

Project: Mustang  
 Site: CC Section 29  
 Well: Guttersen CC32-785  
 Wellbore: Guttersen CC32-785  
 Design: Plan #1

# Northern Region - DJ Basin

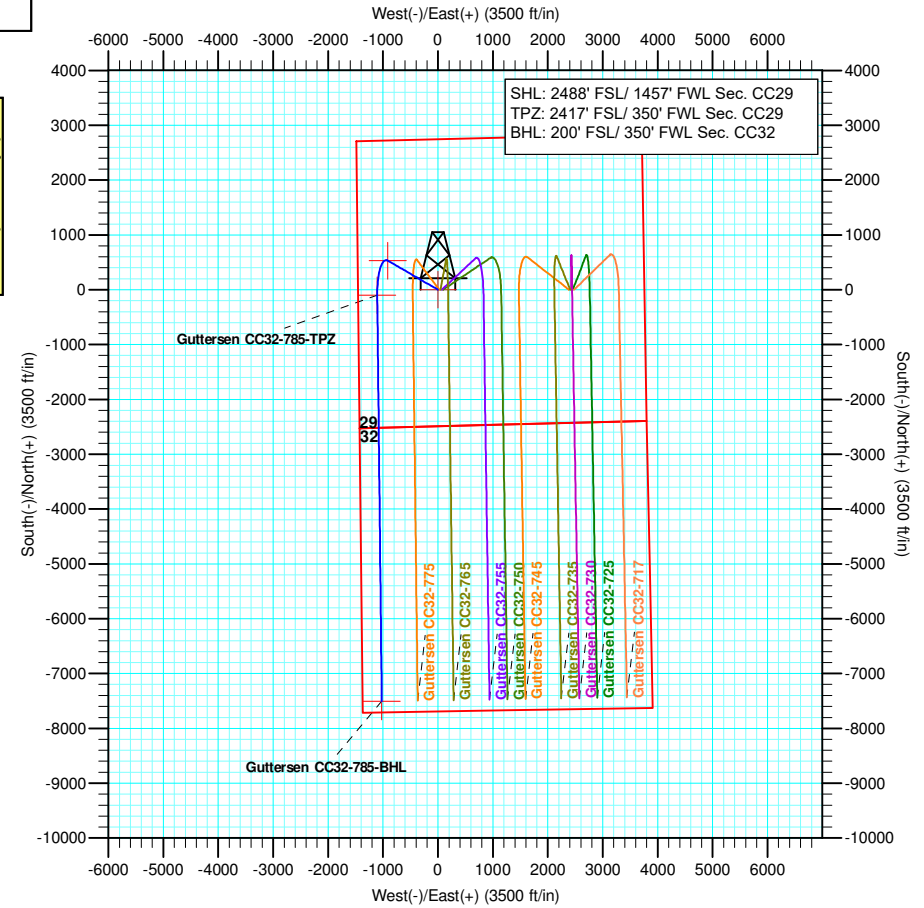
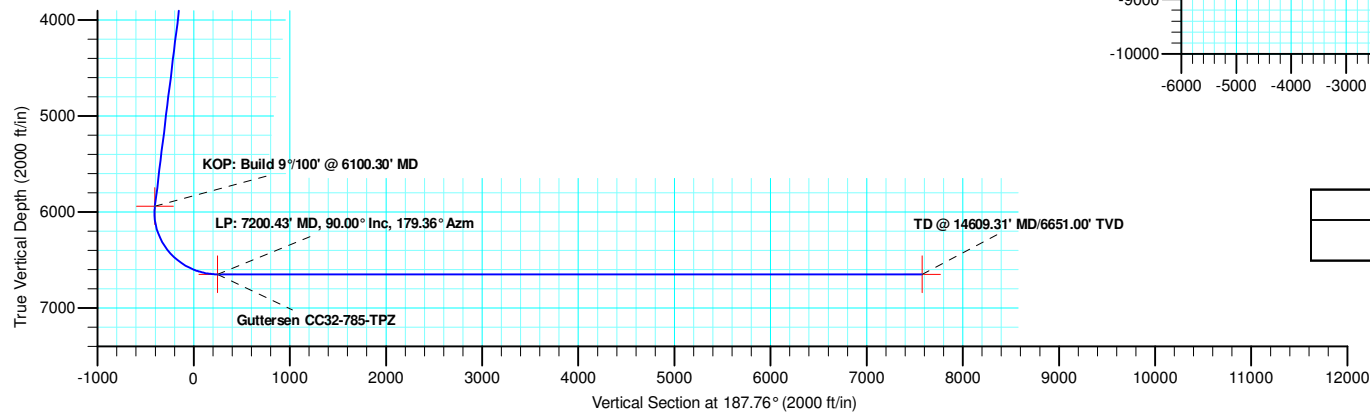
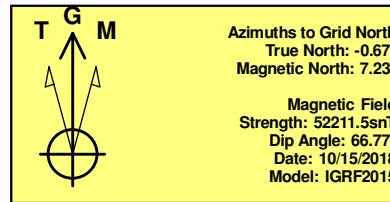
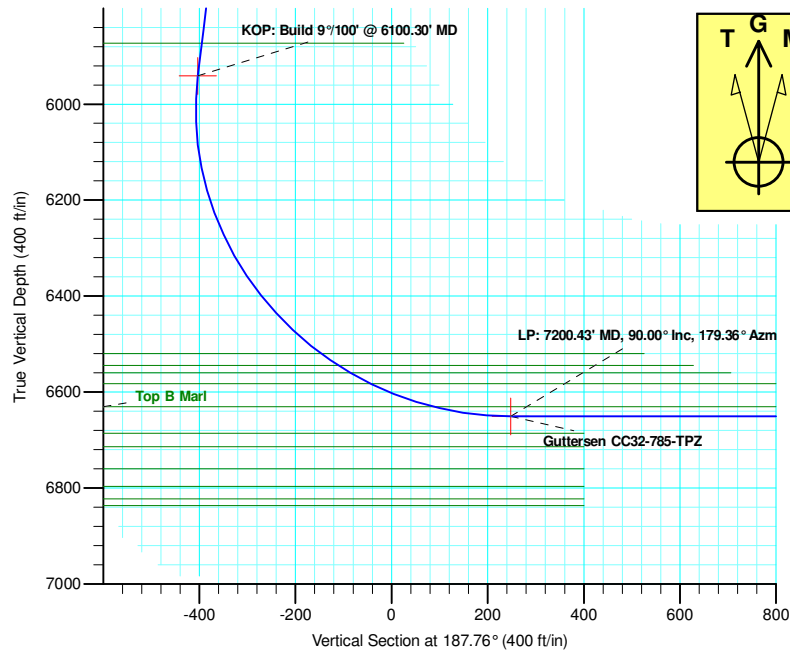
Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Northern Zone  
 System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	3091.98	17.84	300.11	3077.64	69.11	-119.15	2.00	300.11	-52.38	
4	6100.30	17.84	300.11	5941.32	531.49	-916.38	0.00	0.00	-402.83	
5	7200.43	90.00	179.36	6651.00	-99.41	-1105.68	9.00	-119.52	247.85	Guttersen CC32-785-TPZ
6	14609.31	90.00	179.36	6651.00	-7507.84	-1023.52	0.00	0.00	7577.28	Guttersen CC32-785-BHL

