

Project: Mustang
 Site: CC Section 31
 Well: Booth CC30-784
 Wellbore: Booth CC30-784
 Design: Plan #1

Northern Region - DJ Basin

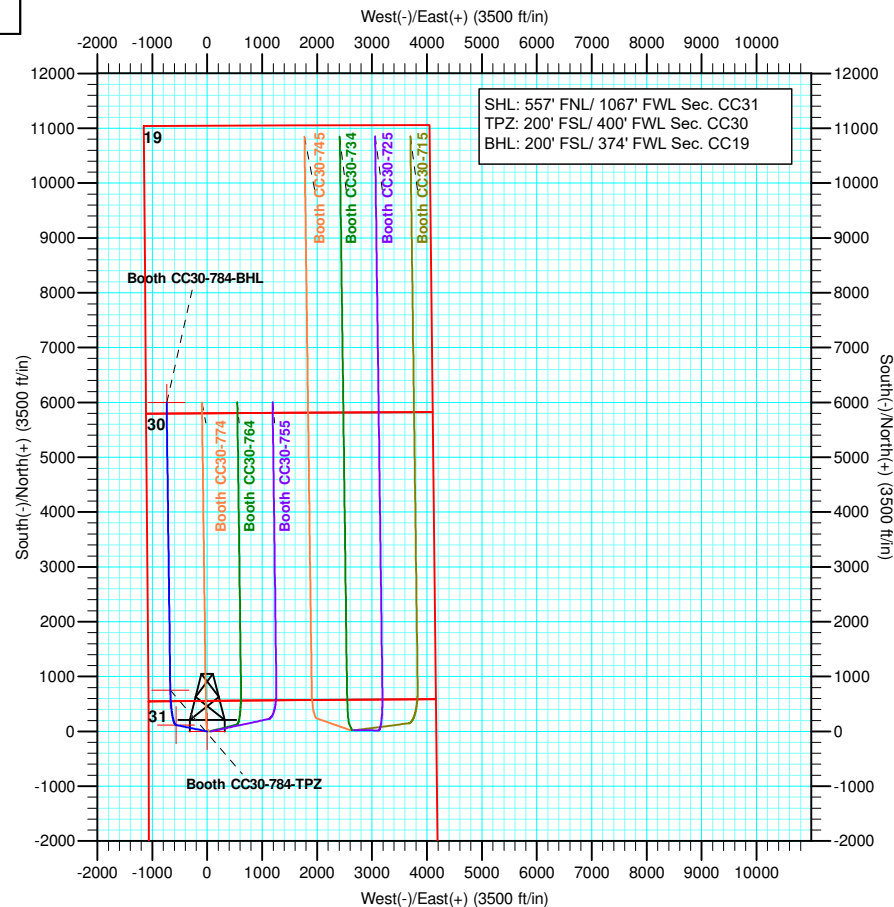
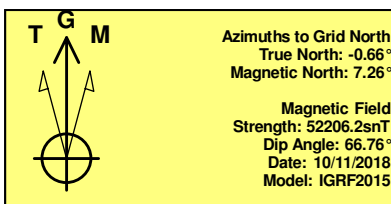
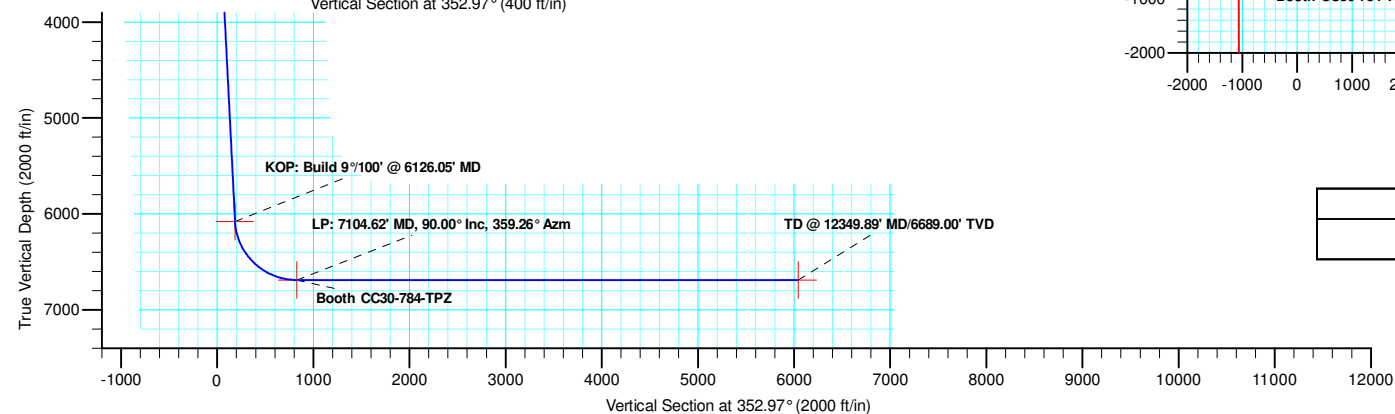
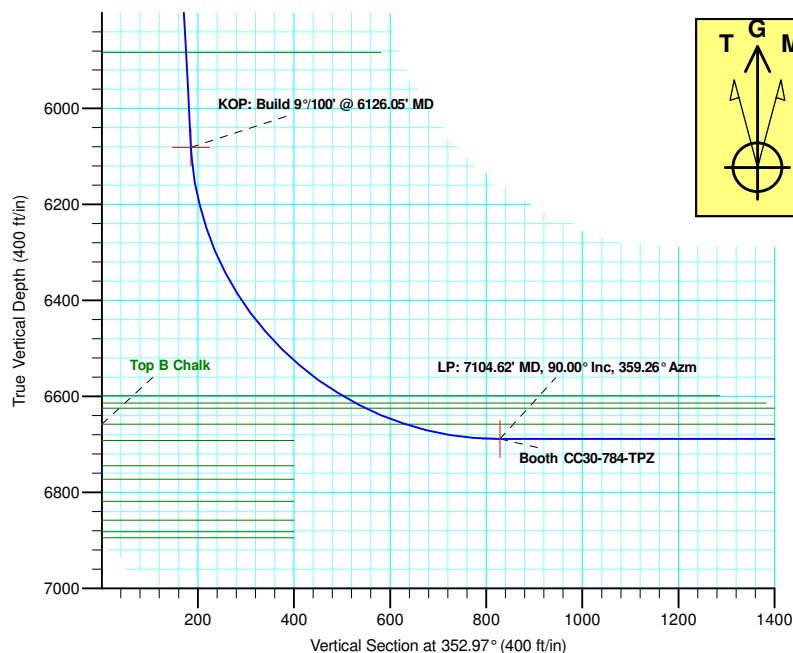
Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level

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	2651.62	9.03	281.64	2649.76	7.17	-34.79	2.00	281.64	11.37	
4	6126.05	9.03	281.64	6081.10	117.22	-569.04	0.00	0.00	185.97	
5	7104.62	90.00	359.26	6689.00	752.21	-671.64	9.00	77.77	828.74	Booth CC30-784-TPZ
6	12349.89	90.00	359.26	6689.00	5997.05	-739.35	0.00	0.00	6042.45	Booth CC30-784-BHL

WELL DETAILS: Booth CC30-784

+N/-S	+E/-W	Northing	Ground Level: Easting	4773.00 Latitude	Longitude	Slot
0.00	0.00	1344484.51	3282925.84	40.2745690	-104.4860000	



Plan: Plan #1 (Booth CC30-784/Booth CC30-784)

Created By: Keith Noack Date: 10:43, October 12 2018

Northern Region - DJ Basin

Mustang

CC Section 31

Booth CC30-784

Booth CC30-784

Plan: Plan #1

Standard Planning Report

12 October, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Booth CC30-784
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4803.00ft
Project:	Mustang	MD Reference:	Well @ 4803.00ft
Site:	CC Section 31	North Reference:	Grid
Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Wellbore:	Booth CC30-784		
Design:	Plan #1		

Project	Mustang, Weld County Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 CC30-784					
Well Position	+N/-S	4,187.94 ft	Northing:	1,344,484.51 usft	Latitude:	40.2745690
	+E/-W	-1,098.67 ft	Easting:	3,282,925.85 usft	Longitude:	-104.4860000
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,773.00 ft

Wellbore	Booth CC30-784				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/11/2018	7.91	66.76	52,206.19817576

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	352.97

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	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	
2,651.62	9.03	281.64	2,649.76	7.17	-34.79	2.00	2.00	0.00	281.64	
6,126.05	9.03	281.64	6,081.10	117.22	-569.04	0.00	0.00	0.00	0.00	
7,104.62	90.00	359.26	6,689.00	752.21	-671.64	9.00	8.27	7.93	77.77	Booth CC30-784-TI
12,349.89	90.00	359.26	6,689.00	5,997.05	-739.35	0.00	0.00	0.00	0.00	Booth CC30-784-BI

