

Project: Mustang
Site: D Section 21
Well: Vogler State D33-718
Wellbore: Wellbore #1
Design: Plan 1

Northern Region - DJ Basin

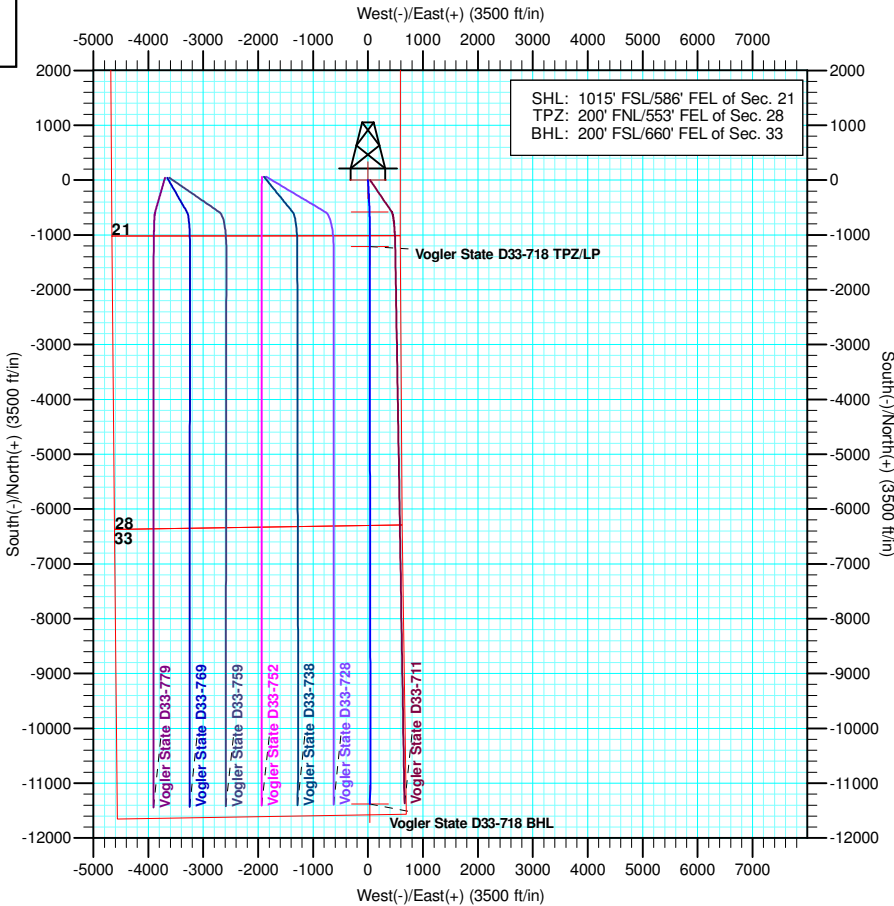
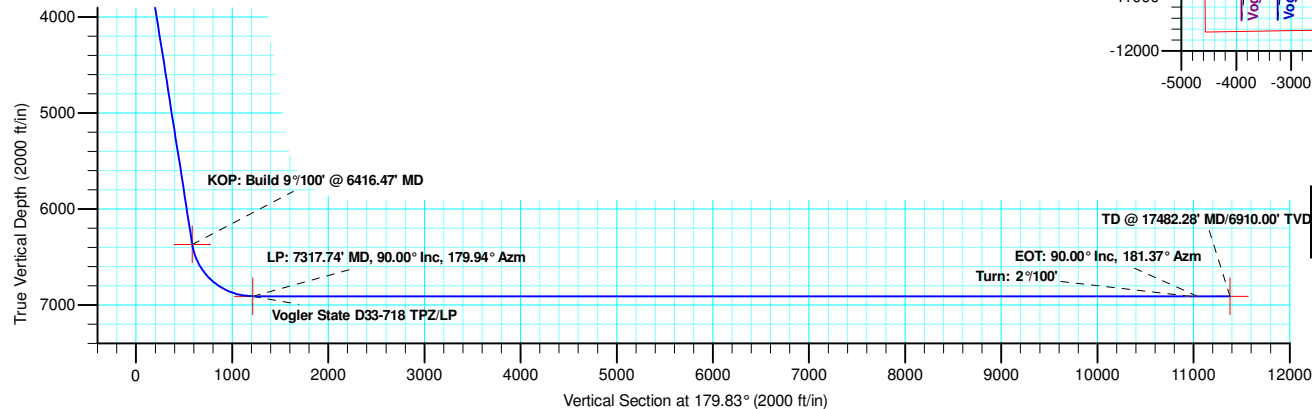
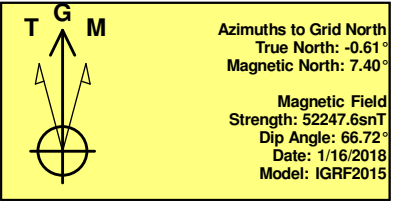
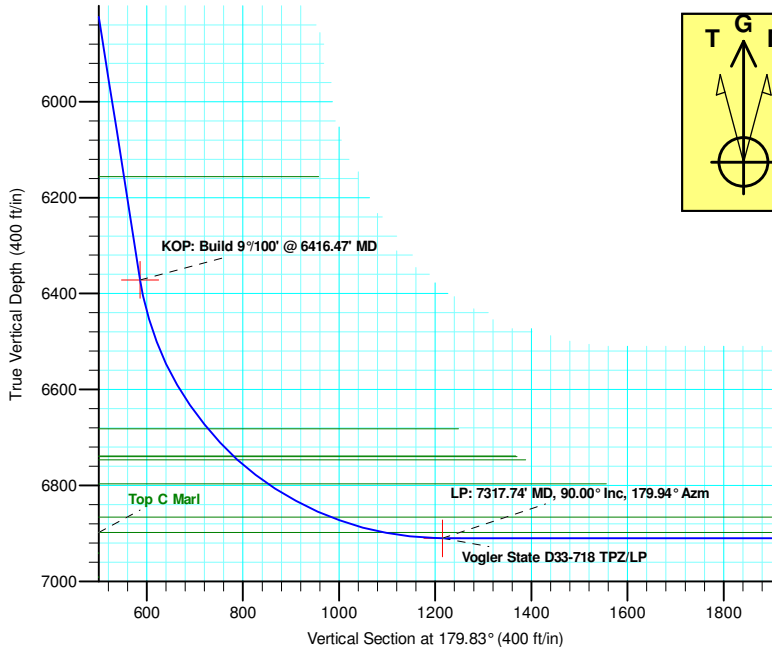
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

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	2400.00	0.00	0.00	2400.00	0.00	0.00	0.00	0.00	0.00	
3	2844.75	8.90	177.29	2842.97	-34.42	1.63	2.00	177.29	34.42	
4	6416.47	8.90	177.29	6371.73	-586.07	27.78	0.00	0.00	586.15	
5	7317.74	90.00	179.94	6910.00	-1215.05	32.33	9.00	2.69	1215.14	Vogler State D33-718 TPZ/LP
6	17073.48	90.00	179.94	6910.00	-10970.79	42.28	0.00	0.00	10970.86	Vogler State D33-718-1
7	17145.07	90.00	181.37	6910.00	-11042.36	41.46	2.00	90.00	11042.44	Vogler State D33-718 BHL
8	17482.28	90.00	181.37	6910.00	-11379.48	33.38	0.00	0.00	11379.53	Vogler State D33-718 BHL

WELL DETAILS: Vogler State D33-718

+N/-S	+E/-W	Northing	Ground Level: Easting	4819.00 Latitude	Longitude	Slot
0.00	0.00	1319464.02	3265615.22	40.2064160	-104.5489976	



Plan: Plan 1 (Vogler State D33-718/Wellbore #1)

Created By: Keith Noack Date: 9:46, August 09 2018

Northern Region - DJ Basin

Mustang

D Section 21

Vogler State D33-718

Wellbore #1

Plan: Plan 1

Standard Planning Report

09 August, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D33-718
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4849.00ft
Project:	Mustang	MD Reference:	KB @ 4849.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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	D Section 21				
Site Position:		Northing:	1,323,041.88 usft	Latitude:	40.2163540
From:	Lat/Long	Easting:	3,261,613.48 usft	Longitude:	-104.5631890
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.61 °

