

Created By: Keith Noack Date: 12:37, October 02 2018

Northern Region - DJ Basin

Mustang

DD Section 08

Guttersen DD17-735

Guttersen DD17-735

Plan: Plan #1

Standard Planning Report

02 October, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen DD17-735
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4897.00ft
Project:	Mustang	MD Reference:	Well @ 4897.00ft
Site:	DD Section 08	North Reference:	Grid
Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen DD17-735		
Design:	Plan #1		

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

Site	DD Section 08		
Site Position:		Northing:	1,330,053.01 usft
From:	Map	Easting:	3,287,864.30 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	40.2347995
		Longitude:	-104.4689036
		Grid Convergence:	0.67 °

Well	Guttersen DD17-735		
Well Position	+N/-S	4,083.10 ft	Northing: 1,334,136.10 usft
	+E/-W	3,339.78 ft	Easting: 3,291,204.08 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	Latitude: 40.2459000
			Longitude: -104.4567700
			Ground Level: 4,867.00 ft

Wellbore	Guttersen DD17-735				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/1/2018	7.90	66.75	52,196.70418710

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	181.36

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	
3,033.72	16.67	340.88	3,022.01	113.82	-39.46	2.00	2.00	0.00	340.88	
6,127.44	16.67	340.88	5,985.63	952.53	-330.24	0.00	0.00	0.00	0.00	
7,304.52	90.00	177.75	6,794.00	338.09	-376.43	9.00	6.23	-13.86	-162.43	Guttersen DD17-73
7,504.52	90.00	177.75	6,794.00	138.25	-368.58	0.00	0.00	0.00	0.00	
7,654.72	90.00	179.25	6,794.00	-11.90	-364.65	1.00	0.00	1.00	90.00	
17,549.96	90.00	179.25	6,794.00	-9,906.29	-235.48	0.00	0.00	0.00	0.00	Guttersen DD17-73

Noble Energy, Inc.

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Project:	Mustang	MD Reference:	Well @ 4897.00ft
Site:	DD Section 08	North Reference:	Grid
Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen DD17-735		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
414.00	0.00	0.00	414.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
754.00	0.00	0.00	754.00	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
1,649.00	0.00	0.00	1,649.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Base									
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
Build: 2°/100'									
2,300.00	2.00	340.88	2,299.98	1.65	-0.57	-1.63	2.00	2.00	0.00
2,400.00	4.00	340.88	2,399.84	6.59	-2.29	-6.54	2.00	2.00	0.00
2,500.00	6.00	340.88	2,499.45	14.83	-5.14	-14.70	2.00	2.00	0.00
2,600.00	8.00	340.88	2,598.70	26.34	-9.13	-26.12	2.00	2.00	0.00
2,700.00	10.00	340.88	2,697.47	41.12	-14.26	-40.77	2.00	2.00	0.00
2,800.00	12.00	340.88	2,795.62	59.15	-20.51	-58.64	2.00	2.00	0.00
2,900.00	14.00	340.88	2,893.06	80.40	-27.88	-79.72	2.00	2.00	0.00
3,000.00	16.00	340.88	2,989.64	104.85	-36.35	-103.96	2.00	2.00	0.00
3,033.72	16.67	340.88	3,022.01	113.82	-39.46	-112.85	2.00	2.00	0.00
Hold: 16.67° Inc, 340.88° Azm									
3,100.00	16.67	340.88	3,085.49	131.78	-45.69	-130.66	0.00	0.00	0.00
3,200.00	16.67	340.88	3,181.29	158.89	-55.09	-157.54	0.00	0.00	0.00
3,300.00	16.67	340.88	3,277.08	186.00	-64.49	-184.42	0.00	0.00	0.00
3,400.00	16.67	340.88	3,372.88	213.12	-73.89	-211.30	0.00	0.00	0.00
3,500.00	16.67	340.88	3,468.67	240.23	-83.29	-238.18	0.00	0.00	0.00
3,600.00	16.67	340.88	3,564.47	267.34	-92.69	-265.06	0.00	0.00	0.00
3,700.00	16.67	340.88	3,660.26	294.45	-102.08	-291.94	0.00	0.00	0.00
3,800.00	16.67	340.88	3,756.06	321.56	-111.48	-318.82	0.00	0.00	0.00
3,834.39	16.67	340.88	3,789.00	330.88	-114.72	-328.06	0.00	0.00	0.00
Parkman									
3,900.00	16.67	340.88	3,851.85	348.67	-120.88	-345.70	0.00	0.00	0.00
4,000.00	16.67	340.88	3,947.65	375.78	-130.28	-372.57	0.00	0.00	0.00
4,100.00	16.67	340.88	4,043.44	402.89	-139.68	-399.45	0.00	0.00	0.00

