68.969	SF
GUTTERSEN #23-29U(PR) - Wellbore #1 - Gyro	8,927.37	6,635.97	4,801.63	4,746.98	87.862	CC, ES
GUTTERSEN #23-29U(PR) - Wellbore #1 - Gyro	11,000.00	6,661.13	5,229.81	5,163.06	78.355	SF
GUTTERSEN #24-29U(PR) - Wellbore #1 - Gyro	7,587.53	6,735.95	4,801.36	4,751.70	96.686	CC
GUTTERSEN #24-29U(PR) - Wellbore #1 - Gyro	7,600.00	6,735.81	4,801.37	4,751.68	96.620	ES
GUTTERSEN #24-29U(PR) - Wellbore #1 - Gyro	9,800.00	6,710.45	5,286.53	5,226.89	88.644	SF
GUTTERSEN #29-BU(PR) - Wellbore #1 - Gyro	8,304.21	6,519.58	4,165.50	4,113.95	80.802	CC, ES
GUTTERSEN #29-BU(PR) - Wellbore #1 - Gyro	10,000.00	6,522.05	4,497.45	4,436.92	74.294	SF
GUTTERSEN #29PU(PR) - Wellbore #1 - Gyro	8,325.40	6,676.45	5,411.57	5,359.63	104.184	CC, ES
GUTTERSEN #29PU(PR) - Wellbore #1 - Gyro	11,000.00	6,700.00	6,036.37	5,969.93	90.853	SF
GUTTERSEN #33-29U(PR) - Wellbore #1 - Gyro	8,972.00	6,716.51	6,100.90	6,045.84	110.813	CC
GUTTERSEN #33-29U(PR) - Wellbore #1 - Gyro	9,000.00	6,716.61	6,100.96	6,045.75	110.499	ES
GUTTERSEN #33-29U(PR) - Wellbore #1 - Gyro	12,000.00	6,719.44	6,811.01	6,738.27	93.637	SF
GUTTERSEN #43-29U(PR) - Wellbore #1 - Gyro	8,901.79	6,524.01	7,397.62	7,343.40	136.439	CC, ES
GUTTERSEN #43-29U(PR) - Wellbore #1 - Gyro	12,414.24	6,538.15	8,189.13	8,113.94	108.921	SF
GUTTERSEN #44-29U(PR) - Wellbore #1 - Gyro	7,650.14	6,919.16	7,477.40	7,427.16	148.854	CC, ES
GUTTERSEN #44-29U(PR) - Wellbore #1 - Gyro	12,400.00	6,990.37	8,858.19	8,783.75	118.989	SF
KILLEYBEGS #1(PR) - Wellbore #1 - No Surveys	7,913.15	6,700.00	6,485.54	6,399.85	75.685	CC, ES
KILLEYBEGS #1(PR) - Wellbore #1 - No Surveys	10,600.00	6,700.00	7,020.07	6,920.38	70.420	SF

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #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
Offset Well - Wellbore - Design						
CC Section 30						
JIGGER STATE CC #30-01(PR) - JIGGER STATE CC #	11,721.84	6,647.00	2,431.43	2,249.31	13.351	CC, ES
JIGGER STATE CC #30-01(PR) - JIGGER STATE CC #	12,000.00	6,647.00	2,447.29	2,262.87	13.270	SF
SPIKE ST GWS #CC 30-03(PA) - SPIKE ST GWS #CC	11,596.79	6,683.00	424.55	242.59	2.333	CC, ES, SF
SPIKE ST GWS #CC 30-04(PA) - SPIKE ST GWS #CC	11,694.57	6,681.78	1,646.42	1,583.40	26.124	CC
SPIKE ST GWS #CC 30-04(PA) - SPIKE ST GWS #CC	11,700.00	6,681.73	1,646.43	1,583.39	26.115	ES
SPIKE ST GWS #CC 30-04(PA) - SPIKE ST GWS #CC	11,800.00	6,680.78	1,649.79	1,586.41	26.027	SF