WELL DETAILS: Guttersen CC32-785

+N/-S	+E/-W	Northing	Ground Level: Easting	4761.00 Latitude	Longitude	Slot
0.00	0.00	1347598.74	3288517.01	40.2829400	-104.4658330	



Plan: Plan #1 (Guttersen CC32-785/Guttersen CC32-785)

Created By: Keith Noack Date: 11:06, October 15 2018

# **Northern Region - DJ Basin**

**Mustang**

**CC Section 29**

**Guttersen CC32-785**

**Guttersen CC32-785**

**Plan: Plan #1**

## **Standard Planning Report**

**15 October, 2018**

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Guttersen CC32-785
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site:</b>	CC Section 29	<b>North Reference:</b>	Grid
<b>Well:</b>	Guttersen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Guttersen CC32-785		
<b>Design:</b>	Plan #1		

<b>Project</b>	Mustang, Weld County Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		CC Section 29			
Site Position:		Northing:	1,347,029.76 usft	Latitude:	40.2812800
From:	Lat/Long	Easting:	3,291,568.57 usft	Longitude:	-104.4549200
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.68 °

Well	Guttersen CC32-785					
Well Position	+N/-S	568.98 ft	Northing:	1,347,598.74 usft	Latitude:	40.2829400
	+E/-W	-3,051.56 ft	Easting:	3,288,517.02 usft	Longitude:	-104.4658330
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,761.00 ft

<b>Wellbore</b>	Guttersen CC32-785				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	10/15/2018	7.90	66.77	52,211.45829684

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	187.76

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,091.98	17.84	300.11	3,077.64	69.11	-119.15	2.00	2.00	0.00	300.11	
6,100.30	17.84	300.11	5,941.32	531.49	-916.38	0.00	0.00	0.00	0.00	
7,200.43	90.00	179.36	6,651.00	-99.41	-1,105.68	9.00	6.56	-10.98	-119.52	Guttersen CC32-78
14,609.31	90.00	179.36	6,651.00	-7,507.84	-1,023.52	0.00	0.00	0.00	0.00	Guttersen CC32-78

**Noble Energy, Inc.**  
Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Guttersen CC32-785
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site:</b>	CC Section 29	<b>North Reference:</b>	Grid
<b>Well:</b>	Guttersen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Guttersen CC32-785		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
107.00	0.00	0.00	107.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Upper Pierre Aquifer Top</b>									
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
443.00	0.00	0.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Pierre</b>									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
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
1,645.00	0.00	0.00	1,645.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Upper Pierre Aquifer Base</b>									
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Build: 2°/100'</b>									
2,300.00	2.00	300.11	2,299.98	0.88	-1.51	-0.66	2.00	2.00	0.00
2,400.00	4.00	300.11	2,399.84	3.50	-6.04	-2.65	2.00	2.00	0.00
2,500.00	6.00	300.11	2,499.45	7.87	-13.58	-5.97	2.00	2.00	0.00
2,600.00	8.00	300.11	2,598.70	13.99	-24.12	-10.60	2.00	2.00	0.00
2,700.00	10.00	300.11	2,697.47	21.84	-37.65	-16.55	2.00	2.00	0.00
2,800.00	12.00	300.11	2,795.62	31.41	-54.15	-23.81	2.00	2.00	0.00
2,900.00	14.00	300.11	2,893.06	42.69	-73.61	-32.36	2.00	2.00	0.00
3,000.00	16.00	300.11	2,989.64	55.68	-96.00	-42.20	2.00	2.00	0.00
3,091.98	17.84	300.11	3,077.64	69.11	-119.15	-52.38	2.00	2.00	0.00
<b>Hold: 17.84° Inc, 300.11° Azm</b>									
3,100.00	17.84	300.11	3,085.27	70.34	-121.28	-53.31	0.00	0.00	0.00
3,200.00	17.84	300.11	3,180.46	85.71	-147.78	-64.96	0.00	0.00	0.00
3,300.00	17.84	300.11	3,275.66	101.08	-174.28	-76.61	0.00	0.00	0.00
3,400.00	17.84	300.11	3,370.85	116.45	-200.78	-88.26	0.00	0.00	0.00
3,500.00	17.84	300.11	3,466.04	131.82	-227.28	-99.91	0.00	0.00	0.00
3,600.00	17.84	300.11	3,561.23	147.19	-253.78	-111.56	0.00	0.00	0.00
3,700.00	17.84	300.11	3,656.42	162.56	-280.28	-123.21	0.00	0.00	0.00
3,746.83	17.84	300.11	3,701.00	169.76	-292.69	-128.67	0.00	0.00	0.00
<b>Parkman</b>									
3,800.00	17.84	300.11	3,751.61	177.93	-306.78	-134.86	0.00	0.00	0.00
3,900.00	17.84	300.11	3,846.81	193.30	-333.29	-146.51	0.00	0.00	0.00
4,000.00	17.84	300.11	3,942.00	208.67	-359.79	-158.16	0.00	0.00	0.00
4,100.00	17.84	300.11	4,037.19	224.04	-386.29	-169.81	0.00	0.00	0.00