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Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen DD17-735		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,200.00	16.67	340.88	4,139.24	430.00	-149.08	-426.33	0.00	0.00	0.00
4,241.51	16.67	340.88	4,179.00	441.25	-152.98	-437.49	0.00	0.00	0.00
Sussex									
4,300.00	16.67	340.88	4,235.03	457.11	-158.48	-453.21	0.00	0.00	0.00
4,400.00	16.67	340.88	4,330.83	484.22	-167.88	-480.09	0.00	0.00	0.00
4,500.00	16.67	340.88	4,426.62	511.33	-177.28	-506.97	0.00	0.00	0.00
4,600.00	16.67	340.88	4,522.42	538.44	-186.68	-533.85	0.00	0.00	0.00
4,700.00	16.67	340.88	4,618.21	565.55	-196.08	-560.73	0.00	0.00	0.00
4,800.00	16.67	340.88	4,714.01	592.66	-205.48	-587.61	0.00	0.00	0.00
4,900.00	16.67	340.88	4,809.80	619.77	-214.87	-614.49	0.00	0.00	0.00
5,000.00	16.67	340.88	4,905.60	646.88	-224.27	-641.37	0.00	0.00	0.00
5,055.74	16.67	340.88	4,959.00	661.99	-229.51	-656.35	0.00	0.00	0.00
Shannon									
5,100.00	16.67	340.88	5,001.39	673.99	-233.67	-668.25	0.00	0.00	0.00
5,200.00	16.67	340.88	5,097.19	701.10	-243.07	-695.13	0.00	0.00	0.00
5,300.00	16.67	340.88	5,192.99	728.21	-252.47	-722.01	0.00	0.00	0.00
5,400.00	16.67	340.88	5,288.78	755.32	-261.87	-748.88	0.00	0.00	0.00
5,500.00	16.67	340.88	5,384.58	782.43	-271.27	-775.76	0.00	0.00	0.00
5,600.00	16.67	340.88	5,480.37	809.54	-280.67	-802.64	0.00	0.00	0.00
5,700.00	16.67	340.88	5,576.17	836.65	-290.07	-829.52	0.00	0.00	0.00
5,800.00	16.67	340.88	5,671.96	863.76	-299.47	-856.40	0.00	0.00	0.00
5,900.00	16.67	340.88	5,767.76	890.87	-308.87	-883.28	0.00	0.00	0.00
6,000.00	16.67	340.88	5,863.55	917.98	-318.27	-910.16	0.00	0.00	0.00
6,100.00	16.67	340.88	5,959.35	945.09	-327.66	-937.04	0.00	0.00	0.00
6,127.44	16.67	340.88	5,985.63	952.53	-330.24	-944.41	0.00	0.00	0.00
KOP: Build 9°/100' @ 6127.44' MD									
6,150.00	14.75	338.47	6,007.35	958.26	-332.36	-950.09	9.00	-8.53	-10.67
6,150.67	14.69	338.39	6,008.00	958.42	-332.42	-950.25	9.00	-8.46	-12.07
Teepee Buttes									
6,200.00	10.63	330.15	6,056.12	968.19	-336.99	-959.91	9.00	-8.24	-16.70
6,250.00	6.98	312.50	6,105.53	974.24	-341.53	-965.85	9.00	-7.30	-35.31
6,300.00	4.98	272.43	6,155.28	976.39	-345.94	-967.89	9.00	-3.99	-80.13
6,350.00	6.43	228.18	6,205.05	974.61	-350.20	-966.01	9.00	2.90	-88.50
6,400.00	9.92	207.57	6,254.55	968.92	-354.28	-960.23	9.00	6.97	-41.23
6,450.00	13.99	198.17	6,303.46	959.36	-358.16	-950.58	9.00	8.14	-18.79
6,500.00	18.26	193.03	6,351.48	945.98	-361.81	-937.11	9.00	8.54	-10.29
6,550.00	22.62	189.79	6,398.32	928.86	-365.22	-919.92	9.00	8.72	-6.46
6,600.00	27.02	187.56	6,443.69	908.12	-368.35	-899.11	9.00	8.80	-4.46
6,650.00	31.45	185.92	6,487.31	883.87	-371.19	-874.80	9.00	8.86	-3.29
6,700.00	35.89	184.65	6,528.92	856.28	-373.73	-847.15	9.00	8.89	-2.55
6,750.00	40.35	183.62	6,568.24	825.50	-375.94	-816.33	9.00	8.91	-2.05
6,783.23	43.31	183.04	6,593.00	803.38	-377.22	-794.19	9.00	8.92	-1.75
Sharon Springs									
6,800.00	44.81	182.77	6,605.05	791.73	-377.81	-782.53	9.00	8.93	-1.61
6,815.63	46.21	182.53	6,616.00	780.59	-378.33	-771.38	9.00	8.93	-1.53
Top A Chalk									
6,836.20	48.05	182.23	6,630.00	765.53	-378.96	-756.31	9.00	8.94	-1.45
Top A Marl									
6,850.00	49.28	182.04	6,639.11	755.18	-379.34	-745.95	9.00	8.94	-1.38
6,852.90	49.54	182.00	6,641.00	752.97	-379.42	-743.75	9.00	8.94	-1.35
Top B Chalk									
6,900.00	53.75	181.40	6,670.22	716.06	-380.51	-706.82	9.00	8.94	-1.27
6,927.50	56.21	181.08	6,686.00	693.55	-381.00	-684.30	9.00	8.95	-1.16