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4803.00ft
Project:	Mustang	MD Reference:	Well @ 4803.00ft
Site:	CC Section 31	North Reference:	Grid
Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Wellbore:	Booth CC30-784		
Design:	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
453.00	0.00	0.00	453.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
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
719.00	0.00	0.00	719.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
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
1,639.00	0.00	0.00	1,639.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Base									
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
Build: 2°/100'									
2,300.00	2.00	281.64	2,299.98	0.35	-1.71	0.56	2.00	2.00	0.00
2,400.00	4.00	281.64	2,399.84	1.41	-6.83	2.23	2.00	2.00	0.00
2,500.00	6.00	281.64	2,499.45	3.17	-15.37	5.02	2.00	2.00	0.00
2,600.00	8.00	281.64	2,598.70	5.63	-27.31	8.92	2.00	2.00	0.00
2,651.62	9.03	281.64	2,649.76	7.17	-34.79	11.37	2.00	2.00	0.00
Hold: 9.03° Inc, 281.64° Azm									
2,700.00	9.03	281.64	2,697.53	8.70	-42.23	13.80	0.00	0.00	0.00
2,800.00	9.03	281.64	2,796.29	11.87	-57.61	18.83	0.00	0.00	0.00
2,900.00	9.03	281.64	2,895.05	15.03	-72.99	23.85	0.00	0.00	0.00
3,000.00	9.03	281.64	2,993.81	18.20	-88.36	28.88	0.00	0.00	0.00
3,100.00	9.03	281.64	3,092.57	21.37	-103.74	33.90	0.00	0.00	0.00
3,200.00	9.03	281.64	3,191.33	24.54	-119.12	38.93	0.00	0.00	0.00
3,300.00	9.03	281.64	3,290.09	27.70	-134.49	43.95	0.00	0.00	0.00
3,400.00	9.03	281.64	3,388.85	30.87	-149.87	48.98	0.00	0.00	0.00
3,500.00	9.03	281.64	3,487.61	34.04	-165.25	54.00	0.00	0.00	0.00
3,600.00	9.03	281.64	3,586.37	37.21	-180.62	59.03	0.00	0.00	0.00
3,700.00	9.03	281.64	3,685.13	40.37	-196.00	64.05	0.00	0.00	0.00
3,726.19	9.03	281.64	3,711.00	41.20	-200.03	65.37	0.00	0.00	0.00
Parkman									
3,800.00	9.03	281.64	3,783.89	43.54	-211.38	69.08	0.00	0.00	0.00
3,900.00	9.03	281.64	3,882.65	46.71	-226.75	74.10	0.00	0.00	0.00
4,000.00	9.03	281.64	3,981.41	49.88	-242.13	79.13	0.00	0.00	0.00
4,100.00	9.03	281.64	4,080.17	53.05	-257.51	84.15	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4803.00ft
Project:	Mustang	MD Reference:	Well @ 4803.00ft
Site:	CC Section 31	North Reference:	Grid
Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Wellbore:	Booth CC30-784		
Design:	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	9.03	281.64	4,178.93	56.21	-272.88	89.18	0.00	0.00	0.00
4,300.00	9.03	281.64	4,277.69	59.38	-288.26	94.20	0.00	0.00	0.00
4,346.89	9.03	281.64	4,324.00	60.87	-295.47	96.56	0.00	0.00	0.00
Sussex									
4,400.00	9.03	281.64	4,376.45	62.55	-303.64	99.23	0.00	0.00	0.00
4,500.00	9.03	281.64	4,475.21	65.72	-319.01	104.26	0.00	0.00	0.00
4,600.00	9.03	281.64	4,573.97	68.88	-334.39	109.28	0.00	0.00	0.00
4,700.00	9.03	281.64	4,672.73	72.05	-349.76	114.31	0.00	0.00	0.00
4,800.00	9.03	281.64	4,771.49	75.22	-365.14	119.33	0.00	0.00	0.00
4,900.00	9.03	281.64	4,870.25	78.39	-380.52	124.36	0.00	0.00	0.00
4,980.75	9.03	281.64	4,950.00	80.94	-392.93	128.41	0.00	0.00	0.00
Shannon									
5,000.00	9.03	281.64	4,969.01	81.55	-395.89	129.38	0.00	0.00	0.00
5,100.00	9.03	281.64	5,067.77	84.72	-411.27	134.41	0.00	0.00	0.00
5,200.00	9.03	281.64	5,166.53	87.89	-426.65	139.43	0.00	0.00	0.00
5,300.00	9.03	281.64	5,265.29	91.06	-442.02	144.46	0.00	0.00	0.00
5,400.00	9.03	281.64	5,364.05	94.22	-457.40	149.48	0.00	0.00	0.00
5,500.00	9.03	281.64	5,462.81	97.39	-472.78	154.51	0.00	0.00	0.00
5,600.00	9.03	281.64	5,561.57	100.56	-488.15	159.53	0.00	0.00	0.00
5,700.00	9.03	281.64	5,660.33	103.73	-503.53	164.56	0.00	0.00	0.00
5,800.00	9.03	281.64	5,759.09	106.89	-518.91	169.58	0.00	0.00	0.00
5,900.00	9.03	281.64	5,857.85	110.06	-534.28	174.61	0.00	0.00	0.00
5,925.47	9.03	281.64	5,883.00	110.87	-538.20	175.89	0.00	0.00	0.00
Teepee Buttes									
6,000.00	9.03	281.64	5,956.61	113.23	-549.66	179.63	0.00	0.00	0.00
6,100.00	9.03	281.64	6,055.37	116.40	-565.04	184.66	0.00	0.00	0.00
6,126.05	9.03	281.64	6,081.10	117.22	-569.04	185.97	0.00	0.00	0.00
KOP: Build 9°/100' @ 6126.05' MD									
6,150.00	9.72	294.22	6,104.73	118.43	-572.73	187.62	9.00	2.86	52.51
6,200.00	12.29	313.79	6,153.82	123.85	-580.42	193.93	9.00	5.14	39.15
6,250.00	15.74	325.83	6,202.34	133.14	-588.07	204.10	9.00	6.90	24.07
6,300.00	19.61	333.43	6,249.97	146.27	-595.64	218.05	9.00	7.75	15.19
6,350.00	23.70	338.55	6,296.44	163.13	-603.07	235.70	9.00	8.18	10.24
6,400.00	27.91	342.21	6,341.45	183.64	-610.33	256.94	9.00	8.42	7.34
6,450.00	32.19	344.98	6,384.72	207.66	-617.36	281.64	9.00	8.56	5.53
6,500.00	36.52	347.16	6,425.99	235.04	-624.12	309.64	9.00	8.66	4.35
6,550.00	40.88	348.93	6,465.00	265.62	-630.57	340.78	9.00	8.72	3.54
6,600.00	45.27	350.41	6,501.51	299.21	-636.68	374.87	9.00	8.77	2.97
6,650.00	49.67	351.69	6,535.30	335.60	-642.39	411.68	9.00	8.80	2.55
6,700.00	54.08	352.80	6,566.16	374.56	-647.69	451.00	9.00	8.83	2.23
6,750.00	58.51	353.80	6,593.90	415.87	-652.53	492.58	9.00	8.85	2.00
6,759.88	59.38	353.99	6,599.00	424.28	-653.43	501.04	9.00	8.85	1.88
Sharon Springs									
6,790.57	62.10	354.54	6,614.00	450.92	-656.10	527.81	9.00	8.86	1.81
Top A Chalk									
6,800.00	62.94	354.71	6,618.35	459.25	-656.88	536.17	9.00	8.86	1.75
6,814.95	64.26	354.97	6,625.00	472.59	-658.09	549.56	9.00	8.87	1.72
Top A Marl									
6,850.00	67.37	355.55	6,639.36	504.45	-660.73	581.50	9.00	8.87	1.66
6,900.00	71.81	356.34	6,656.79	551.18	-664.04	628.29	9.00	8.88	1.57
6,903.92	72.16	356.40	6,658.00	554.89	-664.28	632.00	9.00	8.88	1.53
Top B Chalk									
6,950.00	76.25	357.08	6,670.54	599.16	-666.80	676.24	9.00	8.88	1.49