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Guttersen CC32-785
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site:</b>	CC Section 29	<b>North Reference:</b>	Grid
<b>Well:</b>	Guttersen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Guttersen CC32-785		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,200.00	17.84	300.11	4,132.38	239.41	-412.79	-181.46	0.00	0.00	0.00
4,300.00	17.84	300.11	4,227.57	254.78	-439.29	-193.11	0.00	0.00	0.00
4,390.79	17.84	300.11	4,314.00	268.74	-463.35	-203.68	0.00	0.00	0.00
<b>Sussex</b>									
4,400.00	17.84	300.11	4,322.77	270.15	-465.79	-204.76	0.00	0.00	0.00
4,500.00	17.84	300.11	4,417.96	285.52	-492.29	-216.41	0.00	0.00	0.00
4,600.00	17.84	300.11	4,513.15	300.89	-518.79	-228.06	0.00	0.00	0.00
4,700.00	17.84	300.11	4,608.34	316.26	-545.29	-239.71	0.00	0.00	0.00
4,800.00	17.84	300.11	4,703.53	331.63	-571.79	-251.36	0.00	0.00	0.00
4,900.00	17.84	300.11	4,798.72	347.00	-598.29	-263.00	0.00	0.00	0.00
5,000.00	17.84	300.11	4,893.92	362.37	-624.79	-274.65	0.00	0.00	0.00
5,048.41	17.84	300.11	4,940.00	369.81	-637.62	-280.29	0.00	0.00	0.00
<b>Shannon</b>									
5,100.00	17.84	300.11	4,989.11	377.74	-651.29	-286.30	0.00	0.00	0.00
5,200.00	17.84	300.11	5,084.30	393.11	-677.79	-297.95	0.00	0.00	0.00
5,300.00	17.84	300.11	5,179.49	408.48	-704.30	-309.60	0.00	0.00	0.00
5,400.00	17.84	300.11	5,274.68	423.85	-730.80	-321.25	0.00	0.00	0.00
5,500.00	17.84	300.11	5,369.87	439.22	-757.30	-332.90	0.00	0.00	0.00
5,600.00	17.84	300.11	5,465.07	454.59	-783.80	-344.55	0.00	0.00	0.00
5,700.00	17.84	300.11	5,560.26	469.96	-810.30	-356.20	0.00	0.00	0.00
5,800.00	17.84	300.11	5,655.45	485.33	-836.80	-367.85	0.00	0.00	0.00
5,900.00	17.84	300.11	5,750.64	500.70	-863.30	-379.50	0.00	0.00	0.00
6,000.00	17.84	300.11	5,845.83	516.07	-889.80	-391.15	0.00	0.00	0.00
6,028.54	17.84	300.11	5,873.00	520.46	-897.36	-394.47	0.00	0.00	0.00
<b>Teepee Buttes</b>									
6,100.30	17.84	300.11	5,941.32	531.49	-916.38	-402.83	0.00	0.00	0.00
<b>KOP: Build 9°/100' @ 6100.30' MD</b>									
6,150.00	16.10	285.95	5,988.87	537.20	-929.60	-406.71	9.00	-3.51	-28.51
6,200.00	15.46	269.51	6,037.01	539.05	-942.93	-406.74	9.00	-1.27	-32.87
6,250.00	16.08	253.05	6,085.15	536.97	-956.23	-402.89	9.00	1.23	-32.92
6,300.00	17.81	238.76	6,133.00	530.99	-969.40	-395.18	9.00	3.48	-28.58
6,350.00	20.39	227.44	6,180.26	521.12	-982.36	-383.65	9.00	5.15	-22.63
6,400.00	23.53	218.80	6,226.63	507.45	-995.03	-368.39	9.00	6.28	-17.29
6,450.00	27.04	212.18	6,271.85	490.04	-1,007.35	-349.48	9.00	7.02	-13.23
6,500.00	30.79	207.02	6,315.61	469.01	-1,019.22	-327.04	9.00	7.50	-10.31
6,550.00	34.70	202.91	6,357.66	444.49	-1,030.58	-301.20	9.00	7.83	-8.23
6,600.00	38.73	199.54	6,397.74	416.62	-1,041.36	-272.14	9.00	8.05	-6.73
6,650.00	42.84	196.72	6,435.60	385.59	-1,051.48	-240.02	9.00	8.21	-5.64
6,700.00	47.00	194.31	6,471.00	351.57	-1,060.90	-205.05	9.00	8.33	-4.82
6,750.00	51.21	192.21	6,503.72	314.79	-1,069.54	-167.44	9.00	8.42	-4.21
6,776.64	53.47	191.19	6,520.00	294.14	-1,073.81	-146.40	9.00	8.47	-3.83
<b>Sharon Springs</b>									
6,800.00	55.46	190.34	6,533.58	275.47	-1,077.36	-127.42	9.00	8.50	-3.62
6,820.61	57.21	189.63	6,545.00	258.58	-1,080.33	-110.28	9.00	8.53	-3.46
<b>Top A Chalk</b>									
6,849.27	59.66	188.68	6,560.00	234.47	-1,084.22	-85.87	9.00	8.55	-3.31
<b>Top A Marl</b>									
6,850.00	59.73	188.66	6,560.37	233.84	-1,084.31	-85.24	9.00	8.56	-3.22
6,897.86	63.83	187.18	6,583.00	192.08	-1,090.11	-43.07	9.00	8.58	-3.09
<b>Top B Chalk</b>									
6,900.00	64.01	187.11	6,583.94	190.18	-1,090.35	-41.15	9.00	8.59	-2.97
6,950.00	68.32	185.68	6,604.14	144.74	-1,095.43	4.56	9.00	8.61	-2.87
7,000.00	72.64	184.33	6,620.84	97.80	-1,099.53	51.61	9.00	8.63	-2.70