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen DD17-735
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4897.00ft
Project:	Mustang	MD Reference:	Well @ 4897.00ft
Site:	DD Section 08	North Reference:	Grid
Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen DD17-735		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Top B Marl									
6,950.00	58.23	180.84	6,698.18	674.64	-381.32	-665.38	9.00	8.95	-1.10
7,000.00	62.71	180.32	6,722.82	631.15	-381.75	-621.90	9.00	8.96	-1.03
7,050.00	67.18	179.85	6,743.99	585.86	-381.81	-576.62	9.00	8.96	-0.95
7,065.98	68.62	179.70	6,750.00	571.06	-381.75	-561.83	9.00	8.96	-0.91
Top C Chalk									
7,100.00	71.67	179.40	6,761.56	539.07	-381.50	-529.85	9.00	8.96	-0.88
7,150.00	76.15	178.98	6,775.41	491.04	-380.82	-481.85	9.00	8.96	-0.84
7,161.20	77.15	178.89	6,778.00	480.15	-380.62	-470.97	9.00	8.96	-0.82
Top C Marl									
7,200.00	80.63	178.57	6,785.48	442.09	-379.77	-432.94	9.00	8.96	-0.81
7,250.00	85.11	178.18	6,791.68	392.51	-378.37	-383.41	9.00	8.97	-0.79
7,304.52	90.00	177.75	6,794.00	338.09	-376.43	-329.05	9.00	8.97	-0.78
LP: 7304.52' MD, 90.00° Inc, 177.75° Azm									
7,400.00	90.00	177.75	6,794.00	242.68	-372.68	-233.76	0.00	0.00	0.00
7,504.52	90.00	177.75	6,794.00	138.25	-368.58	-129.45	0.00	0.00	0.00
Turn: 1°/100'									
7,600.00	90.00	178.70	6,794.00	42.81	-365.62	-34.11	1.00	0.00	1.00
7,654.72	90.00	179.25	6,794.00	-11.90	-364.65	20.56	1.00	0.00	1.00
Hold: 90.00° Inc, 179.25° Azm									
7,700.00	90.00	179.25	6,794.00	-57.18	-364.06	65.81	0.00	0.00	0.00
7,800.00	90.00	179.25	6,794.00	-157.17	-362.75	165.74	0.00	0.00	0.00
7,900.00	90.00	179.25	6,794.00	-257.16	-361.45	265.68	0.00	0.00	0.00
8,000.00	90.00	179.25	6,794.00	-357.15	-360.14	365.61	0.00	0.00	0.00
8,100.00	90.00	179.25	6,794.00	-457.14	-358.84	465.54	0.00	0.00	0.00
8,200.00	90.00	179.25	6,794.00	-557.13	-357.53	565.47	0.00	0.00	0.00
8,300.00	90.00	179.25	6,794.00	-657.13	-356.22	665.41	0.00	0.00	0.00
8,400.00	90.00	179.25	6,794.00	-757.12	-354.92	765.34	0.00	0.00	0.00
8,500.00	90.00	179.25	6,794.00	-857.11	-353.61	865.27	0.00	0.00	0.00
8,600.00	90.00	179.25	6,794.00	-957.10	-352.31	965.20	0.00	0.00	0.00
8,700.00	90.00	179.25	6,794.00	-1,057.09	-351.00	1,065.13	0.00	0.00	0.00
8,800.00	90.00	179.25	6,794.00	-1,157.08	-349.70	1,165.07	0.00	0.00	0.00
8,900.00	90.00	179.25	6,794.00	-1,257.07	-348.39	1,265.00	0.00	0.00	0.00
9,000.00	90.00	179.25	6,794.00	-1,357.07	-347.09	1,364.93	0.00	0.00	0.00
9,100.00	90.00	179.25	6,794.00	-1,457.06	-345.78	1,464.86	0.00	0.00	0.00
9,200.00	90.00	179.25	6,794.00	-1,557.05	-344.48	1,564.80	0.00	0.00	0.00
9,300.00	90.00	179.25	6,794.00	-1,657.04	-343.17	1,664.73	0.00	0.00	0.00
9,400.00	90.00	179.25	6,794.00	-1,757.03	-341.87	1,764.66	0.00	0.00	0.00
9,500.00	90.00	179.25	6,794.00	-1,857.02	-340.56	1,864.59	0.00	0.00	0.00
9,600.00	90.00	179.25	6,794.00	-1,957.02	-339.25	1,964.52	0.00	0.00	0.00
9,700.00	90.00	179.25	6,794.00	-2,057.01	-337.95	2,064.46	0.00	0.00	0.00
9,800.00	90.00	179.25	6,794.00	-2,157.00	-336.64	2,164.39	0.00	0.00	0.00
9,900.00	90.00	179.25	6,794.00	-2,256.99	-335.34	2,264.32	0.00	0.00	0.00
10,000.00	90.00	179.25	6,794.00	-2,356.98	-334.03	2,364.25	0.00	0.00	0.00
10,100.00	90.00	179.25	6,794.00	-2,456.97	-332.73	2,464.19	0.00	0.00	0.00
10,200.00	90.00	179.25	6,794.00	-2,556.96	-331.42	2,564.12	0.00	0.00	0.00
10,300.00	90.00	179.25	6,794.00	-2,656.96	-330.12	2,664.05	0.00	0.00	0.00
10,400.00	90.00	179.25	6,794.00	-2,756.95	-328.81	2,763.98	0.00	0.00	0.00
10,500.00	90.00	179.25	6,794.00	-2,856.94	-327.51	2,863.91	0.00	0.00	0.00
10,600.00	90.00	179.25	6,794.00	-2,956.93	-326.20	2,963.85	0.00	0.00	0.00
10,700.00	90.00	179.25	6,794.00	-3,056.92	-324.90	3,063.78	0.00	0.00	0.00
10,800.00	90.00	179.25	6,794.00	-3,156.91	-323.59	3,163.71	0.00	0.00	0.00
10,900.00	90.00	179.25	6,794.00	-3,256.90	-322.29	3,263.64	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen DD17-735
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4897.00ft
Project:	Mustang	MD Reference:	Well @ 4897.00ft
Site:	DD Section 08	North Reference:	Grid
Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen DD17-735		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,000.00	90.00	179.25	6,794.00	-3,356.90	-320.98	3,363.58	0.00	0.00	0.00
11,100.00	90.00	179.25	6,794.00	-3,456.89	-319.67	3,463.51	0.00	0.00	0.00
11,200.00	90.00	179.25	6,794.00	-3,556.88	-318.37	3,563.44	0.00	0.00	0.00
11,300.00	90.00	179.25	6,794.00	-3,656.87	-317.06	3,663.37	0.00	0.00	0.00
11,400.00	90.00	179.25	6,794.00	-3,756.86	-315.76	3,763.30	0.00	0.00	0.00
11,500.00	90.00	179.25	6,794.00	-3,856.85	-314.45	3,863.24	0.00	0.00	0.00
11,600.00	90.00	179.25	6,794.00	-3,956.84	-313.15	3,963.17	0.00	0.00	0.00
11,700.00	90.00	179.25	6,794.00	-4,056.84	-311.84	4,063.10	0.00	0.00	0.00
11,800.00	90.00	179.25	6,794.00	-4,156.83	-310.54	4,163.03	0.00	0.00	0.00
11,900.00	90.00	179.25	6,794.00	-4,256.82	-309.23	4,262.97	0.00	0.00	0.00
12,000.00	90.00	179.25	6,794.00	-4,356.81	-307.93	4,362.90	0.00	0.00	0.00
12,100.00	90.00	179.25	6,794.00	-4,456.80	-306.62	4,462.83	0.00	0.00	0.00