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Booth CC30-784
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4803.00ft
Project:	Mustang	MD Reference:	Well @ 4803.00ft
Site:	CC Section 31	North Reference:	Grid
Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Wellbore:	Booth CC30-784		
Design:	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)
7,000.00	80.70	357.80	6,680.53	648.09	-668.98	725.07	9.00	8.89	1.44
7,050.00	85.14	358.50	6,686.69	697.67	-670.57	774.48	9.00	8.89	1.40
7,104.62	90.00	359.26	6,689.00	752.21	-671.64	828.74	9.00	8.89	1.38
LP: 7104.62' MD, 90.00° Inc, 359.26° Azm									
7,200.00	90.00	359.26	6,689.00	847.58	-672.87	923.55	0.00	0.00	0.00
7,300.00	90.00	359.26	6,689.00	947.57	-674.16	1,022.94	0.00	0.00	0.00
7,400.00	90.00	359.26	6,689.00	1,047.57	-675.45	1,122.34	0.00	0.00	0.00
7,500.00	90.00	359.26	6,689.00	1,147.56	-676.74	1,221.74	0.00	0.00	0.00
7,600.00	90.00	359.26	6,689.00	1,247.55	-678.03	1,321.14	0.00	0.00	0.00
7,700.00	90.00	359.26	6,689.00	1,347.54	-679.32	1,420.54	0.00	0.00	0.00
7,800.00	90.00	359.26	6,689.00	1,447.53	-680.61	1,519.94	0.00	0.00	0.00
7,900.00	90.00	359.26	6,689.00	1,547.52	-681.91	1,619.33	0.00	0.00	0.00
8,000.00	90.00	359.26	6,689.00	1,647.52	-683.20	1,718.73	0.00	0.00	0.00
8,100.00	90.00	359.26	6,689.00	1,747.51	-684.49	1,818.13	0.00	0.00	0.00
8,200.00	90.00	359.26	6,689.00	1,847.50	-685.78	1,917.53	0.00	0.00	0.00
8,300.00	90.00	359.26	6,689.00	1,947.49	-687.07	2,016.93	0.00	0.00	0.00
8,400.00	90.00	359.26	6,689.00	2,047.48	-688.36	2,116.32	0.00	0.00	0.00
8,500.00	90.00	359.26	6,689.00	2,147.47	-689.65	2,215.72	0.00	0.00	0.00
8,600.00	90.00	359.26	6,689.00	2,247.47	-690.94	2,315.12	0.00	0.00	0.00
8,700.00	90.00	359.26	6,689.00	2,347.46	-692.23	2,414.52	0.00	0.00	0.00
8,800.00	90.00	359.26	6,689.00	2,447.45	-693.52	2,513.92	0.00	0.00	0.00
8,900.00	90.00	359.26	6,689.00	2,547.44	-694.81	2,613.32	0.00	0.00	0.00
9,000.00	90.00	359.26	6,689.00	2,647.43	-696.11	2,712.71	0.00	0.00	0.00
9,100.00	90.00	359.26	6,689.00	2,747.42	-697.40	2,812.11	0.00	0.00	0.00
9,200.00	90.00	359.26	6,689.00	2,847.42	-698.69	2,911.51	0.00	0.00	0.00
9,300.00	90.00	359.26	6,689.00	2,947.41	-699.98	3,010.91	0.00	0.00	0.00
9,400.00	90.00	359.26	6,689.00	3,047.40	-701.27	3,110.31	0.00	0.00	0.00
9,500.00	90.00	359.26	6,689.00	3,147.39	-702.56	3,209.71	0.00	0.00	0.00
9,600.00	90.00	359.26	6,689.00	3,247.38	-703.85	3,309.10	0.00	0.00	0.00
9,700.00	90.00	359.26	6,689.00	3,347.37	-705.14	3,408.50	0.00	0.00	0.00
9,800.00	90.00	359.26	6,689.00	3,447.37	-706.43	3,507.90	0.00	0.00	0.00
9,900.00	90.00	359.26	6,689.00	3,547.36	-707.72	3,607.30	0.00	0.00	0.00
10,000.00	90.00	359.26	6,689.00	3,647.35	-709.01	3,706.70	0.00	0.00	0.00
10,100.00	90.00	359.26	6,689.00	3,747.34	-710.30	3,806.10	0.00	0.00	0.00
10,200.00	90.00	359.26	6,689.00	3,847.33	-711.60	3,905.49	0.00	0.00	0.00
10,300.00	90.00	359.26	6,689.00	3,947.32	-712.89	4,004.89	0.00	0.00	0.00
10,400.00	90.00	359.26	6,689.00	4,047.32	-714.18	4,104.29	0.00	0.00	0.00
10,500.00	90.00	359.26	6,689.00	4,147.31	-715.47	4,203.69	0.00	0.00	0.00
10,600.00	90.00	359.26	6,689.00	4,247.30	-716.76	4,303.09	0.00	0.00	0.00
10,700.00	90.00	359.26	6,689.00	4,347.29	-718.05	4,402.49	0.00	0.00	0.00
10,800.00	90.00	359.26	6,689.00	4,447.28	-719.34	4,501.88	0.00	0.00	0.00
10,900.00	90.00	359.26	6,689.00	4,547.27	-720.63	4,601.28	0.00	0.00	0.00
11,000.00	90.00	359.26	6,689.00	4,647.27	-721.92	4,700.68	0.00	0.00	0.00
11,100.00	90.00	359.26	6,689.00	4,747.26	-723.21	4,800.08	0.00	0.00	0.00
11,200.00	90.00	359.26	6,689.00	4,847.25	-724.50	4,899.48	0.00	0.00	0.00
11,300.00	90.00	359.26	6,689.00	4,947.24	-725.80	4,998.87	0.00	0.00	0.00
11,400.00	90.00	359.26	6,689.00	5,047.23	-727.09	5,098.27	0.00	0.00	0.00
11,500.00	90.00	359.26	6,689.00	5,147.22	-728.38	5,197.67	0.00	0.00	0.00
11,600.00	90.00	359.26	6,689.00	5,247.22	-729.67	5,297.07	0.00	0.00	0.00
11,700.00	90.00	359.26	6,689.00	5,347.21	-730.96	5,396.47	0.00	0.00	0.00
11,800.00	90.00	359.26	6,689.00	5,447.20	-732.25	5,495.87	0.00	0.00	0.00
11,900.00	90.00	359.26	6,689.00	5,547.19	-733.54	5,595.26	0.00	0.00	0.00
12,000.00	90.00	359.26	6,689.00	5,647.18	-734.83	5,694.66	0.00	0.00	0.00
12,100.00	90.00	359.26	6,689.00	5,747.17	-736.12	5,794.06	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Booth CC30-784
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4803.00ft
Project:	Mustang	MD Reference:	Well @ 4803.00ft
Site:	CC Section 31	North Reference:	Grid
Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Wellbore:	Booth CC30-784		
Design:	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)
12,200.00	90.00	359.26	6,689.00	5,847.17	-737.41	5,893.46	0.00	0.00	0.00
12,300.00	90.00	359.26	6,689.00	5,947.16	-738.70	5,992.86	0.00	0.00	0.00
12,349.89	90.00	359.26	6,689.00	5,997.05	-739.35	6,042.45	0.00	0.00	0.00
TD @ 12349.89' MD/6689.00' TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Booth CC30-784-SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,344,484.51	3,282,925.85	40.2745690	-104.4860000
Booth CC30-784-KOF - plan hits target center - Point	0.00	0.00	6,081.10	117.22	-569.04	1,344,601.73	3,282,356.80	40.2749086	-104.4880344
Booth CC30-784-TPZ - plan hits target center - Point	0.00	0.00	6,689.00	752.21	-671.64	1,345,236.72	3,282,254.21	40.2766548	-104.4883761
Booth CC30-784-BHL - plan hits target center - Point	0.00	0.00	6,689.00	5,997.05	-739.35	1,350,481.54	3,282,186.50	40.2910534	-104.4884044

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
453.00	453.00	Pierre				
719.00	719.00	Upper Pierre Aquifer Top				
1,639.00	1,639.00	Upper Pierre Aquifer Base				
3,726.19	3,711.00	Parkman				
4,346.89	4,324.00	Sussex				
4,980.75	4,950.00	Shannon				
5,925.47	5,883.00	Teepee Buttes				
6,759.88	6,599.00	Sharon Springs				
6,790.57	6,614.00	Top A Chalk				
6,814.95	6,625.00	Top A Marl				
6,903.92	6,658.00	Top B Chalk				

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Booth CC30-784
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4803.00ft
Project:	Mustang	MD Reference:	Well @ 4803.00ft
Site:	CC Section 31	North Reference:	Grid
Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Wellbore:	Booth CC30-784		
Design:	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'	
2,651.62	2,649.76	7.17	-34.79	Hold: 9.03° Inc, 281.64° Azm	
6,126.05	6,081.10	117.22	-569.04	KOP: Build 9°/100' @ 6126.05' MD	
7,104.62	6,689.00	752.21	-671.64	LP: 7104.62' MD, 90.00° Inc, 359.26° Azm	
12,349.89	6,689.00	5,997.05	-739.35	TD @ 12349.89' MD/6689.00' TVD	

Northern Region - DJ Basin

Mustang

CC Section 31

Booth CC30-784

Booth CC30-784

Plan #1

Anticollision Summary Report

12 October, 2018

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	10/12/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	12,349.89	Plan #1 (Booth CC30-784)	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	12,349.89	6,583.00	3,035.19	2,746.22	10.503	CC, ES, SF
Elise State C24-11 (PR) - Wellbore #1 - No Surveys	12,349.89	6,579.00	3,977.14	3,668.39	12.881	CC, ES, SF
Elise State C24-18 (SI) - Wellbore #1 - No Surveys	12,349.89	6,563.00	4,969.57	4,671.92	16.696	CC, ES, SF
Elise State C24-19 (SI) - Wellbore #1 - Gyro Surveys	12,349.89	6,604.91	5,680.68	5,615.61	87.296	CC, ES, SF
Elise State C24-20 (PR) - Wellbore #1 - No Surveys	12,349.89	6,601.00	5,013.67	4,704.86	16.235	CC, ES, SF
Elise State C24-21 (SI) - Wellbore #1 - No Surveys	12,349.89	6,576.00	3,824.64	3,521.57	12.620	CC, ES, SF
Elise State C24-22 (PR) - Wellbore #1 - No Surveys	12,349.89	6,606.00	2,991.08	2,694.33	10.080	CC, ES, SF
Elise State C24-23 (PR) - Wellbore #1 - No Surveys	12,349.89	6,604.00	2,039.37	1,731.59	6.626	CC, ES, SF
Elise State C24-24 (SI) - Wellbore #1 - No Surveys	12,349.89	6,604.00	3,323.46	3,010.86	10.632	CC, ES, SF
Spike ST GWS C24-05 (PR) - Wellbore #1 - Gyro Survey	12,349.89	6,578.53	5,822.27	5,753.32	84.438	CC, ES, SF
Spike ST GWS C24-07 (SI) - Wellbore #1 - Gyro Surveys	12,349.89	6,552.61	3,765.43	3,706.87	64.293	CC, ES, SF
Spike ST GWS C24-13 (PA) - Wellbore #1 - Gyro Survey	12,349.89	6,528.99	4,997.20	4,920.87	65.471	CC, ES, SF
Spike ST GWS C24-14 (SI) - Wellbore #1 - Gyro Surveys	12,349.89	6,523.44	3,767.68	3,691.54	49.482	CC, ES, SF
Spike ST GWS C24-15 (PR) - Wellbore #1 - Gyro Survey	12,349.89	6,562.26	2,536.54	2,461.51	33.805	CC, ES, SF
Spike ST GWS C24-16 (SI) - Wellbore #1 - Gyro Surveys	12,349.89	6,623.88	1,184.36	1,112.51	16.483	CC, ES, SF
Spike State GWS C24-01 (PA) - Wellbore #1 - No Survey	12,349.89	6,583.00	4,516.62	4,228.52	15.677	CC, ES, SF
Spike State GWS C24-02 (SI) - Wellbore #1 - No Survey	12,349.89	6,573.00	4,972.70	4,679.74	16.974	CC, ES, SF
Spike State GWS C24-03 (SI) - Wellbore #1 - No Survey	12,349.89	6,545.00	5,708.44	5,410.88	19.185	CC, ES, SF
Spike State GWS C24-04 (SI) - Wellbore #1 - No Survey	12,349.89	6,543.00	6,604.03	6,302.30	21.887	CC, ES, SF
Spike State GWS C24-06 (PA) - Wellbore #1 - No Survey	12,349.89	6,567.00	4,766.92	4,463.73	15.722	CC, ES, SF
Spike State GWS C24-09 (SI) - Wellbore #1 - No Survey	12,349.89	6,601.00	2,083.04	1,785.39	6.998	CC, ES, SF
Spike State GWS C24-10 (PR) - Wellbore #1 - No Survey	12,349.89	6,586.00	2,948.39	2,642.98	9.654	CC, ES, SF
Spike State GWS C24-11J (PA) - Wellbore #1 - No Survey	12,349.89	6,608.00	4,455.27	4,140.99	14.176	CC, ES, SF
Spike State GWS C24-12 (SI) - Wellbore #1 - No Survey	12,349.89	6,609.00	5,198.14	4,885.32	16.617	CC, ES, SF
Spike State GWS C24-8J (PA) - Wellbore #1 - No Survey	12,349.89	6,563.00	4,114.99	3,823.81	14.132	CC, ES, SF
State C24-28 (PR) - Wellbore #1 - No Surveys	12,349.89	6,544.00	5,736.48	5,443.20	19.560	CC, ES, SF
State C24-99HZ - Wellbore #1 - Original Drilling	12,349.89	10,838.02	3,536.77	3,391.43	24.334	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