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Guttersen CC32-785
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site:</b>	CC Section 29	<b>North Reference:</b>	Grid
<b>Well:</b>	Guttersen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Guttersen CC32-785		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,037.43	75.87	183.36	6,631.00	61.87	-1,101.94	87.55	9.00	8.65	-2.59
<b>Top B Marl</b>									
7,050.00	76.96	183.04	6,633.95	49.66	-1,102.62	99.73	9.00	8.65	-2.54
7,100.00	81.29	181.79	6,643.38	0.62	-1,104.69	148.60	9.00	8.66	-2.49
7,150.00	85.63	180.58	6,649.08	-49.03	-1,105.71	197.94	9.00	8.67	-2.43
7,200.43	90.00	179.36	6,651.00	-99.41	-1,105.68	247.85	9.00	8.67	-2.40
<b>LP: 7200.43' MD, 90.00° Inc, 179.36° Azm</b>									
7,300.00	90.00	179.36	6,651.00	-198.98	-1,104.58	346.36	0.00	0.00	0.00
7,400.00	90.00	179.36	6,651.00	-298.97	-1,103.47	445.28	0.00	0.00	0.00
7,500.00	90.00	179.36	6,651.00	-398.96	-1,102.36	544.21	0.00	0.00	0.00
7,600.00	90.00	179.36	6,651.00	-498.96	-1,101.25	643.14	0.00	0.00	0.00
7,700.00	90.00	179.36	6,651.00	-598.95	-1,100.14	742.07	0.00	0.00	0.00
7,800.00	90.00	179.36	6,651.00	-698.95	-1,099.04	840.99	0.00	0.00	0.00
7,900.00	90.00	179.36	6,651.00	-798.94	-1,097.93	939.92	0.00	0.00	0.00
8,000.00	90.00	179.36	6,651.00	-898.93	-1,096.82	1,038.85	0.00	0.00	0.00
8,100.00	90.00	179.36	6,651.00	-998.93	-1,095.71	1,137.78	0.00	0.00	0.00
8,200.00	90.00	179.36	6,651.00	-1,098.92	-1,094.60	1,236.70	0.00	0.00	0.00
8,300.00	90.00	179.36	6,651.00	-1,198.91	-1,093.49	1,335.63	0.00	0.00	0.00
8,400.00	90.00	179.36	6,651.00	-1,298.91	-1,092.38	1,434.56	0.00	0.00	0.00
8,500.00	90.00	179.36	6,651.00	-1,398.90	-1,091.27	1,533.49	0.00	0.00	0.00
8,600.00	90.00	179.36	6,651.00	-1,498.90	-1,090.16	1,632.42	0.00	0.00	0.00
8,700.00	90.00	179.36	6,651.00	-1,598.89	-1,089.05	1,731.34	0.00	0.00	0.00
8,800.00	90.00	179.36	6,651.00	-1,698.88	-1,087.94	1,830.27	0.00	0.00	0.00
8,900.00	90.00	179.36	6,651.00	-1,798.88	-1,086.84	1,929.20	0.00	0.00	0.00
9,000.00	90.00	179.36	6,651.00	-1,898.87	-1,085.73	2,028.13	0.00	0.00	0.00
9,100.00	90.00	179.36	6,651.00	-1,998.87	-1,084.62	2,127.05	0.00	0.00	0.00
9,200.00	90.00	179.36	6,651.00	-2,098.86	-1,083.51	2,225.98	0.00	0.00	0.00
9,300.00	90.00	179.36	6,651.00	-2,198.85	-1,082.40	2,324.91	0.00	0.00	0.00
9,400.00	90.00	179.36	6,651.00	-2,298.85	-1,081.29	2,423.84	0.00	0.00	0.00
9,500.00	90.00	179.36	6,651.00	-2,398.84	-1,080.18	2,522.76	0.00	0.00	0.00
9,600.00	90.00	179.36	6,651.00	-2,498.84	-1,079.07	2,621.69	0.00	0.00	0.00
9,700.00	90.00	179.36	6,651.00	-2,598.83	-1,077.96	2,720.62	0.00	0.00	0.00
9,800.00	90.00	179.36	6,651.00	-2,698.82	-1,076.85	2,819.55	0.00	0.00	0.00
9,900.00	90.00	179.36	6,651.00	-2,798.82	-1,075.74	2,918.47	0.00	0.00	0.00
10,000.00	90.00	179.36	6,651.00	-2,898.81	-1,074.64	3,017.40	0.00	0.00	0.00
10,100.00	90.00	179.36	6,651.00	-2,998.80	-1,073.53	3,116.33	0.00	0.00	0.00
10,200.00	90.00	179.36	6,651.00	-3,098.80	-1,072.42	3,215.26	0.00	0.00	0.00
10,300.00	90.00	179.36	6,651.00	-3,198.79	-1,071.31	3,314.18	0.00	0.00	0.00
10,400.00	90.00	179.36	6,651.00	-3,298.79	-1,070.20	3,413.11	0.00	0.00	0.00
10,500.00	90.00	179.36	6,651.00	-3,398.78	-1,069.09	3,512.04	0.00	0.00	0.00
10,600.00	90.00	179.36	6,651.00	-3,498.77	-1,067.98	3,610.97	0.00	0.00	0.00
10,700.00	90.00	179.36	6,651.00	-3,598.77	-1,066.87	3,709.89	0.00	0.00	0.00
10,800.00	90.00	179.36	6,651.00	-3,698.76	-1,065.76	3,808.82	0.00	0.00	0.00
10,900.00	90.00	179.36	6,651.00	-3,798.76	-1,064.65	3,907.75	0.00	0.00	0.00
11,000.00	90.00	179.36	6,651.00	-3,898.75	-1,063.55	4,006.68	0.00	0.00	0.00
11,100.00	90.00	179.36	6,651.00	-3,998.74	-1,062.44	4,105.61	0.00	0.00	0.00
11,200.00	90.00	179.36	6,651.00	-4,098.74	-1,061.33	4,204.53	0.00	0.00	0.00
11,300.00	90.00	179.36	6,651.00	-4,198.73	-1,060.22	4,303.46	0.00	0.00	0.00
11,400.00	90.00	179.36	6,651.00	-4,298.72	-1,059.11	4,402.39	0.00	0.00	0.00
11,500.00	90.00	179.36	6,651.00	-4,398.72	-1,058.00	4,501.32	0.00	0.00	0.00
11,600.00	90.00	179.36	6,651.00	-4,498.71	-1,056.89	4,600.24	0.00	0.00	0.00
11,700.00	90.00	179.36	6,651.00	-4,598.71	-1,055.78	4,699.17	0.00	0.00	0.00
11,800.00	90.00	179.36	6,651.00	-4,698.70	-1,054.67	4,798.10	0.00	0.00	0.00
11,900.00	90.00	179.36	6,651.00	-4,798.69	-1,053.56	4,897.03	0.00	0.00	0.00

