

Project: Mustang
Site: DD Section 30
Well: Guttersen State DD30-766
Wellbore: Guttersen State DD30-766
Design: Plan #2

Northern Region - DJ Basin

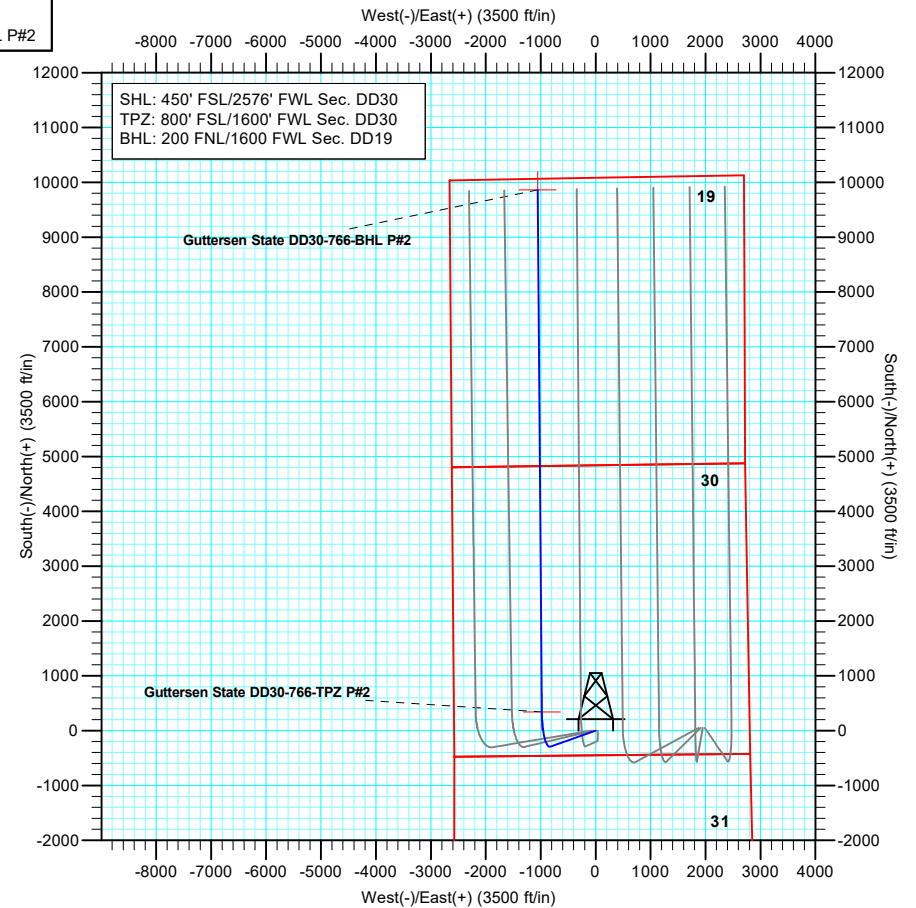
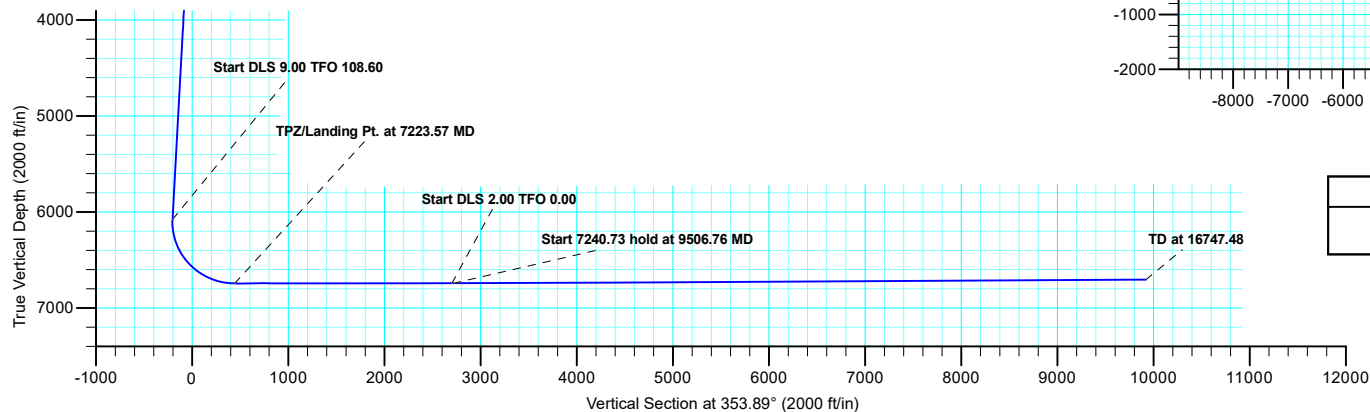
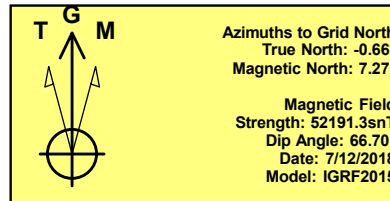
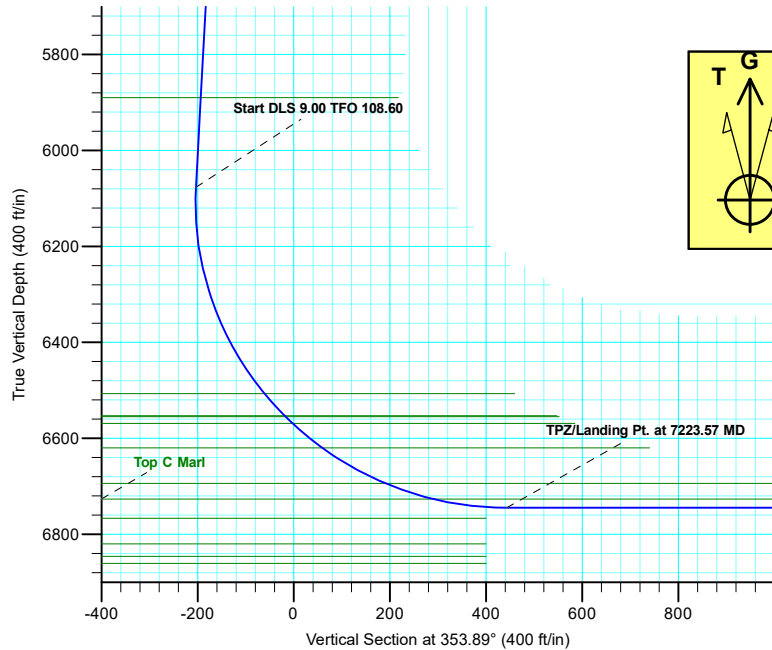
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

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	2100.00	0.00	0.00	2100.00	0.00	0.00	0.00	0.00	0.00	
3	2538.00	13.14	250.48	2534.17	-16.71	-47.13	3.00	250.48	-11.60	
4	6176.27	13.14	250.48	6077.18	-293.11	-826.67	0.00	0.00	-203.45	
5	7223.57	90.00	359.54	6745.00	340.54	-979.13	9.00	108.60	442.83	Guttersen State DD30-766-TPZ P#2
6	9491.76	90.00	359.54	6745.00	2608.65	-997.42	0.00	0.00	2700.00	
7	9506.76	90.30	359.54	6744.96	2623.65	-997.54	2.00	0.00	2714.93	
8	16747.48	90.30	359.54	6707.05	9864.05	-1055.93	0.00	0.00	9920.40	Guttersen State DD30-766-BHL P#2

WELL DETAILS: Guttersen State DD30-766

+N/-S	+E/-W	Northing	Ground Level: Easting	4793.00 Latitude	Longitude	Slot
0.00	0.00	1313834.62	3284635.70	40.1903836	-104.4811345	



Plan: Plan #2 (Guttersen State DD30-766/Guttersen State DD30-766)

Created by: Shelly C. Peterkin Date: 9:02, August 12 2019

Northern Region - DJ Basin

Mustang

DD Section 30

Guttersen State DD30-766

Guttersen State DD30-766

Plan: Plan #2

Standard Planning Report

12 August, 2019

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen State DD30-766
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4823.00ft
Project:	Mustang	MD Reference:	KB @ 4823.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-766		
Design:	Plan #2		

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	DD Section 30				
Site Position:		Northing:	1,316,013.13 usft	Latitude:	40.1963600
From:	Lat/Long	Easting:	3,284,747.15 usft	Longitude:	-104.4806460
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.66 °

Well	Guttersen State DD30-766					
Well Position	+N/-S	-2,178.52 ft	Northing:	1,313,834.62 usft	Latitude:	40.1903836
	+E/-W	-111.45 ft	Easting:	3,284,635.70 usft	Longitude:	-104.4811345
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,793.00 ft

Wellbore	Guttersen State DD30-766				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/12/2018	7.93	66.70	52,191.27780060

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	353.89

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	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,538.00	13.14	250.48	2,534.17	-16.71	-47.13	3.00	3.00	0.00	250.48	
6,176.27	13.14	250.48	6,077.18	-293.11	-826.67	0.00	0.00	0.00	0.00	
7,223.57	90.00	359.54	6,745.00	340.54	-979.13	9.00	7.34	10.41	108.60	Guttersen State DD30
9,491.76	90.00	359.54	6,745.00	2,608.65	-997.42	0.00	0.00	0.00	0.00	
9,506.76	90.30	359.54	6,744.96	2,623.65	-997.54	2.00	2.00	0.00	0.00	
16,747.49	90.30	359.54	6,707.05	9,864.05	-1,055.93	0.00	0.00	0.00	0.00	Guttersen State DD30

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Gutttersen State DD30-766
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4823.00ft
Project:	Mustang	MD Reference:	KB @ 4823.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Gutttersen State DD30-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Gutttersen State DD30-766		
Design:	Plan #2		