Well	Vogler State D33-718					
Well Position	+N/-S	-3,577.87 ft	Northing:	1,319,464.02 usft	Latitude:	40.2064160
	+E/-W	4,001.76 ft	Easting:	3,265,615.22 usft	Longitude:	-104.5489976
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,819.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/16/2018	8.02	66.72	52,247.62626581

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	179.83

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	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,844.75	8.90	177.29	2,842.97	-34.42	1.63	2.00	2.00	0.00	177.29	
6,416.47	8.90	177.29	6,371.73	-586.07	27.78	0.00	0.00	0.00	0.00	
7,317.74	90.00	179.94	6,910.00	-1,215.05	32.33	9.00	9.00	0.29	2.69	Vogler State D33-7
17,073.48	90.00	179.94	6,910.00	-10,970.79	42.28	0.00	0.00	0.00	0.00	Vogler State D33-7
17,145.07	90.00	181.37	6,910.00	-11,042.36	41.46	2.00	0.00	2.00	90.00	Vogler State D33-7
17,482.28	90.00	181.37	6,910.00	-11,379.48	33.38	0.00	0.00	0.00	0.00	Vogler State D33-7

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D33-718
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4849.00ft
Project:	Mustang	MD Reference:	KB @ 4849.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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
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
629.00	0.00	0.00	629.00	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
764.00	0.00	0.00	764.00	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
1,631.00	0.00	0.00	1,631.00	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
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
Build: 2°/100'									
2,500.00	2.00	177.29	2,499.98	-1.74	0.08	1.74	2.00	2.00	0.00
2,600.00	4.00	177.29	2,599.84	-6.97	0.33	6.97	2.00	2.00	0.00
2,700.00	6.00	177.29	2,699.45	-15.68	0.74	15.68	2.00	2.00	0.00
2,800.00	8.00	177.29	2,798.70	-27.85	1.32	27.85	2.00	2.00	0.00
2,844.75	8.90	177.29	2,842.97	-34.42	1.63	34.42	2.00	2.00	0.00
Hold: 8.89° Inc, 177.29° Azm									
2,900.00	8.90	177.29	2,897.55	-42.95	2.04	42.95	0.00	0.00	0.00
3,000.00	8.90	177.29	2,996.35	-58.39	2.77	58.40	0.00	0.00	0.00
3,100.00	8.90	177.29	3,095.15	-73.84	3.50	73.85	0.00	0.00	0.00
3,200.00	8.90	177.29	3,193.94	-89.28	4.23	89.30	0.00	0.00	0.00
3,300.00	8.90	177.29	3,292.74	-104.73	4.96	104.74	0.00	0.00	0.00
3,400.00	8.90	177.29	3,391.54	-120.17	5.70	120.19	0.00	0.00	0.00
3,500.00	8.90	177.29	3,490.34	-135.62	6.43	135.64	0.00	0.00	0.00
3,600.00	8.90	177.29	3,589.13	-151.06	7.16	151.09	0.00	0.00	0.00
3,700.00	8.90	177.29	3,687.93	-166.51	7.89	166.53	0.00	0.00	0.00
3,800.00	8.90	177.29	3,786.73	-181.96	8.63	181.98	0.00	0.00	0.00
3,866.07	8.90	177.29	3,852.00	-192.16	9.11	192.19	0.00	0.00	0.00
Parkman									
3,900.00	8.90	177.29	3,885.52	-197.40	9.36	197.43	0.00	0.00	0.00
4,000.00	8.90	177.29	3,984.32	-212.85	10.09	212.87	0.00	0.00	0.00
4,100.00	8.90	177.29	4,083.12	-228.29	10.82	228.32	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D33-718
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4849.00ft
Project:	Mustang	MD Reference:	KB @ 4849.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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)
4,101.90	8.90	177.29	4,085.00	-228.59	10.84	228.62	0.00	0.00	0.00
Sussex									
4,200.00	8.90	177.29	4,181.92	-243.74	11.55	243.77	0.00	0.00	0.00
4,300.00	8.90	177.29	4,280.71	-259.18	12.29	259.22	0.00	0.00	0.00
4,400.00	8.90	177.29	4,379.51	-274.63	13.02	274.66	0.00	0.00	0.00
4,500.00	8.90	177.29	4,478.31	-290.07	13.75	290.11	0.00	0.00	0.00
4,600.00	8.90	177.29	4,577.11	-305.52	14.48	305.56	0.00	0.00	0.00
4,700.00	8.90	177.29	4,675.90	-320.96	15.22	321.01	0.00	0.00	0.00
4,800.00	8.90	177.29	4,774.70	-336.41	15.95	336.45	0.00	0.00	0.00
4,900.00	8.90	177.29	4,873.50	-351.85	16.68	351.90	0.00	0.00	0.00
5,000.00	8.90	177.29	4,972.29	-367.30	17.41	367.35	0.00	0.00	0.00
5,063.47	8.90	177.29	5,035.00	-377.10	17.88	377.15	0.00	0.00	0.00
Shannon									
5,100.00	8.90	177.29	5,071.09	-382.74	18.14	382.79	0.00	0.00	0.00
5,200.00	8.90	177.29	5,169.89	-398.19	18.88	398.24	0.00	0.00	0.00
5,300.00	8.90	177.29	5,268.69	-413.63	19.61	413.69	0.00	0.00	0.00
5,400.00	8.90	177.29	5,367.48	-429.08	20.34	429.14	0.00	0.00	0.00
5,500.00	8.90	177.29	5,466.28	-444.52	21.07	444.58	0.00	0.00	0.00
5,600.00	8.90	177.29	5,565.08	-459.97	21.81	460.03	0.00	0.00	0.00
5,700.00	8.90	177.29	5,663.88	-475.41	22.54	475.48	0.00	0.00	0.00
5,800.00	8.90	177.29	5,762.67	-490.86	23.27	490.93	0.00	0.00	0.00
5,900.00	8.90	177.29	5,861.47	-506.30	24.00	506.37	0.00	0.00	0.00
6,000.00	8.90	177.29	5,960.27	-521.75	24.73	521.82	0.00	0.00	0.00
6,100.00	8.90	177.29	6,059.07	-537.19	25.47	537.27	0.00	0.00	0.00
6,198.11	8.90	177.29	6,156.00	-552.35	26.18	552.42	0.00	0.00	0.00
Teepee Buttes									
6,200.00	8.90	177.29	6,157.86	-552.64	26.20	552.71	0.00	0.00	0.00
6,300.00	8.90	177.29	6,256.66	-568.09	26.93	568.16	0.00	0.00	0.00
6,400.00	8.90	177.29	6,355.46	-583.53	27.66	583.61	0.00	0.00	0.00
6,416.47	8.90	177.29	6,371.73	-586.07	27.78	586.15	0.00	0.00	0.00
KOP: Build 9°/100' @ 6416.47' MD									
6,450.00	11.91	177.97	6,404.70	-592.12	28.03	592.20	9.00	8.99	2.04
6,500.00	16.41	178.53	6,453.17	-604.35	28.39	604.43	9.00	9.00	1.12
6,550.00	20.91	178.85	6,500.53	-620.33	28.75	620.41	9.00	9.00	0.65
6,600.00	25.41	179.07	6,546.49	-639.99	29.11	640.07	9.00	9.00	0.43
6,650.00	29.91	179.22	6,590.77	-663.19	29.45	663.27	9.00	9.00	0.30
6,700.00	34.41	179.33	6,633.09	-689.79	29.78	689.87	9.00	9.00	0.23
6,750.00	38.91	179.43	6,673.19	-719.63	30.11	719.72	9.00	9.00	0.18
6,761.40	39.93	179.45	6,682.00	-726.87	30.18	726.96	9.00	9.00	0.16
Sharon Springs									
6,800.00	43.40	179.50	6,710.83	-752.53	30.41	752.61	9.00	9.00	0.15
6,839.99	47.00	179.55	6,739.00	-780.90	30.65	780.99	9.00	9.00	0.13
Top A Chalk									
6,841.46	47.14	179.56	6,740.00	-781.97	30.65	782.06	9.00	9.00	0.12
Top A Marl									
6,850.00	47.90	179.57	6,745.77	-788.27	30.70	788.36	9.00	9.00	0.12
6,851.84	48.07	179.57	6,747.00	-789.64	30.71	789.73	9.00	9.00	0.12
Top B Chalk									
6,900.00	52.40	179.62	6,777.79	-826.65	30.97	826.74	9.00	9.00	0.11
6,932.58	55.34	179.65	6,797.00	-852.96	31.14	853.05	9.00	9.00	0.10
Top B Marl									
6,950.00	56.90	179.67	6,806.71	-867.42	31.22	867.51	9.00	9.00	0.09
7,000.00	61.40	179.72	6,832.34	-910.34	31.45	910.43	9.00	9.00	0.09