SPIKE ST GWS #CC 30-05(PA) - SPIKE ST GWS #CC	10,266.22	6,691.00	1,694.59	1,521.46	9.788	CC, ES
SPIKE ST GWS #CC 30-05(PA) - SPIKE ST GWS #CC	10,300.00	6,691.00	1,694.93	1,521.67	9.783	SF
SPIKE ST GWS #CC 30-06(SI) - SPIKE ST GWS #CC 3	10,280.56	6,680.00	395.07	222.07	2.284	CC, ES, SF
SPIKE ST GWS #CC 30-08(PR) - SPIKE ST GWS #CC	10,286.09	6,671.00	2,239.10	2,066.24	12.954	CC
SPIKE ST GWS #CC 30-08(PR) - SPIKE ST GWS #CC	10,300.00	6,671.00	2,239.14	2,066.17	12.945	ES
SPIKE ST GWS #CC 30-08(PR) - SPIKE ST GWS #CC	10,500.00	6,671.00	2,249.29	2,074.76	12.887	SF
SPIKE ST GWS #CC 30-09(SI) - SPIKE ST GWS #CC 3	8,941.18	6,701.00	2,206.46	2,040.82	13.321	CC, ES
SPIKE ST GWS #CC 30-09(SI) - SPIKE ST GWS #CC 3	9,100.00	6,701.00	2,212.17	2,045.50	13.273	SF
SPIKE ST GWS #CC 30-10(SI) - SPIKE ST GWS #CC 3	8,939.11	6,724.00	893.22	727.13	5.378	CC, ES
SPIKE ST GWS #CC 30-10(SI) - SPIKE ST GWS #CC 3	9,000.00	6,724.00	895.29	728.70	5.374	SF
SPIKE ST GWS #CC 30-12(PR) - SPIKE ST GWS #CC	8,941.49	6,715.00	1,813.34	1,647.42	10.929	CC, ES
SPIKE ST GWS #CC 30-12(PR) - SPIKE ST GWS #CC	9,000.00	6,715.00	1,814.28	1,648.17	10.922	SF
SPIKE ST GWS #CC 30-14(PR) - SPIKE ST GWS #CC	7,634.33	6,703.00	369.88	209.44	2.305	CC, ES, SF
SPIKE ST GWS #CC 30-15(SI) - SPIKE ST GWS #CC 3	7,632.84	6,718.00	842.99	682.26	5.245	CC, ES, SF
SPIKE ST GWS #CC 30-16(SI) - SPIKE ST GWS #CC 3	7,615.57	6,717.00	2,175.25	2,014.59	13.539	CC, ES
SPIKE ST GWS #CC 30-16(SI) - SPIKE ST GWS #CC 3	7,700.00	6,717.00	2,176.89	2,015.94	13.525	SF
SPIKE ST GWS CC #30-07(SI) - SPIKE ST GWS CC #3	10,276.95	6,696.00	1,021.88	848.59	5.897	CC, ES
SPIKE ST GWS CC #30-07(SI) - SPIKE ST GWS CC #3	10,300.00	6,696.00	1,022.14	848.61	5.890	SF
Spike State #CC30-19(SI) - Spike State #CC30-19 - No	10,903.62	6,672.00	939.78	762.84	5.311	CC, ES, SF
Spike State #CC30-24(PR) - Spike State #CC30-24 - We	8,284.20	6,658.25	1,608.47	1,567.74	39.490	CC
Spike State #CC30-24(PR) - Spike State #CC30-24 - We	8,300.00	6,658.57	1,608.55	1,567.73	39.410	ES
Spike State #CC30-24(PR) - Spike State #CC30-24 - We	8,600.00	6,664.59	1,639.16	1,596.71	38.614	SF
Spike State #CC30-24(SI) - Spike State #CC30-24 - No	8,373.73	6,719.00	172.26	8.91	1.055	Level 2, CC, ES, SF
SPIKE STATE CC #30-11J(PA) - SPIKE STATE CC #30	8,603.50	6,708.00	707.64	543.50	4.311	CC, ES, SF