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Guttersen CC32-785
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site:</b>	CC Section 29	<b>North Reference:</b>	Grid
<b>Well:</b>	Guttersen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Guttersen CC32-785		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,000.00	90.00	179.36	6,651.00	-4,898.69	-1,052.45	4,995.95	0.00	0.00	0.00
12,100.00	90.00	179.36	6,651.00	-4,998.68	-1,051.35	5,094.88	0.00	0.00	0.00
12,200.00	90.00	179.36	6,651.00	-5,098.68	-1,050.24	5,193.81	0.00	0.00	0.00
12,300.00	90.00	179.36	6,651.00	-5,198.67	-1,049.13	5,292.74	0.00	0.00	0.00
12,400.00	90.00	179.36	6,651.00	-5,298.66	-1,048.02	5,391.66	0.00	0.00	0.00
12,500.00	90.00	179.36	6,651.00	-5,398.66	-1,046.91	5,490.59	0.00	0.00	0.00
12,600.00	90.00	179.36	6,651.00	-5,498.65	-1,045.80	5,589.52	0.00	0.00	0.00
12,700.00	90.00	179.36	6,651.00	-5,598.64	-1,044.69	5,688.45	0.00	0.00	0.00
12,800.00	90.00	179.36	6,651.00	-5,698.64	-1,043.58	5,787.37	0.00	0.00	0.00
12,900.00	90.00	179.36	6,651.00	-5,798.63	-1,042.47	5,886.30	0.00	0.00	0.00
13,000.00	90.00	179.36	6,651.00	-5,898.63	-1,041.36	5,985.23	0.00	0.00	0.00
13,100.00	90.00	179.36	6,651.00	-5,998.62	-1,040.25	6,084.16	0.00	0.00	0.00
13,200.00	90.00	179.36	6,651.00	-6,098.61	-1,039.15	6,183.09	0.00	0.00	0.00
13,300.00	90.00	179.36	6,651.00	-6,198.61	-1,038.04	6,282.01	0.00	0.00	0.00
13,400.00	90.00	179.36	6,651.00	-6,298.60	-1,036.93	6,380.94	0.00	0.00	0.00
13,500.00	90.00	179.36	6,651.00	-6,398.60	-1,035.82	6,479.87	0.00	0.00	0.00
13,600.00	90.00	179.36	6,651.00	-6,498.59	-1,034.71	6,578.80	0.00	0.00	0.00
13,700.00	90.00	179.36	6,651.00	-6,598.58	-1,033.60	6,677.72	0.00	0.00	0.00
13,800.00	90.00	179.36	6,651.00	-6,698.58	-1,032.49	6,776.65	0.00	0.00	0.00
13,900.00	90.00	179.36	6,651.00	-6,798.57	-1,031.38	6,875.58	0.00	0.00	0.00
14,000.00	90.00	179.36	6,651.00	-6,898.56	-1,030.27	6,974.51	0.00	0.00	0.00
14,100.00	90.00	179.36	6,651.00	-6,998.56	-1,029.16	7,073.43	0.00	0.00	0.00
14,200.00	90.00	179.36	6,651.00	-7,098.55	-1,028.05	7,172.36	0.00	0.00	0.00
14,300.00	90.00	179.36	6,651.00	-7,198.55	-1,026.95	7,271.29	0.00	0.00	0.00
14,400.00	90.00	179.36	6,651.00	-7,298.54	-1,025.84	7,370.22	0.00	0.00	0.00
14,500.00	90.00	179.36	6,651.00	-7,398.53	-1,024.73	7,469.14	0.00	0.00	0.00
14,609.31	90.00	179.36	6,651.00	-7,507.84	-1,023.52	7,577.28	0.00	0.00	0.00
TD @ 14609.31' MD/6651.00' TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Guttersen CC32-785- - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	1,347,598.74	3,288,517.02	40.2829400	-104.4658330
Guttersen CC32-785- - plan hits target center - Point	0.00	0.01	5,941.31	531.49	-916.38	1,348,130.23	3,287,600.64	40.2844282	-104.4690952
Guttersen CC32-785- - plan hits target center - Point	0.00	0.00	6,651.00	-7,507.84	-1,023.52	1,340,090.92	3,287,493.50	40.2623645	-104.4698140
Guttersen CC32-785- - plan hits target center - Point	0.00	0.00	6,651.00	-99.41	-1,105.68	1,347,499.33	3,287,411.33	40.2827025	-104.4698000

**Noble Energy, Inc.**  
Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Guttersen CC32-785
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site:</b>	CC Section 29	<b>North Reference:</b>	Grid
<b>Well:</b>	Guttersen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Guttersen CC32-785		
<b>Design:</b>	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
107.00	107.00	Upper Pierre Aquifer Top				
443.00	443.00	Pierre				
1,645.00	1,645.00	Upper Pierre Aquifer Base				
3,746.83	3,701.00	Parkman				
4,390.79	4,314.00	Sussex				
5,048.41	4,940.00	Shannon				
6,028.54	5,873.00	Teepee Buttes				
6,776.64	6,520.00	Sharon Springs				
6,820.61	6,545.00	Top A Chalk				
6,849.27	6,560.00	Top A Marl				
6,897.86	6,583.00	Top B Chalk				
7,037.43	6,631.00	Top B Marl				

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	Build: 2°/100'	
3,091.98	3,077.64	69.11	-119.15	Hold: 17.84° Inc, 300.11° Azm	
6,100.30	5,941.32	531.49	-916.38	KOP: Build 9°/100' @ 6100.30' MD	
7,200.43	6,651.00	-99.41	-1,105.68	LP: 7200.43' MD, 90.00° Inc, 179.36° Azm	
14,609.31	6,651.00	-7,507.84	-1,023.52	TD @ 14609.31' MD/6651.00' TVD	