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D33-718
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4849.00ft
Project:	Mustang	MD Reference:	KB @ 4849.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,050.00	65.90	179.76	6,854.53	-955.13	31.66	955.22	9.00	9.00	0.08
7,079.66	68.57	179.78	6,866.00	-982.48	31.77	982.57	9.00	9.00	0.08
Top C Chalk									
7,100.00	70.40	179.79	6,873.13	-1,001.53	31.84	1,001.62	9.00	9.00	0.07
7,150.00	74.90	179.83	6,888.03	-1,049.24	32.00	1,049.33	9.00	9.00	0.07
7,193.94	78.86	179.86	6,898.00	-1,092.02	32.12	1,092.11	9.00	9.00	0.07
Top C Marl									
7,200.00	79.40	179.86	6,899.14	-1,097.98	32.13	1,098.07	9.00	9.00	0.07
7,250.00	83.90	179.90	6,906.40	-1,147.44	32.23	1,147.53	9.00	9.00	0.07
7,300.00	88.40	179.93	6,909.75	-1,197.31	32.31	1,197.40	9.00	9.00	0.07
7,317.74	90.00	179.94	6,910.00	-1,215.05	32.33	1,215.14	9.00	9.00	0.07
LP: 7317.74' MD, 90.00° Inc, 179.94° Azm									
7,400.00	90.00	179.94	6,910.00	-1,297.31	32.41	1,297.40	0.00	0.00	0.00
7,500.00	90.00	179.94	6,910.00	-1,397.31	32.51	1,397.40	0.00	0.00	0.00
7,600.00	90.00	179.94	6,910.00	-1,497.31	32.62	1,497.40	0.00	0.00	0.00
7,700.00	90.00	179.94	6,910.00	-1,597.31	32.72	1,597.40	0.00	0.00	0.00
7,800.00	90.00	179.94	6,910.00	-1,697.31	32.82	1,697.40	0.00	0.00	0.00
7,900.00	90.00	179.94	6,910.00	-1,797.31	32.92	1,797.40	0.00	0.00	0.00
8,000.00	90.00	179.94	6,910.00	-1,897.31	33.02	1,897.40	0.00	0.00	0.00
8,100.00	90.00	179.94	6,910.00	-1,997.31	33.13	1,997.40	0.00	0.00	0.00
8,200.00	90.00	179.94	6,910.00	-2,097.31	33.23	2,097.40	0.00	0.00	0.00
8,300.00	90.00	179.94	6,910.00	-2,197.31	33.33	2,197.40	0.00	0.00	0.00
8,400.00	90.00	179.94	6,910.00	-2,297.31	33.43	2,297.40	0.00	0.00	0.00
8,500.00	90.00	179.94	6,910.00	-2,397.31	33.53	2,397.40	0.00	0.00	0.00
8,600.00	90.00	179.94	6,910.00	-2,497.31	33.64	2,497.40	0.00	0.00	0.00
8,700.00	90.00	179.94	6,910.00	-2,597.31	33.74	2,597.40	0.00	0.00	0.00
8,800.00	90.00	179.94	6,910.00	-2,697.31	33.84	2,697.40	0.00	0.00	0.00
8,900.00	90.00	179.94	6,910.00	-2,797.31	33.94	2,797.40	0.00	0.00	0.00
9,000.00	90.00	179.94	6,910.00	-2,897.31	34.04	2,897.40	0.00	0.00	0.00
9,100.00	90.00	179.94	6,910.00	-2,997.31	34.15	2,997.40	0.00	0.00	0.00
9,200.00	90.00	179.94	6,910.00	-3,097.31	34.25	3,097.40	0.00	0.00	0.00
9,300.00	90.00	179.94	6,910.00	-3,197.31	34.35	3,197.40	0.00	0.00	0.00
9,400.00	90.00	179.94	6,910.00	-3,297.31	34.45	3,297.40	0.00	0.00	0.00
9,500.00	90.00	179.94	6,910.00	-3,397.31	34.55	3,397.40	0.00	0.00	0.00
9,600.00	90.00	179.94	6,910.00	-3,497.31	34.66	3,497.39	0.00	0.00	0.00
9,700.00	90.00	179.94	6,910.00	-3,597.31	34.76	3,597.39	0.00	0.00	0.00
9,800.00	90.00	179.94	6,910.00	-3,697.31	34.86	3,697.39	0.00	0.00	0.00
9,900.00	90.00	179.94	6,910.00	-3,797.31	34.96	3,797.39	0.00	0.00	0.00
10,000.00	90.00	179.94	6,910.00	-3,897.31	35.06	3,897.39	0.00	0.00	0.00
10,100.00	90.00	179.94	6,910.00	-3,997.31	35.17	3,997.39	0.00	0.00	0.00
10,200.00	90.00	179.94	6,910.00	-4,097.31	35.27	4,097.39	0.00	0.00	0.00
10,300.00	90.00	179.94	6,910.00	-4,197.31	35.37	4,197.39	0.00	0.00	0.00
10,400.00	90.00	179.94	6,910.00	-4,297.31	35.47	4,297.39	0.00	0.00	0.00
10,500.00	90.00	179.94	6,910.00	-4,397.31	35.57	4,397.39	0.00	0.00	0.00
10,600.00	90.00	179.94	6,910.00	-4,497.31	35.68	4,497.39	0.00	0.00	0.00
10,700.00	90.00	179.94	6,910.00	-4,597.31	35.78	4,597.39	0.00	0.00	0.00
10,800.00	90.00	179.94	6,910.00	-4,697.31	35.88	4,697.39	0.00	0.00	0.00
10,900.00	90.00	179.94	6,910.00	-4,797.31	35.98	4,797.39	0.00	0.00	0.00
11,000.00	90.00	179.94	6,910.00	-4,897.31	36.08	4,897.39	0.00	0.00	0.00
11,100.00	90.00	179.94	6,910.00	-4,997.31	36.19	4,997.39	0.00	0.00	0.00
11,200.00	90.00	179.94	6,910.00	-5,097.31	36.29	5,097.39	0.00	0.00	0.00
11,300.00	90.00	179.94	6,910.00	-5,197.31	36.39	5,197.39	0.00	0.00	0.00
11,400.00	90.00	179.94	6,910.00	-5,297.31	36.49	5,297.39	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D33-718
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4849.00ft
Project:	Mustang	MD Reference:	KB @ 4849.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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)	
11,500.00	90.00	179.94	6,910.00	-5,397.31	36.59	5,397.39	0.00	0.00	0.00	
11,600.00	90.00	179.94	6,910.00	-5,497.31	36.70	5,497.39	0.00	0.00	0.00	
11,700.00	90.00	179.94	6,910.00	-5,597.31	36.80	5,597.39	0.00	0.00	0.00	
11,800.00	90.00	179.94	6,910.00	-5,697.31	36.90	5,697.39	0.00	0.00	0.00	
11,900.00	90.00	179.94	6,910.00	-5,797.31	37.00	5,797.39	0.00	0.00	0.00	
12,000.00	90.00	179.94	6,910.00	-5,897.31	37.10	5,897.39	0.00	0.00	0.00	
12,100.00	90.00	179.94	6,910.00	-5,997.31	37.21	5,997.39	0.00	0.00	0.00	
12,200.00	90.00	179.94	6,910.00	-6,097.31	37.31	6,097.39	0.00	0.00	0.00	
12,300.00	90.00	179.94	6,910.00	-6,197.31	37.41	6,197.39	0.00	0.00	0.00	
12,400.00	90.00	179.94	6,910.00	-6,297.31	37.51	6,297.39	0.00	0.00	0.00	
12,500.00	90.00	179.94	6,910.00	-6,397.31	37.61	6,397.39	0.00	0.00	0.00	
12,600.00	90.00	179.94	6,910.00	-6,497.31	37.72	6,497.39	0.00	0.00	0.00	
12,700.00	90.00	179.94	6,910.00	-6,597.31	37.82	6,597.39	0.00	0.00	0.00	
12,800.00	90.00	179.94	6,910.00	-6,697.31	37.92	6,697.39	0.00	0.00	0.00	
12,900.00	90.00	179.94	6,910.00	-6,797.31	38.02	6,797.39	0.00	0.00	0.00	
13,000.00	90.00	179.94	6,910.00	-6,897.31	38.12	6,897.39	0.00	0.00	0.00	
13,100.00	90.00	179.94	6,910.00	-6,997.31	38.23	6,997.39	0.00	0.00	0.00	
13,200.00	90.00	179.94	6,910.00	-7,097.31	38.33	7,097.39	0.00	0.00	0.00	
13,300.00	90.00	179.94	6,910.00	-7,197.31	38.43	7,197.39	0.00	0.00	0.00	
13,400.00	90.00	179.94	6,910.00	-7,297.31	38.53	7,297.39	0.00	0.00	0.00	
13,500.00	90.00	179.94	6,910.00	-7,397.31	38.63	7,397.39	0.00	0.00	0.00	
13,600.00	90.00	179.94	6,910.00	-7,497.31	38.74	7,497.39	0.00	0.00	0.00	
13,700.00	90.00	179.94	6,910.00	-7,597.31	38.84	7,597.39	0.00	0.00	0.00	
13,800.00	90.00	179.94	6,910.00	-7,697.31	38.94	7,697.39	0.00	0.00	0.00	
13,900.00	90.00	179.94	6,910.00	-7,797.31	39.04	7,797.39	0.00	0.00	0.00	
14,000.00	90.00	179.94	6,910.00	-7,897.31	39.14	7,897.39	0.00	0.00	0.00	
14,100.00	90.00	179.94	6,910.00	-7,997.31	39.25	7,997.39	0.00	0.00	0.00	
14,200.00	90.00	179.94	6,910.00	-8,097.31	39.35	8,097.39	0.00	0.00	0.00	
14,300.00	90.00	179.94	6,910.00	-8,197.31	39.45	8,197.39	0.00	0.00	0.00	
14,400.00	90.00	179.94	6,910.00	-8,297.31	39.55	8,297.39	0.00	0.00	0.00	
14,500.00	90.00	179.94	6,910.00	-8,397.31	39.65	8,397.39	0.00	0.00	0.00	
14,600.00	90.00	179.94	6,910.00	-8,497.31	39.76	8,497.39	0.00	0.00	0.00	
14,700.00	90.00	179.94	6,910.00	-8,597.31	39.86	8,597.39	0.00	0.00	0.00	
14,800.00	90.00	179.94	6,910.00	-8,697.31	39.96	8,697.39	0.00	0.00	0.00	
14,900.00	90.00	179.94	6,910.00	-8,797.31	40.06	8,797.39	0.00	0.00	0.00	
15,000.00	90.00	179.94	6,910.00	-8,897.31	40.16	8,897.39	0.00	0.00	0.00	
15,100.00	90.00	179.94	6,910.00	-8,997.31	40.27	8,997.39	0.00	0.00	0.00	
15,200.00	90.00	179.94	6,910.00	-9,097.31	40.37	9,097.38	0.00	0.00	0.00	
15,300.00	90.00	179.94	6,910.00	-9,197.31	40.47	9,197.38	0.00	0.00	0.00	
15,400.00	90.00	179.94	6,910.00	-9,297.31	40.57	9,297.38	0.00	0.00	0.00	
15,500.00	90.00	179.94	6,910.00	-9,397.31	40.67	9,397.38	0.00	0.00	0.00	
15,600.00	90.00	179.94	6,910.00	-9,497.31	40.78	9,497.38	0.00	0.00	0.00	
15,700.00	90.00	179.94	6,910.00	-9,597.31	40.88	9,597.38	0.00	0.00	0.00	
15,800.00	90.00	179.94	6,910.00	-9,697.31	40.98	9,697.38	0.00	0.00	0.00	
15,900.00	90.00	179.94	6,910.00	-9,797.31	41.08	9,797.38	0.00	0.00	0.00	
16,000.00	90.00	179.94	6,910.00	-9,897.31	41.18	9,897.38	0.00	0.00	0.00	
16,100.00	90.00	179.94	6,910.00	-9,997.31	41.29	9,997.38	0.00	0.00	0.00	
16,200.00	90.00	179.94	6,910.00	-10,097.31	41.39	10,097.38	0.00	0.00	0.00	
16,300.00	90.00	179.94	6,910.00	-10,197.31	41.49	10,197.38	0.00	0.00	0.00	
16,400.00	90.00	179.94	6,910.00	-10,297.30	41.59	10,297.38	0.00	0.00	0.00	
16,500.00	90.00	179.94	6,910.00	-10,397.30	41.69	10,397.38	0.00	0.00	0.00	
16,600.00	90.00	179.94	6,910.00	-10,497.30	41.80	10,497.38	0.00	0.00	0.00	
16,700.00	90.00	179.94	6,910.00	-10,597.30	41.90	10,597.38	0.00	0.00	0.00	
16,800.00	90.00	179.94	6,910.00	-10,697.30	42.00	10,697.38	0.00	0.00	0.00	

