

Project: Mustang
Site: DD Section 30
Well: Gutttersen State DD30-725
Wellbore: Gutttersen State DD30-725
Design: Plan #2

Northern Region - DJ Basin

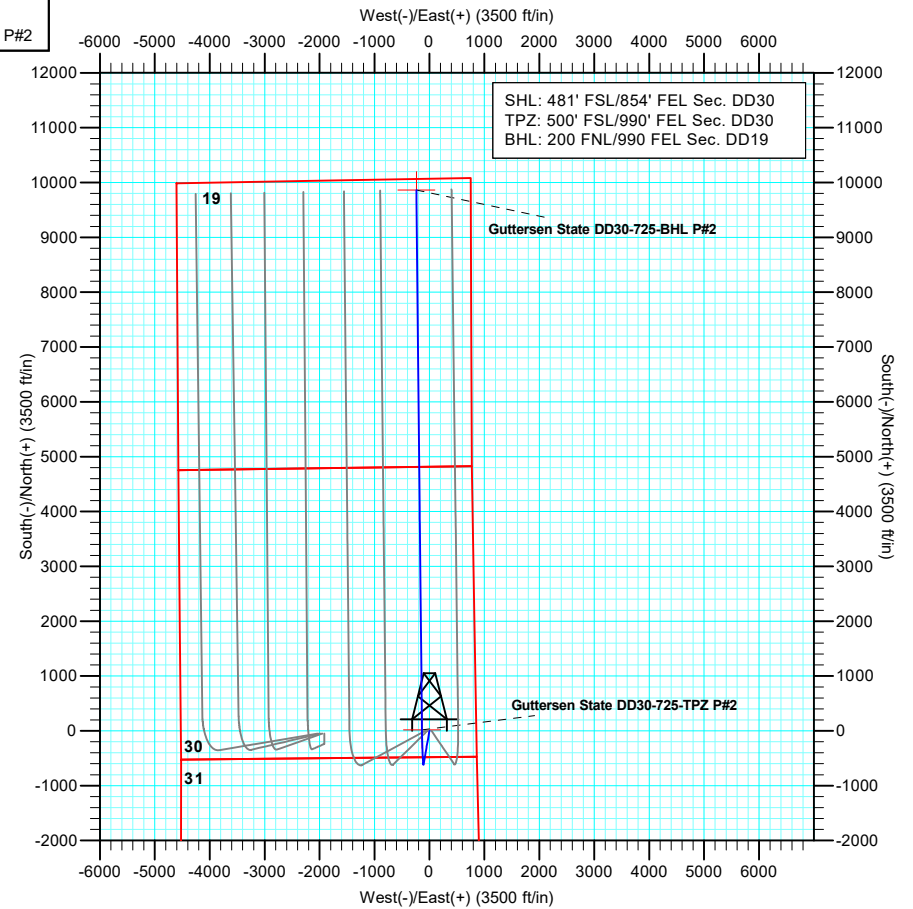
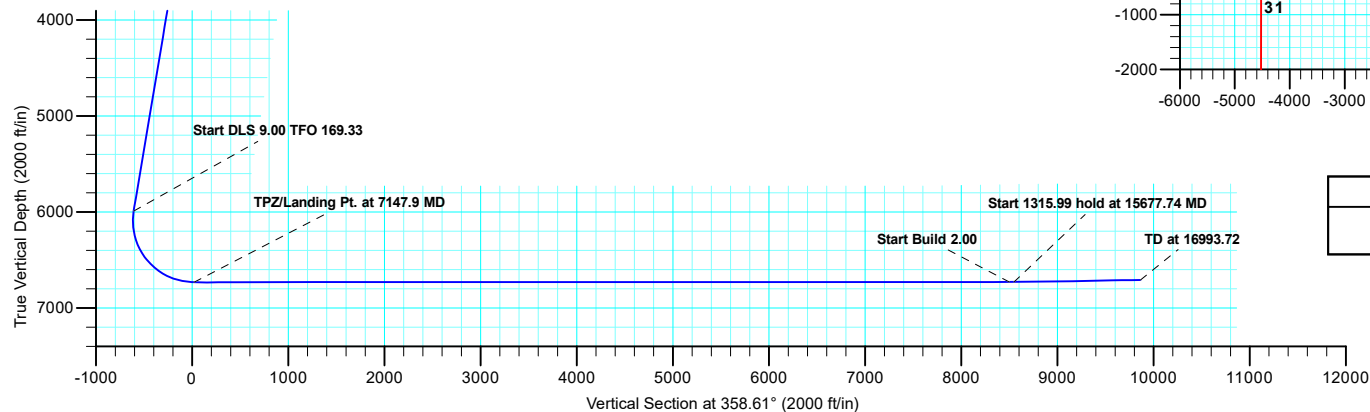
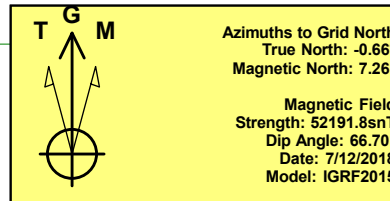
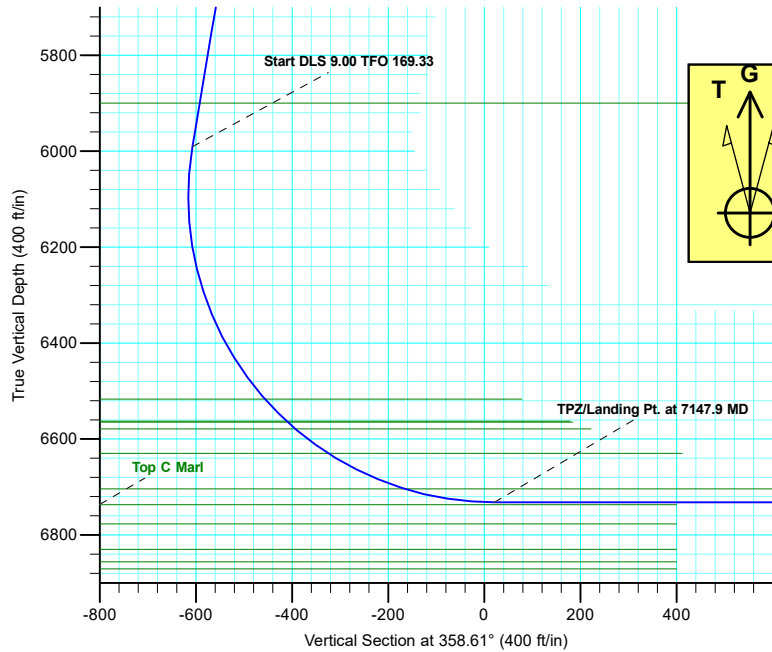
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

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	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2522.77	9.68	189.92	2521.24	-26.80	-4.69	3.00	189.92	-26.68	
4	6042.14	9.68	189.92	5990.46	-609.90	-106.71	0.00	0.00	-607.15	
5	7147.90	90.00	359.41	6732.00	17.68	-136.32	9.00	169.33	20.97	Gutttersen State DD30-725-TPZ P#2
6	15627.74	90.00	359.41	6732.00	8497.06	-224.32	0.00	0.00	8500.00	
7	15677.74	91.00	359.41	6731.56	8547.05	-224.84	2.00	0.00	8549.99	
8	16993.72	91.00	359.41	6708.60	9862.76	-238.49	0.00	0.00	9865.65	Gutttersen State DD30-725-BHL P#2

WELL DETAILS: Gutttersen State DD30-725

+N/-S	+E/-W	Northing	Ground Level: Easting	4823.00 Latitude	Longitude	Slot
0.00	0.00	1313884.55	3286585.14	40.1904590	-104.4741550	



Plan: Plan #2 (Gutttersen State DD30-725/Gutttersen State DD30-725)

Created by: Shelly C. Peterkin Date: 10:54, August 09 2019

Northern Region - DJ Basin

Mustang

DD Section 30

Guttersen State DD30-725

Guttersen State DD30-725

Plan: Plan #2

Standard Planning Report

09 August, 2019

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen State DD30-725
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4853.00ft
Project:	Mustang	MD Reference:	KB @ 4853.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-725	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-725		
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 DD30-725					
Well Position	+N/-S	-2,128.59 ft	Northing:	1,313,884.55 usft	Latitude:	40.1904590
	+E/-W	1,838.00 ft	Easting:	3,286,585.15 usft	Longitude:	-104.4741550
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,823.00 ft

Wellbore	Guttersen State DD30-725				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/12/2018	7.92	66.70	52,191.77185476

Design	Plan #2			
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	358.61

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	
2,522.77	9.68	189.92	2,521.24	-26.80	-4.69	3.00	3.00	0.00	189.92	
6,042.14	9.68	189.92	5,990.46	-609.90	-106.71	0.00	0.00	0.00	0.00	
7,147.90	90.00	359.41	6,732.00	17.68	-136.32	9.00	7.26	15.33	169.33	Guttersen State DD30
15,627.74	90.00	359.41	6,732.00	8,497.06	-224.32	0.00	0.00	0.00	0.00	
15,677.74	91.00	359.41	6,731.56	8,547.05	-224.84	2.00	2.00	0.00	0.00	
16,993.72	91.00	359.41	6,708.60	9,862.76	-238.49	0.00	0.00	0.00	0.00	Guttersen State DD30

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen State DD30-725
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4853.00ft
Project:	Mustang	MD Reference:	KB @ 4853.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-725	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-725		
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
622.00	0.00	0.00	622.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
716.00	0.00	0.00	716.00	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
1,653.00	0.00	0.00	1,653.00	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
Start Build 3.00									
2,300.00	3.00	189.92	2,299.95	-2.58	-0.45	-2.57	3.00	3.00	0.00
2,400.00	6.00	189.92	2,399.63	-10.31	-1.80	-10.26	3.00	3.00	0.00
2,500.00	9.00	189.92	2,498.77	-23.16	-4.05	-23.06	3.00	3.00	0.00
2,522.77	9.68	189.92	2,521.24	-26.80	-4.69	-26.68	3.00	3.00	0.00
Start 3519.36 hold at 2522.77 MD									
2,600.00	9.68	189.92	2,597.37	-39.60	-6.93	-39.42	0.00	0.00	0.00
2,700.00	9.68	189.92	2,695.94	-56.17	-9.83	-55.91	0.00	0.00	0.00
2,800.00	9.68	189.92	2,794.52	-72.73	-12.73	-72.41	0.00	0.00	0.00
2,900.00	9.68	189.92	2,893.09	-89.30	-15.62	-88.90	0.00	0.00	0.00
3,000.00	9.68	189.92	2,991.67	-105.87	-18.52	-105.39	0.00	0.00	0.00
3,100.00	9.68	189.92	3,090.24	-122.44	-21.42	-121.89	0.00	0.00	0.00
3,200.00	9.68	189.92	3,188.82	-139.01	-24.32	-138.38	0.00	0.00	0.00
3,300.00	9.68	189.92	3,287.39	-155.58	-27.22	-154.87	0.00	0.00	0.00
3,400.00	9.68	189.92	3,385.97	-172.15	-30.12	-171.37	0.00	0.00	0.00
3,500.00	9.68	189.92	3,484.54	-188.71	-33.02	-187.86	0.00	0.00	0.00
3,600.00	9.68	189.92	3,583.12	-205.28	-35.92	-204.35	0.00	0.00	0.00
3,642.49	9.68	189.92	3,625.00	-212.32	-37.15	-211.36	0.00	0.00	0.00
Parkman									
3,700.00	9.68	189.92	3,681.69	-221.85	-38.82	-220.85	0.00	0.00	0.00
3,800.00	9.68	189.92	3,780.27	-238.42	-41.71	-237.34	0.00	0.00	0.00
3,900.00	9.68	189.92	3,878.84	-254.99	-44.61	-253.83	0.00	0.00	0.00
4,000.00	9.68	189.92	3,977.42	-271.56	-47.51	-270.33	0.00	0.00	0.00
4,070.59	9.68	189.92	4,047.00	-283.25	-49.56	-281.97	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