12,200.00	90.00	179.25	6,794.00	-4,556.79	-305.32	4,562.76	0.00	0.00	0.00
12,300.00	90.00	179.25	6,794.00	-4,656.79	-304.01	4,662.69	0.00	0.00	0.00
12,400.00	90.00	179.25	6,794.00	-4,756.78	-302.70	4,762.63	0.00	0.00	0.00
12,500.00	90.00	179.25	6,794.00	-4,856.77	-301.40	4,862.56	0.00	0.00	0.00
12,600.00	90.00	179.25	6,794.00	-4,956.76	-300.09	4,962.49	0.00	0.00	0.00
12,700.00	90.00	179.25	6,794.00	-5,056.75	-298.79	5,062.42	0.00	0.00	0.00
12,800.00	90.00	179.25	6,794.00	-5,156.74	-297.48	5,162.36	0.00	0.00	0.00
12,900.00	90.00	179.25	6,794.00	-5,256.73	-296.18	5,262.29	0.00	0.00	0.00
13,000.00	90.00	179.25	6,794.00	-5,356.73	-294.87	5,362.22	0.00	0.00	0.00
13,100.00	90.00	179.25	6,794.00	-5,456.72	-293.57	5,462.15	0.00	0.00	0.00
13,200.00	90.00	179.25	6,794.00	-5,556.71	-292.26	5,562.08	0.00	0.00	0.00
13,300.00	90.00	179.25	6,794.00	-5,656.70	-290.96	5,662.02	0.00	0.00	0.00
13,400.00	90.00	179.25	6,794.00	-5,756.69	-289.65	5,761.95	0.00	0.00	0.00
13,500.00	90.00	179.25	6,794.00	-5,856.68	-288.35	5,861.88	0.00	0.00	0.00
13,600.00	90.00	179.25	6,794.00	-5,956.67	-287.04	5,961.81	0.00	0.00	0.00
13,700.00	90.00	179.25	6,794.00	-6,056.67	-285.73	6,061.75	0.00	0.00	0.00
13,800.00	90.00	179.25	6,794.00	-6,156.66	-284.43	6,161.68	0.00	0.00	0.00
13,900.00	90.00	179.25	6,794.00	-6,256.65	-283.12	6,261.61	0.00	0.00	0.00
14,000.00	90.00	179.25	6,794.00	-6,356.64	-281.82	6,361.54	0.00	0.00	0.00
14,100.00	90.00	179.25	6,794.00	-6,456.63	-280.51	6,461.47	0.00	0.00	0.00
14,200.00	90.00	179.25	6,794.00	-6,556.62	-279.21	6,561.41	0.00	0.00	0.00
14,300.00	90.00	179.25	6,794.00	-6,656.61	-277.90	6,661.34	0.00	0.00	0.00
14,400.00	90.00	179.25	6,794.00	-6,756.61	-276.60	6,761.27	0.00	0.00	0.00
14,500.00	90.00	179.25	6,794.00	-6,856.60	-275.29	6,861.20	0.00	0.00	0.00
14,600.00	90.00	179.25	6,794.00	-6,956.59	-273.99	6,961.14	0.00	0.00	0.00
14,700.00	90.00	179.25	6,794.00	-7,056.58	-272.68	7,061.07	0.00	0.00	0.00
14,800.00	90.00	179.25	6,794.00	-7,156.57	-271.38	7,161.00	0.00	0.00	0.00
14,900.00	90.00	179.25	6,794.00	-7,256.56	-270.07	7,260.93	0.00	0.00	0.00
15,000.00	90.00	179.25	6,794.00	-7,356.56	-268.76	7,360.86	0.00	0.00	0.00
15,100.00	90.00	179.25	6,794.00	-7,456.55	-267.46	7,460.80	0.00	0.00	0.00
15,200.00	90.00	179.25	6,794.00	-7,556.54	-266.15	7,560.73	0.00	0.00	0.00
15,300.00	90.00	179.25	6,794.00	-7,656.53	-264.85	7,660.66	0.00	0.00	0.00
15,400.00	90.00	179.25	6,794.00	-7,756.52	-263.54	7,760.59	0.00	0.00	0.00
15,500.00	90.00	179.25	6,794.00	-7,856.51	-262.24	7,860.53	0.00	0.00	0.00
15,600.00	90.00	179.25	6,794.00	-7,956.50	-260.93	7,960.46	0.00	0.00	0.00
15,700.00	90.00	179.25	6,794.00	-8,056.50	-259.63	8,060.39	0.00	0.00	0.00
15,800.00	90.00	179.25	6,794.00	-8,156.49	-258.32	8,160.32	0.00	0.00	0.00
15,900.00	90.00	179.25	6,794.00	-8,256.48	-257.02	8,260.25	0.00	0.00	0.00
16,000.00	90.00	179.25	6,794.00	-8,356.47	-255.71	8,360.19	0.00	0.00	0.00
16,100.00	90.00	179.25	6,794.00	-8,456.46	-254.41	8,460.12	0.00	0.00	0.00
16,200.00	90.00	179.25	6,794.00	-8,556.45	-253.10	8,560.05	0.00	0.00	0.00
16,300.00	90.00	179.25	6,794.00	-8,656.44	-251.79	8,659.98	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen DD17-735
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4897.00ft
Project:	Mustang	MD Reference:	Well @ 4897.00ft
Site:	DD Section 08	North Reference:	Grid
Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen DD17-735		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
16,400.00	90.00	179.25	6,794.00	-8,756.44	-250.49	8,759.92	0.00	0.00	0.00	
16,500.00	90.00	179.25	6,794.00	-8,856.43	-249.18	8,859.85	0.00	0.00	0.00	
16,600.00	90.00	179.25	6,794.00	-8,956.42	-247.88	8,959.78	0.00	0.00	0.00	
16,700.00	90.00	179.25	6,794.00	-9,056.41	-246.57	9,059.71	0.00	0.00	0.00	
16,800.00	90.00	179.25	6,794.00	-9,156.40	-245.27	9,159.64	0.00	0.00	0.00	
16,900.00	90.00	179.25	6,794.00	-9,256.39	-243.96	9,259.58	0.00	0.00	0.00	
17,000.00	90.00	179.25	6,794.00	-9,356.38	-242.66	9,359.51	0.00	0.00	0.00	
17,100.00	90.00	179.25	6,794.00	-9,456.38	-241.35	9,459.44	0.00	0.00	0.00	
17,200.00	90.00	179.25	6,794.00	-9,556.37	-240.05	9,559.37	0.00	0.00	0.00	
17,300.00	90.00	179.25	6,794.00	-9,656.36	-238.74	9,659.31	0.00	0.00	0.00	
17,400.00	90.00	179.25	6,794.00	-9,756.35	-237.44	9,759.24	0.00	0.00	0.00	
17,500.00	90.00	179.25	6,794.00	-9,856.34	-236.13	9,859.17	0.00	0.00	0.00	
17,549.96	90.00	179.25	6,794.00	-9,906.29	-235.48	9,909.09	0.00	0.00	0.00	
TD @ 17549.96' MD/6794.00' TVD										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Guttersen DD17-735- - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	1,334,136.10	3,291,204.08	40.2459000	-104.4567700	
Guttersen DD17-735- - plan hits target center - Point	0.00	0.00	5,985.63	952.53	-330.24	1,335,088.63	3,290,873.84	40.2485253	-104.4579129	
Guttersen DD17-735- - plan hits target center - Point	0.00	0.00	6,794.00	-9,906.29	-235.48	1,324,229.82	3,290,968.60	40.2187158	-104.4580305	
Guttersen DD17-735- - plan hits target center - Point	0.00	0.00	6,794.00	338.09	-376.43	1,334,474.19	3,290,827.65	40.2468402	-104.4581042	