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D33-718
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4849.00ft
Project:	Mustang	MD Reference:	KB @ 4849.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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)
16,900.00	90.00	179.94	6,910.00	-10,797.30	42.10	10,797.38	0.00	0.00	0.00
17,000.00	90.00	179.94	6,910.00	-10,897.30	42.20	10,897.38	0.00	0.00	0.00
17,073.48	90.00	179.94	6,910.00	-10,970.79	42.28	10,970.87	0.00	0.00	0.00
Turn: 2°/100'									
17,100.00	90.00	180.47	6,910.00	-10,997.30	42.18	10,997.38	2.00	0.00	2.00
17,145.07	90.00	181.37	6,910.00	-11,042.36	41.46	11,042.44	2.00	0.00	2.00
EOT: 90.00° Inc, 181.37° Azm									
17,200.00	90.00	181.37	6,910.00	-11,097.28	40.14	11,097.35	0.00	0.00	0.00
17,300.00	90.00	181.37	6,910.00	-11,197.25	37.74	11,197.32	0.00	0.00	0.00
17,400.00	90.00	181.37	6,910.00	-11,297.22	35.35	11,297.28	0.00	0.00	0.00
17,482.28	90.00	181.37	6,910.00	-11,379.48	33.38	11,379.53	0.00	0.00	0.00
TD @ 17482.28' MD/6910.00' TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Vogler State D33-718	0.00	0.00	0.00	0.00	0.00	1,319,464.02	3,265,615.22	40.2064160	-104.5489976
- plan hits target center									
- Point									
Vogler State D33-718	0.00	0.00	6,371.73	-586.07	27.78	1,318,877.95	3,265,643.01	40.2048064	-104.5489207
- plan hits target center									
- Point									
Vogler State D33-718	0.00	0.00	6,910.00	-11,379.48	33.38	1,308,084.56	3,265,648.60	40.1751788	-104.5493149
- plan hits target center									
- Point									
Vogler State D33-718	0.00	0.01	6,910.00	-1,215.05	32.33	1,318,248.97	3,265,647.55	40.2030798	-104.5489285
- plan hits target center									
- Point									

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D33-718
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4849.00ft
Project:	Mustang	MD Reference:	KB @ 4849.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
629.00	629.00	Pierre			
764.00	764.00	Upper Pierre Aquifer Top			
1,631.00	1,631.00	Upper Pierre Aquifer Base			
3,866.07	3,852.00	Parkman			
4,101.90	4,085.00	Sussex			
5,063.47	5,035.00	Shannon			
6,198.11	6,156.00	Teepee Buttes			
6,761.40	6,682.00	Sharon Springs			
6,839.99	6,739.00	Top A Chalk			
6,841.46	6,740.00	Top A Marl			
6,851.84	6,747.00	Top B Chalk			
6,932.58	6,797.00	Top B Marl			
7,079.66	6,866.00	Top C Chalk			
7,193.94	6,898.00	Top C Marl			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,400.00	2,400.00	0.00	0.00	Build: 2°/100'
2,844.75	2,842.97	-34.42	1.63	Hold: 8.89° Inc, 177.29° Azm
6,416.47	6,371.73	-586.07	27.78	KOP: Build 9°/100' @ 6416.47' MD
7,317.74	6,910.00	-1,215.05	32.33	LP: 7317.74' MD, 90.00° Inc, 179.94° Azm
17,073.48	6,910.00	-10,970.79	42.28	Turn: 2°/100'
17,145.07	6,910.00	-11,042.36	41.46	EOT: 90.00° Inc, 181.37° Azm
17,482.28	6,910.00	-11,379.48	33.38	TD @ 17482.28' MD/6910.00' TVD