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
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
612.00	0.00	0.00	612.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
686.00	0.00	0.00	686.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
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
1,623.00	0.00	0.00	1,623.00	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
Start Build 3.00									
2,200.00	3.00	250.48	2,199.95	-0.87	-2.47	-0.61	3.00	3.00	0.00
2,300.00	6.00	250.48	2,299.63	-3.50	-9.86	-2.43	3.00	3.00	0.00
2,400.00	9.00	250.48	2,398.77	-7.86	-22.16	-5.45	3.00	3.00	0.00
2,500.00	12.00	250.48	2,497.08	-13.95	-39.34	-9.68	3.00	3.00	0.00
2,538.00	13.14	250.48	2,534.17	-16.71	-47.13	-11.60	3.00	3.00	0.00
Start 3638.27 hold at 2538.00 MD									
2,600.00	13.14	250.48	2,594.55	-21.42	-60.41	-14.87	0.00	0.00	0.00
2,700.00	13.14	250.48	2,691.93	-29.02	-81.84	-20.14	0.00	0.00	0.00
2,800.00	13.14	250.48	2,789.31	-36.61	-103.27	-25.42	0.00	0.00	0.00
2,900.00	13.14	250.48	2,886.69	-44.21	-124.69	-30.69	0.00	0.00	0.00
3,000.00	13.14	250.48	2,984.07	-51.81	-146.12	-35.96	0.00	0.00	0.00
3,100.00	13.14	250.48	3,081.46	-59.41	-167.54	-41.23	0.00	0.00	0.00
3,200.00	13.14	250.48	3,178.84	-67.00	-188.97	-46.51	0.00	0.00	0.00
3,300.00	13.14	250.48	3,276.22	-74.60	-210.40	-51.78	0.00	0.00	0.00
3,400.00	13.14	250.48	3,373.60	-82.20	-231.82	-57.05	0.00	0.00	0.00
3,500.00	13.14	250.48	3,470.98	-89.79	-253.25	-62.33	0.00	0.00	0.00
3,600.00	13.14	250.48	3,568.36	-97.39	-274.68	-67.60	0.00	0.00	0.00
3,647.89	13.14	250.48	3,615.00	-101.03	-284.94	-70.13	0.00	0.00	0.00
Parkman									
3,700.00	13.14	250.48	3,665.75	-104.99	-296.10	-72.87	0.00	0.00	0.00
3,800.00	13.14	250.48	3,763.13	-112.58	-317.53	-78.15	0.00	0.00	0.00
3,900.00	13.14	250.48	3,860.51	-120.18	-338.95	-83.42	0.00	0.00	0.00
4,000.00	13.14	250.48	3,957.89	-127.78	-360.38	-88.69	0.00	0.00	0.00
4,081.24	13.14	250.48	4,037.00	-133.95	-377.79	-92.98	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4823.00ft
Project:	Mustang	MD Reference:	KB @ 4823.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersten State DD30-766		
Design:	Plan #2		

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)
Sussex									
4,100.00	13.14	250.48	4,055.27	-135.38	-381.81	-93.97	0.00	0.00	0.00
4,200.00	13.14	250.48	4,152.66	-142.97	-403.23	-99.24	0.00	0.00	0.00
4,271.21	13.14	250.48	4,222.00	-148.38	-418.49	-103.00	0.00	0.00	0.00
Shannon									
4,300.00	13.14	250.48	4,250.04	-150.57	-424.66	-104.51	0.00	0.00	0.00
4,400.00	13.14	250.48	4,347.42	-158.17	-446.08	-109.79	0.00	0.00	0.00
4,500.00	13.14	250.48	4,444.80	-165.76	-467.51	-115.06	0.00	0.00	0.00
4,600.00	13.14	250.48	4,542.18	-173.36	-488.94	-120.33	0.00	0.00	0.00
4,700.00	13.14	250.48	4,639.56	-180.96	-510.36	-125.61	0.00	0.00	0.00
4,800.00	13.14	250.48	4,736.95	-188.55	-531.79	-130.88	0.00	0.00	0.00
4,900.00	13.14	250.48	4,834.33	-196.15	-553.22	-136.15	0.00	0.00	0.00
5,000.00	13.14	250.48	4,931.71	-203.75	-574.64	-141.43	0.00	0.00	0.00
5,100.00	13.14	250.48	5,029.09	-211.35	-596.07	-146.70	0.00	0.00	0.00
5,200.00	13.14	250.48	5,126.47	-218.94	-617.49	-151.97	0.00	0.00	0.00
5,300.00	13.14	250.48	5,223.85	-226.54	-638.92	-157.25	0.00	0.00	0.00
5,400.00	13.14	250.48	5,321.24	-234.14	-660.35	-162.52	0.00	0.00	0.00
5,500.00	13.14	250.48	5,418.62	-241.73	-681.77	-167.79	0.00	0.00	0.00
5,600.00	13.14	250.48	5,516.00	-249.33	-703.20	-173.07	0.00	0.00	0.00
5,700.00	13.14	250.48	5,613.38	-256.93	-724.62	-178.34	0.00	0.00	0.00
5,800.00	13.14	250.48	5,710.76	-264.52	-746.05	-183.61	0.00	0.00	0.00
5,900.00	13.14	250.48	5,808.15	-272.12	-767.48	-188.89	0.00	0.00	0.00
5,984.06	13.14	250.48	5,890.00	-278.51	-785.49	-193.32	0.00	0.00	0.00
Teepee Buttes									
6,000.00	13.14	250.48	5,905.53	-279.72	-788.90	-194.16	0.00	0.00	0.00
6,100.00	13.14	250.48	6,002.91	-287.32	-810.33	-199.43	0.00	0.00	0.00
6,176.27	13.14	250.48	6,077.18	-293.11	-826.67	-203.45	0.00	0.00	0.00
Start DLS 9.00 TFO 108.60									
6,200.00	12.62	259.78	6,100.32	-294.47	-831.76	-204.27	9.00	-2.19	39.21
6,250.00	12.66	280.45	6,149.13	-294.45	-842.54	-203.09	9.00	0.09	41.33
6,300.00	14.19	298.78	6,197.78	-290.50	-853.30	-198.02	9.00	3.05	36.66
6,350.00	16.80	312.58	6,245.98	-282.66	-864.00	-189.09	9.00	5.22	27.61
6,400.00	20.07	322.40	6,293.42	-270.96	-874.56	-176.33	9.00	6.55	19.62
6,450.00	23.74	329.42	6,339.81	-255.49	-884.92	-159.85	9.00	7.33	14.06
6,500.00	27.64	334.62	6,384.86	-236.34	-895.02	-139.73	9.00	7.80	10.39
6,550.00	31.69	338.60	6,428.31	-213.62	-904.79	-116.11	9.00	8.10	7.96
6,600.00	35.83	341.75	6,469.87	-187.49	-914.17	-89.12	9.00	8.29	6.30
6,647.01	39.79	344.18	6,507.00	-159.93	-922.58	-60.82	9.00	8.42	5.17
Sharon Springs									
6,650.00	40.05	344.32	6,509.30	-158.08	-923.11	-58.93	9.00	8.48	4.71
6,700.00	44.31	346.47	6,546.34	-125.60	-931.54	-25.74	9.00	8.52	4.31
6,709.37	45.11	346.84	6,553.00	-119.19	-933.06	-19.20	9.00	8.57	3.92
Top A Chalk									
6,712.21	45.35	346.95	6,555.00	-117.23	-933.52	-17.20	9.00	8.58	3.85
Top A Marl									
6,732.45	47.09	347.70	6,569.00	-102.97	-936.72	-2.68	9.00	8.59	3.72
Top B Chalk									
6,750.00	48.60	348.32	6,580.78	-90.24	-939.43	10.27	9.00	8.61	3.53
6,800.00	52.93	349.94	6,612.40	-52.21	-946.71	48.85	9.00	8.64	3.24
6,812.77	54.03	350.32	6,620.00	-42.10	-948.47	59.09	9.00	8.67	3.00
Top B Marl									
6,850.00	57.27	351.38	6,641.00	-11.76	-953.35	89.78	9.00	8.69	2.85
6,900.00	61.63	352.69	6,666.41	30.87	-959.30	132.80	9.00	8.71	2.62

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen State DD30-766
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4823.00ft
Project:	Mustang	MD Reference:	KB @ 4823.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-766		
Design:	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,950.00	65.99	353.90	6,688.48	75.42	-964.52	177.66	9.00	8.74	2.41
6,963.91	67.21	354.22	6,694.00	88.12	-965.85	190.42	9.00	8.75	2.30
Top C Chalk									
7,000.00	70.37	355.02	6,707.06	121.61	-969.00	224.06	9.00	8.76	2.23
7,050.00	74.75	356.09	6,722.04	169.16	-972.69	271.73	9.00	8.77	2.13
7,070.00	76.51	356.50	6,727.00	188.50	-973.94	291.09	9.00	8.77	2.07
Top C Marl									
7,100.00	79.14	357.11	6,733.33	217.77	-975.57	320.37	9.00	8.78	2.03
7,150.00	83.53	358.11	6,740.85	267.14	-977.63	369.68	9.00	8.78	1.99
7,200.00	87.93	359.08	6,744.57	316.98	-978.85	419.36	9.00	8.79	1.95
7,223.57	90.00	359.54	6,745.00	340.54	-979.13	442.83	9.00	8.79	1.94
TPZ/Landing Pt. at 7223.57 MD									
7,300.00	90.00	359.54	6,745.00	416.97	-979.75	518.88	0.00	0.00	0.00
7,400.00	90.00	359.54	6,745.00	516.96	-980.56	618.40	0.00	0.00	0.00
7,500.00	90.00	359.54	6,745.00	616.96	-981.36	717.91	0.00	0.00	0.00
7,600.00	90.00	359.54	6,745.00	716.96	-982.17	817.43	0.00	0.00	0.00
7,700.00	90.00	359.54	6,745.00	816.95	-982.98	916.94	0.00	0.00	0.00
7,800.00	90.00	359.54	6,745.00	916.95	-983.78	1,016.46	0.00	0.00	0.00
7,900.00	90.00	359.54	6,745.00	1,016.95	-984.59	1,115.97	0.00	0.00	0.00
8,000.00	90.00	359.54	6,745.00	1,116.94	-985.40	1,215.48	0.00	0.00	0.00
8,100.00	90.00	359.54	6,745.00	1,216.94	-986.20	1,315.00	0.00	0.00	0.00
8,200.00	90.00	359.54	6,745.00	1,316.94	-987.01	1,414.51	0.00	0.00	0.00
8,300.00	90.00	359.54	6,745.00	1,416.93	-987.81	1,514.03	0.00	0.00	0.00
8,400.00	90.00	359.54	6,745.00	1,516.93	-988.62	1,613.54	0.00	0.00	0.00
8,500.00	90.00	359.54	6,745.00	1,616.93	-989.43	1,713.06	0.00	0.00	0.00
8,600.00	90.00	359.54	6,745.00	1,716.93	-990.23	1,812.57	0.00	0.00	0.00
8,700.00	90.00	359.54	6,745.00	1,816.92	-991.04	1,912.09	0.00	0.00	0.00
8,800.00	90.00	359.54	6,745.00	1,916.92	-991.85	2,011.60	0.00	0.00	0.00
8,900.00	90.00	359.54	6,745.00	2,016.92	-992.65	2,111.12	0.00	0.00	0.00
9,000.00	90.00	359.54	6,745.00	2,116.91	-993.46	2,210.63	0.00	0.00	0.00
9,100.00	90.00	359.54	6,745.00	2,216.91	-994.26	2,310.14	0.00	0.00	0.00
9,200.00	90.00	359.54	6,745.00	2,316.91	-995.07	2,409.66	0.00	0.00	0.00
9,300.00	90.00	359.54	6,745.00	2,416.90	-995.88	2,509.17	0.00	0.00	0.00
9,400.00	90.00	359.54	6,745.00	2,516.90	-996.68	2,608.69	0.00	0.00	0.00
9,491.76	90.00	359.54	6,745.00	2,608.65	-997.42	2,700.00	0.00	0.00	0.00
Start DLS 2.00 TFO 0.00									
9,506.76	90.30	359.54	6,744.96	2,623.65	-997.54	2,714.93	2.00	2.00	0.00
Start 7240.73 hold at 9506.76 MD									
9,600.00	90.30	359.54	6,744.47	2,716.89	-998.30	2,807.72	0.00	0.00	0.00
9,700.00	90.30	359.54	6,743.95	2,816.89	-999.10	2,907.23	0.00	0.00	0.00
9,800.00	90.30	359.54	6,743.43	2,916.88	-999.91	3,006.74	0.00	0.00	0.00
9,900.00	90.30	359.54	6,742.90	3,016.88	-1,000.72	3,106.25	0.00	0.00	0.00
10,000.00	90.30	359.54	6,742.38	3,116.87	-1,001.52	3,205.77	0.00	0.00	0.00
10,100.00	90.30	359.54	6,741.85	3,216.87	-1,002.33	3,305.28	0.00	0.00	0.00
10,200.00	90.30	359.54	6,741.33	3,316.86	-1,003.13	3,404.79	0.00	0.00	0.00
10,300.00	90.30	359.54	6,740.81	3,416.86	-1,003.94	3,504.31	0.00	0.00	0.00
10,400.00	90.30	359.54	6,740.28	3,516.85	-1,004.75	3,603.82	0.00	0.00	0.00
10,500.00	90.30	359.54	6,739.76	3,616.85	-1,005.55	3,703.33	0.00	0.00	0.00
10,600.00	90.30	359.54	6,739.24	3,716.84	-1,006.36	3,802.85	0.00	0.00	0.00
10,700.00	90.30	359.54	6,738.71	3,816.84	-1,007.17	3,902.36	0.00	0.00	0.00
10,800.00	90.30	359.54	6,738.19	3,916.84	-1,007.97	4,001.87	0.00	0.00	0.00
10,900.00	90.30	359.54	6,737.67	4,016.83	-1,008.78	4,101.39	0.00	0.00	0.00
11,000.00	90.30	359.54	6,737.14	4,116.83	-1,009.58	4,200.90	0.00	0.00	0.00
11,100.00	90.30	359.54	6,736.62	4,216.82	-1,010.39	4,300.41	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen State DD30-766
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4823.00ft
Project:	Mustang	MD Reference:	KB @ 4823.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-766		
Design:	Plan #2		