Noble Energy, Inc.
Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen DD17-735
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4897.00ft
Project:	Mustang	MD Reference:	Well @ 4897.00ft
Site:	DD Section 08	North Reference:	Grid
Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen DD17-735		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
414.00	414.00	Pierre				
754.00	754.00	Upper Pierre Aquifer Top				
1,649.00	1,649.00	Upper Pierre Aquifer Base				
3,834.39	3,789.00	Parkman				
4,241.51	4,179.00	Sussex				
5,055.74	4,959.00	Shannon				
6,150.67	6,008.00	Teepee Buttes				
6,783.23	6,593.00	Sharon Springs				
6,815.63	6,616.00	Top A Chalk				
6,836.20	6,630.00	Top A Marl				
6,852.90	6,641.00	Top B Chalk				
6,927.50	6,686.00	Top B Marl				
7,065.98	6,750.00	Top C Chalk				
7,161.20	6,778.00	Top C 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'	
3,033.72	3,022.01	113.82	-39.46	Hold: 16.67° Inc, 340.88° Azm	
6,127.44	5,985.63	952.53	-330.24	KOP: Build 9°/100' @ 6127.44' MD	
7,304.52	6,794.00	338.09	-376.43	LP: 7304.52' MD, 90.00° Inc, 177.75° Azm	
7,504.52	6,794.00	138.25	-368.58	Turn: 1°/100'	
7,654.72	6,794.00	-11.90	-364.65	Hold: 90.00° Inc, 179.25° Azm	
17,549.96	6,794.00	-9,906.29	-235.48	TD @ 17549.96' MD/6794.00' TVD	