Northern Region - DJ Basin

Mustang

D Section 21

Vogler State D33-718

Wellbore #1

Plan 1

Anticollision Summary Report

01 August, 2018

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Vogler State D33-718
Project:	Mustang	TVD Reference:	KB @ 4849.00ft
Reference Site:	D Section 21	MD Reference:	KB @ 4849.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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	8/1/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	17,482.05	Plan 1 (Wellbore #1)	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 21						
Casey Blue D 21-11 (PR) - Wellbore #1 - No Surveys	2,400.00	2,365.00	2,900.90	2,845.23	52.108	CC
Casey Blue D 21-11 (PR) - Wellbore #1 - No Surveys	2,600.00	2,564.84	2,903.75	2,843.42	48.132	ES
Casey Blue D 21-11 (PR) - Wellbore #1 - No Surveys	6,800.00	6,675.99	3,275.81	3,118.29	20.797	SF
Casey Blue D21-13 (PR) - Wellbore #1 - Gyro Surveys	100.00	33.24	4,028.89	4,028.71	10,000.000	CC
Casey Blue D21-13 (PR) - Wellbore #1 - Gyro Surveys	4,600.00	4,500.00	4,047.90	4,016.40	128.487	ES
Casey Blue D21-13 (PR) - Wellbore #1 - Gyro Surveys	7,700.00	6,940.29	4,231.88	4,180.74	82.749	SF
Casey Blue D21-14 (SI) - Wellbore #1 - Gyro Surveys	5,183.54	5,151.19	2,583.40	2,547.53	72.017	CC
Casey Blue D21-14 (SI) - Wellbore #1 - Gyro Surveys	5,300.00	5,252.57	2,583.79	2,547.14	70.495	ES
Casey Blue D21-14 (SI) - Wellbore #1 - Gyro Surveys	7,050.00	6,837.74	2,663.39	2,614.94	54.967	SF
Casey Blue D21-3J (PR) - Wellbore #1 - Gyro Surveys	1,550.80	1,505.82	3,806.69	3,796.27	365.265	CC
Casey Blue D21-3J (PR) - Wellbore #1 - Gyro Surveys	2,500.00	2,464.73	3,808.01	3,790.87	222.085	ES
Casey Blue D21-3J (PR) - Wellbore #1 - Gyro Surveys	7,050.00	6,855.22	4,062.12	4,013.56	83.654	SF
Guttersen 21-31 (SI) - Wellbore #1 - Gyro Surveys	2,243.79	2,187.81	3,844.88	3,829.61	251.729	CC
Guttersen 21-31 (SI) - Wellbore #1 - Gyro Surveys	2,400.00	2,319.80	3,845.35	3,829.06	235.992	ES
Guttersen 21-31 (SI) - Wellbore #1 - Gyro Surveys	6,750.00	6,630.88	4,524.26	4,477.65	97.052	SF
Guttersen 21-42 (SI) - Wellbore #1 - Gyro Surveys	100.00	52.60	2,287.47	2,287.25	10,000.000	CC
Guttersen 21-42 (SI) - Wellbore #1 - Gyro Surveys	2,419.49	2,396.17	2,291.50	2,274.86	137.766	ES
Guttersen 21-42 (SI) - Wellbore #1 - Gyro Surveys	6,600.00	6,508.34	2,913.03	2,867.39	63.833	SF
Guttersen 32-21 (PR) - Wellbore #1 - No Surveys	2,400.00	2,369.00	2,628.17	2,572.42	47.142	CC
Guttersen 32-21 (PR) - Wellbore #1 - No Surveys	2,500.00	2,468.98	2,629.69	2,571.60	45.269	ES
Guttersen 32-21 (PR) - Wellbore #1 - No Surveys	6,650.00	6,559.97	3,221.44	3,066.94	20.850	SF
Guttersen 33-21 (PR) - Wellbore #1 - Gyro Surveys	338.40	309.77	1,689.70	1,687.81	894.944	CC
Guttersen 33-21 (PR) - Wellbore #1 - Gyro Surveys	1,900.00	1,858.00	1,698.76	1,685.86	131.685	ES
Guttersen 33-21 (PR) - Wellbore #1 - Gyro Surveys	6,600.00	6,529.74	2,167.38	2,121.55	47.294	SF
Guttersen 34-21 (PR) - Wellbore #1 - Gyro Surveys	5,331.54	5,306.49	1,361.79	1,324.79	36.812	CC
Guttersen 34-21 (PR) - Wellbore #1 - Gyro Surveys	5,600.00	5,565.73	1,362.79	1,323.90	35.041	ES
Guttersen 34-21 (PR) - Wellbore #1 - Gyro Surveys	6,750.00	6,680.86	1,413.40	1,366.30	30.013	SF
Guttersen 41-21 (PR) - Wellbore #1 - Gyro Surveys	100.00	54.38	3,616.89	3,616.67	10,000.000	CC
Guttersen 41-21 (PR) - Wellbore #1 - Gyro Surveys	1,900.00	1,838.14	3,624.05	3,611.22	282.437	ES
Guttersen 41-21 (PR) - Wellbore #1 - Gyro Surveys	6,700.00	6,580.42	4,336.32	4,290.07	93.765	SF
Guttersen 43-21 (PR) - Wellbore #1 - Gyro Surveys	1,953.04	1,924.07	959.51	946.20	72.073	CC
Guttersen 43-21 (PR) - Wellbore #1 - Gyro Surveys	2,200.00	2,163.94	960.28	945.25	63.873	ES
Guttersen 43-21 (PR) - Wellbore #1 - Gyro Surveys	6,500.00	6,424.68	1,534.41	1,489.41	34.095	SF
Guttersen D21-32D (SI) - Wellbore #1 - MWD Surveys	0.00	0.00	3,048.97			
Guttersen D21-32D (SI) - Wellbore #1 - MWD Surveys	100.00	58.37	3,049.00	3,048.77	10,000.000	ES
Guttersen D21-32D (SI) - Wellbore #1 - MWD Surveys	12,200.00	12,200.00	8,822.24	8,726.31	91.967	SF
Guttersen USX D21-17 (PR) - Wellbore #1 - No Surveys	2,400.00	2,353.00	3,057.86	3,002.43	55.166	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 Vogler State D33-718
Project:	Mustang	TVD Reference:	KB @ 4849.00ft
Reference Site:	D Section 21	MD Reference:	KB @ 4849.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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)	Between Ellipses (ft)	Separation Factor	Warning
D Section 21						
Guttersen USX D21-17 (PR) - Wellbore #1 - No Surveys	2,500.00	2,452.98	3,059.58	3,001.81	52.961	ES
Guttersen USX D21-17 (PR) - Wellbore #1 - No Surveys	6,650.00	6,543.97	3,711.23	3,557.08	24.075	SF
Guttersen USX D21-20D (PR) - Wellbore #1 - MWD Surv	752.61	724.15	2,983.15	2,978.38	624.644	CC
Guttersen USX D21-20D (PR) - Wellbore #1 - MWD Surv	800.00	751.00	2,983.31	2,978.27	591.648	ES
Guttersen USX D21-20D (PR) - Wellbore #1 - MWD Surv	6,800.00	6,849.85	4,067.77	4,016.39	79.166	SF
Guttersen USX D21-21D (SI) - Wellbore #1 - MWD Surve	3,332.98	3,593.63	2,722.88	2,694.16	94.805	CC
Guttersen USX D21-21D (SI) - Wellbore #1 - MWD Surve	3,400.00	3,639.51	2,723.26	2,694.00	93.070	ES
Guttersen USX D21-21D (SI) - Wellbore #1 - MWD Surve	6,650.00	6,785.43	3,068.94	3,012.46	54.336	SF
Guttersen USX D21-24D (PR) - Wellbore #1 - MWD Surv	4,722.41	4,866.21	2,270.26	2,235.96	66.176	CC, ES
Guttersen USX D21-24D (PR) - Wellbore #1 - MWD Surv	6,850.00	6,822.13	2,437.79	2,388.72	49.686	SF
Guttersen USX D21-25 (PR) - Wellbore #1 - MWD Surve	1,178.17	1,150.20	3,007.87	2,999.97	380.638	CC
Guttersen USX D21-25 (PR) - Wellbore #1 - MWD Surve	2,000.00	1,951.47	3,010.04	2,996.33	219.655	ES
Guttersen USX D21-25 (PR) - Wellbore #1 - MWD Surve	7,000.00	6,834.12	3,244.82	3,196.04	66.514	SF