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Project:	Mustang	MD Reference:	KB @ 4853.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-725	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-725		
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	9.68	189.92	4,075.99	-288.12	-50.41	-286.82	0.00	0.00	0.00
4,200.00	9.68	189.92	4,174.57	-304.69	-53.31	-303.31	0.00	0.00	0.00
4,258.26	9.68	189.92	4,232.00	-314.35	-55.00	-312.92	0.00	0.00	0.00
Shannon									
4,300.00	9.68	189.92	4,273.15	-321.26	-56.21	-319.81	0.00	0.00	0.00
4,400.00	9.68	189.92	4,371.72	-337.83	-59.11	-336.30	0.00	0.00	0.00
4,500.00	9.68	189.92	4,470.30	-354.40	-62.01	-352.80	0.00	0.00	0.00
4,600.00	9.68	189.92	4,568.87	-370.97	-64.91	-369.29	0.00	0.00	0.00
4,700.00	9.68	189.92	4,667.45	-387.53	-67.80	-385.78	0.00	0.00	0.00
4,800.00	9.68	189.92	4,766.02	-404.10	-70.70	-402.28	0.00	0.00	0.00
4,900.00	9.68	189.92	4,864.60	-420.67	-73.60	-418.77	0.00	0.00	0.00
5,000.00	9.68	189.92	4,963.17	-437.24	-76.50	-435.26	0.00	0.00	0.00
5,100.00	9.68	189.92	5,061.75	-453.81	-79.40	-451.76	0.00	0.00	0.00
5,200.00	9.68	189.92	5,160.32	-470.38	-82.30	-468.25	0.00	0.00	0.00
5,300.00	9.68	189.92	5,258.90	-486.94	-85.20	-484.74	0.00	0.00	0.00
5,400.00	9.68	189.92	5,357.47	-503.51	-88.10	-501.24	0.00	0.00	0.00
5,500.00	9.68	189.92	5,456.05	-520.08	-91.00	-517.73	0.00	0.00	0.00
5,600.00	9.68	189.92	5,554.62	-536.65	-93.89	-534.22	0.00	0.00	0.00
5,700.00	9.68	189.92	5,653.20	-553.22	-96.79	-550.72	0.00	0.00	0.00
5,800.00	9.68	189.92	5,751.77	-569.79	-99.69	-567.21	0.00	0.00	0.00
5,900.00	9.68	189.92	5,850.35	-586.36	-102.59	-583.70	0.00	0.00	0.00
5,950.37	9.68	189.92	5,900.00	-594.70	-104.05	-592.01	0.00	0.00	0.00
Teepee Buttes									
6,000.00	9.68	189.92	5,948.92	-602.92	-105.49	-600.20	0.00	0.00	0.00
6,042.14	9.68	189.92	5,990.46	-609.90	-106.71	-607.15	0.00	0.00	0.00
Start DLS 9.00 TFO 169.33									
6,050.00	8.99	190.76	5,998.22	-611.16	-106.94	-608.40	9.00	-8.83	10.66
6,100.00	4.67	201.85	6,047.86	-616.89	-108.43	-614.09	9.00	-8.65	22.17
6,150.00	1.79	275.45	6,097.79	-618.70	-109.96	-615.86	9.00	-5.74	147.20
6,200.00	5.02	338.62	6,147.70	-616.59	-111.54	-613.71	9.00	6.44	126.34
6,250.00	9.36	348.51	6,197.30	-610.57	-113.15	-607.65	9.00	8.69	19.79
6,300.00	13.80	352.12	6,246.27	-600.67	-114.78	-597.72	9.00	8.89	7.22
6,350.00	18.27	353.99	6,294.31	-586.96	-116.42	-583.97	9.00	8.94	3.74
6,400.00	22.76	355.15	6,341.13	-569.52	-118.06	-566.50	9.00	8.96	2.31
6,450.00	27.24	355.94	6,386.44	-548.46	-119.69	-545.41	9.00	8.98	1.58
6,500.00	31.73	356.52	6,429.95	-523.91	-121.30	-520.82	9.00	8.98	1.16
6,550.00	36.23	356.97	6,471.40	-496.01	-122.88	-492.90	9.00	8.99	0.90
6,600.00	40.72	357.33	6,510.53	-464.95	-124.42	-461.81	9.00	8.99	0.73
6,608.58	41.49	357.39	6,517.00	-459.31	-124.68	-456.17	9.00	8.99	0.65
Sharon Springs									
6,650.00	45.22	357.63	6,547.11	-430.91	-125.91	-427.74	9.00	8.99	0.60
6,672.98	47.28	357.76	6,563.00	-414.33	-126.58	-411.15	9.00	8.99	0.54
Top A Chalk									
6,675.94	47.55	357.77	6,565.00	-412.15	-126.66	-408.97	9.00	8.99	0.52
Top A Marl									
6,697.06	49.45	357.88	6,579.00	-396.34	-127.26	-393.15	9.00	8.99	0.50
Top B Chalk									
6,700.00	49.71	357.89	6,580.90	-394.11	-127.34	-390.91	9.00	8.99	0.48
6,750.00	54.21	358.12	6,611.71	-354.76	-128.71	-351.55	9.00	8.99	0.45
6,782.44	57.13	358.25	6,630.00	-327.99	-129.56	-324.76	9.00	8.99	0.41
Top B Marl									
6,800.00	58.71	358.32	6,639.33	-313.12	-130.01	-309.88	9.00	8.99	0.39