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)
11,200.00	90.30	359.54	6,736.10	4,316.82	-1,011.20	4,399.93	0.00	0.00	0.00
11,300.00	90.30	359.54	6,735.57	4,416.81	-1,012.00	4,499.44	0.00	0.00	0.00
11,400.00	90.30	359.54	6,735.05	4,516.81	-1,012.81	4,598.95	0.00	0.00	0.00
11,500.00	90.30	359.54	6,734.52	4,616.80	-1,013.62	4,698.47	0.00	0.00	0.00
11,600.00	90.30	359.54	6,734.00	4,716.80	-1,014.42	4,797.98	0.00	0.00	0.00
11,700.00	90.30	359.54	6,733.48	4,816.79	-1,015.23	4,897.49	0.00	0.00	0.00
11,800.00	90.30	359.54	6,732.95	4,916.79	-1,016.04	4,997.00	0.00	0.00	0.00
11,900.00	90.30	359.54	6,732.43	5,016.78	-1,016.84	5,096.52	0.00	0.00	0.00
12,000.00	90.30	359.54	6,731.91	5,116.78	-1,017.65	5,196.03	0.00	0.00	0.00
12,100.00	90.30	359.54	6,731.38	5,216.78	-1,018.45	5,295.54	0.00	0.00	0.00
12,200.00	90.30	359.54	6,730.86	5,316.77	-1,019.26	5,395.06	0.00	0.00	0.00
12,300.00	90.30	359.54	6,730.34	5,416.77	-1,020.07	5,494.57	0.00	0.00	0.00
12,400.00	90.30	359.54	6,729.81	5,516.76	-1,020.87	5,594.08	0.00	0.00	0.00
12,500.00	90.30	359.54	6,729.29	5,616.76	-1,021.68	5,693.60	0.00	0.00	0.00
12,600.00	90.30	359.54	6,728.77	5,716.75	-1,022.49	5,793.11	0.00	0.00	0.00
12,700.00	90.30	359.54	6,728.24	5,816.75	-1,023.29	5,892.62	0.00	0.00	0.00
12,800.00	90.30	359.54	6,727.72	5,916.74	-1,024.10	5,992.14	0.00	0.00	0.00
12,900.00	90.30	359.54	6,727.19	6,016.74	-1,024.90	6,091.65	0.00	0.00	0.00
13,000.00	90.30	359.54	6,726.67	6,116.73	-1,025.71	6,191.16	0.00	0.00	0.00
13,100.00	90.30	359.54	6,726.15	6,216.73	-1,026.52	6,290.68	0.00	0.00	0.00
13,200.00	90.30	359.54	6,725.62	6,316.72	-1,027.32	6,390.19	0.00	0.00	0.00
13,300.00	90.30	359.54	6,725.10	6,416.72	-1,028.13	6,489.70	0.00	0.00	0.00
13,400.00	90.30	359.54	6,724.58	6,516.72	-1,028.94	6,589.21	0.00	0.00	0.00
13,500.00	90.30	359.54	6,724.05	6,616.71	-1,029.74	6,688.73	0.00	0.00	0.00
13,600.00	90.30	359.54	6,723.53	6,716.71	-1,030.55	6,788.24	0.00	0.00	0.00
13,700.00	90.30	359.54	6,723.01	6,816.70	-1,031.35	6,887.75	0.00	0.00	0.00
13,800.00	90.30	359.54	6,722.48	6,916.70	-1,032.16	6,987.27	0.00	0.00	0.00
13,900.00	90.30	359.54	6,721.96	7,016.69	-1,032.97	7,086.78	0.00	0.00	0.00
14,000.00	90.30	359.54	6,721.44	7,116.69	-1,033.77	7,186.29	0.00	0.00	0.00
14,100.00	90.30	359.54	6,720.91	7,216.68	-1,034.58	7,285.81	0.00	0.00	0.00
14,200.00	90.30	359.54	6,720.39	7,316.68	-1,035.39	7,385.32	0.00	0.00	0.00
14,300.00	90.30	359.54	6,719.86	7,416.67	-1,036.19	7,484.83	0.00	0.00	0.00
14,400.00	90.30	359.54	6,719.34	7,516.67	-1,037.00	7,584.35	0.00	0.00	0.00
14,500.00	90.30	359.54	6,718.82	7,616.66	-1,037.81	7,683.86	0.00	0.00	0.00
14,600.00	90.30	359.54	6,718.29	7,716.66	-1,038.61	7,783.37	0.00	0.00	0.00
14,700.00	90.30	359.54	6,717.77	7,816.66	-1,039.42	7,882.89	0.00	0.00	0.00
14,800.00	90.30	359.54	6,717.25	7,916.65	-1,040.22	7,982.40	0.00	0.00	0.00
14,900.00	90.30	359.54	6,716.72	8,016.65	-1,041.03	8,081.91	0.00	0.00	0.00
15,000.00	90.30	359.54	6,716.20	8,116.64	-1,041.84	8,181.43	0.00	0.00	0.00
15,100.00	90.30	359.54	6,715.68	8,216.64	-1,042.64	8,280.94	0.00	0.00	0.00
15,200.00	90.30	359.54	6,715.15	8,316.63	-1,043.45	8,380.45	0.00	0.00	0.00
15,300.00	90.30	359.54	6,714.63	8,416.63	-1,044.26	8,479.96	0.00	0.00	0.00
15,400.00	90.30	359.54	6,714.11	8,516.62	-1,045.06	8,579.48	0.00	0.00	0.00
15,500.00	90.30	359.54	6,713.58	8,616.62	-1,045.87	8,678.99	0.00	0.00	0.00
15,600.00	90.30	359.54	6,713.06	8,716.61	-1,046.67	8,778.50	0.00	0.00	0.00
15,700.00	90.30	359.54	6,712.53	8,816.61	-1,047.48	8,878.02	0.00	0.00	0.00
15,800.00	90.30	359.54	6,712.01	8,916.60	-1,048.29	8,977.53	0.00	0.00	0.00
15,900.00	90.30	359.54	6,711.49	9,016.60	-1,049.09	9,077.04	0.00	0.00	0.00
16,000.00	90.30	359.54	6,710.96	9,116.60	-1,049.90	9,176.56	0.00	0.00	0.00
16,100.00	90.30	359.54	6,710.44	9,216.59	-1,050.71	9,276.07	0.00	0.00	0.00
16,200.00	90.30	359.54	6,709.92	9,316.59	-1,051.51	9,375.58	0.00	0.00	0.00
16,300.00	90.30	359.54	6,709.39	9,416.58	-1,052.32	9,475.10	0.00	0.00	0.00
16,400.00	90.30	359.54	6,708.87	9,516.58	-1,053.13	9,574.61	0.00	0.00	0.00
16,500.00	90.30	359.54	6,708.35	9,616.57	-1,053.93	9,674.12	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen State DD30-766
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4823.00ft
Project:	Mustang	MD Reference:	KB @ 4823.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-766		
Design:	Plan #2		

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)
16,600.00	90.30	359.54	6,707.82	9,716.57	-1,054.74	9,773.64	0.00	0.00	0.00
16,700.00	90.30	359.54	6,707.30	9,816.56	-1,055.54	9,873.15	0.00	0.00	0.00
16,747.49	90.30	359.54	6,707.05	9,864.05	-1,055.93	9,920.40	0.00	0.00	0.00
TD at 16747.48									

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									
Guttersen State DD30-7	0.00	0.00	6,707.05	9,864.05	-1,055.93	1,323,698.64	3,283,579.78	40.2174930	-104.4845096
- plan hits target center									
- Point									
Guttersen State DD30-7	0.00	0.01	6,745.00	340.54	-979.13	1,314,175.16	3,283,656.57	40.1913492	-104.4846251
- plan hits target center									
- Point									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
612.00	612.00	Pierre				
686.00	686.00	Upper Pierre Aquifer Top				
1,623.00	1,623.00	Upper Pierre Aquifer Base				
3,647.89	3,615.00	Parkman				
4,081.24	4,037.00	Sussex				
4,271.21	4,222.00	Shannon				
5,984.06	5,890.00	Teepee Buttes				
6,647.01	6,507.00	Sharon Springs				
6,709.37	6,553.00	Top A Chalk				
6,712.21	6,555.00	Top A Marl				
6,732.45	6,569.00	Top B Chalk				
6,812.77	6,620.00	Top B Marl				
6,963.91	6,694.00	Top C Chalk				
7,070.00	6,727.00	Top C Marl				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,100.00	2,100.00	0.00	0.00	Start Build 3.00
2,538.00	2,534.17	-16.71	-47.13	Start 3638.27 hold at 2538.00 MD
6,176.27	6,077.18	-293.11	-826.67	Start DLS 9.00 TFO 108.60
7,223.57	6,745.00	340.54	-979.13	TPZ/Landing Pt. at 7223.57 MD
9,491.76	6,745.00	2,608.65	-997.42	Start DLS 2.00 TFO 0.00
9,506.76	6,744.96	2,623.65	-997.54	Start 7240.73 hold at 9506.76 MD
16,747.49	6,707.05	9,864.05	-1,055.93	TD at 16747.48