Guttersen USX D21-27D (PR) - Wellbore #1 - MWD Surv	704.00	656.00	3,071.80	3,067.45	706.764	CC
Guttersen USX D21-27D (PR) - Wellbore #1 - MWD Surv	900.00	840.33	3,071.96	3,066.27	539.857	ES
Guttersen USX D21-27D (PR) - Wellbore #1 - MWD Surv	6,700.00	6,725.90	4,938.20	4,890.31	103.126	SF
Guttersen USX D21-28D (PR) - Wellbore #1 - MWD Surv	100.00	49.83	3,046.71	3,046.49	10,000.000	CC
Guttersen USX D21-28D (PR) - Wellbore #1 - MWD Surv	300.00	237.85	3,047.31	3,046.04	2,400.491	ES
Guttersen USX D21-28D (PR) - Wellbore #1 - MWD Surv	6,750.00	6,970.23	5,292.40	5,240.69	102.346	SF
Guttersen USX D21-33D (SI) - Wellbore #1 - MWD Surve	100.00	70.17	3,029.80	3,029.55	10,000.000	CC
Guttersen USX D21-33D (SI) - Wellbore #1 - MWD Surve	600.00	551.64	3,031.87	3,028.18	822.304	ES
Guttersen USX D21-33D (SI) - Wellbore #1 - MWD Surve	8,300.00	6,987.06	5,278.42	5,219.62	89.762	SF
Guttersen USX D22-30D (PR) - Wellbore #1 - MWD Surv	100.00	51.93	3,083.50	3,083.28	10,000.000	CC
Guttersen USX D22-30D (PR) - Wellbore #1 - MWD Surv	1,000.00	921.61	3,085.01	3,078.81	497.723	ES
Guttersen USX D22-30D (PR) - Wellbore #1 - MWD Surv	6,700.00	6,880.73	4,903.15	4,848.58	89.847	SF
Gutterson 18-21 (SI) - Wellbore #1 - Gyro Surveys	2,344.76	2,306.04	4,373.16	4,357.09	272.244	CC
Gutterson 18-21 (SI) - Wellbore #1 - Gyro Surveys	2,400.00	2,346.93	4,373.25	4,356.85	266.610	ES
Gutterson 18-21 (SI) - Wellbore #1 - Gyro Surveys	6,800.00	6,704.13	4,974.29	4,927.15	105.528	SF
HSR Guttersen B 5-21 (PR) - Wellbore #1 - Gyro Survey	444.62	396.65	4,591.72	4,589.15	1,782.324	CC
HSR Guttersen B 5-21 (PR) - Wellbore #1 - Gyro Survey	2,100.00	2,024.06	4,594.81	4,580.63	323.902	ES
HSR Guttersen B 5-21 (PR) - Wellbore #1 - Gyro Survey	6,800.00	6,689.80	5,033.08	4,985.92	106.724	SF
HSR Gutterson 4-21 (PR) - Wellbore #1 - Gyro Surveys	2,406.69	2,375.61	5,332.43	5,315.78	320.301	CC, ES
HSR Gutterson 4-21 (PR) - Wellbore #1 - Gyro Surveys	6,900.00	6,739.95	5,951.39	5,903.79	125.032	SF
HSR-Guttersen 3-21 (SI) - Wellbore #1 - Gyro Surveys	2,471.66	2,520.38	4,461.58	4,444.33	258.523	CC
HSR-Guttersen 3-21 (SI) - Wellbore #1 - Gyro Surveys	2,500.00	2,546.70	4,461.72	4,444.27	255.736	ES
HSR-Guttersen 3-21 (SI) - Wellbore #1 - Gyro Surveys	6,900.00	7,091.98	5,043.35	4,993.44	101.051	SF
HSR-Guttersen 6-21 (SI) - Wellbore #1 - Gyro Surveys	1,441.47	1,395.50	3,518.11	3,508.48	365.012	CC
HSR-Guttersen 6-21 (SI) - Wellbore #1 - Gyro Surveys	2,100.00	2,029.61	3,519.93	3,505.72	247.765	ES
HSR-Guttersen 6-21 (SI) - Wellbore #1 - Gyro Surveys	6,850.00	6,720.44	4,072.71	4,025.37	86.027	SF
Two E Ranch 1-21C (SI) - Wellbore #1 - Gyro Surveys	428.90	398.91	530.50	527.97	210.021	CC
Two E Ranch 1-21C (SI) - Wellbore #1 - Gyro Surveys	1,600.00	1,566.47	535.61	524.81	49.587	ES
Two E Ranch 1-21C (SI) - Wellbore #1 - Gyro Surveys	6,450.00	6,380.66	1,044.39	999.69	23.367	SF
Vogler State D21-720 - Wellbore #1 - Plan 1	7,129.86	7,275.18	106.07	54.89	2.073	CC, ES, SF
Vogler State D21-731 - Wellbore #1 - Plan 1	6,960.08	7,570.24	803.78	752.18	15.576	CC, ES, SF
Vogler State D21-740 - Wellbore #1 - Plan 1	7,077.35	7,434.86	1,429.83	1,378.23	27.711	CC, ES
Vogler State D21-740 - Wellbore #1 - Plan 1	7,250.00	7,318.51	1,434.76	1,382.76	27.590	SF
Vogler State D21-750 - Wellbore #1 - Plan 1	2,000.00	2,005.00	1,935.08	1,921.18	139.307	CC
Vogler State D21-750 - Wellbore #1 - Plan 1	2,200.00	2,192.43	1,935.74	1,920.51	127.123	ES
Vogler State D21-750 - Wellbore #1 - Plan 1	7,500.00	6,982.01	2,066.65	2,014.81	39.865	SF
Vogler State D21-760 - Wellbore #1 - Plan 1	6,998.17	7,589.83	2,716.45	2,664.75	52.542	CC
Vogler State D21-760 - Wellbore #1 - Plan 1	7,000.00	7,589.00	2,716.45	2,664.74	52.536	ES
Vogler State D21-760 - Wellbore #1 - Plan 1	7,600.00	7,321.89	2,759.65	2,706.42	51.844	SF
Vogler State D21-770 - Wellbore #1 - Plan 1	6,935.83	7,426.79	3,373.79	3,323.31	66.836	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 Vogler State D33-718
Project:	Mustang	TVD Reference:	KB @ 4849.00ft
Reference Site:	D Section 21	MD Reference:	KB @ 4849.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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
D Section 21						
Vogler State D21-770 - Wellbore #1 - Plan 1	6,950.00	7,418.22	3,373.81	3,323.28	66.770	ES
Vogler State D21-770 - Wellbore #1 - Plan 1	8,100.00	6,884.61	3,475.53	3,421.74	64.605	SF
Vogler State D21-780 - Wellbore #1 - Plan 1	2,000.00	1,971.00	3,695.40	3,681.63	268.388	CC
Vogler State D21-780 - Wellbore #1 - Plan 1	2,100.00	2,055.92	3,695.55	3,681.13	256.258	ES
Vogler State D21-780 - Wellbore #1 - Plan 1	8,700.00	6,620.68	4,185.87	4,129.75	74.592	SF
Vogler State D21-790 - Wellbore #1 - Plan 1	2,850.93	2,828.73	153.89	134.42	7.905	CC, ES
Vogler State D21-790 - Wellbore #1 - Plan 1	3,000.00	2,969.96	157.69	137.40	7.771	SF
Vogler State D33-711 - Wellbore #1 - Plan 1	2,000.00	2,000.00	38.00	24.13	2.739	CC, ES
Vogler State D33-711 - Wellbore #1 - Plan 1	2,100.00	2,099.22	39.00	24.43	2.677	SF
Vogler State D33-728 - Wellbore #1 - Plan 1	17,482.05	17,653.76	659.93	466.23	3.407	CC, ES, SF
Vogler State D33-738 - Wellbore #1 - Plan 1	16,712.32	16,707.90	1,317.81	1,136.63	7.274	CC
Vogler State D33-738 - Wellbore #1 - Plan 1	17,482.05	17,425.18	1,321.75	1,129.01	6.858	ES, SF
Vogler State D33-752 - Wellbore #1 - Plan 1	2,404.18	2,414.41	1,933.95	1,917.15	115.090	CC
Vogler State D33-752 - Wellbore #1 - Plan 1	17,482.05	17,507.56	1,970.27	1,776.19	10.152	ES, SF
Vogler State D33-759 - Wellbore #1 - Plan 1	7,313.83	7,424.14	2,613.16	2,559.90	49.064	CC
Vogler State D33-759 - Wellbore #1 - Plan 1	17,482.05	17,575.39	2,621.16	2,427.61	13.543	ES, SF
Vogler State D33-769 - Wellbore #1 - Plan 1	7,305.90	7,324.07	3,273.21	3,220.91	62.582	CC
Vogler State D33-769 - Wellbore #1 - Plan 1	17,482.05	17,494.37	3,281.11	3,087.40	16.938	ES, SF