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen State DD30-725
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4853.00ft
Project:	Mustang	MD Reference:	KB @ 4853.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-725	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-725		
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)
6,850.00	63.20	358.50	6,663.60	-269.43	-131.21	-266.18	9.00	8.99	0.37
6,900.00	67.70	358.67	6,684.36	-223.98	-132.33	-220.72	9.00	8.99	0.34
6,950.00	72.20	358.83	6,701.50	-177.03	-133.35	-173.76	9.00	9.00	0.32
6,958.34	72.95	358.86	6,704.00	-169.08	-133.51	-165.80	9.00	9.00	0.31
Top C Chalk									
7,000.00	76.70	358.98	6,714.91	-128.89	-134.27	-125.60	9.00	9.00	0.30
7,050.00	81.19	359.13	6,724.49	-79.83	-135.08	-76.54	9.00	9.00	0.29
7,100.00	85.69	359.27	6,730.20	-30.18	-135.77	-26.89	9.00	9.00	0.28
7,147.90	90.00	359.41	6,732.00	17.68	-136.32	20.97	9.00	9.00	0.28
TPZ/Landing Pt. at 7147.9 MD									
7,200.00	90.00	359.41	6,732.00	69.77	-136.87	73.06	0.00	0.00	0.00
7,300.00	90.00	359.41	6,732.00	169.77	-137.90	173.05	0.00	0.00	0.00
7,400.00	90.00	359.41	6,732.00	269.76	-138.94	273.04	0.00	0.00	0.00
7,500.00	90.00	359.41	6,732.00	369.76	-139.98	373.03	0.00	0.00	0.00
7,600.00	90.00	359.41	6,732.00	469.75	-141.02	473.02	0.00	0.00	0.00
7,700.00	90.00	359.41	6,732.00	569.74	-142.05	573.01	0.00	0.00	0.00
7,800.00	90.00	359.41	6,732.00	669.74	-143.09	673.00	0.00	0.00	0.00
7,900.00	90.00	359.41	6,732.00	769.73	-144.13	772.99	0.00	0.00	0.00
8,000.00	90.00	359.41	6,732.00	869.73	-145.17	872.98	0.00	0.00	0.00
8,100.00	90.00	359.41	6,732.00	969.72	-146.20	972.97	0.00	0.00	0.00
8,200.00	90.00	359.41	6,732.00	1,069.72	-147.24	1,072.96	0.00	0.00	0.00
8,300.00	90.00	359.41	6,732.00	1,169.71	-148.28	1,172.96	0.00	0.00	0.00
8,400.00	90.00	359.41	6,732.00	1,269.71	-149.32	1,272.95	0.00	0.00	0.00
8,500.00	90.00	359.41	6,732.00	1,369.70	-150.36	1,372.94	0.00	0.00	0.00
8,600.00	90.00	359.41	6,732.00	1,469.70	-151.39	1,472.93	0.00	0.00	0.00
8,700.00	90.00	359.41	6,732.00	1,569.69	-152.43	1,572.92	0.00	0.00	0.00
8,800.00	90.00	359.41	6,732.00	1,669.69	-153.47	1,672.91	0.00	0.00	0.00
8,900.00	90.00	359.41	6,732.00	1,769.68	-154.51	1,772.90	0.00	0.00	0.00
9,000.00	90.00	359.41	6,732.00	1,869.67	-155.54	1,872.89	0.00	0.00	0.00
9,100.00	90.00	359.41	6,732.00	1,969.67	-156.58	1,972.88	0.00	0.00	0.00
9,200.00	90.00	359.41	6,732.00	2,069.66	-157.62	2,072.87	0.00	0.00	0.00
9,300.00	90.00	359.41	6,732.00	2,169.66	-158.66	2,172.86	0.00	0.00	0.00
9,400.00	90.00	359.41	6,732.00	2,269.65	-159.69	2,272.85	0.00	0.00	0.00
9,500.00	90.00	359.41	6,732.00	2,369.65	-160.73	2,372.84	0.00	0.00	0.00
9,600.00	90.00	359.41	6,732.00	2,469.64	-161.77	2,472.83	0.00	0.00	0.00
9,700.00	90.00	359.41	6,732.00	2,569.64	-162.81	2,572.82	0.00	0.00	0.00
9,800.00	90.00	359.41	6,732.00	2,669.63	-163.84	2,672.81	0.00	0.00	0.00
9,900.00	90.00	359.41	6,732.00	2,769.63	-164.88	2,772.80	0.00	0.00	0.00
10,000.00	90.00	359.41	6,732.00	2,869.62	-165.92	2,872.79	0.00	0.00	0.00
10,100.00	90.00	359.41	6,732.00	2,969.62	-166.96	2,972.78	0.00	0.00	0.00
10,200.00	90.00	359.41	6,732.00	3,069.61	-168.00	3,072.77	0.00	0.00	0.00
10,300.00	90.00	359.41	6,732.00	3,169.60	-169.03	3,172.76	0.00	0.00	0.00
10,400.00	90.00	359.41	6,732.00	3,269.60	-170.07	3,272.76	0.00	0.00	0.00
10,500.00	90.00	359.41	6,732.00	3,369.59	-171.11	3,372.75	0.00	0.00	0.00
10,600.00	90.00	359.41	6,732.00	3,469.59	-172.15	3,472.74	0.00	0.00	0.00
10,700.00	90.00	359.41	6,732.00	3,569.58	-173.18	3,572.73	0.00	0.00	0.00
10,800.00	90.00	359.41	6,732.00	3,669.58	-174.22	3,672.72	0.00	0.00	0.00
10,900.00	90.00	359.41	6,732.00	3,769.57	-175.26	3,772.71	0.00	0.00	0.00
11,000.00	90.00	359.41	6,732.00	3,869.57	-176.30	3,872.70	0.00	0.00	0.00
11,100.00	90.00	359.41	6,732.00	3,969.56	-177.33	3,972.69	0.00	0.00	0.00
11,200.00	90.00	359.41	6,732.00	4,069.56	-178.37	4,072.68	0.00	0.00	0.00
11,300.00	90.00	359.41	6,732.00	4,169.55	-179.41	4,172.67	0.00	0.00	0.00
11,400.00	90.00	359.41	6,732.00	4,269.55	-180.45	4,272.66	0.00	0.00	0.00
11,500.00	90.00	359.41	6,732.00	4,369.54	-181.49	4,372.65	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen State DD30-725
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4853.00ft
Project:	Mustang	MD Reference:	KB @ 4853.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-725	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-725		
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)
11,600.00	90.00	359.41	6,732.00	4,469.53	-182.52	4,472.64	0.00	0.00	0.00
11,700.00	90.00	359.41	6,732.00	4,569.53	-183.56	4,572.63	0.00	0.00	0.00
11,800.00	90.00	359.41	6,732.00	4,669.52	-184.60	4,672.62	0.00	0.00	0.00
11,900.00	90.00	359.41	6,732.00	4,769.52	-185.64	4,772.61	0.00	0.00	0.00
12,000.00	90.00	359.41	6,732.00	4,869.51	-186.67	4,872.60	0.00	0.00	0.00
12,100.00	90.00	359.41	6,732.00	4,969.51	-187.71	4,972.59	0.00	0.00	0.00
12,200.00	90.00	359.41	6,732.00	5,069.50	-188.75	5,072.58	0.00	0.00	0.00
12,300.00	90.00	359.41	6,732.00	5,169.50	-189.79	5,172.57	0.00	0.00	0.00
12,400.00	90.00	359.41	6,732.00	5,269.49	-190.82	5,272.56	0.00	0.00	0.00
12,500.00	90.00	359.41	6,732.00	5,369.49	-191.86	5,372.56	0.00	0.00	0.00
12,600.00	90.00	359.41	6,732.00	5,469.48	-192.90	5,472.55	0.00	0.00	0.00
12,700.00	90.00	359.41	6,732.00	5,569.48	-193.94	5,572.54	0.00	0.00	0.00
12,800.00	90.00	359.41	6,732.00	5,669.47	-194.97	5,672.53	0.00	0.00	0.00
12,900.00	90.00	359.41	6,732.00	5,769.46	-196.01	5,772.52	0.00	0.00	0.00
13,000.00	90.00	359.41	6,732.00	5,869.46	-197.05	5,872.51	0.00	0.00	0.00
13,100.00	90.00	359.41	6,732.00	5,969.45	-198.09	5,972.50	0.00	0.00	0.00
13,200.00	90.00	359.41	6,732.00	6,069.45	-199.13	6,072.49	0.00	0.00	0.00
13,300.00	90.00	359.41	6,732.00	6,169.44	-200.16	6,172.48	0.00	0.00	0.00
13,400.00	90.00	359.41	6,732.00	6,269.44	-201.20	6,272.47	0.00	0.00	0.00
13,500.00	90.00	359.41	6,732.00	6,369.43	-202.24	6,372.46	0.00	0.00	0.00
13,600.00	90.00	359.41	6,732.00	6,469.43	-203.28	6,472.45	0.00	0.00	0.00
13,700.00	90.00	359.41	6,732.00	6,569.42	-204.31	6,572.44	0.00	0.00	0.00
13,800.00	90.00	359.41	6,732.00	6,669.42	-205.35	6,672.43	0.00	0.00	0.00
13,900.00	90.00	359.41	6,732.00	6,769.41	-206.39	6,772.42	0.00	0.00	0.00
14,000.00	90.00	359.41	6,732.00	6,869.41	-207.43	6,872.41	0.00	0.00	0.00
14,100.00	90.00	359.41	6,732.00	6,969.40	-208.46	6,972.40	0.00	0.00	0.00
14,200.00	90.00	359.41	6,732.00	7,069.39	-209.50	7,072.39	0.00	0.00	0.00
14,300.00	90.00	359.41	6,732.00	7,169.39	-210.54	7,172.38	0.00	0.00	0.00
14,400.00	90.00	359.41	6,732.00	7,269.38	-211.58	7,272.37	0.00	0.00	0.00
14,500.00	90.00	359.41	6,732.00	7,369.38	-212.62	7,372.36	0.00	0.00	0.00
14,600.00	90.00	359.41	6,732.00	7,469.37	-213.65	7,472.36	0.00	0.00	0.00
14,700.00	90.00	359.41	6,732.00	7,569.37	-214.69	7,572.35	0.00	0.00	0.00
14,800.00	90.00	359.41	6,732.00	7,669.36	-215.73	7,672.34	0.00	0.00	0.00
14,900.00	90.00	359.41	6,732.00	7,769.36	-216.77	7,772.33	0.00	0.00	0.00
15,000.00	90.00	359.41	6,732.00	7,869.35	-217.80	7,872.32	0.00	0.00	0.00
15,100.00	90.00	359.41	6,732.00	7,969.35	-218.84	7,972.31	0.00	0.00	0.00
15,200.00	90.00	359.41	6,732.00	8,069.34	-219.88	8,072.30	0.00	0.00	0.00
15,300.00	90.00	359.41	6,732.00	8,169.34	-220.92	8,172.29	0.00	0.00	0.00
15,400.00	90.00	359.41	6,732.00	8,269.33	-221.95	8,272.28	0.00	0.00	0.00
15,500.00	90.00	359.41	6,732.00	8,369.32	-222.99	8,372.27	0.00	0.00	0.00
15,600.00	90.00	359.41	6,732.00	8,469.32	-224.03	8,472.26	0.00	0.00	0.00
15,627.74	90.00	359.41	6,732.00	8,497.06	-224.32	8,500.00	0.00	0.00	0.00
Start Build 2.00									
15,677.74	91.00	359.41	6,731.56	8,547.05	-224.84	8,549.99	2.00	2.00	0.00
Start 1315.99 hold at 15677.74 MD									
15,700.00	91.00	359.41	6,731.18	8,569.31	-225.07	8,572.24	0.00	0.00	0.00
15,800.00	91.00	359.41	6,729.43	8,669.29	-226.10	8,672.22	0.00	0.00	0.00
15,900.00	91.00	359.41	6,727.69	8,769.27	-227.14	8,772.20	0.00	0.00	0.00
16,000.00	91.00	359.41	6,725.94	8,869.25	-228.18	8,872.17	0.00	0.00	0.00
16,100.00	91.00	359.41	6,724.20	8,969.23	-229.22	8,972.15	0.00	0.00	0.00
16,200.00	91.00	359.41	6,722.45	9,069.21	-230.25	9,072.12	0.00	0.00	0.00
16,300.00	91.00	359.41	6,720.71	9,169.18	-231.29	9,172.10	0.00	0.00	0.00
16,400.00	91.00	359.41	6,718.96	9,269.16	-232.33	9,272.07	0.00	0.00	0.00
16,500.00	91.00	359.41	6,717.22	9,369.14	-233.37	9,372.05	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen State DD30-725
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4853.00ft
Project:	Mustang	MD Reference:	KB @ 4853.00ft
Site:	DD Section 30	North Reference:	Grid
Well:	Guttersen State DD30-725	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen State DD30-725		
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	91.00	359.41	6,715.47	9,469.12	-234.40	9,472.02	0.00	0.00	0.00
16,700.00	91.00	359.41	6,713.73	9,569.10	-235.44	9,572.00	0.00	0.00	0.00
16,800.00	91.00	359.41	6,711.98	9,669.08	-236.48	9,671.97	0.00	0.00	0.00
16,900.00	91.00	359.41	6,710.24	9,769.06	-237.52	9,771.95	0.00	0.00	0.00
16,993.72	91.00	359.41	6,708.60	9,862.76	-238.49	9,865.65	0.00	0.00	0.00
TD at 16993.72									

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	6,708.60	9,862.76	-238.49	1,323,747.29	3,286,346.66	40.2175391	-104.4746003
- plan hits target center									
- Point									
Guttersen State DD30-7	0.00	0.00	6,732.00	17.68	-136.32	1,313,902.22	3,286,448.82	40.1905119	-104.4746422
- plan hits target center									
- Point									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
622.00	622.00	Pierre				
716.00	716.00	Upper Pierre Aquifer Top				
1,653.00	1,653.00	Upper Pierre Aquifer Base				
3,642.49	3,625.00	Parkman				
4,070.59	4,047.00	Sussex				
4,258.26	4,232.00	Shannon				
5,950.37	5,900.00	Teepee Buttes				
6,608.58	6,517.00	Sharon Springs				
6,672.98	6,563.00	Top A Chalk				
6,675.94	6,565.00	Top A Marl				
6,697.06	6,579.00	Top B Chalk				
6,782.44	6,630.00	Top B Marl				
6,958.34	6,704.00	Top C Chalk				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,200.00	2,200.00	0.00	0.00	Start Build 3.00	
2,522.77	2,521.24	-26.80	-4.69	Start 3519.36 hold at 2522.77 MD	
6,042.14	5,990.46	-609.90	-106.71	Start DLS 9.00 TFO 169.33	
7,147.90	6,732.00	17.68	-136.32	TPZ/Landing Pt. at 7147.9 MD	
15,627.74	6,732.00	8,497.06	-224.32	Start Build 2.00	
15,677.74	6,731.56	8,547.05	-224.84	Start 1315.99 hold at 15677.74 MD	
16,993.72	6,708.60	9,862.76	-238.49	TD at 16993.72	