Northern Region - DJ Basin

Mustang

DD Section 30

Guttersen State DD30-766

Guttersen State DD30-766

Plan #2

Anticollision Summary Report

12 August, 2019

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersten State DD30-766
Project:	Mustang	TVD Reference:	KB @ 4823.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4823.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-766	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference	Plan #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00ft	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	8/12/2019		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	16,747.49	Plan #2 (Guttersten State DD30-766)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
D Section 13						
Dalbey D 13-11 (SI) - Wellbore #1 - Gyro Surveys	16,747.49	6,669.28	5,249.94	5,149.86	52.457	CC, ES, SF
Dalbey D 13-12 (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,658.66	6,164.66	6,060.12	58.967	CC, ES, SF
Dalbey D 13-13 (SI) - Wellbore #1 - As-Drilled	16,747.49	6,765.56	6,228.70	6,120.90	57.781	CC, ES, SF
Dalbey D 13-14 (PA) - Wellbore #1 - Gyro Surveys	16,747.49	6,609.10	5,066.89	4,959.95	47.379	CC, ES, SF
Guttersten 12-13 (SI) - Wellbore #1 - Gyro Surveys	16,747.49	6,980.23	7,138.43	7,040.29	72.732	CC, ES, SF
Guttersten 13C (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,750.78	5,054.07	4,979.56	67.833	CC, ES, SF
Guttersten 13D (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,640.91	3,293.23	3,195.37	33.653	CC, ES, SF
Guttersten 13N (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,843.44	6,069.83	5,983.65	70.426	CC, ES, SF
Guttersten 13S (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,678.16	4,098.43	4,014.14	48.621	CC, ES, SF
Guttersten 13T (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,665.35	3,032.58	2,924.81	28.140	CC, ES, SF
Guttersten 21-13 (SI) - Wellbore #1 - Gyro Surveys	16,747.49	6,804.35	6,900.46	6,814.85	80.604	CC, ES, SF
Guttersten 22-13 (SI) - Wellbore #1 - Gyro Surveys	16,747.49	6,704.94	5,984.51	5,892.15	64.798	CC, ES, SF
Guttersten 31-13 (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,615.39	6,000.58	5,924.09	78.451	CC, ES, SF
Guttersten 32-13 (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,673.15	5,038.82	4,955.10	60.192	CC, ES, SF
Guttersten 34-13 (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,639.80	3,744.85	3,639.11	35.416	CC, ES, SF
Guttersten 41-13 (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,687.20	5,216.27	5,151.21	80.180	CC, ES, SF
Guttersten 42-13 (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,621.88	4,060.18	3,988.91	56.968	CC, ES, SF
Guttersten 43-13 - Wellbore #1 - Wellbore #1 - As Drilled	16,747.49	6,641.55	3,127.82	3,042.88	36.822	CC, ES, SF
Guttersten 44-13 - Wellbore #1 - Wellbore #1 - As Drilled	16,747.49	6,654.31	2,452.87	2,346.53	23.067	CC, ES, SF
L F Ranch 1-13 (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,734.45	4,124.43	4,025.53	41.705	CC, ES, SF
L. F. Ranch 13-4 (SI) - Wellbore #1 - Gyro Surveys	16,747.49	7,368.54	7,334.34	7,236.09	74.647	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 Guttersten State DD30-766
Project:	Mustang	TVD Reference:	KB @ 4823.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4823.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-766	Database:	EDMP
Reference Design:	Plan #2	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						
D Section 24						
Dalbey D 24-10 (PR) - Wellbore #1 - Gyro Surveys	13,288.42	6,686.65	3,223.52	3,141.55	39.326	CC
Dalbey D 24-10 (PR) - Wellbore #1 - Gyro Surveys	13,300.00	6,686.58	3,223.54	3,141.47	39.279	ES
Dalbey D 24-10 (PR) - Wellbore #1 - Gyro Surveys	14,000.00	6,682.37	3,301.12	3,214.24	37.998	SF
Dalbey D 24-15 (SI) - Wellbore #1 - Gyro Surveys	12,329.73	6,649.35	3,695.96	3,621.12	49.386	CC, ES
Dalbey D 24-15 (SI) - Wellbore #1 - Gyro Surveys	13,300.00	6,649.37	3,821.20	3,739.83	46.965	SF
Glazier 2-24 (PR) - Wellbore #1 - Gyro Surveys	15,499.51	6,668.66	2,571.71	2,472.86	26.016	CC
Glazier 2-24 (PR) - Wellbore #1 - Gyro Surveys	15,500.00	6,668.65	2,571.71	2,472.86	26.015	ES
Glazier 2-24 (PR) - Wellbore #1 - Gyro Surveys	15,900.00	6,664.50	2,602.71	2,500.95	25.579	SF
Guttersten 11-24 (SI) - Wellbore #1 - Gyro Surveys	16,288.34	6,762.60	6,249.07	6,143.99	59.469	CC
Guttersten 11-24 (SI) - Wellbore #1 - Gyro Surveys	16,300.00	6,762.54	6,249.08	6,143.90	59.413	ES
Guttersten 11-24 (SI) - Wellbore #1 - Gyro Surveys	16,747.49	6,760.26	6,265.91	6,157.13	57.603	SF
Guttersten 12-24 (SI) - Wellbore #1 - Gyro Surveys	14,991.77	6,710.95	6,268.13	6,173.14	65.989	CC
Guttersten 12-24 (SI) - Wellbore #1 - Gyro Surveys	15,000.00	6,710.89	6,268.13	6,173.07	65.941	ES
Guttersten 12-24 (SI) - Wellbore #1 - Gyro Surveys	16,747.49	6,701.56	6,509.36	6,402.38	60.848	SF
Guttersten 21-24 (SI) - Wellbore #1 - Gyro Surveys	16,298.58	6,637.28	4,930.29	4,825.24	46.933	CC
Guttersten 21-24 (SI) - Wellbore #1 - Gyro Surveys	16,300.00	6,637.27	4,930.29	4,825.23	46.928	ES
Guttersten 21-24 (SI) - Wellbore #1 - Gyro Surveys	16,747.49	6,636.05	4,950.68	4,842.06	45.579	SF
Guttersten 22-24 (PR) - Wellbore #1 - Gyro Surveys	15,069.69	6,656.17	4,883.12	4,787.63	51.138	CC
Guttersten 22-24 (PR) - Wellbore #1 - Gyro Surveys	15,100.00	6,656.06	4,883.21	4,787.47	51.002	ES
Guttersten 22-24 (PR) - Wellbore #1 - Gyro Surveys	16,300.00	6,652.00	5,035.72	4,931.88	48.497	SF
Guttersten 24A (SI) - Wellbore #1 - Gyro Surveys	15,626.05	6,694.35	5,559.85	5,459.98	55.671	CC
Guttersten 24A (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,694.65	5,560.34	5,459.85	55.330	ES
Guttersten 24A (SI) - Wellbore #1 - Gyro Surveys	16,747.49	6,698.90	5,671.82	5,563.87	52.539	SF
Guttersten 24J (PR) - Wellbore #1 - Gyro Surveys	16,747.49	6,657.73	5,470.03	5,361.60	50.448	CC, ES, SF
Guttersten 24N (SI) - Wellbore #1 - MWD Surveys	15,661.46	6,607.94	4,330.80	4,231.88	43.781	CC
Guttersten 24N (SI) - Wellbore #1 - MWD Surveys	15,700.00	6,607.55	4,330.97	4,231.72	43.637	ES
Guttersten 24N (SI) - Wellbore #1 - MWD Surveys	16,600.00	6,598.23	4,431.32	4,325.93	42.050	SF
Guttersten 24S (PR) - Wellbore #1 - As-Drilled	14,169.19	6,689.63	2,872.61	2,784.83	32.726	CC
Guttersten 24S (PR) - Wellbore #1 - As-Drilled	14,200.00	6,689.29	2,872.77	2,784.73	32.628	ES
Guttersten 24S (PR) - Wellbore #1 - As-Drilled	14,700.00	6,683.69	2,921.23	2,829.74	31.927	SF
Guttersten 43-24 (PR) - Wellbore #1 - Gyro Surveys	13,544.34	6,648.46	2,331.77	2,247.87	27.790	CC, ES
Guttersten 43-24 (PR) - Wellbore #1 - Gyro Surveys	13,900.00	6,644.94	2,358.74	2,272.18	27.252	SF
Guttersten 44-24 (PR) - Wellbore #1 - Gyro Surveys	12,305.89	6,716.40	2,262.08	2,187.29	30.248	CC, ES
Guttersten 44-24 (PR) - Wellbore #1 - Gyro Surveys	12,700.00	6,717.71	2,296.15	2,218.51	29.573	SF
Karch Blue D 24-12 (PA) - Wellbore #1 - Gyro Surveys	13,813.43	6,685.73	6,216.25	6,130.40	72.406	CC
Karch Blue D 24-12 (PA) - Wellbore #1 - Gyro Surveys	13,900.00	6,685.30	6,216.85	6,130.30	71.825	ES
Karch Blue D 24-12 (PA) - Wellbore #1 - Gyro Surveys	15,900.00	6,675.53	6,557.09	6,457.49	65.832	SF