Northern Region - DJ Basin

Mustang

DD Section 08

Guttersen DD17-735

Guttersen DD17-735

Plan #1

Anticollision Summary Report

02 October, 2018

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen DD17-735
Project:	Mustang	TVD Reference:	Well @ 4897.00ft
Reference Site:	DD Section 08	MD Reference:	Well @ 4897.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen DD17-735	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

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

Survey Tool Program		Date	10/2/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,549.96	Plan #1 (Guttersen DD17-735)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis	

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
DD Section 05						
Guttersen 1N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	4,240.83	4,161.11	273.89	245.82	9.758	CC, ES
Guttersen 1N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	4,300.00	4,214.71	275.29	246.91	9.701	SF
Guttersen 27N-5HZ - Wellbore #1 - Wellbore #1 - As Dril	6,645.87	6,537.32	72.53	26.15	1.564	CC, ES, SF
Guttersen 2N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	3,984.84	3,806.87	536.39	509.53	19.973	CC
Guttersen 2N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	4,000.00	3,819.90	536.43	509.48	19.908	ES
Guttersen 2N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	4,900.00	4,707.86	612.51	579.00	18.275	SF
Guttersen 3-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	6,761.33	6,610.61	2,053.02	2,008.04	45.645	CC, ES
Guttersen 3-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	6,850.00	6,601.00	2,055.48	2,010.40	45.597	SF
Guttersen 4-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	839.29	822.16	2,545.17	2,539.58	455.369	CC, ES
Guttersen 4-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	6,950.00	6,175.01	3,033.14	2,986.31	64.768	SF
UPV 05-13J03 - Wellbore #1 - Wellbore #1 - As Drilled	6,475.48	6,262.72	2,668.25	2,623.20	59.224	CC
UPV 05-13J03 - Wellbore #1 - Wellbore #1 - As Drilled	6,500.00	6,286.01	2,668.38	2,623.18	59.037	ES
UPV 05-13J03 - Wellbore #1 - Wellbore #1 - As Drilled	6,850.00	6,629.82	2,700.95	2,653.94	57.463	SF
DD Section 08						
GUTTERSEN #31-8 (PA) - GUTTERSEN #31-8 - No Surv	7,763.25	6,777.00	336.03	175.59	2.094	CC, ES, SF
GUTTERSEN #32-8 (PA) - GUTTERSEN #32-8 - No Surv	9,096.52	6,797.00	346.16	181.25	2.099	CC
GUTTERSEN #32-8 (PA) - GUTTERSEN #32-8 - No Surv	9,100.00	6,797.00	346.18	181.25	2.099	ES, SF
GUTTERSEN #33-8 (PA) - GUTTERSEN #33-8 - No Surv	10,411.60	6,787.00	339.52	167.84	1.978	CC, ES, SF
GUTTERSEN #34-8 (PA) - GUTTERSEN #34-8 - No Surv	11,719.47	6,777.00	279.82	99.85	1.555	CC, ES, SF
GUTTERSEN #42-8 (PA) - GUTTERSEN #42-8 - No Surv	9,090.97	6,767.00	996.61	832.32	6.066	CC, ES
GUTTERSEN #42-8 (PA) - GUTTERSEN #42-8 - No Surv	9,100.00	6,767.00	996.65	832.33	6.065	SF
GUTTERSEN #43-8 (PA) - GUTTERSEN #43-8 - No Surv	10,413.31	6,787.00	986.56	814.87	5.746	CC, ES, SF
Guttersen 08C - Wellbore #1 - Wellbore #1 - As Drilled	8,404.44	6,782.95	384.29	334.47	7.714	CC, ES, SF
Guttersen 08D - Wellbore #1 - Wellbore #1 - As Drilled	11,092.77	6,801.62	289.72	225.96	4.544	CC, ES, SF
Guttersen 41-08 - Wellbore #1 - Wellbore #1 - As Drilled	100.00	77.81	825.38	825.12	3,183.997	CC
Guttersen 41-08 - Wellbore #1 - Wellbore #1 - As Drilled	300.00	274.80	826.03	824.72	628.318	ES
Guttersen 41-08 - Wellbore #1 - Wellbore #1 - As Drilled	7,654.72	6,766.58	1,212.40	1,165.18	25.677	SF
Guttersen 44-08 - Wellbore #1 - Wellbore #1 - As Drilled	11,780.96	6,804.33	1,044.83	886.99	6.620	CC, ES
Guttersen 44-08 - Wellbore #1 - Wellbore #1 - As Drilled	11,800.00	6,804.50	1,045.00	887.06	6.616	SF
Guttersen DD08-774 - Guttersen DD08-774 - Plan #1	2,112.55	2,123.55	2,392.44	2,377.72	162.539	CC
Guttersen DD08-774 - Guttersen DD08-774 - Plan #1	2,800.00	2,645.22	2,394.52	2,375.55	126.232	ES
Guttersen DD08-774 - Guttersen DD08-774 - Plan #1	12,600.00	12,243.71	2,658.94	2,560.61	27.042	SF
Guttersen DD08-784 - Guttersen DD08-784 - Plan #1	2,200.00	2,210.00	2,414.77	2,399.43	157.390	CC
Guttersen DD08-784 - Guttersen DD08-784 - Plan #1	2,300.00	2,268.79	2,415.18	2,399.27	151.837	ES
Guttersen DD08-784 - Guttersen DD08-784 - Plan #1	12,800.00	12,287.22	3,339.47	3,239.02	33.244	SF
Guttersen DD17-715 - Guttersen DD17-715 - Plan #1	2,200.00	2,197.00	67.09	51.80	4.386	CC, 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 Gutttersen DD17-735
Project:	Mustang	TVD Reference:	Well @ 4897.00ft
Reference Site:	DD Section 08	MD Reference:	Well @ 4897.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Gutttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Gutttersen DD17-735	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
DD Section 08						
Gutttersen DD17-715 - Gutttersen DD17-715 - Plan #1	2,300.00	2,295.81	68.58	52.58	4.285	SF
Gutttersen DD17-725 - Gutttersen DD17-725 - Plan #1	2,200.00	2,202.00	44.81	29.50	2.926	CC
Gutttersen DD17-725 - Gutttersen DD17-725 - Plan #1	2,300.00	2,302.02	45.52	29.49	2.840	ES, SF
Gutttersen DD17-730 - Gutttersen DD17-730 - Plan #1	2,200.00	2,199.00	22.33	7.03	1.459	Level 3, CC
Gutttersen DD17-730 - Gutttersen DD17-730 - Plan #1	2,300.00	2,299.04	22.79	6.77	1.423	Level 3, ES, SF
Gutttersen DD17-745 - Gutttersen DD17-745 - Plan #1	2,200.00	2,202.00	25.12	9.81	1.641	CC
Gutttersen DD17-745 - Gutttersen DD17-745 - Plan #1	2,300.00	2,301.42	25.74	9.72	1.607	ES, SF
Gutttersen DD17-750 - Gutttersen DD17-750 - Plan #1	2,200.00	2,203.00	47.45	32.14	3.098	CC, ES
Gutttersen DD17-750 - Gutttersen DD17-750 - Plan #1	2,300.00	2,301.73	48.27	32.25	3.013	SF
Gutttersen DD17-755 - Gutttersen DD17-755 - Plan #1	7,230.58	7,283.73	1,313.70	1,264.52	26.712	CC
Gutttersen DD17-755 - Gutttersen DD17-755 - Plan #1	17,550.30	17,583.14	1,314.84	1,138.00	7.435	ES, SF
Gutttersen DD17-765 - Gutttersen DD17-765 - Plan #1	7,119.60	7,040.33	1,971.49	1,922.99	40.653	CC
Gutttersen DD17-765 - Gutttersen DD17-765 - Plan #1	17,550.30	17,446.05	1,974.17	1,797.25	11.159	ES, SF
Gutttersen DD17-770 - Gutttersen DD17-770 - Plan #1	6,557.66	6,392.23	2,280.26	2,233.40	48.665	CC
Gutttersen DD17-770 - Gutttersen DD17-770 - Plan #1	17,550.30	17,621.26	2,302.65	2,125.87	13.026	ES, SF
Gutttersen State DD08-11 - Wellbore #1 - Wellbore #1 - A	10,394.47	6,797.60	1,580.46	1,521.12	26.631	CC
Gutttersen State DD08-11 - Wellbore #1 - Wellbore #1 - A	10,400.00	6,797.63	1,580.47	1,521.09	26.615	ES
Gutttersen State DD08-11 - Wellbore #1 - Wellbore #1 - A	10,600.00	6,801.62	1,593.77	1,533.19	26.309	SF
Gutttersen State DD08-13 - Wellbore #1 - Wellbore #1 - A	11,651.60	6,829.01	3,049.16	2,981.21	44.875	CC, ES
Gutttersen State DD08-13 - Wellbore #1 - Wellbore #1 - A	12,300.00	6,834.39	3,117.33	3,045.37	43.317	SF
L F RANCHES #1(DA) - L F RANCHES #1 - No Surveys	2,200.00	2,158.00	634.68	583.86	12.490	CC
L F RANCHES #1(DA) - L F RANCHES #1 - No Surveys	2,600.00	2,556.70	639.02	578.82	10.614	ES
L F RANCHES #1(DA) - L F RANCHES #1 - No Surveys	7,548.66	6,752.00	989.68	829.99	6.197	SF
DD Section 17						
Gutttersen 23-17 - Wellbore #1 - Wellbore #1 - As Drilled	15,636.71	6,753.00	1,759.25	1,662.35	18.154	CC, ES
Gutttersen 23-17 - Wellbore #1 - Wellbore #1 - As Drilled	15,800.00	6,752.61	1,766.81	1,668.78	18.023	SF
Gutttersen State DD17-78HN - Original Drilling - Original	17,550.30	6,779.27	2,984.64	2,874.93	27.206	CC, ES, SF
Gutttersen State DD17-78HN - Original Drilling - ST01 - S	13,100.00	13,100.00	2,997.10	2,822.33	17.149	ES
Gutttersen State DD17-78HN - Original Drilling - ST01 - S	14,100.00	14,100.00	3,025.84	2,827.84	15.282	SF
Gutttersen State DD17-78HN - Original Drilling - ST01 - S	15,368.26	8,685.05	2,983.81	2,870.84	26.411	CC
Gutttersen State DD17-79-1HN - Original Drilling - Original	12,514.84	11,502.00	3,348.87	3,205.65	23.382	SF
Gutttersen State DD17-79-1HN - Original Drilling - Original	14,800.00	9,227.00	3,315.91	3,196.22	27.705	ES
Gutttersen State DD17-79-1HN - Original Drilling - Original	16,114.17	7,900.00	3,305.79	3,196.77	30.322	CC
Gutttersen State DD17-79HN - Original Drilling - Original	14,600.00	14,600.00	3,548.57	3,339.03	16.935	ES, SF
Gutttersen State DD17-79HN - Original Drilling - Original	14,861.11	9,227.00	3,543.49	3,424.44	29.763	CC
Gutttersen USX DD17-19 - Original Drilling - Original Dri	13,614.18	6,753.68	2,431.58	2,349.78	29.727	CC, ES
Gutttersen USX DD17-19 - Original Drilling - Original Dri	14,000.00	6,753.18	2,462.00	2,377.71	29.211	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 DD17-735
Project:	Mustang	TVD Reference:	Well @ 4897.00ft
Reference Site:	DD Section 08	MD Reference:	Well @ 4897.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen DD17-735	Database:	EDMP
Reference Design:	Plan #1	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
DD Section 18						
Guttersen 18D - Wellbore #1 - Wellbore #1 - As Drilled	16,512.63	6,815.18	5,044.33	4,941.43	49.020	CC, ES
Guttersen 18D - Wellbore #1 - Wellbore #1 - As Drilled	17,550.30	6,828.79	5,149.93	5,040.16	46.914	SF
Guttersen 24-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,149.56	6,791.11	6,928.23	6,820.13	64.092	CC
Guttersen 24-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,200.00	6,791.20	6,928.41	6,819.91	63.854	ES
Guttersen 24-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,550.30	6,791.88	6,939.81	6,828.60	62.401	SF
Guttersen 33-18 - Wellbore #1 - Wellbore #1 - As Drilled	15,743.35	6,723.84	5,637.22	5,539.58	57.736	CC
Guttersen 33-18 - Wellbore #1 - Wellbore #1 - As Drilled	15,800.00	6,724.26	5,637.50	5,539.41	57.473	ES
Guttersen 33-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,200.00	6,734.64	5,822.37	5,715.35	54.406	SF
Guttersen 34-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,183.79	6,736.13	5,716.90	5,609.03	52.998	CC
Guttersen 34-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,200.00	6,736.02	5,716.92	5,608.92	52.933	ES
Guttersen 34-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,550.30	6,733.62	5,728.63	5,617.94	51.753	SF
Guttersen 43-18 - Wellbore #1 - Wellbore #1 - As Drilled	15,750.17	6,746.97	4,439.96	4,339.70	44.285	CC
Guttersen 43-18 - Wellbore #1 - Wellbore #1 - As Drilled	15,800.00	6,747.18	4,440.24	4,339.58	44.111	ES
Guttersen 43-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,700.00	6,751.02	4,540.42	4,434.00	42.667	SF
Guttersen 44-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,118.67	6,756.02	4,373.67	4,266.32	40.742	CC, ES
Guttersen 44-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,550.30	6,754.32	4,394.91	4,284.40	39.768	SF
Karch Blue DD18-03J - Wellbore #1 - Wellbore #1 - As D	16,091.67	6,638.32	7,319.91	7,219.82	73.134	CC
Karch Blue DD18-03J - Wellbore #1 - Wellbore #1 - As D	16,100.00	6,638.32	7,319.91	7,219.76	73.085	ES
Karch Blue DD18-03J - Wellbore #1 - Wellbore #1 - As D	17,550.30	6,638.04	7,463.82	7,353.49	67.649	SF
Karch Blue DD18-12 - Original Drilling - Original Drilling -	15,707.04	6,741.94	8,455.69	8,353.44	82.692	CC
Karch Blue DD18-12 - Original Drilling - Original Drilling -	15,800.00	6,741.55	8,456.20	8,353.22	82.110	ES
Karch Blue DD18-12 - Original Drilling - Original Drilling -	17,550.30	6,734.27	8,654.26	8,539.12	75.163	SF
Karch Blue DD18-13 - Wellbore #1 - Wellbore #1 - As Dr	17,192.42	6,896.92	8,508.60	8,399.07	77.684	CC
Karch Blue DD18-13 - Wellbore #1 - Wellbore #1 - As Dr	17,300.00	6,894.94	8,509.28	8,398.89	77.089	ES
Karch Blue DD18-13 - Wellbore #1 - Wellbore #1 - As Dr	17,550.30	6,890.33	8,516.12	8,403.79	75.818	SF
DD Section 20						
Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey	17,550.30	6,695.26	2,995.35	2,889.91	28.409	CC, ES, SF
Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey	17,550.30	6,780.70	4,862.39	4,789.92	67.100	CC, ES, SF