Northern Region - DJ Basin

Mustang

DD Section 30

Guttersen State DD30-725

Guttersen State DD30-725

Plan #2

Anticollision Summary Report

09 August, 2019

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersten State DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-725	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	8/9/2019		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	16,993.52	Plan #2 (Guttersten State DD30-725)	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	16,993.72	6,668.28	7,843.21	7,735.67	72.930	CC, ES, SF
Dalbey D 13-12 (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,648.50	8,851.43	8,742.26	81.077	CC, ES, SF
Dalbey D 13-13 (SI) - Wellbore #1 - As-Drilled	16,993.72	6,750.09	8,977.74	8,867.00	81.065	CC, ES, SF
Dalbey D 13-14 (PA) - Wellbore #1 - Gyro Surveys	16,993.72	6,551.31	7,809.20	7,699.26	71.032	CC, ES, SF
Guttersten 12-13 (SI) - Wellbore #1 - Gyro Surveys	16,993.72	7,018.00	9,652.63	9,546.20	90.692	CC, ES, SF
Guttersten 13C (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,787.27	6,994.78	6,898.94	72.985	CC, ES, SF
Guttersten 13D (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,633.24	5,873.87	5,766.04	54.476	CC, ES, SF
Guttersten 13N (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,876.78	8,298.20	8,197.69	82.559	CC, ES, SF
Guttersten 13S (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,706.46	6,353.12	6,250.90	62.152	CC, ES, SF
Guttersten 13T (PR) - Wellbore #1 - Gyro Surveys	15,500.00	15,500.00	6,057.42	5,931.04	47.930	SF
Guttersten 13T (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,661.24	5,789.97	5,679.31	52.325	CC, ES
Guttersten 21-13 (SI) - Wellbore #1 - Gyro Surveys	16,993.72	6,835.58	9,095.14	8,995.87	91.618	CC, ES, SF
Guttersten 22-13 (SI) - Wellbore #1 - Gyro Surveys	16,993.72	6,727.58	8,377.51	8,273.86	80.823	CC, ES, SF
Guttersten 31-13 (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,544.09	7,964.61	7,870.07	84.243	CC, ES, SF
Guttersten 32-13 (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,662.28	7,237.30	7,136.99	72.151	CC, ES, SF
Guttersten 34-13 (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,616.65	6,468.23	6,358.35	58.866	CC, ES, SF
Guttersten 41-13 (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,862.26	6,847.63	6,756.73	75.332	CC, ES, SF
Guttersten 42-13 (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,722.93	5,982.16	5,885.51	61.899	CC, ES, SF
Guttersten 43-13 - Wellbore #1 - Wellbore #1 - As Drilled	16,993.72	6,626.41	5,454.13	5,350.14	52.449	CC, ES, SF
Guttersten 44-13 - Wellbore #1 - Wellbore #1 - As Drilled	16,993.72	6,617.10	5,138.74	5,026.59	45.819	CC, ES, SF
L F Ranch 1-13 (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,735.43	6,700.41	6,592.53	62.112	CC, ES, SF
L. F. Ranch 13-4 (SI) - Wellbore #1 - Gyro Surveys	16,993.72	7,376.00	9,672.71	9,563.00	88.166	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 Guttersen State DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen State DD30-725	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	13,522.16	6,683.78	5,998.84	5,915.06	71.597	CC
Dalbey D 24-10 (PR) - Wellbore #1 - Gyro Surveys	13,600.00	6,683.74	5,999.35	5,914.98	71.104	ES
Dalbey D 24-10 (PR) - Wellbore #1 - Gyro Surveys	15,400.00	6,682.55	6,285.89	6,190.58	65.955	SF
Dalbey D 24-15 (SI) - Wellbore #1 - Gyro Surveys	12,564.14	6,598.48	6,473.26	6,396.93	84.808	CC
Dalbey D 24-15 (SI) - Wellbore #1 - Gyro Surveys	12,600.00	6,598.64	6,473.36	6,396.76	84.515	ES
Dalbey D 24-15 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	6,612.58	6,881.80	6,791.25	76.001	SF
Glazier 2-24 (PR) - Wellbore #1 - Gyro Surveys	15,730.97	6,676.33	5,341.85	5,241.03	52.981	CC
Glazier 2-24 (PR) - Wellbore #1 - Gyro Surveys	15,800.00	6,674.68	5,342.30	5,240.94	52.706	ES
Glazier 2-24 (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,646.49	5,489.00	5,380.34	50.518	SF
Guttersen 11-24 (SI) - Wellbore #1 - Gyro Surveys	16,526.77	6,790.15	9,017.31	8,910.08	84.095	CC
Guttersen 11-24 (SI) - Wellbore #1 - Gyro Surveys	16,600.00	6,788.88	9,017.60	8,909.80	83.647	ES
Guttersen 11-24 (SI) - Wellbore #1 - Gyro Surveys	16,993.72	6,782.04	9,029.38	8,918.55	81.470	SF
Guttersen 12-24 (SI) - Wellbore #1 - Gyro Surveys	15,232.67	6,720.77	9,039.43	8,942.43	93.195	CC
Guttersen 12-24 (SI) - Wellbore #1 - Gyro Surveys	15,300.00	6,720.64	9,039.68	8,942.16	92.696	ES
Guttersen 12-24 (SI) - Wellbore #1 - Gyro Surveys	16,993.72	6,705.99	9,209.53	9,100.06	84.132	SF
Guttersen 21-24 (SI) - Wellbore #1 - Gyro Surveys	16,536.10	6,621.50	7,698.56	7,591.57	71.956	CC
Guttersen 21-24 (SI) - Wellbore #1 - Gyro Surveys	16,600.00	6,620.80	7,698.82	7,591.33	71.622	ES
Guttersen 21-24 (SI) - Wellbore #1 - Gyro Surveys	16,993.72	6,616.48	7,712.14	7,601.67	69.808	SF
Guttersen 22-24 (PR) - Wellbore #1 - Gyro Surveys	15,307.17	6,650.13	7,654.25	7,556.84	78.578	CC
Guttersen 22-24 (PR) - Wellbore #1 - Gyro Surveys	15,400.00	6,650.28	7,654.82	7,556.68	78.005	ES
Guttersen 22-24 (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,631.43	7,837.89	7,729.04	72.010	SF
Guttersen 24A (SI) - Wellbore #1 - Gyro Surveys	15,864.05	6,707.22	8,329.68	8,227.74	81.714	CC
Guttersen 24A (SI) - Wellbore #1 - Gyro Surveys	15,900.00	6,706.91	8,329.76	8,227.54	81.489	ES
Guttersen 24A (SI) - Wellbore #1 - Gyro Surveys	16,993.72	6,697.11	8,405.93	8,295.77	76.310	SF
Guttersen 24J (PR) - Wellbore #1 - Gyro Surveys	16,993.72	6,636.49	8,235.80	8,125.17	74.451	CC, ES, SF
Guttersen 24N (SI) - Wellbore #1 - MWD Surveys	15,898.51	6,576.65	7,100.35	6,999.64	70.501	CC
Guttersen 24N (SI) - Wellbore #1 - MWD Surveys	16,000.00	6,574.54	7,101.08	6,999.58	69.961	ES
Guttersen 24N (SI) - Wellbore #1 - MWD Surveys	16,993.72	6,553.43	7,184.28	7,075.87	66.269	SF
Guttersen 24S (PR) - Wellbore #1 - As-Drilled	14,402.08	6,695.00	5,645.86	5,556.17	62.947	CC, ES
Guttersen 24S (PR) - Wellbore #1 - As-Drilled	15,900.00	6,682.63	5,841.20	5,742.23	59.020	SF
Guttersen 43-24 (PR) - Wellbore #1 - Gyro Surveys	13,775.97	6,598.20	5,106.16	5,020.69	59.741	CC
Guttersen 43-24 (PR) - Wellbore #1 - Gyro Surveys	13,800.00	6,598.14	5,106.22	5,020.56	59.614	ES
Guttersen 43-24 (PR) - Wellbore #1 - Gyro Surveys	15,100.00	6,594.61	5,275.03	5,181.32	56.291	SF
Guttersen 44-24 (PR) - Wellbore #1 - Gyro Surveys	12,537.35	6,726.02	5,039.71	4,963.21	65.877	CC
Guttersen 44-24 (PR) - Wellbore #1 - Gyro Surveys	12,600.00	6,725.90	5,040.10	4,963.14	65.488	ES
Guttersen 44-24 (PR) - Wellbore #1 - Gyro Surveys	14,000.00	6,723.26	5,247.67	5,162.26	61.441	SF
Karch Blue D 24-12 (PA) - Wellbore #1 - Gyro Surveys	14,054.03	6,672.49	8,990.30	8,902.57	102.477	CC
Karch Blue D 24-12 (PA) - Wellbore #1 - Gyro Surveys	14,100.00	6,672.51	8,990.42	8,902.34	102.068	ES
Karch Blue D 24-12 (PA) - Wellbore #1 - Gyro Surveys	16,993.72	6,650.11	9,458.71	9,351.84	88.502	SF
Karch Blue D 24-14 (PR) - Wellbore #1 - No Surveys	12,519.99	6,644.00	7,432.64	7,246.63	39.959	CC
Karch Blue D 24-14 (PR) - Wellbore #1 - No Surveys	12,600.00	6,644.00	7,433.07	7,246.48	39.835	ES
Karch Blue D 24-14 (PR) - Wellbore #1 - No Surveys	14,300.00	6,644.00	7,642.81	7,444.88	38.613	SF
Karch Blue D24-11 (PA) - Wellbore #1 - Gyro Surveys	14,044.28	6,561.96	7,573.06	7,479.43	80.888	CC
Karch Blue D24-11 (PA) - Wellbore #1 - Gyro Surveys	14,100.00	6,562.52	7,573.26	7,479.21	80.519	ES
Karch Blue D24-11 (PA) - Wellbore #1 - Gyro Surveys	16,700.00	6,570.16	8,025.03	7,914.83	72.824	SF
Koerner 31-24 (SI) - Wellbore #1 - Gyro Surveys	16,579.82	6,568.06	6,374.74	6,267.59	59.498	CC
Koerner 31-24 (SI) - Wellbore #1 - Gyro Surveys	16,600.00	6,567.98	6,374.77	6,267.47	59.409	ES
Koerner 31-24 (SI) - Wellbore #1 - Gyro Surveys	16,993.72	6,566.46	6,388.16	6,277.89	57.933	SF
Koerner 32-24 (SI) - Wellbore #1 - Gyro Surveys	15,145.56	6,831.93	6,368.94	6,272.24	65.863	CC
Koerner 32-24 (SI) - Wellbore #1 - Gyro Surveys	15,200.00	6,831.99	6,369.17	6,272.05	65.579	ES
Koerner 32-24 (SI) - Wellbore #1 - Gyro Surveys	16,993.72	6,810.53	6,632.34	6,524.24	61.353	SF