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	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 25						
Booth 14-25 (SI) - Wellbore #1 - No Surveys	7,570.01	6,628.00	3,774.02	3,485.53	13.082	CC, ES
Booth 14-25 (SI) - Wellbore #1 - No Surveys	7,700.00	6,628.00	3,776.26	3,487.34	13.070	SF
Booth 9-25 (SI) - Wellbore #1 - No Surveys	8,889.12	6,648.00	1,054.95	760.05	3.577	CC
Booth 9-25 (SI) - Wellbore #1 - No Surveys	8,900.00	6,648.00	1,055.01	760.03	3.577	ES, SF
Booth C 25-19 (PR) - Wellbore #1 - No Surveys	10,990.10	6,601.00	4,299.53	3,993.37	14.043	CC
Booth C 25-19 (PR) - Wellbore #1 - No Surveys	11,000.00	6,601.00	4,299.54	3,993.31	14.040	ES
Booth C 25-19 (PR) - Wellbore #1 - No Surveys	11,400.00	6,601.00	4,319.02	4,009.89	13.971	SF
UNI UPR C 25-5 (SI) - Wellbore #1 - Gyro Surveys	10,206.95	6,547.60	5,053.18	4,991.27	81.615	CC, ES
UNI UPR C 25-5 (SI) - Wellbore #1 - Gyro Surveys	12,100.00	6,569.94	5,396.08	5,322.45	73.293	SF
UNI UPR C 25-6 (PR) - Wellbore #1 - No Surveys	10,325.35	6,601.00	3,684.37	3,621.63	58.723	CC, ES
UNI UPR C 25-6 (PR) - Wellbore #1 - No Surveys	11,400.00	6,601.00	3,837.90	3,768.38	55.204	SF
UNI-UPR C 25-3 (PR) - Wellbore #1 - Gyro Surveys	11,594.75	6,564.94	3,759.57	3,688.06	52.576	CC
UNI-UPR C 25-3 (PR) - Wellbore #1 - Gyro Surveys	11,600.00	6,564.71	3,759.57	3,688.03	52.546	ES
UNI-UPR C 25-3 (PR) - Wellbore #1 - Gyro Surveys	12,349.89	6,533.49	3,834.54	3,757.88	50.016	SF
UNI-UPRR 4-25 (PR) - Wellbore #1 - Gyro Surveys	11,492.79	6,553.56	5,086.27	5,015.58	71.954	CC
UNI-UPRR 4-25 (PR) - Wellbore #1 - Gyro Surveys	11,500.00	6,553.63	5,086.27	5,015.53	71.898	ES
UNI-UPRR 4-25 (PR) - Wellbore #1 - Gyro Surveys	12,349.89	6,561.63	5,157.97	5,081.15	67.142	SF
UPRR 66 Amoco 1 (SI) - Wellbore #1 - No Surveys	7,906.43	6,635.00	1,390.17	1,100.28	4.795	CC, ES, SF
UPV 25-114 (PA) - Wellbore #1 - Gyro Surveys	11,538.17	6,654.96	1,063.24	991.82	14.886	CC, ES
UPV 25-114 (PA) - Wellbore #1 - Gyro Surveys	11,600.00	6,654.46	1,065.04	993.08	14.801	SF
UPV 25-214 (PR) - Wellbore #1 - Gyro Surveys	11,768.09	6,575.66	2,486.56	2,413.74	34.148	CC
UPV 25-214 (PR) - Wellbore #1 - Gyro Surveys	11,800.00	6,576.73	2,486.76	2,413.68	34.028	ES
UPV 25-214 (PR) - Wellbore #1 - Gyro Surveys	12,200.00	6,589.74	2,523.75	2,447.90	33.272	SF
UPV 25-714 (PR) - Wellbore #1 - No Surveys	10,540.94	6,647.00	1,837.17	1,532.19	6.024	CC, ES
UPV 25-714 (PR) - Wellbore #1 - No Surveys	10,600.00	6,647.00	1,838.12	1,532.67	6.018	SF
UPV 25-814 (PA) - Wellbore #1 - Gyro Surveys	10,221.85	6,710.01	779.58	717.29	12.515	CC, ES
UPV 25-814 (PA) - Wellbore #1 - Gyro Surveys	10,300.00	6,710.51	783.49	720.55	12.449	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
C Section 36						
Ava State C36-18 (SI) - Wellbore #1 - No Surveys	6,413.92	6,286.68	3,172.25	2,900.08	11.655	CC
Ava State C36-18 (SI) - Wellbore #1 - No Surveys	6,500.00	6,358.99	3,174.43	2,899.08	11.529	ES
Ava State C36-18 (SI) - Wellbore #1 - No Surveys	6,800.00	6,551.35	3,219.46	2,935.56	11.340	SF
Ava State C36-20 (PR) - Wellbore #1 - No Surveys	6,283.12	6,157.01	5,053.93	4,787.36	18.959	CC
Ava State C36-20 (PR) - Wellbore #1 - No Surveys	6,350.00	6,219.44	5,055.70	4,786.40	18.773	ES
Ava State C36-20 (PR) - Wellbore #1 - No Surveys	6,800.00	6,541.35	5,160.36	4,876.83	18.200	SF
Ava State C36-21 (SI) - Wellbore #1 - No Surveys	6,254.17	6,134.35	3,843.27	3,577.69	14.471	CC
Ava State C36-21 (SI) - Wellbore #1 - No Surveys	6,300.00	6,177.97	3,844.21	3,576.72	14.372	ES
Ava State C36-21 (SI) - Wellbore #1 - No Surveys	6,700.00	6,505.84	3,933.33	3,651.47	13.955	SF
Ava State C36-22 (SI) - Wellbore #1 - No Surveys	6,188.00	6,108.92	2,940.59	2,676.19	11.122	CC, ES
Ava State C36-22 (SI) - Wellbore #1 - No Surveys	6,500.00	6,374.99	2,999.86	2,723.72	10.864	SF
Ava State C36-24 (PR) - Wellbore #1 - No Surveys	6,190.11	6,082.15	4,701.61	4,438.27	17.854	CC
Ava State C36-24 (PR) - Wellbore #1 - No Surveys	6,200.00	6,108.18	4,701.66	4,437.25	17.782	ES
Ava State C36-24 (PR) - Wellbore #1 - No Surveys	6,650.00	6,473.30	4,825.65	4,545.16	17.204	SF
Ava State C36-31 (PR) - Wellbore #1 - No Surveys	6,538.29	6,369.08	5,658.99	5,383.13	20.514	CC
Ava State C36-31 (PR) - Wellbore #1 - No Surveys	6,600.00	6,414.51	5,659.86	5,381.99	20.369	ES
Ava State C36-31 (PR) - Wellbore #1 - No Surveys	7,000.00	6,606.47	5,710.68	5,424.10	19.927	SF
Booth CC31-68-1HN (PR) - Original Drilling - Original Dri	6,324.76	6,498.97	759.13	714.90	17.163	CC, ES
Booth CC31-68-1HN (PR) - Original Drilling - Original Dri	6,400.00	6,584.04	764.03	719.21	17.047	SF
Booth State C36-69HN (PR) - Original Drilling - Original I	6,600.00	6,206.00	758.35	717.14	18.400	SF
Booth State C36-69HN (PR) - Original Drilling - Original I	6,642.52	6,224.00	758.03	716.84	18.404	CC, ES
Booth State CC30-79HN (PR) - Original Drilling - Original	9,152.12	8,561.62	298.72	219.69	3.780	CC
Booth State CC30-79HN (PR) - Original Drilling - Original	11,600.00	11,009.38	313.89	179.03	2.327	ES, SF
Booth State CC31-69HN (PR) - Original Drilling - Original	6,800.00	6,680.04	56.81	18.45	1.481	Level 3, ES, SF
Booth State CC31-69HN (PR) - Original Drilling - Original	6,813.10	6,683.01	55.49	20.75	1.597	CC
State 36-0414 (PR) - Wellbore #1 - No Surveys	6,535.71	6,375.10	4,727.48	4,451.39	17.123	CC
State 36-0414 (PR) - Wellbore #1 - No Surveys	6,600.00	6,422.51	4,728.46	4,450.27	16.998	ES
State 36-0414 (PR) - Wellbore #1 - No Surveys	6,950.00	6,608.46	4,771.14	4,484.59	16.651	SF
State 36-0714 (SI) - Wellbore #1 - No Surveys	6,264.51	6,157.27	3,045.98	2,779.46	11.429	CC
State 36-0714 (SI) - Wellbore #1 - No Surveys	6,300.00	6,209.03	3,046.52	2,777.80	11.337	ES
State 36-0714 (SI) - Wellbore #1 - No Surveys	6,650.00	6,476.30	3,112.18	2,831.64	11.093	SF
State 36-1014 (SI) - Wellbore #1 - No Surveys	6,196.74	6,087.64	3,911.05	3,647.48	14.839	CC
State 36-1014 (SI) - Wellbore #1 - No Surveys	6,200.00	6,109.18	3,911.05	3,646.61	14.790	ES
State 36-1014 (SI) - Wellbore #1 - No Surveys	6,600.00	6,438.51	4,004.78	3,725.83	14.356	SF
State 36-1114 (PR) - Wellbore #1 - No Surveys	6,226.09	6,105.23	4,859.34	4,595.00	18.383	CC
State 36-1114 (PR) - Wellbore #1 - No Surveys	6,250.00	6,128.34	4,859.63	4,594.28	18.314	ES
State 36-1114 (PR) - Wellbore #1 - No Surveys	6,700.00	6,507.84	4,971.38	4,689.42	17.631	SF
State 36-1214 (PR) - Wellbore #1 - No Surveys	6,279.39	6,171.47	6,014.83	5,747.92	22.535	CC
State 36-1214 (PR) - Wellbore #1 - No Surveys	6,300.00	6,209.03	6,015.00	5,746.51	22.403	ES
State 36-1214 (PR) - Wellbore #1 - No Surveys	6,800.00	6,559.35	6,122.69	5,838.66	21.556	SF
State 36-1414 (PR) - Wellbore #1 - No Surveys	6,190.20	6,072.24	5,769.23	5,506.29	21.941	CC
State 36-1414 (PR) - Wellbore #1 - No Surveys	6,250.00	6,130.34	5,771.37	5,505.89	21.739	ES
State 36-1414 (PR) - Wellbore #1 - No Surveys	6,700.00	6,505.84	5,919.61	5,637.69	20.998	SF
State 36-1514 (PR) - Wellbore #1 - No Surveys	6,160.77	6,043.34	4,379.31	4,117.57	16.732	CC
State 36-1514 (PR) - Wellbore #1 - No Surveys	6,200.00	6,081.82	4,380.37	4,116.95	16.629	ES
State 36-1514 (PR) - Wellbore #1 - No Surveys	6,550.00	6,407.00	4,481.23	4,203.62	16.142	SF
State 36-1614 (PR) - Wellbore #1 - No Surveys	6,136.72	6,062.63	4,557.37	4,294.90	17.363	CC
State 36-1614 (PR) - Wellbore #1 - No Surveys	6,150.00	6,075.73	4,557.51	4,294.46	17.326	ES
State 36-1614 (PR) - Wellbore #1 - No Surveys	6,500.00	6,403.01	4,654.11	4,376.76	16.780	SF
State 36-214 (SI) - Wellbore #1 - No Surveys	6,531.65	6,379.96	2,467.25	2,190.98	8.930	CC
State 36-214 (SI) - Wellbore #1 - No Surveys	6,550.00	6,406.00	2,467.35	2,189.97	8.895	ES
State 36-214 (SI) - Wellbore #1 - No Surveys	6,800.00	6,547.35	2,489.36	2,205.62	8.773	SF
State 36-314 (SI) - Wellbore #1 - No Surveys	6,641.74	6,448.92	3,741.93	3,462.58	13.395	CC