SPIKE STATE CC #30-13(PR) - SPIKE STATE CC #30	2,200.00	2,168.00	1,285.79	1,234.78	25.205	CC
SPIKE STATE CC #30-13(PR) - SPIKE STATE CC #30	2,500.00	2,467.45	1,288.87	1,230.82	22.203	ES
SPIKE STATE CC #30-13(PR) - SPIKE STATE CC #30	7,611.64	6,702.00	1,689.92	1,529.57	10.539	SF
Spike State CC #30-18(SI) - Spike State CC #30-18 - No	10,914.10	6,680.00	291.92	114.75	1.648	CC, ES, SF
SPIKE STATE CC #30-20(PR) - SPIKE STATE CC #30	9,520.66	6,691.00	863.28	694.69	5.121	CC, ES, SF
SPIKE STATE CC #30-21(PR) - SPIKE STATE CC #30	9,273.45	6,703.00	18.03	-149.41	0.108	Level 1, CC, ES, SF
SPIKE STATE CC #30-22(SI) - SPIKE STATE CC #30-2	9,669.42	6,640.05	1,697.81	1,649.32	35.009	CC, ES
SPIKE STATE CC #30-22(SI) - SPIKE STATE CC #30-2	10,900.00	10,900.00	2,095.73	2,033.85	33.867	SF
SPIKE STATE CC #30-1J(PR) - SPIKE STATE CC #30-I	11,020.19	6,651.63	1,605.73	1,549.83	28.727	CC, ES
SPIKE STATE CC #30-1J(PR) - SPIKE STATE CC #30-I	11,300.00	6,662.00	1,629.89	1,571.78	28.046	SF
SPIKE STATE GWS CC #30-02(PR) - SPIKE STATE GV	11,523.95	6,668.00	993.90	812.76	5.487	CC, ES
SPIKE STATE GWS CC #30-02(PR) - SPIKE STATE GV	11,600.00	6,668.00	996.80	814.86	5.479	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 Booth CC30-755
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #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
Offset Well - Wellbore - Design						
CC Section 31						
BOOTH 11-31U (SI) - BOOTH#11-31U - No Surveys	2,200.00	2,162.00	485.41	434.52	9.538	CC
BOOTH 11-31U (SI) - BOOTH#11-31U - No Surveys	2,300.00	2,261.98	487.16	433.91	9.149	ES
BOOTH 11-31U (SI) - BOOTH#11-31U - No Surveys	2,800.00	2,757.62	548.02	483.13	8.446	SF
BOOTH 21-31U (SI) - BOOTH#21-31U - No Surveys	5,306.54	5,187.95	254.25	131.06	2.064	CC
BOOTH 21-31U (SI) - BOOTH#21-31U - No Surveys	5,400.00	5,277.35	255.70	130.33	2.040	ES
BOOTH 21-31U (SI) - BOOTH#21-31U - No Surveys	5,500.00	5,373.00	260.44	132.73	2.039	SF
BOOTH 31-31 (SI) - BOOTH#31-31 - No Surveys	6,629.28	6,421.60	1,078.70	926.27	7.077	CC
BOOTH 31-31 (SI) - BOOTH#31-31 - No Surveys	6,650.00	6,438.32	1,078.94	926.10	7.059	ES
BOOTH 31-31 (SI) - BOOTH#31-31 - No Surveys	6,750.00	6,513.68	1,087.16	932.43	7.026	SF
BOOTH 31-AU (SI) - BOOTH#31-AU - No Surveys	2,200.00	2,172.00	804.44	753.34	15.744	CC
BOOTH 31-AU (SI) - BOOTH#31-AU - No Surveys	2,800.00	2,767.62	808.84	743.73	12.423	ES