Koerner 42-24 (SI) - Wellbore #1 - Gyro Surveys	15,127.60	6,640.23	5,064.54	4,968.57	52.773	CC
Koerner 42-24 (SI) - Wellbore #1 - Gyro Surveys	15,200.00	6,639.41	5,065.06	4,968.53	52.473	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 DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-725	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						
Koerner 42-24 (SI) - Wellbore #1 - Gyro Surveys	16,300.00	6,615.11	5,198.41	5,095.14	50.339	SF
LF Ranch 1-24 (SI) - Wellbore #1 - Gyro Surveys	12,946.39	6,887.26	8,653.21	8,573.08	107.986	CC
LF Ranch 1-24 (SI) - Wellbore #1 - Gyro Surveys	13,000.00	6,886.82	8,653.38	8,572.85	107.454	ES
LF Ranch 1-24 (SI) - Wellbore #1 - Gyro Surveys	16,700.00	6,881.52	9,432.62	9,329.70	91.652	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersten State DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-725	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)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 25						
Coors Energy 13-25D (PR) - Wellbore #1 - MWD Surveys	100.00	58.07	8,238.97	8,238.74	10,000.000	CC
Coors Energy 13-25D (PR) - Wellbore #1 - MWD Surveys	300.00	209.47	8,239.26	8,237.82	5,760.129	ES
Coors Energy 13-25D (PR) - Wellbore #1 - MWD Surveys	13,000.00	6,768.30	9,999.84	9,914.19	116.740	SF
Coors Energy 14-25D (PR) - Wellbore #1 - MWD Surveys	100.00	60.97	8,222.33	8,222.10	10,000.000	CC
Coors Energy 14-25D (PR) - Wellbore #1 - MWD Surveys	900.00	847.70	8,223.08	8,218.56	1,822.196	ES
Coors Energy 14-25D (PR) - Wellbore #1 - MWD Surveys	11,600.00	7,016.37	9,968.78	9,901.49	148.152	SF
Coors Energy 14-25H (PR) - Wellbore #1 - MWD Surveys	7,987.58	11,093.00	4,908.14	4,859.23	100.347	CC, ES
Coors Energy 14-25H (PR) - Wellbore #1 - MWD Surveys	12,400.00	11,093.00	6,599.95	6,475.06	52.849	SF
Coors Energy 23-25D (PR) - Wellbore #1 - MWD Surveys	8,620.29	6,842.94	7,665.80	7,608.49	133.758	CC, ES
Coors Energy 23-25D (PR) - Wellbore #1 - MWD Surveys	12,500.00	6,846.42	8,591.66	8,516.48	114.277	SF
Coors Energy 24-25 (PR) - Wellbore #1 - Gyro Surveys	7,077.99	6,742.13	7,527.86	7,480.56	159.152	CC, ES
Coors Energy 24-25 (PR) - Wellbore #1 - Gyro Surveys	12,000.00	6,753.22	9,011.01	8,944.19	134.859	SF
Coors Energy 25HD (PR) - Wellbore #1 - MWD Surveys	0.00	0.00	8,214.36			
Coors Energy 25HD (PR) - Wellbore #1 - MWD Surveys	100.00	35.51	8,214.37	8,214.18	10,000.000	ES
Coors Energy 25HD (PR) - Wellbore #1 - MWD Surveys	11,100.00	6,969.87	9,974.24	9,903.01	140.029	SF
Coors Energy 25LD (PR) - Wellbore #1 - MWD Surveys	100.00	59.50	8,221.88	8,221.65	10,000.000	CC
Coors Energy 25LD (PR) - Wellbore #1 - MWD Surveys	900.00	827.29	8,223.69	8,219.21	1,836.614	ES
Coors Energy 25LD (PR) - Wellbore #1 - MWD Surveys	12,300.00	7,105.00	9,953.89	9,884.38	143.196	SF
Coors Energy 25TD (PR) - Wellbore #1 - MWD Surveys	6,799.97	6,616.04	5,620.05	5,572.93	119.273	CC
Coors Energy 25TD (PR) - Wellbore #1 - MWD Surveys	6,800.00	6,616.06	5,620.05	5,572.93	119.272	ES
Coors Energy 25TD (PR) - Wellbore #1 - MWD Surveys	9,400.00	6,734.46	6,222.81	6,167.91	113.352	SF
Coors Energy 25XD (PR) - Wellbore #1 - MWD Surveys	7,955.80	6,956.67	4,496.54	4,444.48	86.385	CC, ES
Coors Energy 25XD (PR) - Wellbore #1 - MWD Surveys	9,400.00	6,936.64	4,722.73	4,666.80	84.439	SF
Coors Energy 25YD (PR) - Wellbore #1 - MWD Surveys	6,783.24	6,759.81	4,473.69	4,424.30	90.590	CC
Coors Energy 25YD (PR) - Wellbore #1 - MWD Surveys	6,800.00	6,768.25	4,473.72	4,424.25	90.442	ES
Coors Energy 25YD (PR) - Wellbore #1 - MWD Surveys	8,900.00	6,922.16	4,967.24	4,908.00	83.844	SF
Coors Energy 33-25D (PR) - Wellbore #1 - MWD Surveys	100.00	31.17	5,899.35	5,899.17	10,000.000	CC
Coors Energy 33-25D (PR) - Wellbore #1 - MWD Surveys	300.00	194.61	5,900.11	5,898.84	4,638.356	ES
Coors Energy 33-25D (PR) - Wellbore #1 - MWD Surveys	11,600.00	6,849.48	7,025.63	6,949.32	92.066	SF
Coors Energy 34-25 (PR) - Wellbore #1 - Gyro Surveys	7,057.33	6,661.11	6,531.29	6,484.32	139.036	CC, ES
Coors Energy 34-25 (PR) - Wellbore #1 - Gyro Surveys	10,900.00	6,667.62	7,591.32	7,530.29	124.390	SF
Coors Energy 43-25D (PR) - Wellbore #1 - MWD Surveys	8,613.03	6,899.88	5,060.29	5,000.94	85.253	CC, ES
Coors Energy 43-25D (PR) - Wellbore #1 - MWD Surveys	10,000.00	6,915.76	5,246.91	5,182.87	81.941	SF
Coors Energy 44-25D (PR) - Wellbore #1 - MWD Surveys	7,306.01	6,780.24	5,039.42	4,992.29	106.929	CC, ES
Coors Energy 44-25D (PR) - Wellbore #1 - MWD Surveys	9,700.00	6,775.00	5,579.15	5,523.19	99.692	SF
Dalbey D 25-03 (SI) - Wellbore #1 - Gyro Surveys	10,869.97	6,924.63	7,984.28	7,918.89	122.099	CC, ES
Dalbey D 25-03 (SI) - Wellbore #1 - Gyro Surveys	14,700.00	6,832.83	8,854.34	8,766.81	101.153	SF
Dalbey D 25-05 (SI) - Wellbore #1 - Gyro Surveys	9,930.74	7,070.00	9,180.33	9,119.48	150.873	CC
Dalbey D 25-05 (SI) - Wellbore #1 - Gyro Surveys	10,000.00	7,070.00	9,180.59	9,119.32	149.835	ES
Dalbey D 25-05 (SI) - Wellbore #1 - Gyro Surveys	13,900.00	6,747.33	9,995.23	9,912.54	120.877	SF
Guttersten 11-25 (PR) - Wellbore #1 - MWD Surveys	11,304.52	6,818.46	8,983.25	8,916.33	134.252	CC
Guttersten 11-25 (PR) - Wellbore #1 - MWD Surveys	11,400.00	6,817.39	8,983.75	8,916.18	132.944	ES
Guttersten 11-25 (PR) - Wellbore #1 - MWD Surveys	15,677.74	6,775.06	9,991.08	9,898.19	107.563	SF
Guttersten 22-25 (PA) - Wellbore #1 - MWD Surveys	10,032.97	6,760.29	7,562.27	7,504.01	129.817	CC
Guttersten 22-25 (PA) - Wellbore #1 - MWD Surveys	10,100.00	6,757.68	7,562.56	7,503.90	128.920	ES
Guttersten 22-25 (PA) - Wellbore #1 - MWD Surveys	13,800.00	6,600.38	8,447.12	8,367.99	106.757	SF
Guttersten 25E (PR) - Wellbore #1 - MWD Surveys	11,902.83	6,663.10	9,384.75	9,313.85	132.369	CC
Guttersten 25E (PR) - Wellbore #1 - MWD Surveys	12,000.00	6,661.37	9,385.25	9,313.66	131.092	ES
Guttersten 25E (PR) - Wellbore #1 - MWD Surveys	15,300.00	6,600.56	9,980.56	9,887.97	107.785	SF
Guttersten 25KD (PR) - Wellbore #1 - MWD Surveys	100.00	26.44	7,570.70	7,570.52	10,000.000	CC
Guttersten 25KD (PR) - Wellbore #1 - MWD Surveys	300.00	191.70	7,571.30	7,570.12	6,379.966	ES
Guttersten 25KD (PR) - Wellbore #1 - MWD Surveys	14,500.00	7,132.98	9,745.77	9,659.92	113.517	SF
Guttersten 25O (PR) - Wellbore #1 - MWD Surveys	9,548.95	6,643.27	7,125.04	7,069.82	129.036	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 Guttersten State DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-725	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						
Guttersten 250 (PR) - Wellbore #1 - MWD Surveys	9,600.00	6,643.30	7,125.22	7,069.71	128.356	ES
Guttersten 250 (PR) - Wellbore #1 - MWD Surveys	13,200.00	6,645.75	8,006.02	7,930.78	106.402	SF
Guttersten D 25-17 (SI) - Wellbore #1 - Gyro Surveys	10,630.37	6,501.07	5,884.47	5,822.05	94.272	CC
Guttersten D 25-17 (SI) - Wellbore #1 - Gyro Surveys	10,700.00	6,500.22	5,884.88	5,822.00	93.589	ES
Guttersten D 25-17 (SI) - Wellbore #1 - Gyro Surveys	13,000.00	6,472.86	6,343.61	6,267.60	83.462	SF
Guttersten D25-715 - Wellbore #1 - Plan #3	16,993.72	12,566.08	4,708.19	4,560.46	31.871	CC, ES, SF
Guttersten D25-724 - Wellbore #1 - Plan #3	16,993.72	12,453.91	5,308.19	5,160.49	35.941	CC, ES, SF
Guttersten D25-734 - Wellbore #1 - Plan #5	16,993.72	12,482.51	5,938.07	5,790.05	40.117	CC, ES, SF
Guttersten D25-743 - Wellbore #1 - Plan #3	10,804.96	5,350.08	6,410.68	6,350.24	106.065	CC
Guttersten D25-743 - Wellbore #1 - Plan #3	10,900.00	5,375.53	6,411.33	6,350.12	104.735	ES
Guttersten D25-743 - Wellbore #1 - Plan #3	16,993.72	12,600.64	6,560.07	6,411.57	44.176	SF
Guttersten D25-753 - Wellbore #1 - Plan #3	16,993.72	12,540.04	7,167.75	7,022.60	49.385	CC, ES, SF
Guttersten D25-762 - Wellbore #1 - Plan #3	16,993.72	12,380.03	7,801.33	7,656.83	53.990	CC, ES, SF
Guttersten D25-772 - Wellbore #1 - Plan #3	10,954.00	5,417.55	8,334.23	8,272.89	135.868	CC
Guttersten D25-772 - Wellbore #1 - Plan #3	16,993.72	12,603.00	8,412.81	8,267.72	57.982	ES, SF
Guttersten D25-781 - Wellbore #1 - Plan #3	2,007.41	1,971.41	8,604.96	8,591.16	623.688	CC
Guttersten D25-781 - Wellbore #1 - Plan #3	2,100.00	2,000.00	8,605.20	8,590.97	604.679	ES