Karch Blue D 24-14 (PR) - Wellbore #1 - No Surveys	12,283.05	6,672.42	4,655.09	4,470.21	25.180	CC
Karch Blue D 24-14 (PR) - Wellbore #1 - No Surveys	12,300.00	6,672.34	4,655.12	4,470.11	25.162	ES
Karch Blue D 24-14 (PR) - Wellbore #1 - No Surveys	13,000.00	6,668.67	4,709.97	4,519.89	24.778	SF
Karch Blue D24-11 (PA) - Wellbore #1 - Gyro Surveys	13,807.70	6,606.61	4,799.32	4,707.19	52.095	CC, ES
Karch Blue D24-11 (PA) - Wellbore #1 - Gyro Surveys	15,100.00	6,612.70	4,970.26	4,869.34	49.253	SF
Koerner 31-24 (SI) - Wellbore #1 - Gyro Surveys	16,345.08	6,607.35	3,606.85	3,501.49	34.235	CC
Koerner 31-24 (SI) - Wellbore #1 - Gyro Surveys	16,400.00	6,607.73	3,607.26	3,501.43	34.083	ES
Koerner 31-24 (SI) - Wellbore #1 - Gyro Surveys	16,747.49	6,610.04	3,629.22	3,520.74	33.454	SF
Koerner 32-24 (SI) - Wellbore #1 - Gyro Surveys	14,910.43	6,759.09	3,598.38	3,504.00	38.127	CC, ES
Koerner 32-24 (SI) - Wellbore #1 - Gyro Surveys	15,600.00	6,756.69	3,663.86	3,564.59	36.911	SF
Koerner 42-24 (SI) - Wellbore #1 - Gyro Surveys	14,896.00	6,655.35	2,293.02	2,198.87	24.355	CC
Koerner 42-24 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	6,655.28	2,293.03	2,198.84	24.346	ES
Koerner 42-24 (SI) - Wellbore #1 - Gyro Surveys	15,200.00	6,650.35	2,313.08	2,216.62	23.980	SF
LF Ranch 1-24 (SI) - Wellbore #1 - Gyro Surveys	12,705.54	6,830.20	5,876.82	5,798.81	75.341	CC, ES
LF Ranch 1-24 (SI) - Wellbore #1 - Gyro Surveys	15,100.00	6,920.17	6,345.88	6,252.60	68.030	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 Guttersten State DD30-766
Project:	Mustang	TVD Reference:	KB @ 4823.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4823.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-766	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
D Section 25						
Coors Energy 13-25D (PR) - Wellbore #1 - MWD Surveys	8,380.72	6,827.14	6,204.56	6,145.99	105.933	CC
Coors Energy 13-25D (PR) - Wellbore #1 - MWD Surveys	8,400.00	6,827.18	6,204.59	6,145.91	105.745	ES
Coors Energy 13-25D (PR) - Wellbore #1 - MWD Surveys	11,600.00	6,824.02	6,989.85	6,911.67	89.412	SF
Coors Energy 14-25D (PR) - Wellbore #1 - MWD Surveys	7,185.11	6,979.20	6,222.68	6,174.45	129.014	CC, ES
Coors Energy 14-25D (PR) - Wellbore #1 - MWD Surveys	11,000.00	6,999.27	7,344.78	7,280.66	114.547	SF
Coors Energy 14-25H (PR) - Wellbore #1 - MWD Surveys	7,756.45	11,093.00	2,123.94	2,074.79	43.216	CC, ES
Coors Energy 14-25H (PR) - Wellbore #1 - MWD Surveys	9,600.00	11,093.00	2,812.41	2,699.78	24.971	SF
Coors Energy 23-25D (PR) - Wellbore #1 - MWD Surveys	8,382.82	6,882.99	4,879.32	4,822.45	85.801	CC
Coors Energy 23-25D (PR) - Wellbore #1 - MWD Surveys	8,400.00	6,883.00	4,879.35	4,822.42	85.714	ES
Coors Energy 23-25D (PR) - Wellbore #1 - MWD Surveys	10,100.00	6,881.13	5,172.65	5,108.79	80.999	SF
Coors Energy 24-25 (PR) - Wellbore #1 - Gyro Surveys	7,068.79	6,751.64	4,748.52	4,700.61	99.115	CC, ES
Coors Energy 24-25 (PR) - Wellbore #1 - Gyro Surveys	8,800.00	6,770.01	5,138.31	5,085.31	96.951	SF
Coors Energy 25HD (PR) - Wellbore #1 - MWD Surveys	0.00	0.00	6,268.45			
Coors Energy 25HD (PR) - Wellbore #1 - MWD Surveys	12,000.00	6,974.63	7,929.78	7,851.97	101.913	SF
Coors Energy 25LD (PR) - Wellbore #1 - MWD Surveys	7,028.79	6,976.33	5,554.06	5,504.49	112.030	CC, ES
Coors Energy 25LD (PR) - Wellbore #1 - MWD Surveys	9,200.00	7,047.76	6,112.20	6,056.58	109.894	SF
Coors Energy 25TD (PR) - Wellbore #1 - MWD Surveys	6,859.65	6,663.09	2,874.09	2,826.12	59.914	CC, ES
Coors Energy 25TD (PR) - Wellbore #1 - MWD Surveys	7,050.00	6,741.46	2,886.38	2,837.81	59.428	SF
Coors Energy 25XD (PR) - Wellbore #1 - MWD Surveys	7,500.00	6,972.47	1,722.94	1,670.35	32.762	SF
Coors Energy 25XD (PR) - Wellbore #1 - MWD Surveys	7,725.46	6,969.77	1,708.13	1,656.18	32.882	CC, ES
Coors Energy 25YD (PR) - Wellbore #1 - MWD Surveys	6,776.30	6,782.57	1,739.68	1,688.18	33.780	CC, ES
Coors Energy 25YD (PR) - Wellbore #1 - MWD Surveys	7,050.00	6,911.90	1,771.49	1,717.80	32.995	SF
Coors Energy 33-25D (PR) - Wellbore #1 - MWD Surveys	8,369.65	6,887.04	3,568.36	3,509.01	60.120	CC
Coors Energy 33-25D (PR) - Wellbore #1 - MWD Surveys	8,400.00	6,887.12	3,568.49	3,508.96	59.943	ES
Coors Energy 33-25D (PR) - Wellbore #1 - MWD Surveys	9,500.00	6,889.88	3,743.11	3,677.06	56.671	SF
Coors Energy 34-25 (PR) - Wellbore #1 - Gyro Surveys	7,035.61	6,687.73	3,754.63	3,706.99	78.805	CC, ES
Coors Energy 34-25 (PR) - Wellbore #1 - Gyro Surveys	7,223.57	6,713.50	3,765.32	3,717.31	78.433	SF
Coors Energy 43-25D (PR) - Wellbore #1 - MWD Surveys	8,382.01	6,949.35	2,273.73	2,214.77	38.564	CC, ES
Coors Energy 43-25D (PR) - Wellbore #1 - MWD Surveys	8,500.00	6,950.35	2,276.79	2,217.67	38.511	SF
Coors Energy 44-25D (PR) - Wellbore #1 - MWD Surveys	7,140.08	6,798.24	2,251.76	2,204.17	47.314	CC, ES
Coors Energy 44-25D (PR) - Wellbore #1 - MWD Surveys	7,300.00	6,803.00	2,260.86	2,212.99	47.227	SF
Dalbey D 25-03 (SI) - Wellbore #1 - Gyro Surveys	10,632.05	6,900.00	5,203.26	5,139.64	81.785	CC
Dalbey D 25-03 (SI) - Wellbore #1 - Gyro Surveys	10,700.00	6,900.00	5,203.71	5,139.61	81.179	ES
Dalbey D 25-03 (SI) - Wellbore #1 - Gyro Surveys	12,600.00	6,831.72	5,562.25	5,486.42	73.355	SF
Dalbey D 25-05 (SI) - Wellbore #1 - Gyro Surveys	9,692.65	7,026.43	6,397.64	6,338.57	108.304	CC
Dalbey D 25-05 (SI) - Wellbore #1 - Gyro Surveys	9,700.00	7,025.65	6,397.64	6,338.53	108.231	ES
Dalbey D 25-05 (SI) - Wellbore #1 - Gyro Surveys	12,800.00	6,735.20	7,104.94	7,029.06	93.638	SF
Guttersten 11-25 (PR) - Wellbore #1 - MWD Surveys	11,063.57	6,810.57	6,202.67	6,137.43	95.073	CC
Guttersten 11-25 (PR) - Wellbore #1 - MWD Surveys	11,100.00	6,809.98	6,202.78	6,137.27	94.694	ES
Guttersten 11-25 (PR) - Wellbore #1 - MWD Surveys	13,700.00	6,771.25	6,739.60	6,657.96	82.548	SF
Guttersten 22-25 (PA) - Wellbore #1 - MWD Surveys	9,795.07	6,768.65	4,778.66	4,721.66	83.843	CC
Guttersten 22-25 (PA) - Wellbore #1 - MWD Surveys	9,800.00	6,768.43	4,778.66	4,721.64	83.798	ES
Guttersten 22-25 (PA) - Wellbore #1 - MWD Surveys	11,700.00	6,680.27	5,143.60	5,075.46	75.483	SF
Guttersten 25E (PR) - Wellbore #1 - MWD Surveys	11,660.80	6,709.63	6,605.80	6,536.40	95.187	CC
Guttersten 25E (PR) - Wellbore #1 - MWD Surveys	11,700.00	6,708.77	6,605.91	6,536.22	94.789	ES
Guttersten 25E (PR) - Wellbore #1 - MWD Surveys	14,400.00	6,647.81	7,151.00	7,064.32	82.495	SF
Guttersten 25KD (PR) - Wellbore #1 - MWD Surveys	9,183.15	7,054.56	5,534.05	5,478.44	99.517	CC
Guttersten 25KD (PR) - Wellbore #1 - MWD Surveys	9,200.00	7,054.79	5,534.08	5,478.38	99.366	ES
Guttersten 25KD (PR) - Wellbore #1 - MWD Surveys	12,100.00	7,081.55	6,255.95	6,183.16	85.944	SF
Guttersten 25O (PR) - Wellbore #1 - MWD Surveys	9,312.72	6,697.01	4,340.75	4,286.36	79.797	CC, ES
Guttersten 25O (PR) - Wellbore #1 - MWD Surveys	11,000.00	6,689.85	4,657.12	4,593.13	72.776	SF
Guttersten D 25-17 (SI) - Wellbore #1 - Gyro Surveys	10,396.33	6,593.04	3,104.71	3,043.13	50.416	CC
Guttersten D 25-17 (SI) - Wellbore #1 - Gyro Surveys	10,400.00	6,592.98	3,104.71	3,043.10	50.394	ES