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	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 36-314 (SI) - Wellbore #1 - No Surveys	6,700.00	6,485.16	3,742.75	3,461.78	13.321	ES
State 36-314 (SI) - Wellbore #1 - No Surveys	6,950.00	6,589.54	3,766.55	3,480.77	13.180	SF
State 36-614 (PR) - Wellbore #1 - No Surveys	6,361.24	6,221.70	3,993.64	3,724.23	14.824	CC
State 36-614 (PR) - Wellbore #1 - No Surveys	6,400.00	6,256.45	3,994.11	3,723.18	14.743	ES
State 36-614 (PR) - Wellbore #1 - No Surveys	6,800.00	6,533.35	4,057.60	3,774.41	14.328	SF
State 36-814 (SI) - Wellbore #1 - No Surveys	6,189.44	6,103.50	1,754.58	1,490.39	6.641	CC
State 36-814 (SI) - Wellbore #1 - No Surveys	6,200.00	6,113.82	1,754.65	1,490.01	6.630	ES
State 36-814 (SI) - Wellbore #1 - No Surveys	6,400.00	6,301.45	1,781.94	1,509.07	6.530	SF
State 36-914 (PR) - Wellbore #1 - No Surveys	6,149.33	6,072.07	3,328.32	3,065.45	12.662	CC
State 36-914 (PR) - Wellbore #1 - No Surveys	6,200.00	6,121.82	3,330.17	3,065.12	12.564	ES
State 36-914 (PR) - Wellbore #1 - No Surveys	6,500.00	6,406.01	3,415.43	3,137.98	12.310	SF
State B14-36 (PA) - Wellbore #1 - No Surveys	6,229.68	6,117.71	6,145.15	5,880.31	23.203	CC
State B14-36 (PA) - Wellbore #1 - No Surveys	6,250.00	6,137.34	6,145.36	5,879.65	23.129	ES
State B14-36 (PA) - Wellbore #1 - No Surveys	6,750.00	6,528.90	6,276.00	5,993.07	22.182	SF
State B41-36 (SI) - Wellbore #1 - No Surveys	6,325.36	6,224.70	1,576.49	1,307.09	5.852	CC
State B41-36 (SI) - Wellbore #1 - No Surveys	6,400.00	6,307.55	1,578.62	1,305.64	5.783	ES
State B41-36 (SI) - Wellbore #1 - No Surveys	6,550.00	6,416.00	1,596.90	1,319.09	5.748	SF
State C36-01 (SI) - Wellbore #1 - No Surveys	6,547.81	6,414.34	928.49	650.80	3.344	CC
State C36-01 (SI) - Wellbore #1 - No Surveys	6,600.00	6,452.51	929.68	650.29	3.328	ES
State C36-01 (SI) - Wellbore #1 - No Surveys	6,650.00	6,486.30	933.23	652.35	3.322	SF
State C36-04 (PR) - Wellbore #1 - No Surveys	6,771.54	6,526.85	5,242.36	4,959.53	18.536	CC
State C36-04 (PR) - Wellbore #1 - No Surveys	6,800.00	6,540.35	5,242.53	4,959.09	18.496	ES
State C36-04 (PR) - Wellbore #1 - No Surveys	6,950.00	6,607.46	5,249.34	4,962.86	18.323	SF
State C36-13 (SI) - Wellbore #1 - No Surveys	6,223.84	6,127.04	6,856.83	6,591.63	25.855	CC
State C36-13 (SI) - Wellbore #1 - No Surveys	6,250.00	6,152.34	6,857.18	6,590.87	25.749	ES
State C36-13 (SI) - Wellbore #1 - No Surveys	6,800.00	6,568.35	7,019.20	6,734.57	24.661	SF
State C36-15 (PR) - Wellbore #1 - No Surveys	6,165.38	6,068.87	5,107.08	4,844.32	19.436	CC
State C36-15 (PR) - Wellbore #1 - No Surveys	6,200.00	6,102.82	5,107.89	4,843.64	19.330	ES
State C36-15 (PR) - Wellbore #1 - No Surveys	6,600.00	6,450.51	5,230.72	4,951.24	18.716	SF
State C36-32D (SI) - Wellbore #1 - As Drilled	6,352.50	6,465.05	6,136.52	6,086.01	121.487	CC, ES
State C36-32D (SI) - Wellbore #1 - As Drilled	6,900.00	6,817.59	6,236.44	6,183.34	117.453	SF
State C36-33D (SI) - Wellbore #1 - Original Drilling	954.99	913.00	6,521.72	6,516.61	1,275.838	CC
State C36-33D (SI) - Wellbore #1 - Original Drilling	1,000.00	913.00	6,521.88	6,516.60	1,236.815	ES
State C36-33D (SI) - Wellbore #1 - Original Drilling	6,900.00	6,687.86	6,860.25	6,813.63	147.178	SF
State C36-99HZ (PR) - Wellbore #1 - As Drilled	6,219.73	10,537.02	3,562.67	3,430.10	26.874	CC, ES
State C36-99HZ (PR) - Wellbore #1 - As Drilled	6,350.00	10,537.02	3,577.87	3,444.16	26.759	SF
State D01-30D (SI) - Wellbore #1 - Original Drilling	100.00	53.58	6,527.64	6,527.42	10,000.000	CC
State D01-30D (SI) - Wellbore #1 - Original Drilling	500.00	423.02	6,528.84	6,526.55	2,849.182	ES
State D01-30D (SI) - Wellbore #1 - Original Drilling	6,750.00	7,000.35	7,768.48	7,716.77	150.230	SF