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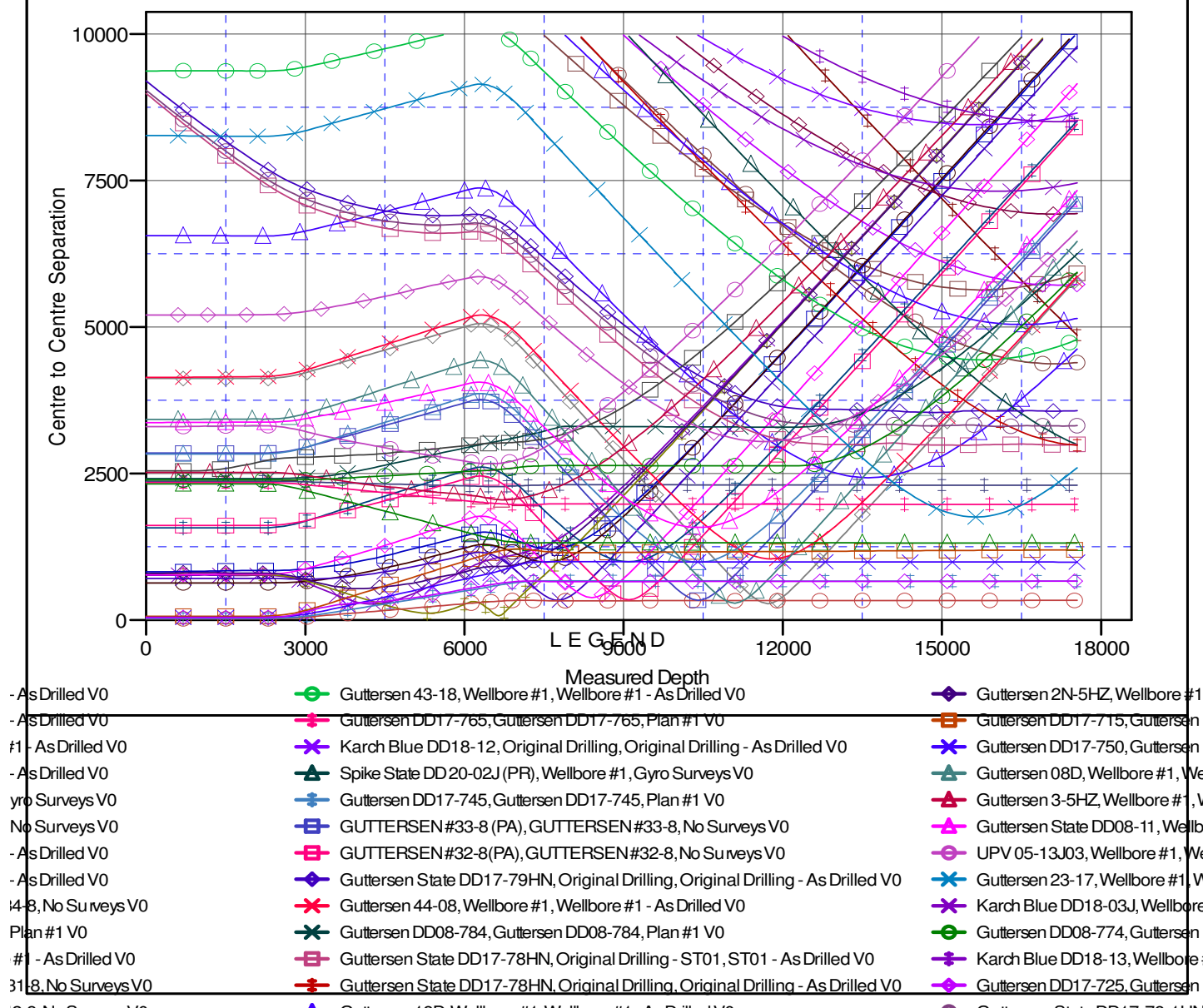
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen DD17-735
Project:	Mustang	TVD Reference:	Well @ 4897.00ft
Reference Site:	DD Section 08	MD Reference:	Well @ 4897.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen DD17-735	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen DD17-735	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4897.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Guttersen DD17-735
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.67°