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 Guttersten State DD30-766
Project:	Mustang	TVD Reference:	KB @ 4823.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4823.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-766	Database:	EDMP
Reference Design:	Plan #2	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						
D Section 25						
Guttersten D 25-17 (SI) - Wellbore #1 - Gyro Surveys	11,200.00	6,580.37	3,207.01	3,140.28	48.058	SF
Guttersten D25-715 - Wellbore #1 - Plan #3	11,492.43	7,290.19	1,934.76	1,861.90	26.552	CC
Guttersten D25-715 - Wellbore #1 - Plan #3	16,747.49	12,542.77	1,940.90	1,795.55	13.353	ES, SF
Guttersten D25-724 - Wellbore #1 - Plan #3	16,747.49	12,425.03	2,541.27	2,395.81	17.471	CC, ES, SF
Guttersten D25-734 - Wellbore #1 - Plan #5	16,747.49	12,448.65	3,170.83	3,025.27	21.783	CC, ES, SF
Guttersten D25-743 - Wellbore #1 - Plan #3	10,765.30	6,060.95	3,715.28	3,650.57	57.413	CC
Guttersten D25-743 - Wellbore #1 - Plan #3	16,747.49	12,564.17	3,793.09	3,646.87	25.941	ES, SF
Guttersten D25-753 - Wellbore #1 - Plan #3	16,747.49	12,500.27	4,400.59	4,257.94	30.850	CC, ES, SF
Guttersten D25-762 - Wellbore #1 - Plan #3	11,151.47	6,753.98	5,024.76	4,957.03	74.195	CC
Guttersten D25-762 - Wellbore #1 - Plan #3	16,747.49	12,358.14	5,034.11	4,891.84	35.384	ES, SF
Guttersten D25-772 - Wellbore #1 - Plan #3	10,784.92	5,904.99	5,595.43	5,532.25	88.556	CC
Guttersten D25-772 - Wellbore #1 - Plan #3	16,747.49	12,554.69	5,645.70	5,503.19	39.616	ES, SF
Guttersten D25-781 - Wellbore #1 - Plan #3	10,672.29	5,077.43	6,012.74	5,952.71	100.153	CC
Guttersten D25-781 - Wellbore #1 - Plan #3	10,700.00	5,080.87	6,012.81	5,952.56	99.803	ES
Guttersten D25-781 - Wellbore #1 - Plan #3	16,747.49	12,659.35	6,288.62	6,145.49	43.935	SF
Guttersten State D36-714 - Wellbore #1 - Plan #1	6,950.00	9,073.10	1,909.07	1,850.46	32.572	SF
Guttersten State D36-714 - Wellbore #1 - Plan #1	8,885.04	7,155.82	1,881.64	1,826.02	33.826	CC
Guttersten State D36-714 - Wellbore #1 - Plan #1	8,900.00	7,150.00	1,881.66	1,825.96	33.784	ES
Guttersten State D36-724 - Wellbore #1 - Plan #1	6,950.00	9,002.44	2,533.76	2,475.39	43.408	SF
Guttersten State D36-724 - Wellbore #1 - Plan #1	9,001.06	6,967.57	2,505.56	2,450.31	45.346	CC, ES
Guttersten State D36-733 - Wellbore #1 - Plan #1	9,365.55	6,509.86	3,112.61	3,056.61	55.584	CC
Guttersten State D36-733 - Wellbore #1 - Plan #1	9,400.00	6,493.57	3,112.75	3,056.59	55.425	ES
Guttersten State D36-733 - Wellbore #1 - Plan #1	10,300.00	6,300.00	3,232.82	3,171.88	53.048	SF
Guttersten State D36-743 - Wellbore #1 - Plan #1	9,499.93	6,025.43	3,658.53	3,602.58	65.392	CC
Guttersten State D36-743 - Wellbore #1 - Plan #1	9,506.76	6,024.49	3,658.54	3,602.55	65.346	ES
Guttersten State D36-743 - Wellbore #1 - Plan #1	10,600.00	5,872.37	3,816.72	3,754.73	61.577	SF
Guttersten State D36-752 - Wellbore #1 - Plan #1	8,876.52	7,192.02	4,371.73	4,315.18	77.308	CC
Guttersten State D36-752 - Wellbore #1 - Plan #1	8,900.00	7,178.11	4,371.76	4,315.15	77.224	ES
Guttersten State D36-752 - Wellbore #1 - Plan #1	10,900.00	6,550.00	4,664.41	4,598.73	71.020	SF
Guttersten State D36-762 - Wellbore #1 - Plan #1	9,381.41	6,580.75	4,958.80	4,902.09	87.431	CC
Guttersten State D36-762 - Wellbore #1 - Plan #1	9,400.00	6,575.39	4,958.83	4,902.03	87.293	ES
Guttersten State D36-762 - Wellbore #1 - Plan #1	11,400.00	6,187.13	5,329.52	5,262.18	79.147	SF
Guttersten State D36-771 - Wellbore #1 - Plan #1	9,590.02	5,908.68	5,499.17	5,443.02	97.940	CC, ES
Guttersten State D36-771 - Wellbore #1 - Plan #1	11,900.00	5,304.21	5,934.83	5,866.99	87.484	SF
Guttersten State D36-781 - Wellbore #1 - Plan #1	9,826.87	5,084.38	5,914.94	5,859.99	107.631	CC, ES
Guttersten State D36-781 - Wellbore #1 - Plan #1	12,600.00	4,404.92	6,496.28	6,427.44	94.370	SF
Karch Blue D 25-02 (DA) - Wellbore #1 - No Surveys	10,999.85	6,675.14	3,578.65	3,402.71	20.341	CC
Karch Blue D 25-02 (DA) - Wellbore #1 - No Surveys	11,000.00	6,675.14	3,578.65	3,402.71	20.341	ES
Karch Blue D 25-02 (DA) - Wellbore #1 - No Surveys	11,500.00	6,672.52	3,613.43	3,433.97	20.135	SF
Karch Blue D 25-08 (SI) - Wellbore #1 - Gyro Surveys	9,727.92	6,646.14	2,289.87	2,232.28	39.763	CC, ES
Karch Blue D 25-08 (SI) - Wellbore #1 - Gyro Surveys	10,200.00	6,631.19	2,337.98	2,277.42	38.605	SF
Karch Blue D25-07 (SI) - Wellbore #1 - Gyro Surveys	9,726.60	6,690.06	3,613.99	3,556.39	62.745	CC, ES
Karch Blue D25-07 (SI) - Wellbore #1 - Gyro Surveys	10,900.00	6,680.50	3,799.70	3,735.10	58.827	SF
L F Ranch 2-25 (PR) - Wellbore #1 - Gyro Surveys	10,963.80	6,649.83	2,301.11	2,235.79	35.226	CC
L F Ranch 2-25 (PR) - Wellbore #1 - Gyro Surveys	11,000.00	6,648.70	2,301.39	2,235.78	35.076	ES
L F Ranch 2-25 (PR) - Wellbore #1 - Gyro Surveys	11,400.00	6,636.10	2,342.05	2,273.70	34.266	SF
LF Ranches 1 (PA) - Wellbore #1 - No Surveys	10,671.57	6,680.86	2,588.75	2,414.88	14.889	CC
LF Ranches 1 (PA) - Wellbore #1 - No Surveys	10,700.00	6,680.71	2,588.91	2,414.82	14.872	ES
LF Ranches 1 (PA) - Wellbore #1 - No Surveys	10,900.00	6,679.67	2,598.81	2,423.28	14.806	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 Guttersten State DD30-766
Project:	Mustang	TVD Reference:	KB @ 4823.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4823.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-766	Database:	EDMP
Reference Design:	Plan #2	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						
D Section 36						
Kanga State D 36-1JI (SI) - Wellbore #1 - Gyro Surveys	6,524.49	6,378.23	2,519.50	2,474.21	55.636	CC, ES
Kanga State D 36-1JI (SI) - Wellbore #1 - Gyro Surveys	6,800.00	6,592.78	2,551.55	2,504.81	54.594	SF
Kanga State D 36-2JI - Wellbore #1 - Gyro Surveys	6,754.97	6,612.58	3,800.90	3,754.06	81.144	CC, ES
Kanga State D 36-2JI - Wellbore #1 - Gyro Surveys	7,050.00	6,750.30	3,829.48	3,781.59	79.967	SF
Kanga State D36-11JI (PR) - Wellbore #1 - Gyro Surveys	6,392.91	6,204.57	6,098.81	6,014.63	72.456	CC
Kanga State D36-11JI (PR) - Wellbore #1 - Gyro Surveys	6,400.00	6,211.26	6,098.83	6,014.56	72.370	ES
Kanga State D36-11JI (PR) - Wellbore #1 - Gyro Surveys	6,900.00	6,584.73	6,222.26	6,132.46	69.289	SF
Rhoo State D36-07JI (SI) - Wellbore #1 - Gyro Surveys	6,499.01	6,526.00	4,288.85	4,243.22	93.989	CC
Rhoo State D36-07JI (SI) - Wellbore #1 - Gyro Surveys	6,500.00	6,526.65	4,288.85	4,243.21	93.977	ES
Rhoo State D36-07JI (SI) - Wellbore #1 - Gyro Surveys	6,850.00	6,713.23	4,346.19	4,298.94	91.978	SF
Spike State D 36-04 (SI) - Gyro Surveys - Wellbore #1	6,823.87	6,750.40	6,363.48	6,316.15	134.438	CC, ES
Spike State D 36-04 (SI) - Gyro Surveys - Wellbore #1	9,700.00	6,909.29	7,368.63	7,311.69	129.423	SF
Spike State D 36-3 (SI) - Wellbore #1 - No Surveys	6,705.81	6,552.48	5,221.42	5,066.66	33.738	CC
Spike State D 36-3 (SI) - Wellbore #1 - No Surveys	6,750.00	6,582.78	5,221.99	5,066.51	33.587	ES
Spike State D 36-3 (SI) - Wellbore #1 - No Surveys	7,050.00	6,724.04	5,257.31	5,098.41	33.086	SF
Spike State D36-05 (SI) - Wellbore #1 - Gyro Surveys	6,544.48	6,294.36	6,803.06	6,757.86	150.516	CC
Spike State D36-05 (SI) - Wellbore #1 - Gyro Surveys	6,550.00	6,299.81	6,803.07	6,757.83	150.399	ES
Spike State D36-05 (SI) - Wellbore #1 - Gyro Surveys	7,100.00	6,924.77	6,892.41	6,843.96	142.247	SF
Spike State D36-06 (PA) - Wellbore #1 - Gyro Surveys	6,517.61	6,430.18	5,633.11	5,587.60	123.775	CC, ES
Spike State D36-06 (PA) - Wellbore #1 - Gyro Surveys	7,400.00	7,400.00	5,901.18	5,850.57	116.594	SF
State 09 (SI) - Wellbore #1 - Gyro Surveys	6,467.41	6,287.02	3,364.23	3,319.41	75.056	CC, ES
State 09 (SI) - Wellbore #1 - Gyro Surveys	6,850.00	6,850.00	3,426.05	3,378.43	71.945	SF
State 30 (SI) - Wellbore #1 - Gyro Surveys	6,388.09	6,268.60	6,828.21	6,783.67	153.305	CC, ES
State 30 (SI) - Wellbore #1 - Gyro Surveys	6,950.00	6,647.50	6,983.15	6,935.73	147.274	SF
DD Section 06						
Guttersten 06D - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersten 23-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersten 24-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersten 33-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersten 34-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersten 43-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersten 44-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersten DD18-715 - Guttersten DD18-715 - Plan #1	16,747.49	17,440.37	3,433.32	3,255.20	19.275	CC, ES, SF
Guttersten DD18-725 - Guttersten DD18-725 - Plan #1	16,747.49	17,276.88	2,774.67	2,598.24	15.727	CC, ES, SF