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	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	12,349.89	6,558.00	5,225.53	5,055.69	30.766	CC, ES, SF
Sater #19E-203(PR) - Sater #19E-203 - Wellbore #1 - As	12,349.89	11,029.02	440.35	333.10	4.106	CC, ES, SF
Sater #19E-223(PR) - Sater #19E-223 - Wellbore #1 - As	12,349.89	10,910.02	334.58	255.31	4.221	CC, ES, SF
Sater #19E-323(PR) - Sater #19E-323 - Wellbore #1 - As	12,349.89	10,978.02	318.51	251.95	4.785	CC, ES, SF
Sater #19J-203(PR) - Sater #19J-203 - Wellbore #1 - As	12,349.89	11,073.02	996.17	866.31	7.671	CC, ES, SF
Sater #19J-323(PR) - Sater #19J-323 - Wellbore #1 - As	12,349.89	11,033.02	1,288.97	1,155.51	9.658	CC, ES, SF
Sater #19J-443(PR) - Sater #19J-443 - Wellbore #1 - As	12,349.89	11,159.02	606.78	483.21	4.910	CC, ES, SF
Sater #19M-243ST(PR) - Sater #19M-243OH - Wellbore	12,349.89	11,157.02	2,007.88	1,869.51	14.511	CC, ES, SF
Sater #19M-243ST(PR) - Sater #19M-243ST - Wellbore	12,349.89	10,809.02	2,020.72	1,881.92	14.559	CC, ES, SF
Sater #19M-443(PR) - Sater #19M-443 - Wellbore #1 - A	12,349.89	11,075.02	1,754.50	1,616.27	12.693	CC, ES, SF
Sater #19-NU(PR) - Sater #19-NU - No Surveys	12,349.89	6,556.00	4,197.56	4,029.34	24.954	CC, ES, SF
Sater #19-PU(SI) - Sater #19-PU - No Surveys	12,349.89	6,596.00	2,382.79	2,199.32	12.987	CC, ES, SF
SATER #24-19U(PR) - SATER #24-19U - No Surveys	12,349.89	6,616.00	1,607.33	1,421.48	8.649	CC, ES, SF
Sater USX CC #19-01(PR) - Sater USX CC #19-01 - No	12,349.89	6,568.00	5,967.39	5,792.03	34.028	CC, ES, SF
Sater USX CC #19-07(PR) - Sater USX CC #19-07 - No	12,349.89	6,570.00	4,187.04	4,013.13	24.076	CC, ES, SF
Sater USX CC #19-08(PR) - Sater USX CC #19-08 - No	12,349.89	6,594.00	5,109.56	4,929.40	28.361	CC, ES, SF
SATER USX CC #19-09(PR) - SATER USX CC #19-09 -	12,349.89	6,584.00	4,492.13	4,308.18	24.419	CC, ES, SF
Sater USX CC #19-10(PR) - Sater USX CC #19-10 - No	12,349.89	6,578.00	3,413.78	3,233.26	18.911	CC, ES, SF
SATER USX CC #19-15(PR) - SATER USX CC #19-15 -	12,349.89	6,619.00	2,910.64	2,724.31	15.621	CC, ES, SF
Sater USX CC #19-16(PR) - Sater USX CC #19-16 - No	12,349.89	6,603.00	4,193.60	4,007.27	22.507	CC, ES, SF
Sater USX CC #19-17(PR) - Sater USX CC #19-17 - No	12,349.89	6,567.00	5,098.70	4,923.78	29.149	CC, ES, SF
Sater USX CC #19-23(PR) - Sater USX CC #19-23 - No	12,349.89	6,590.00	3,687.02	3,502.14	19.943	CC, ES, SF
CC Section 20						
GUTTERSEN STATE CC #20-03(SI) - Wellbore #1 - No	12,349.89	6,641.00	8,106.09	7,998.40	75.277	CC, ES, SF
GUTTERSEN STATE CC #20-05(SI) - Wellbore #1 - Gyr	12,349.89	6,473.37	6,244.12	6,171.88	86.434	CC, ES, SF
GUTTERSEN STATE CC #20-06(SI) - Wellbore #1 - Gyr	12,349.89	6,684.01	7,428.15	7,353.28	99.215	CC, ES, SF
GUTTERSEN STATE CC #20-13(PR) - Wellbore #1 - Gy	12,349.89	6,457.68	5,329.90	5,253.40	69.667	CC, ES, SF
Guttersen State CC #20-14(SI) - Wellbore #1 - Gyro	12,349.89	6,600.00	6,838.41	6,761.24	88.616	CC, ES, SF
GUTTERSEN STATE CC #20-30D(SI) - Wellbore #1 - G	12,349.89	6,732.19	6,943.77	6,869.37	93.325	CC, ES, SF
GUTTERSEN STATE CC #20-31D(SI) - Wellbore #1 - G	12,349.89	6,578.96	6,057.03	5,986.04	85.326	CC, ES, SF
GUTTERSEN STATE CC #20-32D(PR) - Wellbore #1 - C	12,349.89	6,824.96	5,230.73	5,151.06	65.655	CC, ES, SF
GUTTERSEN STATE CC #20-33D(PR) - Wellbore #1 - C	12,349.89	6,574.02	4,892.95	4,812.08	60.502	CC, ES, SF
GUTTERSEN STATE CC #20-4(SI) - Wellbore #1 - Gyro	12,349.89	6,439.69	6,948.90	6,880.16	101.082	CC, ES, SF
Guttersen State CC 20-11(SI) - Wellbore #1 - Gyro	12,349.89	6,500.00	7,028.64	6,952.53	92.353	CC, ES, SF
Guttersen State CC 20-12(PR) - Wellbore #1 - Gyro	12,349.89	6,671.04	5,672.06	5,596.04	74.621	CC, ES, SF
Guttersen State CC20-30D - Wellbore #1 - Wellbore #1-	12,349.89	6,732.52	6,964.25	6,889.90	93.674	CC, ES, SF
STATE #11(SI) - Wellbore #1 - Gyro	12,349.89	6,649.53	6,183.39	6,106.17	80.073	CC, ES, SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	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	2,266.17	2,320.73	5,433.29	5,417.48	343.553	CC
GUTTERSEN #13-29U(PA) - Wellbore #1 - Gyro	2,300.00	2,356.62	5,433.44	5,417.38	338.336	ES
GUTTERSEN #13-29U(PA) - Wellbore #1 - Gyro	11,100.00	6,469.30	5,931.26	5,867.11	92.450	SF
GUTTERSEN #14-29U(PR) - Wellbore #1 - Gyro	0.00	0.00	4,960.26			
GUTTERSEN #14-29U(PR) - Wellbore #1 - Gyro	2,200.00	2,149.34	4,966.33	4,951.34	331.326	ES
GUTTERSEN #14-29U(PR) - Wellbore #1 - Gyro	8,800.00	8,800.00	5,657.40	5,596.72	93.235	SF
GUTTERSEN #23-29U(PR) - Wellbore #1 - Gyro	2,218.33	2,215.33	6,627.48	6,612.20	433.622	CC, ES
GUTTERSEN #23-29U(PR) - Wellbore #1 - Gyro	12,100.00	6,601.93	7,474.64	7,404.52	106.596	SF
GUTTERSEN #24-29U(PR) - Wellbore #1 - Gyro	2,218.41	2,222.20	6,232.46	6,217.15	407.147	CC, ES
GUTTERSEN #24-29U(PR) - Wellbore #1 - Gyro	11,100.00	6,747.88	7,628.72	7,564.93	119.578	SF
GUTTERSEN #29-BU(PR) - Wellbore #1 - Gyro	2,270.81	2,359.70	5,760.81	5,744.83	360.635	CC
GUTTERSEN #29-BU(PR) - Wellbore #1 - Gyro	2,300.00	2,389.60	5,760.93	5,744.75	356.026	ES
GUTTERSEN #29-BU(PR) - Wellbore #1 - Gyro	11,100.00	6,436.85	6,735.90	6,672.61	106.418	SF
GUTTERSEN #29PU(PR) - Wellbore #1 - Gyro	100.00	53.10	6,959.51	6,959.29	10,000.000	CC
GUTTERSEN #29PU(PR) - Wellbore #1 - Gyro	900.00	821.75	6,963.11	6,957.41	1,222.781	ES
GUTTERSEN #29PU(PR) - Wellbore #1 - Gyro	12,349.89	6,700.00	8,409.76	8,338.86	118.607	SF
GUTTERSEN #33-29U(PR) - Wellbore #1 - Gyro	2,264.51	2,382.26	7,830.15	7,814.10	487.895	CC
GUTTERSEN #33-29U(PR) - Wellbore #1 - Gyro	2,300.00	2,419.24	7,830.33	7,814.03	480.299	ES
GUTTERSEN #33-29U(PR) - Wellbore #1 - Gyro	12,349.89	6,676.75	8,742.53	8,669.64	119.930	SF
GUTTERSEN #43-29U(PR) - Wellbore #1 - Gyro	0.00	0.00	9,020.76			
GUTTERSEN #43-29U(PR) - Wellbore #1 - Gyro	2,200.32	2,188.32	9,030.87	9,015.74	596.808	ES
GUTTERSEN #43-29U(PR) - Wellbore #1 - Gyro	12,349.89	6,438.20	9,969.81	9,897.11	137.139	SF
GUTTERSEN #44-29U(PR) - Wellbore #1 - Gyro	1,747.97	1,735.03	8,811.40	8,799.48	739.155	CC
GUTTERSEN #44-29U(PR) - Wellbore #1 - Gyro	2,100.00	2,024.52	8,812.78	8,798.59	620.922	ES
GUTTERSEN #44-29U(PR) - Wellbore #1 - Gyro	10,900.00	6,981.19	9,978.39	9,912.75	152.029	SF
KILLEYBEGS #1(PR) - Wellbore #1 - No Surveys	2,200.00	2,171.00	7,895.15	7,868.55	296.821	CC, ES
KILLEYBEGS #1(PR) - Wellbore #1 - No Surveys	11,700.00	6,660.00	9,260.19	9,157.01	89.744	SF