Guttersten D25-781 - Wellbore #1 - Plan #3	16,993.72	12,714.18	9,055.49	8,909.82	62.165	SF
Guttersten State D36-714 - Wellbore #1 - Plan #1	9,123.03	7,150.00	4,667.32	4,610.82	82.603	CC
Guttersten State D36-714 - Wellbore #1 - Plan #1	9,200.00	7,113.74	4,667.62	4,610.81	82.166	ES
Guttersten State D36-714 - Wellbore #1 - Plan #1	11,200.00	6,600.00	4,983.74	4,917.66	75.417	SF
Guttersten State D36-724 - Wellbore #1 - Plan #1	9,278.77	6,919.64	5,290.67	5,234.49	94.178	CC
Guttersten State D36-724 - Wellbore #1 - Plan #1	9,300.00	6,906.15	5,290.68	5,234.44	94.066	ES
Guttersten State D36-724 - Wellbore #1 - Plan #1	11,700.00	6,350.00	5,694.12	5,626.62	84.360	SF
Guttersten State D36-733 - Wellbore #1 - Plan #1	9,100.00	9,100.00	5,910.14	5,846.32	92.603	SF
Guttersten State D36-733 - Wellbore #1 - Plan #1	9,692.39	6,244.45	5,882.92	5,826.89	104.984	CC
Guttersten State D36-733 - Wellbore #1 - Plan #1	9,700.00	6,243.47	5,882.93	5,826.85	104.907	ES
Guttersten State D36-743 - Wellbore #1 - Plan #1	9,821.07	5,359.35	6,363.68	6,310.02	118.589	CC, ES
Guttersten State D36-743 - Wellbore #1 - Plan #1	12,800.00	4,961.42	7,015.13	6,946.10	101.622	SF
Guttersten State D36-752 - Wellbore #1 - Plan #1	9,126.67	7,176.53	7,157.33	7,099.93	124.673	CC
Guttersten State D36-752 - Wellbore #1 - Plan #1	9,200.00	7,150.00	7,157.54	7,099.85	124.063	ES
Guttersten State D36-752 - Wellbore #1 - Plan #1	13,200.00	6,450.00	8,024.45	7,947.36	104.092	SF
Guttersten State D36-762 - Wellbore #1 - Plan #1	9,662.24	6,475.63	7,737.38	7,680.13	135.141	CC
Guttersten State D36-762 - Wellbore #1 - Plan #1	9,700.00	6,469.42	7,737.47	7,680.02	134.681	ES
Guttersten State D36-762 - Wellbore #1 - Plan #1	13,600.00	5,580.36	8,633.97	8,557.46	112.843	SF
Guttersten State D36-771 - Wellbore #1 - Plan #1	9,966.88	5,323.41	8,228.90	8,174.22	150.492	CC
Guttersten State D36-771 - Wellbore #1 - Plan #1	10,000.00	5,315.05	8,228.96	8,174.11	150.029	ES
Guttersten State D36-771 - Wellbore #1 - Plan #1	14,400.00	4,204.39	9,279.82	9,203.58	121.714	SF
Guttersten State D36-781 - Wellbore #1 - Plan #1	10,282.87	4,152.93	8,548.07	8,496.27	165.020	CC
Guttersten State D36-781 - Wellbore #1 - Plan #1	10,300.00	4,148.77	8,548.09	8,496.20	164.726	ES
Guttersten State D36-781 - Wellbore #1 - Plan #1	15,600.00	3,100.00	9,986.68	9,908.49	127.736	SF
Karch Blue D 25-02 (DA) - Wellbore #1 - No Surveys	11,234.32	6,640.00	6,359.17	6,182.45	35.984	CC
Karch Blue D 25-02 (DA) - Wellbore #1 - No Surveys	11,300.00	6,640.00	6,359.51	6,182.33	35.894	ES
Karch Blue D 25-02 (DA) - Wellbore #1 - No Surveys	12,600.00	6,640.00	6,504.16	6,318.54	35.040	SF
Karch Blue D 25-08 (SI) - Wellbore #1 - Gyro Surveys	9,962.59	6,540.69	5,072.03	5,013.76	87.034	CC
Karch Blue D 25-08 (SI) - Wellbore #1 - Gyro Surveys	10,000.00	6,538.82	5,072.17	5,013.67	86.703	ES
Karch Blue D25-08 (SI) - Wellbore #1 - Gyro Surveys	11,900.00	6,446.89	5,428.72	5,359.96	78.954	SF
Karch Blue D25-07 (SI) - Wellbore #1 - Gyro Surveys	9,961.34	6,655.58	6,397.48	6,338.83	109.086	CC
Karch Blue D25-07 (SI) - Wellbore #1 - Gyro Surveys	10,000.00	6,655.35	6,397.60	6,338.71	108.650	ES
Karch Blue D25-07 (SI) - Wellbore #1 - Gyro Surveys	12,800.00	6,631.27	6,998.94	6,924.42	93.911	SF
L F Ranch 2-25 (PR) - Wellbore #1 - Gyro Surveys	11,196.87	6,576.56	5,080.98	5,014.52	76.450	CC
L F Ranch 2-25 (PR) - Wellbore #1 - Gyro Surveys	11,200.00	6,576.50	5,080.98	5,014.50	76.425	ES
L F Ranch 2-25 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,550.06	5,358.73	5,282.31	70.118	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 Guttersen State DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen State DD30-725	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						
LF Ranches 1 (PA) - Wellbore #1 - No Surveys	10,903.76	6,644.00	5,370.04	5,195.50	30.767	CC, ES
LF Ranches 1 (PA) - Wellbore #1 - No Surveys	11,900.00	6,644.00	5,461.67	5,280.74	30.187	SF
D Section 36						
Kanga State D 36-1JI (SI) - Wellbore #1 - Gyro Surveys	6,297.15	6,173.26	5,089.09	5,045.49	116.724	CC
Kanga State D 36-1JI (SI) - Wellbore #1 - Gyro Surveys	6,300.00	6,175.60	5,089.09	5,045.47	116.678	ES
Kanga State D 36-1JI (SI) - Wellbore #1 - Gyro Surveys	7,900.00	7,900.00	5,417.73	5,365.09	102.931	SF
Kanga State D 36-2JI - Wellbore #1 - Gyro Surveys	6,552.89	6,506.49	6,500.81	6,455.21	142.560	CC, ES
Kanga State D 36-2JI - Wellbore #1 - Gyro Surveys	10,200.00	6,817.44	7,574.91	7,517.24	131.370	SF
Kanga State D36-11JI (PR) - Wellbore #1 - Gyro Surveys	6,168.57	5,961.16	8,309.92	8,229.57	103.416	CC
Kanga State D36-11JI (PR) - Wellbore #1 - Gyro Surveys	6,200.00	5,992.53	8,310.23	8,229.41	102.834	ES
Kanga State D36-11JI (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,545.41	8,484.93	8,396.21	95.638	SF
Rhoo State D36-07JI (SI) - Wellbore #1 - Gyro Surveys	6,243.55	6,217.74	6,715.36	6,671.80	154.174	CC
Rhoo State D36-07JI (SI) - Wellbore #1 - Gyro Surveys	6,250.00	6,222.39	6,715.37	6,671.78	154.043	ES
Rhoo State D36-07JI (SI) - Wellbore #1 - Gyro Surveys	6,950.00	6,700.00	6,817.26	6,770.41	145.519	SF
Spike State D 36-04 (SI) - Gyro Surveys - Wellbore #1	6,547.90	6,610.16	9,071.93	9,026.13	198.072	CC
Spike State D 36-04 (SI) - Gyro Surveys - Wellbore #1	6,600.00	6,648.81	9,072.17	9,026.11	196.965	ES
Spike State D 36-04 (SI) - Gyro Surveys - Wellbore #1	10,300.00	6,913.08	9,996.36	9,936.85	167.992	SF
Spike State D 36-3 (SI) - Wellbore #1 - No Surveys	6,359.85	6,275.64	7,886.17	7,738.25	53.315	CC
Spike State D 36-3 (SI) - Wellbore #1 - No Surveys	6,450.00	6,358.44	7,886.85	7,737.03	52.641	ES
Spike State D 36-3 (SI) - Wellbore #1 - No Surveys	7,100.00	6,702.20	7,941.86	7,783.93	50.289	SF
Spike State D36-05 (SI) - Wellbore #1 - Gyro Surveys	6,165.36	5,869.57	9,340.69	9,298.51	221.419	CC
Spike State D36-05 (SI) - Wellbore #1 - Gyro Surveys	6,200.00	5,905.27	9,340.88	9,298.45	220.171	ES
Spike State D36-05 (SI) - Wellbore #1 - Gyro Surveys	8,700.00	6,974.28	9,994.71	9,942.66	192.007	SF
Spike State D36-06 (PA) - Wellbore #1 - Gyro Surveys	6,154.61	5,860.36	8,114.48	8,072.35	192.634	CC, ES
Spike State D36-06 (PA) - Wellbore #1 - Gyro Surveys	8,700.00	8,700.00	8,864.14	8,806.28	153.196	SF
State 09 (SI) - Wellbore #1 - Gyro Surveys	6,209.36	6,036.33	5,848.06	5,805.24	136.544	CC, ES
State 09 (SI) - Wellbore #1 - Gyro Surveys	7,050.00	6,867.50	5,965.24	5,917.39	124.653	SF
State 30 (SI) - Wellbore #1 - Gyro Surveys	6,166.98	5,958.97	8,976.95	8,934.56	211.763	CC, ES
State 30 (SI) - Wellbore #1 - Gyro Surveys	6,950.00	6,582.77	9,165.29	9,118.87	197.425	SF
DD Section 06						
Guttersen 06D - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersen 23-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersen 24-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersen 33-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersen 34-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersen 43-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersen 44-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Guttersen DD18-715 - Guttersen DD18-715 - Plan #1	16,993.72	17,440.37	758.06	599.65	4.786	CC, ES, SF
Guttersen DD18-725 - Guttersen DD18-725 - Plan #1	16,993.72	17,276.88	402.79	345.49	7.030	CC, ES, SF
Guttersen DD18-730 - Guttersen DD18-730 - Plan #1	16,993.72	17,467.47	560.15	427.76	4.231	CC, ES, SF
Guttersen DD18-735 - Guttersen DD18-735 - Plan #1	16,993.72	17,393.03	798.47	639.02	5.008	CC, ES, SF
Guttersen DD18-746 - Guttersen DD18-746 - Plan #1	16,993.72	17,388.93	1,410.74	1,235.50	8.050	CC, ES, SF
Guttersen DD18-750 - Guttersen DD18-750 - Plan #1	16,993.72	17,652.14	1,741.20	1,564.44	9.851	CC, ES, SF
Guttersen DD18-754 - Guttersen DD18-754 - Plan #1	16,993.72	17,462.94	2,058.42	1,881.81	11.655	CC, ES, SF
Guttersen DD18-765 - Guttersen DD18-765 - Plan #1	16,993.72	17,287.24	2,712.70	2,534.84	15.252	CC, ES, SF
Guttersen DD18-770 - Guttersen DD18-770 - Plan #1	16,993.72	17,473.14	3,046.80	2,868.50	17.088	CC, ES, SF
Guttersen DD18-775 - Guttersen DD18-775 - Plan #1	16,993.72	17,369.80	3,372.71	3,193.84	18.856	CC, ES, SF