Guttersten DD18-730 - Guttersten DD18-730 - Plan #1	16,747.49	17,467.47	2,449.06	2,273.00	13.910	CC, ES, SF
Guttersten DD18-735 - Guttersten DD18-735 - Plan #1	16,747.49	17,393.03	2,118.12	1,943.06	12.100	CC, ES, SF
Guttersten DD18-746 - Guttersten DD18-746 - Plan #1	16,747.49	17,388.93	1,470.68	1,300.02	8.618	CC, ES, SF
Guttersten DD18-750 - Guttersten DD18-750 - Plan #1	16,747.49	17,652.14	1,163.14	994.10	6.881	CC, ES, SF
Guttersten DD18-754 - Guttersten DD18-754 - Plan #1	16,747.49	17,462.94	850.63	686.89	5.195	CC, ES, SF
Guttersten DD18-765 - Guttersten DD18-765 - Plan #1	16,747.49	17,287.24	411.16	340.59	5.826	CC, ES, SF
Guttersten DD18-770 - Guttersten DD18-770 - Plan #1	16,747.49	17,473.14	492.00	382.34	4.487	CC, ES, SF
Guttersten DD18-775 - Guttersten DD18-775 - Plan #1	16,747.49	17,369.80	706.59	557.34	4.734	CC, ES, SF
Guttersten DD18-785 - Guttersten DD18-785 - Plan #1	16,747.49	17,360.03	1,309.31	1,137.52	7.622	CC, ES, SF
DD Section 17						
Guttersten 23-17 - Wellbore #1 - Wellbore #1 - As Drilled	16,747.49	6,737.95	6,105.40	6,000.97	58.466	CC, ES, SF
Guttersten State DD17-78HN - Original Drilling - Original D	16,747.49	6,742.03	4,423.41	4,316.58	41.405	CC, ES, SF
Guttersten State DD17-78HN - Original Drilling - ST01 - S	16,747.49	6,431.64	4,449.41	4,346.70	43.319	CC, ES, SF
Guttersten State DD17-79-1HN - Original Drilling - Origina	16,000.00	16,000.00	4,277.04	4,156.49	35.478	SF
Guttersten State DD17-79-1HN - Original Drilling - Origina	16,747.49	6,459.02	4,135.39	4,030.96	39.600	CC, ES
Guttersten State DD17-79HN - Original Drilling - Original D	16,747.49	6,373.87	3,871.53	3,767.38	37.172	CC, ES, SF
Guttersten USX DD17-19 - Original Drilling - Original Dri	16,747.49	6,677.07	6,613.16	6,520.84	71.633	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 Guttersten State DD30-766
Project:	Mustang	TVD Reference:	KB @ 4823.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4823.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-766	Database:	EDMP
Reference Design:	Plan #2	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						
DD Section 18						
Guttersten 18D - Wellbore #1 - Wellbore #1 - As Drilled	16,747.49	6,671.70	2,773.21	2,675.33	28.333	CC, ES, SF
Guttersten 24-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,747.49	6,683.41	956.48	882.87	12.993	CC, ES, SF
Guttersten 33-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,747.49	6,701.59	2,848.57	2,765.35	34.227	CC, ES, SF
Guttersten 34-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,747.49	6,681.53	1,859.21	1,757.54	18.287	CC, ES, SF
Guttersten 43-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,747.49	6,707.68	3,704.85	3,606.83	37.795	CC, ES, SF
Guttersten 44-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,747.49	6,677.58	3,142.69	3,037.20	29.789	CC, ES, SF
Karch Blue DD18-03J - Wellbore #1 - Wellbore #1 - As D	16,747.49	6,683.42	1,894.47	1,841.94	36.059	CC, ES, SF
Karch Blue DD18-12 - Original Drilling - Original Drilling -	16,747.49	6,655.47	2,512.27	2,443.00	36.270	CC, ES, SF
Karch Blue DD18-13 - Wellbore #1 - Wellbore #1 - As Dri	16,747.49	6,697.11	1,366.56	1,273.65	14.708	CC, ES, SF
SPIKE STATE GWS DD #18-1J(PA) - SPIKE STATE GW	16,747.49	6,701.05	4,810.76	4,624.96	25.892	CC, ES, SF
DD Section 19						
Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv	15,269.02	6,652.51	2,675.45	2,578.59	27.622	CC
Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv	15,300.00	6,651.11	2,675.63	2,578.59	27.572	ES
Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv	15,500.00	6,642.27	2,685.39	2,587.37	27.397	SF
Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey	12,662.13	6,690.44	52.56	-135.44	0.280	Level 1, CC, ES, SF
Guttersten 31-19 (PR) - Wellbore #1 - Gyro Surveys	16,263.09	6,671.17	1,752.32	1,647.51	16.719	CC, ES
Guttersten 31-19 (PR) - Wellbore #1 - Gyro Surveys	16,400.00	6,668.06	1,757.66	1,652.32	16.686	SF
Guttersten 44-19 (SI) - Wellbore #1 - No Surveys	12,402.29	6,736.80	3,084.52	2,897.50	16.492	CC, ES
Guttersten 44-19 (SI) - Wellbore #1 - No Surveys	12,700.00	6,735.24	3,098.86	2,910.22	16.428	SF
DD Section 20						
Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey	16,083.63	6,731.36	4,620.71	4,517.12	44.606	CC
Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey	16,100.00	6,731.05	4,620.74	4,517.04	44.558	ES
Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey	16,747.49	6,718.85	4,668.14	4,560.67	43.437	SF
Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey	12,973.67	6,710.68	5,021.07	4,941.38	63.003	CC
Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey	13,000.00	6,710.76	5,021.14	4,941.27	62.865	ES
Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey	14,300.00	6,714.60	5,193.30	5,106.36	59.736	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersten State DD30-766
Project:	Mustang	TVD Reference:	KB @ 4823.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4823.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-766	Database:	EDMP
Reference Design:	Plan #2	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						
DD Section 29						
Champlin 366 Amoco C UT 1 (PR) - Wellbore #1 - Gyro S	10,696.63	7,011.00	7,360.10	7,295.07	113.187	CC
Champlin 366 Amoco C UT 1 (PR) - Wellbore #1 - Gyro S	11,200.00	11,200.00	7,377.30	7,294.51	89.110	ES
Champlin 366 Amoco C UT 1 (PR) - Wellbore #1 - Gyro S	12,500.00	12,500.00	7,577.84	7,482.98	79.888	SF
Champlin Amoco 1 (PA) - Wellbore #1 - No Surveys	2,100.00	2,139.01	4,211.47	4,161.40	84.103	CC, ES
Champlin Amoco 1 (PA) - Wellbore #1 - No Surveys	8,200.00	6,784.01	5,118.79	4,956.17	31.477	SF
Guttersten 42-29 (PR) - Wellbore #1 - Gyro Surveys	2,115.67	2,213.63	8,034.87	8,019.96	538.635	CC, ES
Guttersten 42-29 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,989.21	8,861.36	8,754.68	83.071	SF
Guttersten Federal YY5-715 - Guttersten Federal YY5-715	2,100.00	2,168.00	6,858.64	6,843.80	462.373	CC, ES
Guttersten Federal YY5-715 - Guttersten Federal YY5-715	12,100.00	4,944.51	9,969.26	9,910.06	168.393	SF
Guttersten Federal YY5-725 - Guttersten Federal YY5-725	2,100.00	2,169.00	6,822.33	6,807.49	459.814	CC, ES
Guttersten Federal YY5-725 - Guttersten Federal YY5-725	12,200.00	5,641.65	9,594.15	9,532.41	155.403	SF
Guttersten Federal YY5-735 - Guttersten Federal YY5-735	2,100.00	2,171.00	6,783.22	6,768.38	456.958	CC, ES
Guttersten Federal YY5-735 - Guttersten Federal YY5-735	11,800.00	6,300.00	9,025.99	8,963.62	144.722	SF
Guttersten Federal YY5-745 - Guttersten Federal YY5-745	2,518.98	4,006.34	6,625.28	6,602.84	295.257	CC, ES
Guttersten Federal YY5-745 - Guttersten Federal YY5-745	10,900.00	6,500.00	8,012.38	7,952.70	134.253	SF
Guttersten Federal YY5-755 - Guttersten Federal YY5-755	2,100.00	2,169.00	5,007.33	4,992.49	337.486	CC, ES
Guttersten Federal YY5-755 - Guttersten Federal YY5-755	9,800.00	6,053.69	6,805.76	6,753.40	129.963	SF
Guttersten Federal YY5-765 - Guttersten Federal YY5-765	2,100.00	2,170.00	4,968.24	4,953.40	334.771	CC, ES
Guttersten Federal YY5-765 - Guttersten Federal YY5-765	6,650.00	6,815.00	5,478.69	5,431.33	115.677	SF
Guttersten Federal YY5-775 - Guttersten Federal YY5-775	5,677.74	6,921.93	4,744.86	4,699.61	104.855	CC
Guttersten Federal YY5-775 - Guttersten Federal YY5-775	5,700.00	6,931.76	4,744.90	4,699.52	104.566	ES
Guttersten Federal YY5-775 - Guttersten Federal YY5-775	6,600.00	7,070.73	4,825.95	4,777.10	98.802	SF
Guttersten Federal YY5-785 - Guttersten Federal YY5-785	5,821.67	7,200.00	4,101.69	4,053.79	85.637	CC, ES
Guttersten Federal YY5-785 - Guttersten Federal YY5-785	6,450.00	7,250.00	4,150.31	4,100.44	83.226	SF
Guttersten State DD29-715 - Wellbore #1 - Plan #1	1,907.11	1,954.11	6,855.64	6,842.27	512.559	CC
Guttersten State DD29-715 - Wellbore #1 - Plan #1	2,000.00	2,000.00	6,855.81	6,841.93	494.198	ES
Guttersten State DD29-715 - Wellbore #1 - Plan #1	16,747.49	17,363.14	8,730.01	8,555.90	50.142	SF
Guttersten State DD29-725 - Wellbore #1 - Plan #1	1,902.48	1,959.48	6,817.64	6,804.27	509.614	CC
Guttersten State DD29-725 - Wellbore #1 - Plan #1	2,000.00	2,032.17	6,817.75	6,803.77	487.602	ES
Guttersten State DD29-725 - Wellbore #1 - Plan #1	16,747.49	17,171.69	8,071.21	7,896.99	46.328	SF
Guttersten State DD29-735 - Wellbore #1 - Plan #1	2,253.37	2,842.27	6,768.28	6,750.76	386.266	CC, ES
Guttersten State DD29-735 - Wellbore #1 - Plan #1	16,747.49	17,321.10	7,410.14	7,235.59	42.452	SF
Guttersten State DD29-745 - Wellbore #1 - Plan #1	5,239.56	7,229.30	6,592.18	6,548.38	150.506	CC, ES