Vogler State D33-779 - Wellbore #1 - Plan 1	2,000.00	1,977.00	3,695.35	3,681.56	267.965	CC
Vogler State D33-779 - Wellbore #1 - Plan 1	2,100.00	2,057.49	3,695.55	3,681.13	256.163	ES
Vogler State D33-779 - Wellbore #1 - Plan 1	17,482.05	17,477.37	3,941.06	3,747.10	20.319	SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Vogler State D33-718
Project:	Mustang	TVD Reference:	KB @ 4849.00ft
Reference Site:	D Section 21	MD Reference:	KB @ 4849.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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)	Between Ellipses (ft)	Separation Factor	Warning
D Section 28						
O'SH D 28-7 (P&A) - Wellbore #1 - No Surveys	9,084.03	6,871.00	1,403.21	1,231.33	8.164	CC
O'SH D 28-7 (P&A) - Wellbore #1 - No Surveys	9,100.00	6,871.00	1,403.30	1,231.33	8.160	ES, SF
Spike ST GWS D 28-12 (SI) - Wellbore #1 - Gyro Surve	10,467.94	6,851.91	4,132.00	4,064.88	61.555	CC
Spike ST GWS D 28-12 (SI) - Wellbore #1 - Gyro Surve	10,500.00	6,852.22	4,132.13	4,064.78	61.358	ES
Spike ST GWS D 28-12 (SI) - Wellbore #1 - Gyro Surve	11,600.00	6,862.50	4,284.26	4,210.48	58.067	SF
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	7,030.84	6,899.93	3,341.72	3,291.86	67.013	CC
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	7,050.00	6,907.10	3,341.77	3,291.79	66.862	ES
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	8,000.00	6,959.12	3,477.30	3,422.94	63.974	SF
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	850.21	822.31	4,220.68	4,216.42	990.214	CC, ES
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	9,100.00	7,001.29	5,158.78	5,101.52	90.097	SF
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	8,266.23	6,930.03	2,224.75	2,167.85	39.093	CC, ES
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	8,500.00	6,928.10	2,237.00	2,179.27	38.746	SF
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	9,588.41	6,994.46	2,110.03	2,045.68	32.788	CC
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	9,600.00	6,994.47	2,110.06	2,045.63	32.745	ES
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	10,000.00	6,995.05	2,149.80	2,082.89	32.128	SF
Guttersen State D28-24D (SI) - Wellbore #1 - MWD Surv	11,149.13	6,936.88	2,118.91	2,042.11	27.590	CC, ES
Guttersen State D28-24D (SI) - Wellbore #1 - MWD Surv	11,400.00	6,943.24	2,133.70	2,055.75	27.373	SF
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	6,926.97	6,824.49	2,168.39	2,117.69	42.772	CC
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	6,950.00	6,837.42	2,168.47	2,117.62	42.643	ES
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	7,317.51	6,941.31	2,198.96	2,146.12	41.610	SF
Guttersen State D28-79HN - Wellbore #1 - Actual	7,500.00	11,087.38	4,609.50	4,498.95	41.697	SF
Guttersen State D28-79HN - Wellbore #1 - Actual	11,170.10	7,593.00	4,431.61	4,354.31	57.325	CC
Guttersen State D28-79HN - Wellbore #1 - Actual	11,200.00	7,593.00	4,431.72	4,354.20	57.172	ES
HSR Guttersen State 10-28 (SI) - Wellbore #1 - Gyro Su	10,369.41	6,814.36	1,666.19	1,599.88	25.130	CC, ES
HSR Guttersen State 10-28 (SI) - Wellbore #1 - Gyro Su	10,600.00	6,803.94	1,682.05	1,614.53	24.913	SF
HSR Guttersen State 15-28 (SI) - Wellbore #1 - Gyro Su	12,011.66	6,933.09	1,063.65	985.00	13.523	CC, ES
HSR Guttersen State 15-28 (SI) - Wellbore #1 - Gyro Su	12,100.00	6,943.61	1,067.26	988.00	13.465	SF
HSR Guttersen State 7-28 (PR) - Wellbore #1 - Gyro Sur	9,016.96	6,976.44	1,602.71	1,543.82	27.217	CC, ES
HSR Guttersen State 7-28 (PR) - Wellbore #1 - Gyro Sur	9,200.00	6,968.48	1,613.11	1,553.27	26.959	SF
O'SH D 28-1 (SI) - Wellbore #1 - Gyro Surveys	8,110.46	6,889.05	411.97	358.87	7.758	CC, ES, SF
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	7,744.00	6,876.11	1,394.60	1,343.50	27.291	CC, ES
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	7,900.00	6,875.99	1,403.30	1,351.59	27.138	SF
O'SH D 28-8 (SI) - Wellbore #1 - Gyro Surveys	9,145.43	6,895.82	48.96	-9.64	0.835	Level 1, CC, ES, SF
Spike ST GWS D 28-03 (PR) - Wellbore #1 - Gyro Surve	7,609.80	6,839.69	2,637.25	2,570.69	39.621	CC, ES
Spike ST GWS D 28-03 (PR) - Wellbore #1 - Gyro Surve	8,000.00	6,836.92	2,665.96	2,597.87	39.155	SF
Spike ST GWS D 28-4 (SI) - Wellbore #1 - Gyro Surveys	7,579.17	6,950.29	4,015.12	3,964.10	78.705	CC
Spike ST GWS D 28-4 (SI) - Wellbore #1 - Gyro Surveys	7,600.00	6,950.39	4,015.17	3,964.08	78.586	ES
Spike ST GWS D 28-4 (SI) - Wellbore #1 - Gyro Surveys	8,900.00	6,956.70	4,226.79	4,170.10	74.563	SF
Spike State D 28-13 (SI) - Wellbore #1 - Gyro Surveys	11,910.69	6,869.88	4,044.79	3,967.32	52.212	CC, ES
Spike State D 28-13 (SI) - Wellbore #1 - Gyro Surveys	12,900.00	6,873.71	4,164.02	4,080.60	49.920	SF
Spike State D28-05 (PR) - Wellbore #1 - Gyro Surveys	8,924.29	6,872.88	4,150.43	4,093.19	72.511	CC, ES
Spike State D28-05 (PR) - Wellbore #1 - Gyro Surveys	10,300.00	6,884.76	4,372.47	4,307.94	67.759	SF
Spike State D28-06 (SI) - Wellbore #1 - Gyro Surveys	8,954.72	6,897.02	2,458.76	2,401.15	42.679	CC, ES
Spike State D28-06 (SI) - Wellbore #1 - Gyro Surveys	9,400.00	6,900.28	2,498.75	2,438.78	41.666	SF
Spike State D28-11 (SI) - Wellbore #1 - Gyro Surveys	10,258.03	6,788.13	2,537.88	2,472.40	38.761	CC, ES
Spike State D28-11 (SI) - Wellbore #1 - Gyro Surveys	10,700.00	6,817.86	2,575.93	2,507.80	37.810	SF
Spike State GWS D 28-14 (P&A) - Wellbore #1 - Gyro Su	11,966.43	6,869.21	2,510.21	2,432.32	32.227	CC
Spike State GWS D 28-14 (P&A) - Wellbore #1 - Gyro Su	12,000.00	6,870.88	2,510.43	2,432.29	32.128	ES
Spike State GWS D 28-14 (P&A) - Wellbore #1 - Gyro Su	12,400.00	6,891.88	2,547.26	2,466.75	31.638	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 Vogler State D33-718
Project:	Mustang	TVD Reference:	KB @ 4849.00ft