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	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 #	11,643.04	6,607.00	4,360.41	4,179.25	24.069	CC, ES
JIGGER STATE CC #30-01(PR) - JIGGER STATE CC #	12,200.00	6,607.00	4,395.84	4,211.30	23.820	SF
SPIKE ST GWS #CC 30-03(PA) - SPIKE ST GWS #CC	11,517.66	6,643.00	1,504.45	1,323.47	8.313	CC, ES
SPIKE ST GWS #CC 30-03(PA) - SPIKE ST GWS #CC	11,600.00	6,643.00	1,506.70	1,325.33	8.307	SF
SPIKE ST GWS #CC 30-04(PA) - SPIKE ST GWS #CC	11,615.82	6,634.88	282.34	219.57	4.498	CC, ES, SF
SPIKE ST GWS #CC 30-05(PA) - SPIKE ST GWS #CC	10,186.94	6,651.00	234.56	62.55	1.364	Level 3, CC, ES, SF
SPIKE ST GWS #CC 30-06(SI) - SPIKE ST GWS #CC 3	10,201.44	6,640.00	1,534.08	1,362.20	8.925	CC, ES
SPIKE ST GWS #CC 30-06(SI) - SPIKE ST GWS #CC 3	10,300.00	6,640.00	1,537.24	1,364.92	8.921	SF
SPIKE ST GWS #CC 30-08(PR) - SPIKE ST GWS #CC	10,207.26	6,631.00	4,168.25	3,996.51	24.271	CC, ES
SPIKE ST GWS #CC 30-08(PR) - SPIKE ST GWS #CC	10,700.00	6,631.00	4,197.27	4,022.73	24.047	SF
SPIKE ST GWS #CC 30-09(SI) - SPIKE ST GWS #CC 3	8,862.35	6,661.00	4,135.76	3,971.46	25.172	CC
SPIKE ST GWS #CC 30-09(SI) - SPIKE ST GWS #CC 3	8,900.00	6,661.00	4,135.93	3,971.45	25.145	ES
SPIKE ST GWS #CC 30-09(SI) - SPIKE ST GWS #CC 3	9,400.00	6,661.00	4,170.56	4,003.66	24.987	SF
SPIKE ST GWS #CC 30-10(SI) - SPIKE ST GWS #CC 3	8,860.13	6,684.00	2,822.52	2,657.76	17.132	CC, ES
SPIKE ST GWS #CC 30-10(SI) - SPIKE ST GWS #CC 3	9,100.00	6,684.00	2,832.69	2,666.85	17.081	SF
SPIKE ST GWS #CC 30-12(PR) - SPIKE ST GWS #CC	8,862.21	6,675.00	115.96	-48.62	0.705	Level 1, CC, ES, SF
SPIKE ST GWS #CC 30-14(PR) - SPIKE ST GWS #CC	2,200.00	2,174.00	1,507.77	1,456.63	29.487	CC
SPIKE ST GWS #CC 30-14(PR) - SPIKE ST GWS #CC	7,555.21	6,663.00	1,559.57	1,400.75	9.820	ES
SPIKE ST GWS #CC 30-14(PR) - SPIKE ST GWS #CC	7,600.00	6,663.00	1,560.21	1,401.28	9.817	SF
SPIKE ST GWS #CC 30-15(SI) - SPIKE ST GWS #CC 3	2,200.00	2,189.00	2,432.84	2,381.41	47.301	CC
SPIKE ST GWS #CC 30-15(SI) - SPIKE ST GWS #CC 3	2,300.00	2,288.98	2,434.13	2,380.35	45.257	ES
SPIKE ST GWS #CC 30-15(SI) - SPIKE ST GWS #CC 3	7,700.00	6,678.00	2,776.28	2,616.77	17.404	SF
SPIKE ST GWS #CC 30-16(SI) - SPIKE ST GWS #CC 3	2,200.00	2,188.00	3,643.65	3,592.23	70.869	CC
SPIKE ST GWS #CC 30-16(SI) - SPIKE ST GWS #CC 3	2,300.00	2,287.98	3,645.13	3,591.37	67.798	ES
SPIKE ST GWS #CC 30-16(SI) - SPIKE ST GWS #CC 3	7,900.00	6,677.00	4,120.74	3,960.61	25.734	SF
SPIKE ST GWS CC #30-07(SI) - SPIKE ST GWS CC #3	10,197.98	6,656.00	2,951.03	2,778.86	17.140	CC
SPIKE ST GWS CC #30-07(SI) - SPIKE ST GWS CC #3	10,200.00	6,656.00	2,951.03	2,778.84	17.139	ES
SPIKE ST GWS CC #30-07(SI) - SPIKE ST GWS CC #3	10,500.00	6,656.00	2,966.44	2,792.65	17.069	SF
Spike State #CC30-19(SI) - Spike State #CC30-19 - No	10,824.44	6,632.00	989.30	813.40	5.624	CC, ES, SF
Spike State #CC30-24(PR) - Spike State #CC30-24 - We	1,077.50	1,066.52	3,403.28	3,397.86	627.432	CC
Spike State #CC30-24(PR) - Spike State #CC30-24 - We	2,200.00	2,181.59	3,407.63	3,395.82	288.664	ES
Spike State #CC30-24(PR) - Spike State #CC30-24 - We	9,300.00	6,579.67	3,701.35	3,657.54	84.481	SF
Spike State #CC30-24(SI) - Spike State #CC30-24 - No	8,294.67	6,679.00	2,101.62	1,939.73	12.981	CC
Spike State #CC30-24(SI) - Spike State #CC30-24 - No	8,300.00	6,679.00	2,101.63	1,939.71	12.980	ES
Spike State #CC30-24(SI) - Spike State #CC30-24 - No	8,400.00	6,679.00	2,104.26	1,941.97	12.966	SF
SPIKE STATE CC #30-11J(PA) - SPIKE STATE CC #30	8,524.34	6,668.00	1,221.70	1,058.96	7.507	CC, ES, SF
SPIKE STATE CC #30-13(PR) - SPIKE STATE CC #30-	7,532.37	6,662.00	239.52	80.79	1.509	CC, ES, SF
Spike State CC #30-18(SI) - Spike State CC #30-18 - No	10,835.05	6,640.00	2,220.99	2,044.87	12.610	CC, ES
Spike State CC #30-18(SI) - Spike State CC #30-18 - No	11,000.00	6,640.00	2,227.11	2,050.11	12.583	SF
SPIKE STATE CC #30-20(PR) - SPIKE STATE CC #30-	9,441.48	6,651.00	1,065.96	898.60	6.369	CC, ES, SF
SPIKE STATE CC #30-21(PR) - SPIKE STATE CC #30-	9,194.37	6,663.00	1,911.23	1,745.07	11.502	CC
SPIKE STATE CC #30-21(PR) - SPIKE STATE CC #30-	9,200.00	6,663.00	1,911.23	1,745.05	11.500	ES
SPIKE STATE CC #30-21(PR) - SPIKE STATE CC #30-	9,300.00	6,663.00	1,914.14	1,747.51	11.487	SF
SPIKE STATE CC #30-22(SI) - SPIKE STATE CC #30-2	9,584.72	6,518.49	3,624.31	3,576.92	76.469	CC
SPIKE STATE CC #30-22(SI) - SPIKE STATE CC #30-2	9,600.00	6,519.09	3,624.35	3,576.87	76.334	ES
SPIKE STATE CC #30-22(SI) - SPIKE STATE CC #30-2	12,349.89	12,349.89	4,556.35	4,488.12	66.776	SF
SPIKE STATE CC #30-1J(PR) - SPIKE STATE CC #30-I	10,939.14	6,591.08	3,534.33	3,478.91	63.772	CC, ES
SPIKE STATE CC #30-1J(PR) - SPIKE STATE CC #30-I	11,800.00	6,622.66	3,637.54	3,577.59	60.681	SF
SPIKE STATE GWS CC #30-02(PR) - SPIKE STATE GV	11,444.99	6,628.00	2,922.90	2,742.74	16.224	CC, ES
SPIKE STATE GWS CC #30-02(PR) - SPIKE STATE GV	11,700.00	6,628.00	2,934.01	2,752.39	16.155	SF

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	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	4,850.07	4,787.94	179.53	66.55	1.589	CC
BOOTH #11-31U(SI) - BOOTH #11-31U - No Surveys	5,000.00	4,936.01	181.07	64.56	1.554	ES
BOOTH #11-31U(SI) - BOOTH #11-31U - No Surveys	5,100.00	5,034.77	183.77	64.91	1.546	SF
BOOTH #21-31U(SI) - BOOTH #21-31U - No Surveys	2,200.00	2,197.00	889.53	837.94	17.241	CC
BOOTH #21-31U(SI) - BOOTH #21-31U - No Surveys	2,300.00	2,296.98	891.27	837.32	16.522	ES
BOOTH #21-31U(SI) - BOOTH #21-31U - No Surveys	6,400.00	6,338.45	1,519.66	1,370.21	10.169	SF
BOOTH #31-31(SI) - BOOTH #31-31 - No Surveys	2,200.00	2,182.00	2,203.70	2,152.41	42.963	CC
BOOTH #31-31(SI) - BOOTH #31-31 - No Surveys	2,300.00	2,281.98	2,205.42	2,151.78	41.112	ES
BOOTH #31-31(SI) - BOOTH #31-31 - No Surveys	6,750.00	6,575.90	2,896.54	2,741.32	18.662	SF
BOOTH #31-AU(SI) - BOOTH #31-AU - No Surveys	2,200.00	2,177.00	818.82	767.63	15.995	CC
BOOTH #31-AU(SI) - BOOTH #31-AU - No Surveys	2,300.00	2,276.98	819.60	766.06	15.307	ES
BOOTH #31-AU(SI) - BOOTH #31-AU - No Surveys	6,200.00	6,130.82	1,209.33	1,064.54	8.353	SF
BOOTH #41-31(SI) - BOOTH #41-31 - No Surveys	2,200.00	2,188.00	3,417.87	3,366.46	66.478	CC
BOOTH #41-31(SI) - BOOTH #41-31 - No Surveys	2,300.00	2,287.98	3,419.59	3,365.83	63.603	ES
BOOTH #41-31(SI) - BOOTH #41-31 - No Surveys	6,900.00	6,644.79	4,136.77	3,979.83	26.360	SF
Booth #CC31-17D(SI) - Booth #CC31-17D - Wellbore #1	100.00	80.79	2,243.60	2,243.37	9,639.032	CC
Booth #CC31-17D(SI) - Booth #CC31-17D - Wellbore #1	200.00	167.89	2,243.84	2,243.06	2,873.261	ES
Booth #CC31-17D(SI) - Booth #CC31-17D - Wellbore #1	6,750.00	6,673.30	3,724.43	3,684.05	92.234	SF
Booth CC30-715 - Booth CC30-715 - Plan #1	2,111.24	2,125.24	2,680.91	2,666.19	182.120	CC
Booth CC30-715 - Booth CC30-715 - Plan #1	2,200.00	2,200.00	2,680.94	2,665.64	175.150	ES
Booth CC30-715 - Booth CC30-715 - Plan #1	12,349.89	12,415.92	4,501.50	4,392.86	41.436	SF
Booth CC30-725 - Booth CC30-725 - Plan #1	2,111.24	2,125.24	2,658.30	2,643.58	180.584	CC
Booth CC30-725 - Booth CC30-725 - Plan #1	2,200.00	2,200.00	2,658.34	2,643.03	173.673	ES
Booth CC30-725 - Booth CC30-725 - Plan #1	12,349.89	12,540.33	3,858.13	3,749.32	35.459	SF
Booth CC30-734 - Booth CC30-734 - Plan #1	2,200.00	2,214.00	2,635.98	2,620.62	171.648	CC, ES
Booth CC30-734 - Booth CC30-734 - Plan #1	12,349.89	12,301.58	3,215.04	3,107.14	29.797	SF
Booth CC30-745 - Booth CC30-745 - Plan #1	5,874.82	6,291.06	2,540.10	2,496.89	58.782	CC
Booth CC30-745 - Booth CC30-745 - Plan #1	12,349.89	12,312.29	2,572.00	2,463.56	23.719	ES, SF
Booth CC30-755 - Booth CC30-755 - Plan #1	2,200.00	2,205.00	66.13	50.81	4.315	CC, ES, SF
Booth CC30-764 - Booth CC30-764 - Plan #1	2,200.00	2,203.00	43.53	28.21	2.842	CC, ES, SF
Booth CC30-774 - Booth CC30-774 - Plan #1	2,200.00	2,202.00	20.93	5.61	1.367	Level 3, CC, ES, SF
Sadie CC31-14 - Wellbore #1 - Wellbore #1 - As Drilled	1,813.53	1,866.58	4,323.99	4,311.40	343.533	CC
Sadie CC31-14 - Wellbore #1 - Wellbore #1 - As Drilled	2,200.00	2,233.63	4,326.42	4,311.17	283.677	ES
Sadie CC31-14 - Wellbore #1 - Wellbore #1 - As Drilled	6,450.00	6,259.79	4,666.52	4,621.81	104.377	SF
CC Section 32						
Guttersen State CC32-13 - Wellbore #1 - Wellbore #1 - A	1,941.56	1,970.60	6,255.86	6,242.44	466.456	CC
Guttersen State CC32-13 - Wellbore #1 - Wellbore #1 - A	2,100.00	2,100.81	6,256.32	6,241.89	433.476	ES
Guttersen State CC32-13 - Wellbore #1 - Wellbore #1 - A	6,600.00	6,491.87	6,925.24	6,879.33	150.865	SF
Guttersen State CC32-14 - Wellbore #1 - Wellbore #1 - A	2,274.74	2,478.28	7,255.87	7,239.50	443.351	CC
Guttersen State CC32-14 - Wellbore #1 - Wellbore #1 - A	2,300.00	2,507.00	7,255.96	7,239.41	438.301	ES
Guttersen State CC32-14 - Wellbore #1 - Wellbore #1 - A	9,000.00	9,000.00	9,473.06	9,414.65	162.171	SF