# **Northern Region - DJ Basin**

**Mustang**

**CC Section 29**

**Guttersen CC32-785**

**Guttersen CC32-785**

**Plan #1**

## **Anticollision Summary Report**

**15 October, 2018**

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen CC32-785
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Reference Site:</b>	CC Section 29	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen CC32-785	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

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

Survey Tool Program		Date	10/15/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	14,609.31	Plan #1 (Guttersen CC32-785)	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						
CC Section 29						
GUTTERSEN #13-29U(PA) - Wellbore #1 - Gyro	7,647.56	6,605.19	307.40	259.80	6.458	CC, ES, SF
GUTTERSEN #14-29U(PR) - Wellbore #1 - Gyro	8,925.65	6,630.70	340.62	288.25	6.504	CC, ES, SF
GUTTERSEN #23-29U(PR) - Wellbore #1 - Gyro	100.00	71.37	740.60	740.35	2,940.637	CC
GUTTERSEN #23-29U(PR) - Wellbore #1 - Gyro	2,200.00	2,172.67	748.48	733.40	49.636	ES
GUTTERSEN #23-29U(PR) - Wellbore #1 - Gyro	7,700.00	6,608.21	1,546.11	1,498.14	32.230	SF
GUTTERSEN #24-29U(PR) - Wellbore #1 - Gyro	8,989.57	6,624.38	1,547.87	1,495.25	29.418	CC, ES
GUTTERSEN #24-29U(PR) - Wellbore #1 - Gyro	9,100.00	6,623.13	1,551.80	1,498.91	29.341	SF
GUTTERSEN #29-BU(PR) - Wellbore #1 - Gyro	8,273.70	6,591.87	911.05	861.77	18.487	CC, ES
GUTTERSEN #29-BU(PR) - Wellbore #1 - Gyro	8,300.00	6,591.95	911.43	862.13	18.485	SF
GUTTERSEN #29PU(PR) - Wellbore #1 - Gyro	2,210.57	2,195.39	1,592.72	1,577.52	104.824	CC, ES
GUTTERSEN #29PU(PR) - Wellbore #1 - Gyro	8,500.00	6,631.65	2,171.22	2,120.97	43.213	SF
GUTTERSEN #33-29U(PR) - Wellbore #1 - Gyro	2,249.41	2,259.25	1,844.25	1,828.70	118.580	CC, ES
GUTTERSEN #33-29U(PR) - Wellbore #1 - Gyro	7,900.00	6,627.80	2,860.61	2,812.16	59.043	SF
GUTTERSEN #43-29U(PR) - Wellbore #1 - Gyro	657.72	656.75	3,108.17	3,103.92	731.173	CC
GUTTERSEN #43-29U(PR) - Wellbore #1 - Gyro	2,203.36	2,205.88	3,112.30	3,097.11	204.796	ES
GUTTERSEN #43-29U(PR) - Wellbore #1 - Gyro	8,700.00	6,538.94	4,267.48	4,217.46	85.324	SF
GUTTERSEN #44-29U(PR) - Wellbore #1 - Gyro	2,213.09	2,228.71	3,611.69	3,596.37	235.767	CC, ES
GUTTERSEN #44-29U(PR) - Wellbore #1 - Gyro	10,100.00	6,747.85	4,387.64	4,330.11	76.267	SF
Guttersen CC32-717 - Guttersen CC32-717 - Plan #1	2,112.12	2,124.12	2,474.83	2,460.11	168.130	CC
Guttersen CC32-717 - Guttersen CC32-717 - Plan #1	2,200.00	2,200.00	2,474.86	2,459.55	161.686	ES
Guttersen CC32-717 - Guttersen CC32-717 - Plan #1	14,609.31	14,516.71	4,463.50	4,328.30	33.014	SF
Guttersen CC32-725 - Guttersen CC32-725 - Plan #1	2,112.55	2,123.55	2,452.23	2,437.51	166.601	CC
Guttersen CC32-725 - Guttersen CC32-725 - Plan #1	2,200.00	2,208.40	2,452.24	2,436.90	159.893	ES
Guttersen CC32-725 - Guttersen CC32-725 - Plan #1	14,609.31	14,521.99	3,923.85	3,788.60	29.014	SF
Guttersen CC32-730 - Guttersen CC32-730 - Plan #1	2,200.06	2,210.11	2,429.91	2,414.56	158.371	CC, ES
Guttersen CC32-730 - Guttersen CC32-730 - Plan #1	14,609.31	14,596.99	3,597.87	3,462.36	26.551	SF
Guttersen CC32-735 - Guttersen CC32-735 - Plan #1	2,215.78	2,236.26	2,407.29	2,391.80	155.390	CC
Guttersen CC32-735 - Guttersen CC32-735 - Plan #1	2,300.00	2,359.39	2,407.68	2,391.45	148.389	ES
Guttersen CC32-735 - Guttersen CC32-735 - Plan #1	14,609.31	14,434.92	3,271.06	3,136.20	24.254	SF
Guttersen CC32-745 - Guttersen CC32-745 - Plan #1	2,927.68	3,455.52	2,333.76	2,311.80	106.287	CC, ES
Guttersen CC32-745 - Guttersen CC32-745 - Plan #1	14,609.31	14,627.60	2,616.00	2,480.46	19.301	SF
Guttersen CC32-750 - Guttersen CC32-750 - Plan #1	2,200.00	2,201.00	90.12	74.81	5.886	CC, ES
Guttersen CC32-750 - Guttersen CC32-750 - Plan #1	2,300.00	2,298.35	93.07	77.07	5.816	SF
Guttersen CC32-755 - Guttersen CC32-755 - Plan #1	2,200.00	2,201.00	67.52	52.21	4.410	CC, ES
Guttersen CC32-755 - Guttersen CC32-755 - Plan #1	2,300.00	2,299.21	70.31	54.30	4.392	SF
Guttersen CC32-765 - Guttersen CC32-765 - Plan #1	2,200.00	2,201.00	44.92	29.61	2.934	CC, ES
Guttersen CC32-765 - Guttersen CC32-765 - Plan #1	2,300.00	2,300.67	46.77	30.75	2.919	SF