Guttersen DD18-785 - Guttersen DD18-785 - Plan #1	16,993.72	17,360.03	4,033.16	3,853.21	22.413	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 DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-725	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 17						
Guttersten 23-17 - Wellbore #1 - Wellbore #1 - As Drilled	16,993.72	6,718.08	3,699.07	3,605.61	39.581	CC, ES, SF
Guttersten State DD17-78HN - Original Drilling - Original D	16,993.72	6,721.10	1,669.60	1,561.81	15.489	CC, ES, SF
Guttersten State DD17-78HN - Original Drilling - ST01 - S	16,993.72	6,426.36	1,736.05	1,633.90	16.995	CC, ES, SF
Guttersten State DD17-79-1HN - Original Drilling - Origina	16,993.72	6,401.00	1,441.01	1,338.95	14.119	CC, ES, SF
Guttersten State DD17-79HN - Original Drilling - Original D	16,993.72	6,443.39	1,186.02	1,085.34	11.780	CC, ES, SF
Guttersten USX DD17-19 - Original Drilling - Original Dri	16,993.72	6,668.69	4,879.79	4,810.19	70.118	CC, ES, SF
DD Section 18						
Guttersten 18D - Wellbore #1 - Wellbore #1 - As Drilled	16,993.72	6,699.31	1,519.82	1,461.79	26.194	CC, ES, SF
Guttersten 24-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,993.72	6,687.35	2,443.85	2,338.47	23.191	CC, ES, SF
Guttersten 33-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,993.72	6,682.40	2,447.07	2,380.01	36.488	CC, ES, SF
Guttersten 34-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,993.72	6,668.67	1,344.28	1,249.53	14.188	CC, ES, SF
Guttersten 43-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,993.72	6,692.60	2,230.11	2,176.27	41.425	CC, ES, SF
Guttersten 44-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,993.72	6,672.04	890.11	831.90	15.291	CC, ES, SF
Karch Blue DD18-03J - Wellbore #1 - Wellbore #1 - As D	16,993.72	6,633.92	3,283.63	3,187.18	34.047	CC, ES, SF
Karch Blue DD18-12 - Original Drilling - Original Drilling -	16,993.72	6,651.04	4,448.07	4,344.06	42.768	CC, ES, SF
Karch Blue DD18-13 - Wellbore #1 - Wellbore #1 - As Dri	16,993.72	6,770.51	3,960.01	3,850.49	36.157	CC, ES, SF
SPIKE STATE GWS DD #18-1J(PA) - SPIKE STATE GW	16,993.72	6,672.60	4,186.28	4,024.37	25.855	CC, ES, SF
DD Section 19						
Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv	15,486.73	6,701.79	94.85	-4.12	0.958	Level 1, CC, ES, SF
Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey	12,888.17	6,664.00	2,724.13	2,535.00	14.403	CC
Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey	12,900.00	6,664.00	2,724.16	2,534.94	14.397	ES
Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey	13,100.00	6,664.00	2,732.36	2,541.76	14.336	SF
Guttersten 31-19 (PR) - Wellbore #1 - Gyro Surveys	16,485.09	6,669.72	1,016.13	909.40	9.521	CC
Guttersten 31-19 (PR) - Wellbore #1 - Gyro Surveys	16,500.00	6,669.20	1,016.24	909.39	9.512	ES, SF
Guttersten 44-19 (SI) - Wellbore #1 - No Surveys	12,621.33	6,709.00	307.23	119.17	1.634	CC, ES, SF
DD Section 20						
Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey	16,299.53	6,700.21	1,852.03	1,746.65	17.575	CC
Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey	16,300.00	6,700.19	1,852.03	1,746.65	17.574	ES
Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey	16,400.00	6,697.07	1,854.75	1,748.71	17.491	SF
Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey	13,187.99	6,704.66	2,244.99	2,163.66	27.606	CC
Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey	13,200.00	6,704.77	2,245.02	2,163.61	27.576	ES
Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey	13,500.00	6,707.37	2,266.56	2,183.39	27.251	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen State DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen State DD30-725	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	10,904.41	6,870.01	4,580.97	4,515.39	69.859	CC, ES
Champlin 366 Amoco C UT 1 (PR) - Wellbore #1 - Gyro S	12,300.00	6,887.34	4,788.79	4,715.17	65.044	SF
Champlin Amoco 1 (PA) - Wellbore #1 - No Surveys	7,954.41	6,741.01	2,309.98	2,149.41	14.386	CC, ES
Champlin Amoco 1 (PA) - Wellbore #1 - No Surveys	8,100.00	6,741.01	2,314.57	2,153.53	14.372	SF
Guttersen 42-29 (PR) - Wellbore #1 - Gyro Surveys	9,987.79	6,952.96	5,512.95	5,423.26	61.465	CC
Guttersen 42-29 (PR) - Wellbore #1 - Gyro Surveys	10,000.00	6,952.58	5,512.96	5,423.20	61.418	ES
Guttersen 42-29 (PR) - Wellbore #1 - Gyro Surveys	11,600.00	6,903.11	5,743.64	5,645.32	58.421	SF
Guttersen Federal YY5-715 - Guttersen Federal YY5-715	2,106.24	2,144.24	4,908.63	4,893.86	332.322	CC
Guttersen Federal YY5-715 - Guttersen Federal YY5-715	2,200.00	2,200.00	4,908.78	4,893.47	320.702	ES
Guttersen Federal YY5-715 - Guttersen Federal YY5-715	10,300.00	5,548.95	6,605.30	6,550.85	121.306	SF
Guttersen Federal YY5-725 - Guttersen Federal YY5-725	2,200.00	2,239.00	4,872.32	4,856.88	315.431	CC
Guttersen Federal YY5-725 - Guttersen Federal YY5-725	2,300.00	2,338.95	4,872.87	4,856.72	301.837	ES
Guttersen Federal YY5-725 - Guttersen Federal YY5-725	9,500.00	6,093.16	5,757.57	5,705.09	109.710	SF
Guttersen Federal YY5-735 - Guttersen Federal YY5-735	6,478.38	7,262.95	4,682.95	4,635.67	99.051	CC, ES
Guttersen Federal YY5-735 - Guttersen Federal YY5-735	6,850.00	7,050.00	4,696.96	4,649.33	98.614	SF
Guttersen Federal YY5-745 - Guttersen Federal YY5-745	6,596.87	7,122.35	4,032.65	3,984.54	83.814	CC
Guttersen Federal YY5-745 - Guttersen Federal YY5-745	6,600.00	7,121.52	4,032.66	3,984.54	83.806	ES
Guttersen Federal YY5-745 - Guttersen Federal YY5-745	6,850.00	7,050.00	4,040.36	3,991.98	83.513	SF
Guttersen Federal YY5-755 - Guttersen Federal YY5-755	2,200.00	2,239.00	3,057.75	3,042.30	197.957	CC
Guttersen Federal YY5-755 - Guttersen Federal YY5-755	2,300.00	2,338.95	3,058.34	3,042.19	189.440	ES
Guttersen Federal YY5-755 - Guttersen Federal YY5-755	6,900.00	6,546.30	3,366.05	3,319.78	72.752	SF
Guttersen Federal YY5-765 - Guttersen Federal YY5-765	6,582.65	6,921.61	2,726.79	2,679.84	58.067	CC, ES
Guttersen Federal YY5-765 - Guttersen Federal YY5-765	6,700.00	6,879.40	2,729.07	2,681.98	57.950	SF
Guttersen Federal YY5-775 - Guttersen Federal YY5-775	6,646.54	7,100.00	2,083.89	2,035.42	42.995	CC
Guttersen Federal YY5-775 - Guttersen Federal YY5-775	6,650.00	7,100.00	2,083.89	2,035.41	42.988	ES
Guttersen Federal YY5-775 - Guttersen Federal YY5-775	6,700.00	7,078.43	2,084.53	2,036.02	42.976	SF
Guttersen Federal YY5-785 - Guttersen Federal YY5-785	6,608.21	7,250.00	1,432.76	1,383.02	28.803	CC, ES, SF
Guttersen State DD29-715 - Wellbore #1 - Plan #1	1,909.84	1,926.84	4,905.84	4,892.56	369.210	CC
Guttersen State DD29-715 - Wellbore #1 - Plan #1	2,000.00	2,000.00	4,905.87	4,892.00	353.633	ES
Guttersen State DD29-715 - Wellbore #1 - Plan #1	16,993.72	17,381.47	5,962.70	5,786.37	33.815	SF
Guttersen State DD29-725 - Wellbore #1 - Plan #1	1,904.34	1,931.34	4,867.84	4,854.56	366.450	CC
Guttersen State DD29-725 - Wellbore #1 - Plan #1	2,100.00	2,081.36	4,868.44	4,853.93	335.579	ES
Guttersen State DD29-725 - Wellbore #1 - Plan #1	16,993.72	17,193.10	5,303.97	5,127.37	30.034	SF
Guttersen State DD29-735 - Wellbore #1 - Plan #1	6,418.70	6,757.85	4,640.07	4,593.61	99.869	CC
Guttersen State DD29-735 - Wellbore #1 - Plan #1	16,993.72	17,333.24	4,642.78	4,466.01	26.265	ES, SF
Guttersen State DD29-745 - Wellbore #1 - Plan #1	16,993.72	17,336.18	3,983.79	3,807.72	22.627	CC, ES, SF
Guttersen State DD29-755 - Wellbore #1 - Plan #1	1,907.10	1,944.10	3,052.21	3,038.87	228.811	CC
Guttersen State DD29-755 - Wellbore #1 - Plan #1	2,100.00	2,122.28	3,052.54	3,037.89	208.468	ES
Guttersen State DD29-755 - Wellbore #1 - Plan #1	16,993.72	17,352.39	3,300.29	3,123.43	18.660	SF
Guttersen State DD29-765 - Wellbore #1 - Plan #1	16,993.72	17,383.63	2,640.23	2,463.53	14.941	CC, ES, SF
Guttersen State DD29-775 - Wellbore #1 - Plan #1	16,993.72	17,494.88	1,980.17	1,803.87	11.232	CC, ES, SF
Guttersen State DD29-785 - Wellbore #1 - Plan #1	16,040.53	16,763.28	1,320.36	1,159.11	8.188	CC