Guttersten State DD29-745 - Wellbore #1 - Plan #1	16,747.49	17,319.60	6,751.06	6,577.28	38.848	SF
Guttersten State DD29-755 - Wellbore #1 - Plan #1	1,900.00	1,967.00	5,002.06	4,988.66	373.397	CC
Guttersten State DD29-755 - Wellbore #1 - Plan #1	2,100.00	2,141.09	5,002.49	4,987.79	340.227	ES
Guttersten State DD29-755 - Wellbore #1 - Plan #1	16,747.49	17,332.93	6,067.49	5,892.88	34.748	SF
Guttersten State DD29-765 - Wellbore #1 - Plan #1	2,324.00	2,949.04	4,944.08	4,925.99	273.236	CC, ES
Guttersten State DD29-765 - Wellbore #1 - Plan #1	16,747.49	17,364.20	5,407.45	5,233.04	31.003	SF
Guttersten State DD29-775 - Wellbore #1 - Plan #1	5,773.86	7,350.00	4,648.35	4,601.65	99.538	CC
Guttersten State DD29-775 - Wellbore #1 - Plan #1	16,747.49	17,475.47	4,747.42	4,573.47	27.291	ES, SF
Guttersten State DD29-785 - Wellbore #1 - Plan #1	5,937.69	7,564.98	4,008.66	3,959.43	81.432	CC
Guttersten State DD29-785 - Wellbore #1 - Plan #1	16,747.49	17,696.93	4,087.34	3,913.48	23.509	ES, SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersten State DD30-766
Project:	Mustang	TVD Reference:	KB @ 4823.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4823.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-766	Database:	EDMP
Reference Design:	Plan #2	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						
DD Section 30						
Guttersten 11-30 (PR) - Wellbore #1 - Gyro Surveys	11,056.06	6,689.96	963.64	897.68	14.609	CC, ES
Guttersten 11-30 (PR) - Wellbore #1 - Gyro Surveys	11,200.00	6,687.36	974.33	907.23	14.522	SF
Guttersten 12-30 (PR) - Wellbore #1 - Gyro Surveys	9,637.22	6,687.57	1,044.79	987.67	18.289	CC, ES
Guttersten 12-30 (PR) - Wellbore #1 - Gyro Surveys	9,800.00	6,679.00	1,057.36	999.07	18.141	SF
Guttersten 22-30 (PR) - Wellbore #1 - Gyro Surveys	9,711.03	6,702.12	366.52	309.16	6.391	CC, ES, SF
Guttersten 30 A (PR) - Wellbore #1 - Gyro Surveys	10,338.77	6,696.45	234.89	173.64	3.835	CC, ES, SF
Guttersten State DD30-715 - Guttersten State DD30-715 -	2,100.00	2,130.00	1,987.08	1,972.38	135.200	CC, ES
Guttersten State DD30-715 - Guttersten State DD30-715 -	16,747.49	17,000.53	3,407.53	3,234.74	19.722	SF
Guttersten State DD30-725 - Guttersten State DD30-725 -	2,100.00	2,130.00	1,950.08	1,935.39	132.683	CC, ES
Guttersten State DD30-725 - Guttersten State DD30-725 -	16,747.49	16,973.29	2,767.38	2,594.44	16.002	SF
Guttersten State DD30-735 - Guttersten State DD30-735 -	2,447.15	2,808.88	1,904.74	1,886.79	106.118	CC, ES
Guttersten State DD30-735 - Guttersten State DD30-735 -	16,747.49	17,055.50	2,107.25	1,934.59	12.205	SF
Guttersten State DD30-745 - Guttersten State DD30-745 -	6,558.58	7,200.00	1,439.37	1,389.72	28.990	CC
Guttersten State DD30-745 - Guttersten State DD30-745 -	16,747.49	17,221.14	1,447.19	1,274.93	8.401	ES, SF
Guttersten State DD30-755 - Guttersten State DD30-755 -	2,100.00	2,100.00	37.00	22.41	2.536	CC, ES, SF
Guttersten State DD30-775 - Guttersten State DD30-775 -	2,000.00	2,001.00	38.00	24.12	2.738	CC, ES, SF
Guttersten State DD30-785 - Guttersten State DD30-785 -	2,000.00	2,001.00	75.01	61.13	5.405	CC, ES
Guttersten State DD30-785 - Guttersten State DD30-785 -	2,100.00	2,097.15	77.54	62.99	5.328	SF
Guttersten YY06-756 - Guttersten YY06-756 - Plan #1	2,100.00	2,103.00	154.82	140.22	10.604	CC, ES
Guttersten YY06-756 - Guttersten YY06-756 - Plan #1	2,300.00	2,303.37	160.84	144.84	10.050	SF
Guttersten YY06-766 - Guttersten YY06-766 - Plan #1	6,631.68	6,638.52	47.08	-0.46	0.990	Level 1, CC, ES, SF
Guttersten YY06-775 - Guttersten YY06-775 - Plan #1	2,100.00	2,098.00	155.23	140.65	10.645	CC
Guttersten YY06-775 - Guttersten YY06-775 - Plan #1	2,200.00	2,197.71	155.58	140.30	10.184	ES
Guttersten YY06-775 - Guttersten YY06-775 - Plan #1	3,300.00	3,304.92	192.12	169.02	8.317	SF
Guttersten YY06-785 - Guttersten YY06-785 - Plan #1	2,000.00	1,998.00	168.15	154.28	12.127	CC
Guttersten YY06-785 - Guttersten YY06-785 - Plan #1	2,100.00	2,095.94	168.75	154.18	11.586	ES
Guttersten YY06-785 - Guttersten YY06-785 - Plan #1	2,800.00	2,780.24	193.50	174.17	10.012	SF
Karch Blue DD 30-12 (PA) - Wellbore #1 - No Surveys	8,516.31	6,698.00	1,089.92	927.67	6.718	CC, ES, SF
Karch Blue DD 30-14 (PA) - Wellbore #1 - No Surveys	4,398.32	4,304.78	314.17	212.39	3.087	CC
Karch Blue DD 30-14 (PA) - Wellbore #1 - No Surveys	4,500.00	4,403.80	315.02	210.87	3.025	ES
Karch Blue DD 30-14 (PA) - Wellbore #1 - No Surveys	7,000.00	6,666.06	418.61	260.90	2.654	SF
Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys	7,963.61	6,703.00	79.94	-80.42	0.499	Level 1, CC, ES, SF
L F Ranch 2-30 (PR) - Wellbore #1 - Gyro Surveys	10,711.28	6,722.19	349.28	285.22	5.452	CC, ES, SF
State 19 (PA) - Wellbore #1 - NO Surveys	10,357.56	6,749.51	2,574.38	2,401.16	14.862	CC, ES
State 19 (PA) - Wellbore #1 - NO Surveys	10,500.00	6,748.76	2,578.32	2,404.40	14.825	SF
DD Section 31						
Guttersten 31Q-221 (PR) - Wellbore #1 - MWD Surveys	6,299.51	10,956.00	1,742.85	1,642.12	17.302	CC
Guttersten 31Q-221 (PR) - Wellbore #1 - MWD Surveys	6,300.00	10,956.00	1,742.85	1,642.11	17.301	ES
Guttersten 31Q-221 (PR) - Wellbore #1 - MWD Surveys	6,400.00	10,956.00	1,748.79	1,647.02	17.184	SF
Guttersten 31Q-401 (PR) - Wellbore #1 - MWD Surveys	6,428.95	11,132.00	1,556.54	1,460.74	16.249	CC, ES
Guttersten 31Q-401 (PR) - Wellbore #1 - MWD Surveys	6,500.00	11,132.00	1,560.01	1,463.49	16.162	SF
Guttersten 31T-301 (PR) - Wellbore #1 - MWD Surveys	6,272.61	11,048.00	2,357.56	2,252.24	22.385	CC, ES
Guttersten 31T-301 (PR) - Wellbore #1 - MWD Surveys	6,450.00	11,048.00	2,371.12	2,264.14	22.164	SF
Guttersten 31T-441 (PR) - Wellbore #1 - MWD Surveys	6,361.00	11,127.00	2,077.40	1,974.59	20.205	CC, ES
Guttersten 31T-441 (PR) - Wellbore #1 - MWD Surveys	6,500.00	11,127.00	2,087.06	1,982.92	20.040	SF
Guttersten 33-31 (PR) - Wellbore #1 - Gyro Surveys	5,734.70	5,714.84	3,740.24	3,699.57	91.962	CC
Guttersten 33-31 (PR) - Wellbore #1 - Gyro Surveys	5,800.00	5,762.18	3,740.41	3,699.32	91.022	ES
Guttersten 33-31 (PR) - Wellbore #1 - Gyro Surveys	6,500.00	6,354.54	3,828.15	3,782.38	83.631	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 Guttersten State DD30-766
Project:	Mustang	TVD Reference:	KB @ 4823.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4823.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-766	Database:	EDMP
Reference Design:	Plan #2	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						
YY Section 06						
Cuykendall #2-6 (PA) - Wellbore #1 - No Surveys						Out of range
Guttersten #6D South (PA) - Wellbore #1 - As-Drilled	6,196.91	6,282.69	9,649.44	9,604.93	216.790	CC
Guttersten #6D South (PA) - Wellbore #1 - As-Drilled	6,200.00	6,285.87	9,649.45	9,604.91	216.677	ES
Guttersten #6D South (PA) - Wellbore #1 - As-Drilled	6,800.00	6,838.30	9,904.60	9,856.38	205.389	SF
Guttersten 6M-303 (PR) - Wellbore #1 - Wellbore #1	6,111.13	5,881.00	5,620.77	5,577.36	129.481	CC, ES
Guttersten 6M-303 (PR) - Wellbore #1 - Wellbore #1	6,400.00	5,913.00	5,665.27	5,620.75	127.262	SF
Guttersten 6M-423 (PR) - Wellbore #1 - MWD Surveys	6,027.55	5,856.68	5,715.55	5,673.19	134.938	CC
Guttersten 6M-423 (PR) - Wellbore #1 - MWD Surveys	6,100.00	5,886.25	5,715.82	5,673.08	133.734	ES
Guttersten 6M-423 (PR) - Wellbore #1 - MWD Surveys	6,400.00	6,010.00	5,759.76	5,715.49	130.125	SF
Guttersten 6R-243 (PR) - Wellbore #1 - Gyro Surveys	5,784.40	5,696.14	5,803.14	5,761.35	138.854	CC
Guttersten 6R-243 (PR) - Wellbore #1 - Gyro Surveys	6,000.00	5,873.39	5,804.08	5,760.88	134.364	ES
Guttersten 6R-243 (PR) - Wellbore #1 - Gyro Surveys	6,400.00	5,946.00	5,854.87	5,809.99	130.461	SF
Guttersten 6R-403 (PR) - Wellbore #1 - MWD Surveys	238.96	252.00	5,847.98	5,846.57	4,154.670	CC
Guttersten 6R-403 (PR) - Wellbore #1 - MWD Surveys	3,553.86	3,442.00	5,859.87	5,833.65	223.441	ES
Guttersten 6R-403 (PR) - Wellbore #1 - MWD Surveys	6,500.00	6,010.00	6,020.68	5,973.67	128.069	SF
Guttersten 31-6 (SI) - Wellbore #1 - Gyro Surveys	6,189.37	6,138.60	6,373.17	6,329.27	145.163	CC, ES
Guttersten 31-6 (SI) - Wellbore #1 - Gyro Surveys	6,600.00	6,459.93	6,498.12	6,451.72	140.045	SF
Guttersten 32-6 (SI) - Wellbore #1 - Gyro Surveys	6,195.16	6,162.60	7,612.85	7,568.84	172.987	CC
Guttersten 32-6 (SI) - Wellbore #1 - Gyro Surveys	6,200.00	6,165.52	7,612.86	7,568.83	172.872	ES
Guttersten 32-6 (SI) - Wellbore #1 - Gyro Surveys	6,950.00	6,910.65	7,996.28	7,946.65	161.123	SF
J.H. Cuykendall 1 (PA) - Wellbore #1 - Gyro Surveys	6,219.08	5,929.65	9,738.33	9,695.14	225.484	CC, ES
J.H. Cuykendall 1 (PA) - Wellbore #1 - Gyro Surveys	6,750.00	6,903.70	9,938.36	9,890.23	206.491	SF