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

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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen CC32-785
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Reference Site:</b>	CC Section 29	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen CC32-785	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
CC Section 29						
Guttersen CC32-775 - Guttersen CC32-775 - Plan #1	2,202.29	2,203.31	22.60	7.27	1.475	Level 3, CC
Guttersen CC32-775 - Guttersen CC32-775 - Plan #1	2,300.00	2,301.48	23.05	7.03	1.439	Level 3, ES, SF
KILLEYBEGS #1(PR) - Wellbore #1 - No Surveys	2,200.00	2,183.00	2,628.41	2,601.71	98.429	CC, ES
KILLEYBEGS #1(PR) - Wellbore #1 - No Surveys	9,100.00	6,634.00	3,261.49	3,173.91	37.241	SF
CC Section 32						
Guttersen State #CC32-06(PR) - Guttersen State #CC32	11,502.26	6,670.00	1,707.49	1,529.28	9.581	CC, ES
Guttersen State #CC32-06(PR) - Guttersen State #CC32	11,600.00	6,670.00	1,710.29	1,531.71	9.577	SF
GUTTERSEN STATE CC #32-03(PR) - GUTTERSEN S	10,081.84	6,647.00	1,804.03	1,635.51	10.706	CC, ES
GUTTERSEN STATE CC #32-03(PR) - GUTTERSEN S	10,100.00	6,647.00	1,804.12	1,635.54	10.702	SF
GUTTERSEN STATE CC #32-04(PR) - GUTTERSEN S	10,230.25	6,658.00	276.72	107.09	1.631	CC, ES, SF
GUTTERSEN STATE CC #32-11(PR) - GUTTERSEN S	12,948.81	6,661.00	1,775.05	1,586.63	9.421	CC, ES
GUTTERSEN STATE CC #32-11(PR) - GUTTERSEN S	13,000.00	6,661.00	1,775.79	1,587.15	9.414	SF
GUTTERSEN STATE CC #32-12(PR) - GUTTERSEN S	12,723.85	6,670.00	178.72	-8.22	0.956	Level 1, CC, ES, SF
GUTTERSEN STATE CC #32-5(PR) - GUTTERSEN ST	11,445.52	6,661.00	257.56	79.92	1.450	Level 3, CC, ES, SF
Guttersen State CC32-13 - Wellbore #1 - Wellbore #1 - A	14,200.00	6,689.12	242.64	154.94	2.767	SF
Guttersen State CC32-13 - Wellbore #1 - Wellbore #1 - A	14,207.09	6,689.29	242.54	154.90	2.768	CC, ES
Guttersen State CC32-14 - Wellbore #1 - Wellbore #1 - A	14,249.21	6,680.01	1,472.96	1,384.91	16.729	CC, ES
Guttersen State CC32-14 - Wellbore #1 - Wellbore #1 - A	14,300.00	6,680.55	1,473.83	1,385.60	16.703	SF
STATE #25(PR) - STATE #25 - No Surveys	13,652.00	6,686.00	943.30	749.13	4.858	CC, ES, SF
DD Section 05						
Guttersen 1N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	14,609.31	11,271.02	4,523.88	4,369.71	29.343	CC, ES, SF
Guttersen 27N-5HZ - Wellbore #1 - Wellbore #1 - As Dril	14,609.31	11,061.02	3,474.77	3,322.61	22.837	CC, ES, SF
Guttersen 2N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	14,609.31	11,309.02	2,414.95	2,267.52	16.380	CC, ES, SF
Guttersen 3-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	14,609.31	11,041.02	1,476.80	1,341.17	10.889	CC, ES, SF
Guttersen 4-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	14,609.31	11,205.02	683.63	620.18	10.775	CC, ES, SF
UPV 05-13J03 - Wellbore #1 - Wellbore #1 - As Drilled	14,609.31	6,719.97	4,496.42	4,442.45	83.306	CC, ES, SF

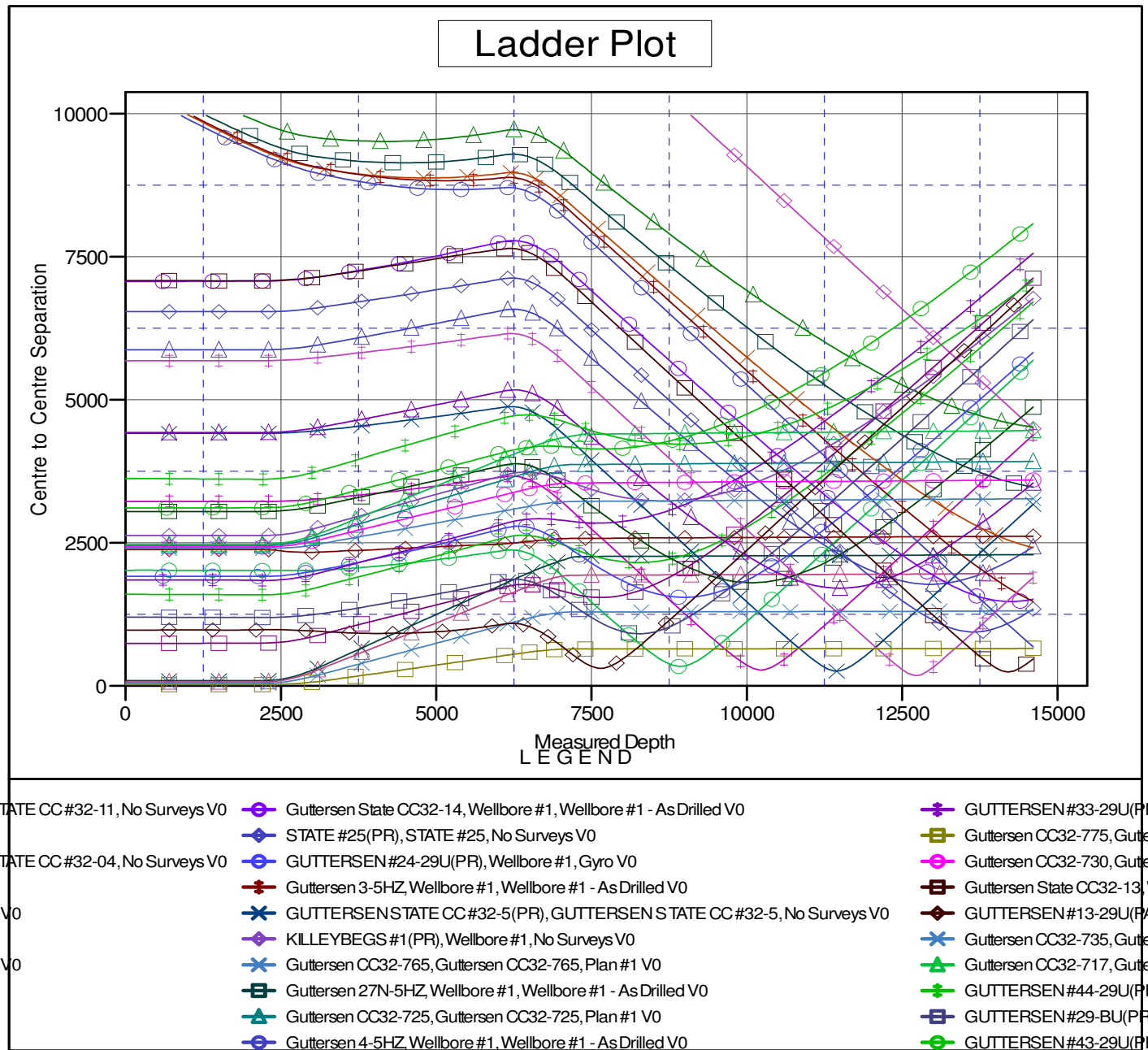
# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Gutteresen CC32-785
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Reference Site:</b>	CC Section 29	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Gutteresen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Gutteresen CC32-785	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to Well @ 4791.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: Gutteresen CC32-785  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.67°