Guttersen State DD29-785 - Wellbore #1 - Plan #1	16,993.72	17,716.33	1,320.47	1,144.05	7.485	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 DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-725	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	11,284.78	6,669.39	3,744.19	3,676.81	55.565	CC
Guttersten 11-30 (PR) - Wellbore #1 - Gyro Surveys	11,300.00	6,669.18	3,744.22	3,676.73	55.479	ES
Guttersten 11-30 (PR) - Wellbore #1 - Gyro Surveys	12,200.00	6,656.02	3,854.40	3,781.61	52.950	SF
Guttersten 12-30 (PR) - Wellbore #1 - Gyro Surveys	9,868.02	6,645.35	3,828.33	3,770.27	65.938	CC
Guttersten 12-30 (PR) - Wellbore #1 - Gyro Surveys	9,900.00	6,644.17	3,828.46	3,770.21	65.725	ES
Guttersten 12-30 (PR) - Wellbore #1 - Gyro Surveys	11,000.00	6,607.30	3,991.89	3,927.74	62.236	SF
Guttersten 22-30 (PR) - Wellbore #1 - Gyro Surveys	9,935.55	6,747.15	2,417.05	2,358.28	41.130	CC, ES
Guttersten 22-30 (PR) - Wellbore #1 - Gyro Surveys	11,000.00	11,000.00	2,640.93	2,562.55	33.692	SF
Guttersten 30 A (PR) - Wellbore #1 - Gyro Surveys	10,565.53	6,694.94	3,017.22	2,954.59	48.180	CC
Guttersten 30 A (PR) - Wellbore #1 - Gyro Surveys	10,600.00	6,695.06	3,017.42	2,954.57	48.010	ES
Guttersten 30 A (PR) - Wellbore #1 - Gyro Surveys	11,200.00	6,697.17	3,083.21	3,016.93	46.521	SF
Guttersten State DD30-715 - Guttersten State DD30-715 -	2,200.00	2,200.00	37.00	21.70	2.417	CC, ES, SF
Guttersten State DD30-735 - Guttersten State DD30-735 -	2,200.00	2,200.00	38.02	22.71	2.484	CC, ES
Guttersten State DD30-735 - Guttersten State DD30-735 -	2,300.00	2,298.60	39.42	23.45	2.468	SF
Guttersten State DD30-745 - Guttersten State DD30-745 -	2,200.00	2,200.00	75.02	59.71	4.901	CC, ES
Guttersten State DD30-745 - Guttersten State DD30-745 -	2,300.00	2,296.62	76.81	60.84	4.810	SF
Guttersten State DD30-755 - Guttersten State DD30-755 -	4,173.67	4,087.61	1,862.28	1,833.75	65.262	CC
Guttersten State DD30-755 - Guttersten State DD30-755 -	4,200.00	4,100.00	1,862.34	1,833.66	64.955	ES
Guttersten State DD30-755 - Guttersten State DD30-755 -	16,993.72	16,672.17	2,057.37	1,883.87	11.858	SF
Guttersten State DD30-766 - Guttersten State DD30-766 -	2,100.00	2,070.00	1,950.08	1,935.60	134.653	CC, ES
Guttersten State DD30-766 - Guttersten State DD30-766 -	16,993.72	16,747.49	2,767.46	2,594.33	15.985	SF
Guttersten State DD30-775 - Guttersten State DD30-775 -	2,000.00	1,971.00	1,988.08	1,974.31	144.389	CC, ES
Guttersten State DD30-775 - Guttersten State DD30-775 -	16,993.72	16,877.58	3,377.70	3,204.43	19.494	SF
Guttersten State DD30-785 - Guttersten State DD30-785 -	2,000.00	1,971.00	2,025.06	2,011.29	147.075	CC, ES
Guttersten State DD30-785 - Guttersten State DD30-785 -	16,993.72	17,131.52	4,017.91	3,844.42	23.159	SF
Guttersten YY06-756 - Guttersten YY06-756 - Plan #1	3,732.83	3,681.05	1,900.55	1,874.72	73.570	CC
Guttersten YY06-756 - Guttersten YY06-756 - Plan #1	4,200.00	4,141.57	1,902.17	1,873.00	65.209	ES
Guttersten YY06-756 - Guttersten YY06-756 - Plan #1	6,900.00	6,335.71	2,140.71	2,095.35	47.199	SF
Guttersten YY06-766 - Guttersten YY06-766 - Plan #1	2,525.20	2,454.79	1,950.11	1,932.84	112.883	CC, ES
Guttersten YY06-766 - Guttersten YY06-766 - Plan #1	7,300.00	6,175.91	2,672.05	2,626.22	58.305	SF
Guttersten YY06-775 - Guttersten YY06-775 - Plan #1	2,100.00	2,068.00	1,989.44	1,974.96	137.439	CC
Guttersten YY06-775 - Guttersten YY06-775 - Plan #1	2,200.00	2,140.60	1,989.91	1,974.82	131.884	ES
Guttersten YY06-775 - Guttersten YY06-775 - Plan #1	7,700.00	5,706.64	3,268.20	3,223.39	72.939	SF
Guttersten YY06-785 - Guttersten YY06-785 - Plan #1	2,000.00	1,968.00	2,027.37	2,013.61	147.358	CC
Guttersten YY06-785 - Guttersten YY06-785 - Plan #1	2,100.00	2,040.00	2,027.84	2,013.47	141.120	ES
Guttersten YY06-785 - Guttersten YY06-785 - Plan #1	8,400.00	5,234.73	3,770.24	3,725.30	83.888	SF
Karch Blue DD 30-12 (PA) - Wellbore #1 - No Surveys	8,745.05	6,655.00	3,876.20	3,714.20	23.927	CC, ES
Karch Blue DD 30-12 (PA) - Wellbore #1 - No Surveys	9,200.00	6,655.00	3,902.81	3,738.60	23.769	SF
Karch Blue DD 30-14 (PA) - Wellbore #1 - No Surveys	7,242.89	6,661.00	2,362.98	2,205.66	15.020	CC, ES
Karch Blue DD 30-14 (PA) - Wellbore #1 - No Surveys	7,300.00	6,661.00	2,363.67	2,206.27	15.017	SF
Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys	8,189.65	6,660.00	2,707.62	2,547.86	16.948	CC
Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys	8,200.00	6,660.00	2,707.64	2,547.85	16.944	ES
Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys	8,400.00	6,660.00	2,715.78	2,555.22	16.915	SF
L F Ranch 2-30 (PR) - Wellbore #1 - Gyro Surveys	10,938.22	6,626.50	2,429.96	2,365.07	37.447	CC, ES
L F Ranch 2-30 (PR) - Wellbore #1 - Gyro Surveys	11,400.00	6,619.62	2,473.44	2,405.90	36.623	SF
State 19 (PA) - Wellbore #1 - NO Surveys	10,577.80	6,711.00	207.65	33.94	1.195	Level 2, 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 DD30-725
Project:	Mustang	TVD Reference:	KB @ 4853.00ft
Reference Site:	DD Section 30	MD Reference:	KB @ 4853.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersten State DD30-725	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersten State DD30-725	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 31						
Guttersten 31Q-221 (PR) - Wellbore #1 - MWD Surveys	6,487.07	10,956.00	1,239.10	1,137.63	12.212	CC, ES
Guttersten 31Q-221 (PR) - Wellbore #1 - MWD Surveys	6,500.00	10,956.00	1,239.22	1,137.74	12.210	SF
Guttersten 31Q-401 (PR) - Wellbore #1 - MWD Surveys	6,586.45	11,132.00	1,546.04	1,443.02	15.007	CC, ES
Guttersten 31Q-401 (PR) - Wellbore #1 - MWD Surveys	6,600.00	11,132.00	1,546.16	1,443.09	15.000	SF
Guttersten 31T-301 (PR) - Wellbore #1 - MWD Surveys	6,500.00	11,048.00	734.47	655.88	9.345	SF
Guttersten 31T-301 (PR) - Wellbore #1 - MWD Surveys	6,516.70	11,048.00	734.12	655.56	9.345	CC, ES
Guttersten 31T-441 (PR) - Wellbore #1 - MWD Surveys	6,570.10	11,127.00	1,021.92	930.55	11.185	CC, ES, SF
Guttersten 33-31 (PR) - Wellbore #1 - Gyro Surveys	6,156.35	6,071.94	3,246.59	3,203.99	76.223	CC, ES
Guttersten 33-31 (PR) - Wellbore #1 - Gyro Surveys	6,400.00	6,291.04	3,290.80	3,246.72	74.658	SF
YY Section 06						
Cuykendall #2-6 (PA) - Wellbore #1 - No Surveys	6,147.83	6,137.62	9,487.47	9,230.74	36.955	CC
Cuykendall #2-6 (PA) - Wellbore #1 - No Surveys	6,200.00	6,189.70	9,489.61	9,230.62	36.641	ES
Cuykendall #2-6 (PA) - Wellbore #1 - No Surveys	6,750.00	6,653.71	9,751.66	9,472.99	34.994	SF
Guttersten #6D South (PA) - Wellbore #1 - As-Drilled	6,159.55	6,291.88	9,056.07	9,012.69	208.779	CC, ES
Guttersten #6D South (PA) - Wellbore #1 - As-Drilled	6,650.00	6,770.97	9,234.20	9,188.00	199.846	SF
Guttersten 6M-303 (PR) - Wellbore #1 - Wellbore #1	6,130.90	5,881.00	5,378.55	5,335.96	126.274	CC, ES
Guttersten 6M-303 (PR) - Wellbore #1 - Wellbore #1	6,350.00	5,913.00	5,417.99	5,374.61	124.903	SF
Guttersten 6M-423 (PR) - Wellbore #1 - MWD Surveys	6,134.74	5,913.00	5,307.78	5,265.74	126.245	CC
Guttersten 6M-423 (PR) - Wellbore #1 - MWD Surveys	6,150.00	5,947.60	5,307.94	5,265.72	125.740	ES
Guttersten 6M-423 (PR) - Wellbore #1 - MWD Surveys	6,400.00	6,010.00	5,364.32	5,321.15	124.247	SF
Guttersten 6R-243 (PR) - Wellbore #1 - Gyro Surveys	6,126.35	5,901.46	5,245.39	5,202.50	122.285	CC, ES
Guttersten 6R-243 (PR) - Wellbore #1 - Gyro Surveys	6,350.00	5,946.00	5,286.24	5,242.52	120.899	SF
Guttersten 6R-403 (PR) - Wellbore #1 - MWD Surveys	6,122.26	5,869.04	5,217.89	5,173.23	116.830	CC, ES
Guttersten 6R-403 (PR) - Wellbore #1 - MWD Surveys	6,350.00	6,010.00	5,259.28	5,213.45	114.764	SF
Guttersten 31-6 (SI) - Wellbore #1 - Gyro Surveys	6,155.50	6,121.00	5,918.51	5,875.79	138.516	CC, ES
Guttersten 31-6 (SI) - Wellbore #1 - Gyro Surveys	6,500.00	6,416.19	6,009.18	5,964.48	134.436	SF
Guttersten 32-6 (SI) - Wellbore #1 - Gyro Surveys	6,152.31	6,116.99	7,184.42	7,141.70	168.184	CC, ES
Guttersten 32-6 (SI) - Wellbore #1 - Gyro Surveys	6,850.00	7,011.15	7,515.04	7,466.21	153.896	SF
J.H. Cuykendall 1 (PA) - Wellbore #1 - Gyro Surveys	6,142.06	5,900.00	9,998.23	9,956.24	238.141	CC, ES
J.H. Cuykendall 1 (PA) - Wellbore #1 - Gyro Surveys	6,150.00	5,900.00	9,998.28	9,956.26	237.980	SF