Ladder Plot



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

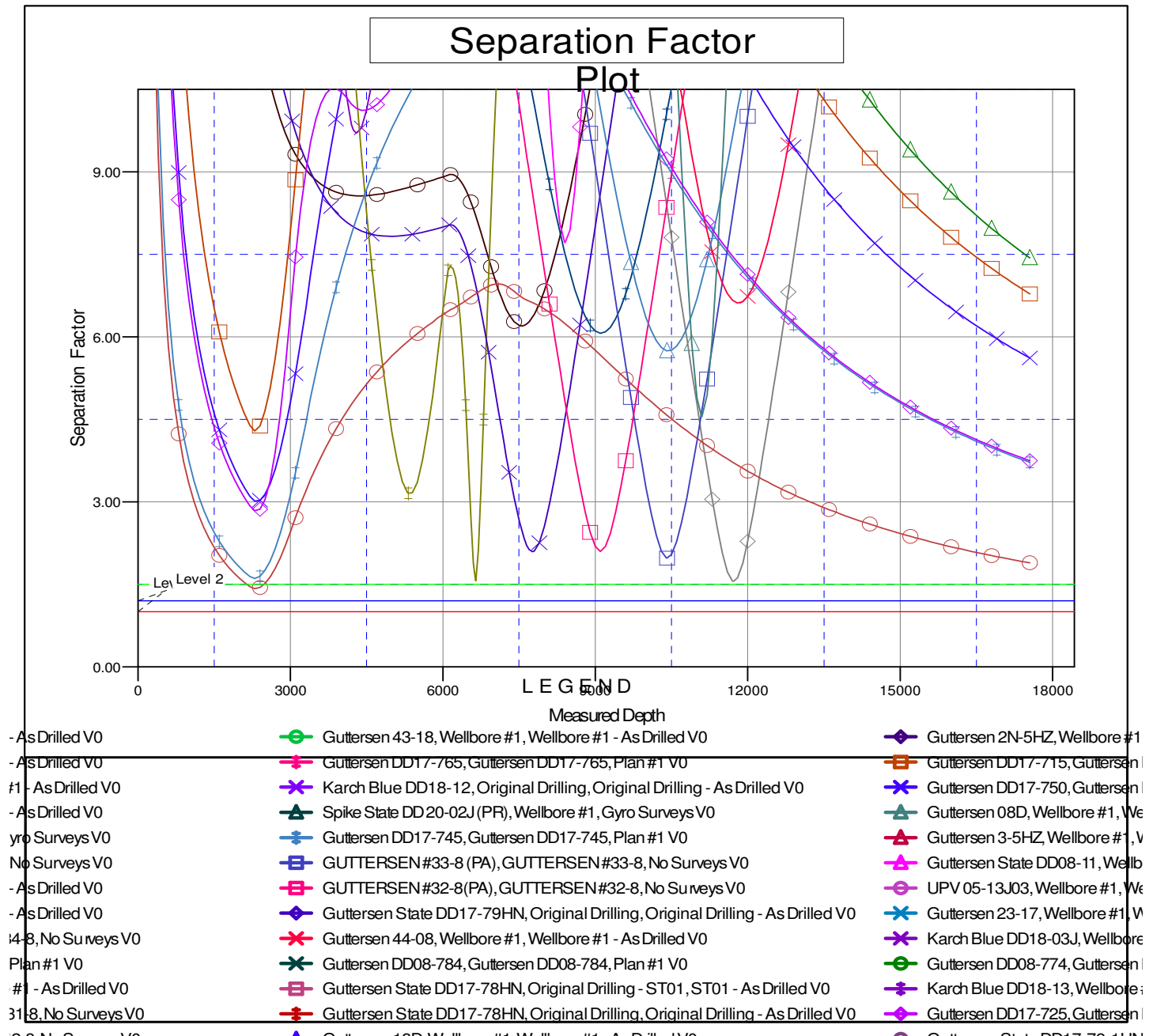
Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Gutteresen DD17-735
Project:	Mustang	TVD Reference:	Well @ 4897.00ft
Reference Site:	DD Section 08	MD Reference:	Well @ 4897.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Gutteresen DD17-735	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Gutteresen DD17-735	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4897.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Gutteresen DD17-735
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