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

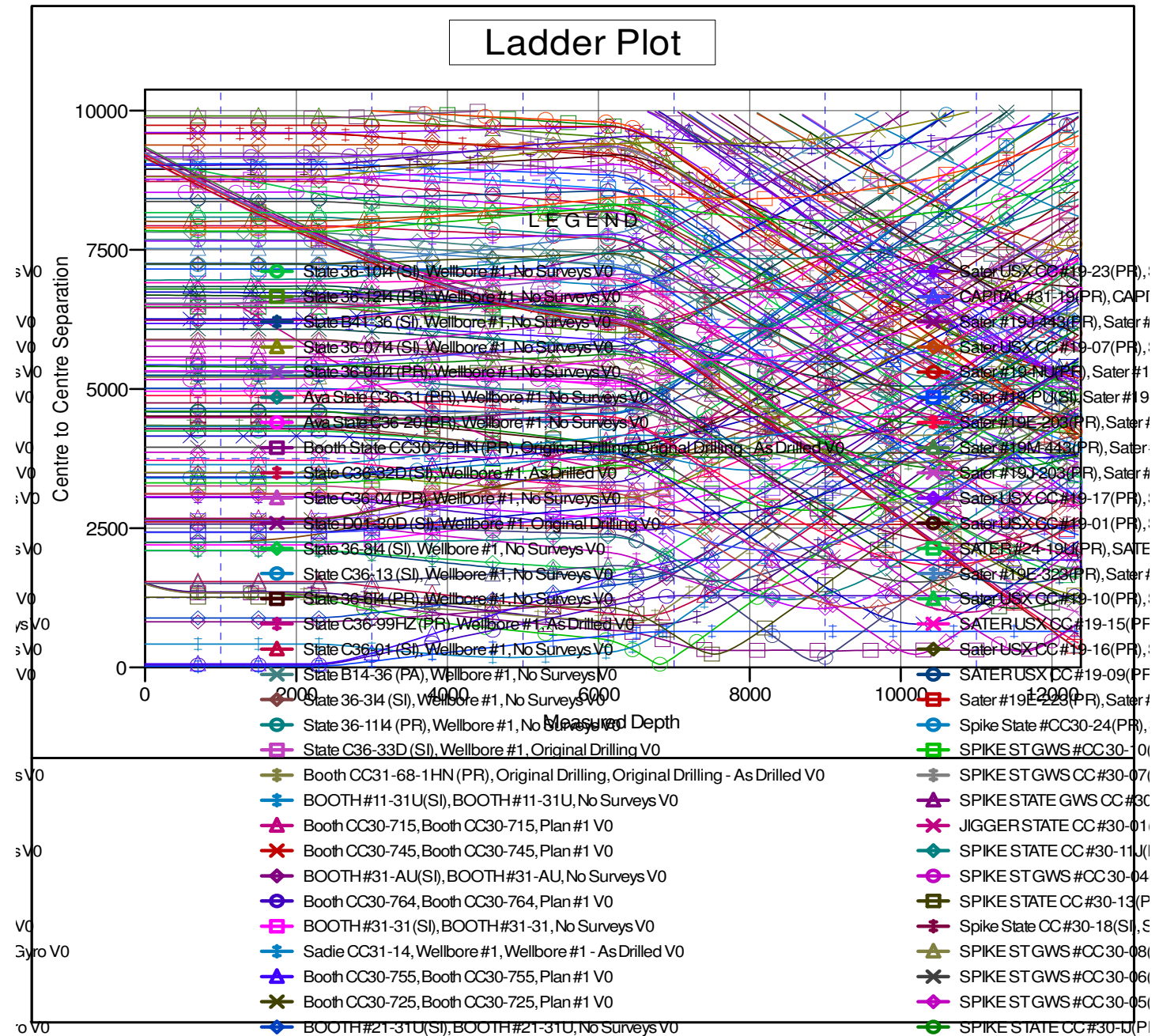
Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4803.00ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.5000000

Coordinates are relative to: Booth CC30-784
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.66°



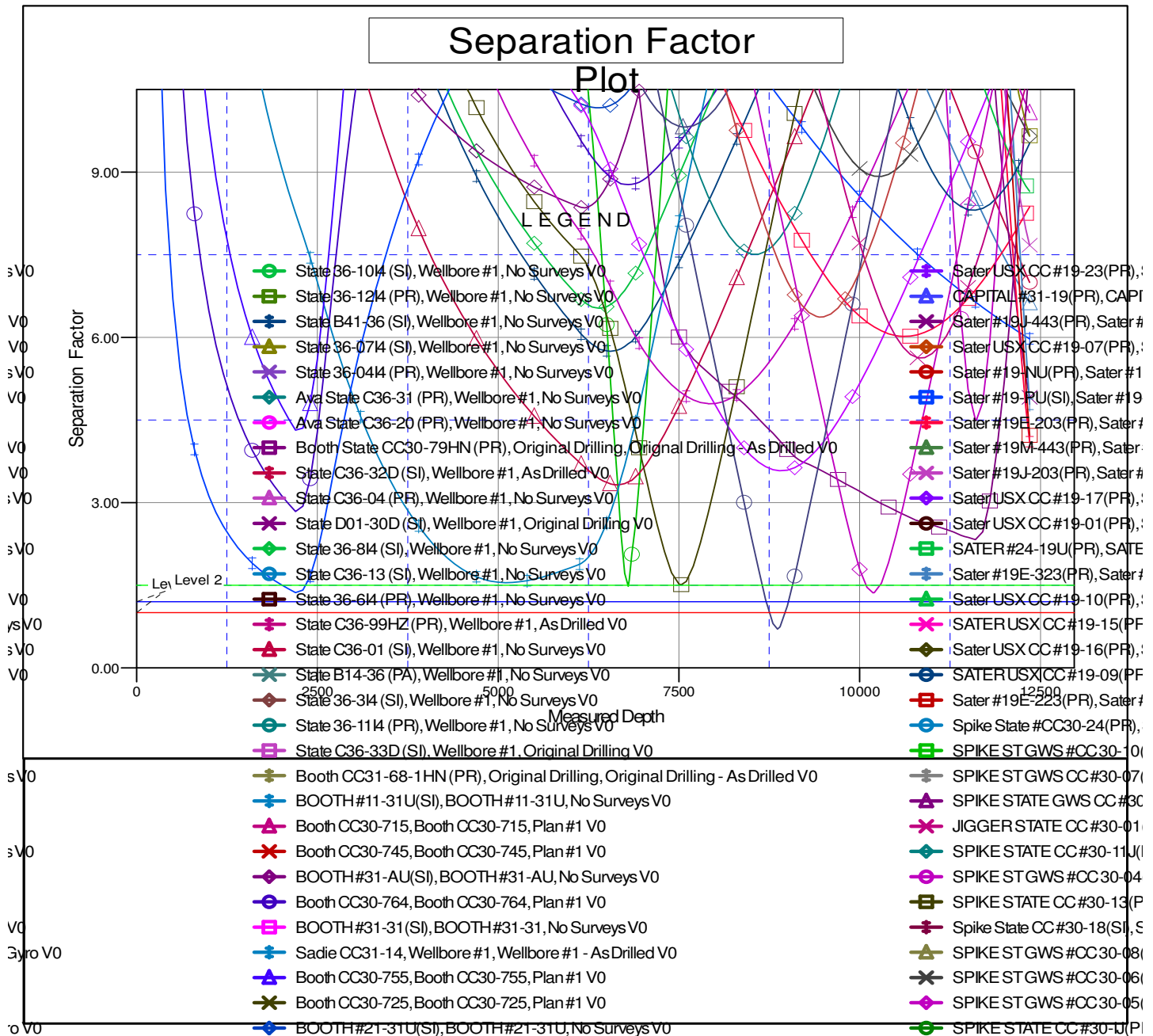
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Booth CC30-784
Project:	Mustang	TVD Reference:	Well @ 4803.00ft
Reference Site:	CC Section 31	MD Reference:	Well @ 4803.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Booth CC30-784	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Booth CC30-784	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4803.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Booth CC30-784
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