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

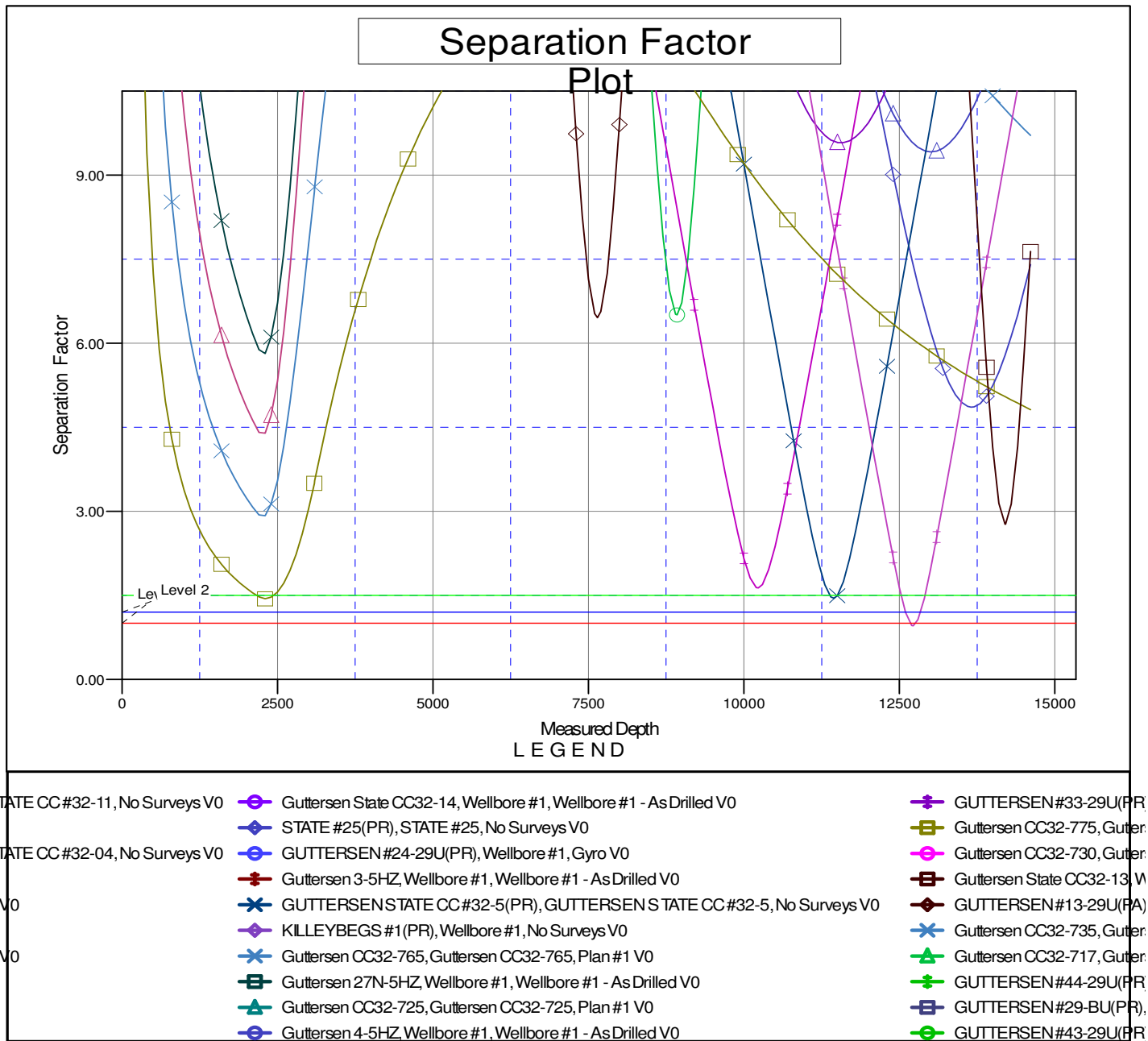
# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Guttersen CC32-785
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4791.00ft
<b>Reference Site:</b>	CC Section 29	<b>MD Reference:</b>	Well @ 4791.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Guttersen CC32-785	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Guttersen CC32-785	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to Well @ 4791.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: Guttersen CC32-785  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.67°



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