BOOTH 31-AU (SI) - BOOTH#31-AU - No Surveys	5,500.00	5,353.00	1,181.21	1,054.12	9.294	SF
BOOTH 41-31 (SI) - BOOTH#41-31 - No Surveys	6,753.88	6,522.41	2,256.63	2,101.84	14.579	CC, ES
BOOTH 41-31 (SI) - BOOTH#41-31 - No Surveys	6,950.00	6,638.37	2,274.18	2,116.45	14.418	SF
Booth CC30-715 - Booth CC30-715 - Plan #1	6,356.40	5,638.74	2,488.62	2,445.40	57.574	CC
Booth CC30-715 - Booth CC30-715 - Plan #1	6,400.00	5,681.90	2,488.78	2,445.21	57.123	ES
Booth CC30-715 - Booth CC30-715 - Plan #1	12,414.24	12,400.68	2,574.71	2,465.45	23.564	SF
Booth CC30-725 - Booth CC30-725 - Plan #1	12,414.24	12,525.16	1,928.93	1,820.32	17.760	CC, ES, SF
Booth CC30-734 - Booth CC30-734 - Plan #1	7,156.03	7,030.61	1,288.06	1,238.46	25.969	CC
Booth CC30-734 - Booth CC30-734 - Plan #1	12,414.24	12,286.49	1,288.18	1,179.87	11.894	ES, SF
Booth CC30-745 - Booth CC30-745 - Plan #1	12,414.24	12,297.26	643.12	534.82	5.938	CC, ES, SF
Booth CC30-764 - Booth CC30-764 - Plan #1	2,200.00	2,198.00	22.60	7.30	1.477	Level 3, CC
Booth CC30-764 - Booth CC30-764 - Plan #1	2,600.00	2,601.05	22.91	4.95	1.276	Level 3, ES, SF
Booth CC30-774 - Booth CC30-774 - Plan #1	2,200.00	2,203.00	45.21	29.89	2.951	CC, ES
Booth CC30-774 - Booth CC30-774 - Plan #1	2,300.00	2,303.02	46.91	30.89	2.927	SF
Booth CC30-784 - Booth CC30-784 - Plan #1	2,200.00	2,195.00	66.13	50.84	4.326	CC, ES, SF
Booth CC31-17D (SI) - Booth#CC31-17D - Wellbore #1	6,528.98	6,432.99	1,989.14	1,949.52	50.205	CC, ES
Booth CC31-17D (SI) - Booth#CC31-17D - Wellbore #1	6,750.00	6,603.85	2,016.50	1,975.66	49.378	SF
Sadie CC31-14 - Wellbore #1 - Wellbore #1 - As Drilled	4,229.15	4,323.79	4,301.79	4,271.74	143.152	CC
Sadie CC31-14 - Wellbore #1 - Wellbore #1 - As Drilled	4,900.00	4,995.04	4,305.13	4,270.06	122.759	ES
Sadie CC31-14 - Wellbore #1 - Wellbore #1 - As Drilled	6,600.00	6,331.94	4,453.57	4,407.03	95.694	SF
CC Section 32						
Guttersen State CC32-13 - Wellbore #1 - Wellbore #1 - A	6,418.09	6,303.85	5,589.40	5,543.95	122.991	CC, ES
Guttersen State CC32-13 - Wellbore #1 - Wellbore #1 - A	6,800.00	6,543.61	5,684.51	5,636.82	119.200	SF
Guttersen State CC32-14 - Wellbore #1 - Wellbore #1 - A	6,437.13	6,125.59	6,473.39	6,428.59	144.516	CC
Guttersen State CC32-14 - Wellbore #1 - Wellbore #1 - A	6,450.00	6,138.88	6,473.48	6,428.59	144.204	ES
Guttersen State CC32-14 - Wellbore #1 - Wellbore #1 - A	6,950.00	6,950.00	6,620.49	6,571.08	133.997	SF

# Noble Energy, Inc.

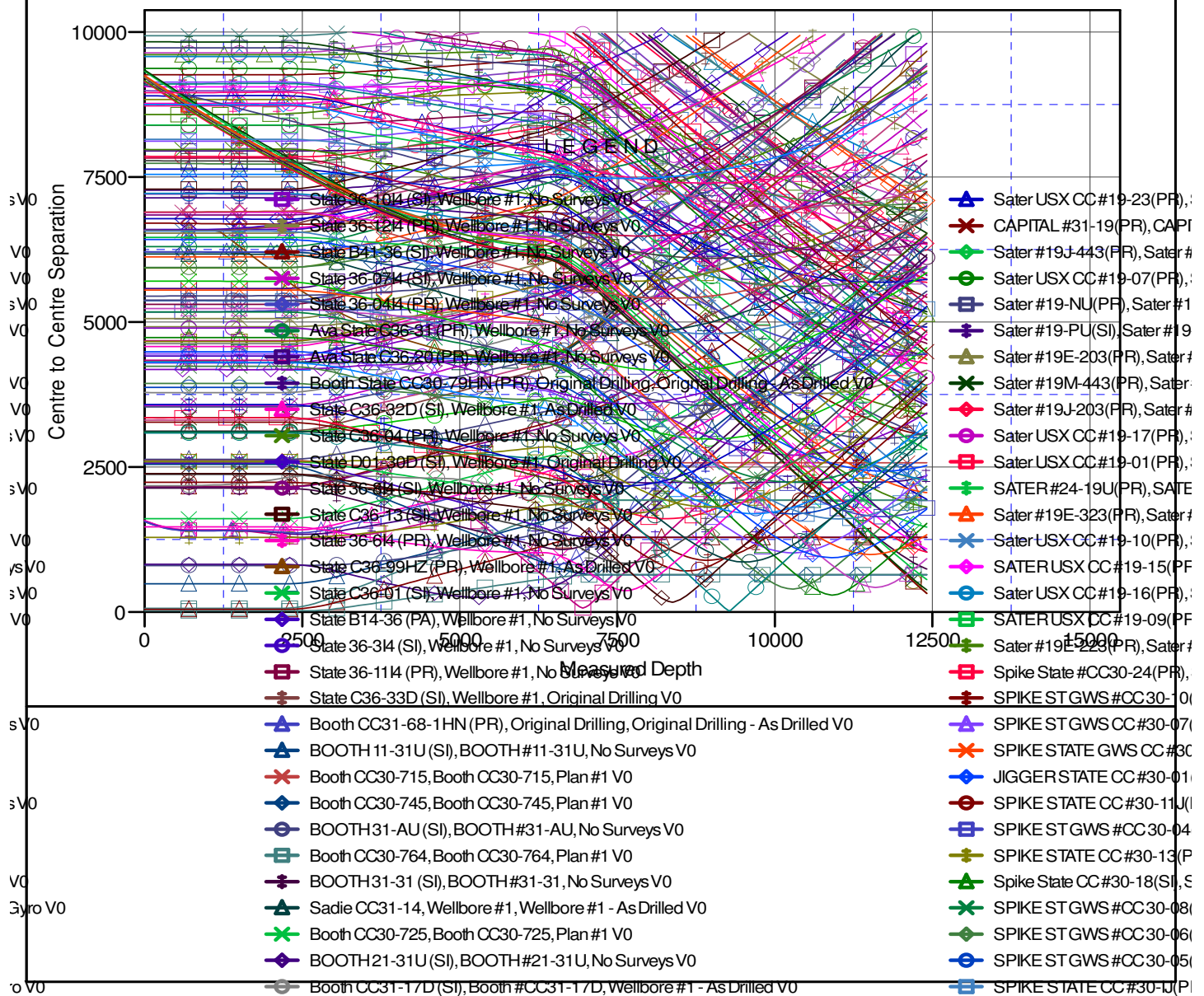
## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to Well @ 4808.00ft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.5000000

Coordinates are relative to: Booth CC30-755  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 0.66°

### Ladder Plot



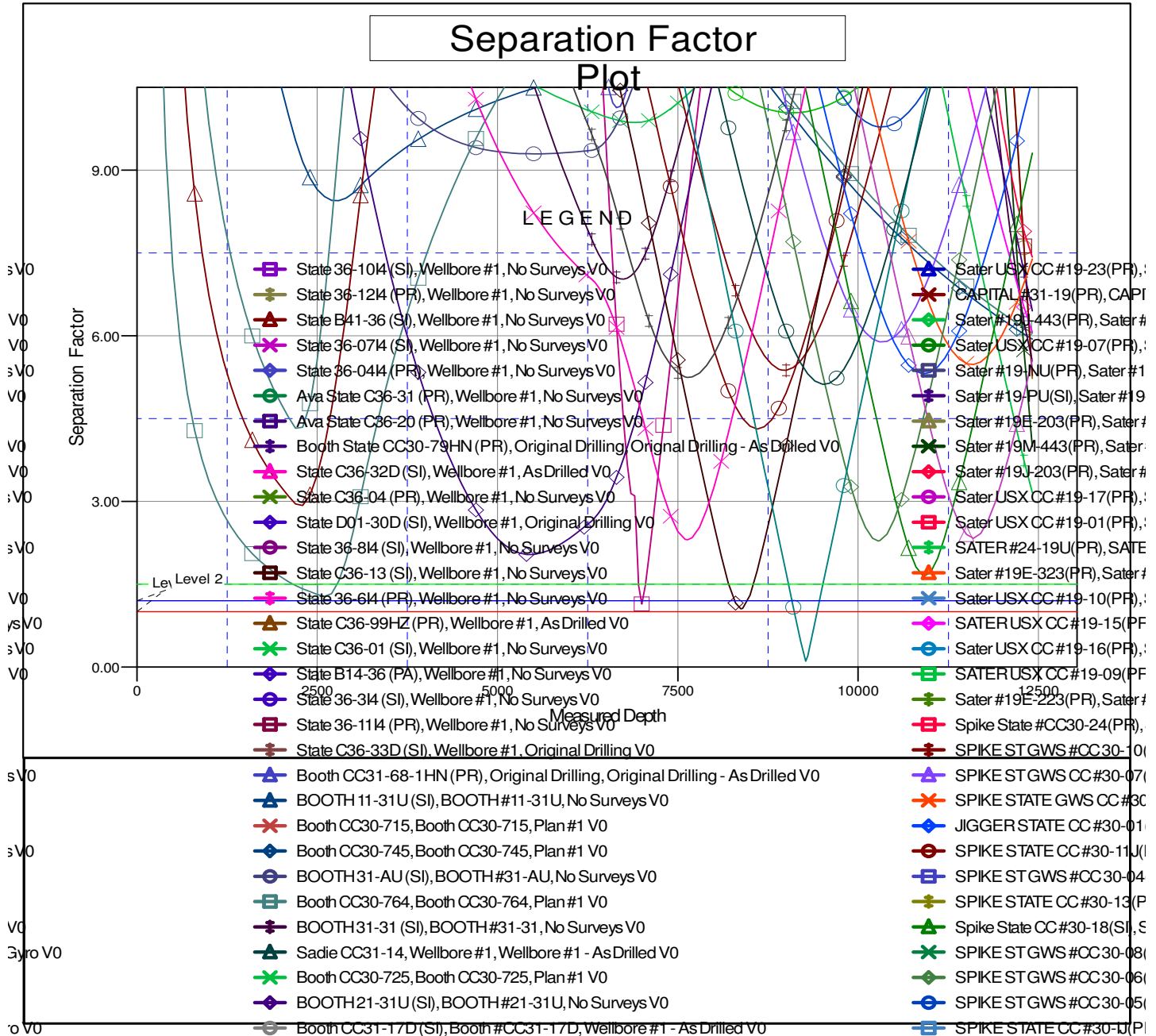
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Booth CC30-755
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4808.00ft
<b>Reference Site:</b>	CC Section 31	<b>MD Reference:</b>	Well @ 4808.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Booth CC30-755	<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>	Booth CC30-755	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to Well @ 4808.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: Booth CC30-755  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.66°



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