Reference Site:	D Section 21	MD Reference:	KB @ 4849.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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						
D Section 33						
Cydney White D33-01 (PR) - Wellbore #1 - Gyro Surveys	13,125.19	6,912.53	26.34	-60.31	0.304	Level 1, CC, ES, SF
Cydney White D33-02 (PR) - Wellbore #1 - Gyro Surveys	13,078.40	6,884.62	1,336.22	1,249.96	15.490	CC, ES
Cydney White D33-02 (PR) - Wellbore #1 - Gyro Surveys	13,200.00	6,885.81	1,341.74	1,254.78	15.429	SF
Cydney White D33-07 (PR) - Wellbore #1 - Gyro Surveys	14,368.37	6,907.02	1,402.16	1,305.92	14.570	CC, ES
Cydney White D33-07 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,906.08	1,408.32	1,311.36	14.525	SF
Guttersen D 33-09 (PR) - Wellbore #1 - Gyro Surveys	15,893.89	6,923.15	107.94	-0.28	0.997	Level 1, CC, ES, SF
Guttersen D 33-16 (PR) - Wellbore #1 - Gyro Surveys	17,073.50	6,910.08	20.00	-80.58	0.199	Level 1, CC, ES, SF
Guttersen D 33-23 (PR) - Wellbore #1 - Gyro Surveys	16,358.45	6,905.90	696.63	584.83	6.231	CC, ES, SF
Guttersen D33-10 (SI) - Wellbore #1 - No Surveys	15,621.99	6,892.00	1,350.46	1,130.55	6.141	CC, ES
Guttersen D33-10 (SI) - Wellbore #1 - No Surveys	15,700.00	6,892.00	1,352.72	1,132.32	6.138	SF
Guttersen D33-15 (PR) - Wellbore #1 - No Surveys	16,947.89	6,897.00	1,334.88	1,104.38	5.791	CC, ES
Guttersen D33-15 (PR) - Wellbore #1 - No Surveys	17,000.00	6,897.00	1,335.89	1,105.06	5.787	SF
HSR Guttersen 11-33 (SI) - Wellbore #1 - No Surveys	15,619.92	6,886.00	2,649.82	2,430.03	12.057	CC, ES
HSR Guttersen 11-33 (SI) - Wellbore #1 - No Surveys	15,800.00	6,886.00	2,655.93	2,434.91	12.017	SF
HSR Guttersen 13-33 (SI) - Wellbore #1 - Gyro Surveys	17,029.51	6,919.43	4,047.78	3,930.58	34.538	CC
HSR Guttersen 13-33 (SI) - Wellbore #1 - Gyro Surveys	17,144.84	6,919.43	4,048.53	3,930.46	34.289	ES
HSR Guttersen 13-33 (SI) - Wellbore #1 - Gyro Surveys	17,482.05	6,919.43	4,063.72	3,943.51	33.803	SF
HSR Guttersen 14-33 (SI) - Wellbore #1 - Gyro Surveys	17,175.56	6,928.82	2,557.40	2,439.41	21.675	CC
HSR Guttersen 14-33 (SI) - Wellbore #1 - Gyro Surveys	17,200.00	6,928.82	2,557.52	2,439.36	21.645	ES
HSR Guttersen 14-33 (SI) - Wellbore #1 - Gyro Surveys	17,400.00	6,928.79	2,567.23	2,447.99	21.531	SF
HSR Guttersen 3-33 (SI) - Wellbore #1 - Gyro Surveys	13,067.05	6,921.00	2,644.48	2,558.23	30.662	CC
HSR Guttersen 3-33 (SI) - Wellbore #1 - Gyro Surveys	13,100.00	6,922.63	2,644.68	2,558.19	30.577	ES
HSR Guttersen 3-33 (SI) - Wellbore #1 - Gyro Surveys	13,400.00	6,937.54	2,665.30	2,576.94	30.163	SF
HSR Guttersen 4-33 (P&A) - Wellbore #1 - No Surveys	13,139.33	6,901.00	4,127.33	3,926.46	20.547	CC
HSR Guttersen 4-33 (P&A) - Wellbore #1 - No Surveys	13,200.00	6,901.00	4,127.77	3,926.45	20.503	ES
HSR Guttersen 4-33 (P&A) - Wellbore #1 - No Surveys	13,600.00	6,901.00	4,152.96	3,948.93	20.356	SF
HSR-Guttersen 12-33 (SI) - Wellbore #1 - Gyro Surveys	15,861.89	6,948.16	3,989.03	3,881.07	36.949	CC
HSR-Guttersen 12-33 (SI) - Wellbore #1 - Gyro Surveys	15,900.00	6,948.17	3,989.21	3,880.95	36.850	ES
HSR-Guttersen 12-33 (SI) - Wellbore #1 - Gyro Surveys	16,500.00	6,948.34	4,039.74	3,927.77	36.077	SF
HSR-Guttersen 5-33 (SI) - Wellbore #1 - Gyro Surveys	14,589.85	6,897.31	3,686.86	3,588.92	37.647	CC
HSR-Guttersen 5-33 (SI) - Wellbore #1 - Gyro Surveys	14,600.00	6,897.23	3,686.87	3,588.86	37.617	ES
HSR-Guttersen 5-33 (SI) - Wellbore #1 - Gyro Surveys	15,200.00	6,892.64	3,737.00	3,635.29	36.740	SF
HSR-Guttersen 6-33 (SI) - Wellbore #1 - Gyro Surveys	14,497.76	6,892.96	2,542.89	2,446.04	26.256	CC
HSR-Guttersen 6-33 (SI) - Wellbore #1 - Gyro Surveys	14,500.00	6,892.98	2,542.89	2,446.02	26.251	ES
HSR-Guttersen 6-33 (SI) - Wellbore #1 - Gyro Surveys	14,800.00	6,896.09	2,560.78	2,462.06	25.940	SF
Y Section 03						
Waste Management USX Y03-03 - Wellbore #1 - Wellbo	17,482.05	6,927.22	2,790.13	2,673.53	23.928	CC, ES, SF
Waste Management USX Y03-04 - Wellbore #1 - Wellbo	17,482.05	6,916.10	1,555.04	1,448.63	14.614	CC, ES, SF
Waste Management USX Y03-05 - Wellbore #1 - Wellbo	17,482.05	6,924.31	2,529.40	2,445.90	30.290	CC, ES, SF
Waste Management USX Y03-06 - Wellbore #1 - Wellbo	17,482.05	7,048.01	3,451.40	3,350.00	34.037	CC, ES, SF
Waste Management USX Y03-11 - Wellbore #1 - Wellbor	17,482.05	6,906.30	4,301.98	4,217.26	50.780	CC, ES, SF
Waste Management USX Y03-12 - Wellbore #1 - Wellbo	17,482.05	6,952.90	3,516.54	3,449.42	52.389	CC, ES, SF
Waste Management USX Y03-13 - Wellbore #1 - Wellbo	17,482.05	6,899.81	4,869.78	4,806.99	77.568	CC, ES, SF
Waste Management USX Y03-14 - Wellbore #1 - Wellbo	17,482.05	6,890.91	5,514.98	5,439.02	72.607	CC, ES, SF
Waste Management USX Y03-19 - Wellbore #1 - Wellbo	17,482.05	6,952.45	2,334.38	2,231.30	22.647	CC, ES, SF
Waste Management USX Y03-25 - Wellbore #1 - Wellbo	17,482.05	6,919.53	4,414.67	4,341.90	60.673	CC, ES, SF
Waste Management USX Y3-15 - Wellbore #1 - As Drille	17,482.05	6,892.09	6,305.66	6,213.79	68.637	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 Vogler State D33-718
Project:	Mustang	TVD Reference:	KB @ 4849.00ft
Reference Site:	D Section 21	MD Reference:	KB @ 4849.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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						
Y Section 04						
HSR-Guttersen 01-04 - Original Drilling - Original Drilling	17,482.05	6,919.15	877.23	813.27	13.716	CC, ES, SF
HSR-Guttersen 02-04 - Original Drilling - Original Drilling	17,482.05	6,926.90	1,592.82	1,485.01	14.774	CC, ES, SF
HSR-Guttersen 03-04 - Original Drilling - Original Drilling	17,482.05	6,967.50	2,942.19	2,825.75	25.268	CC, ES, SF
HSR-Guttersen 05-04 - Original Drilling - Original Drilling	17,482.05	7,238.00	4,517.94	4,408.38	41.236	CC, ES, SF
HSR-Guttersen 07-04 - Original Drilling - Original Drilling	17,482.05	6,943.11	2,558.79	2,473.06	29.845	CC, ES, SF
Melvin Y04-04 - Original Drilling - Original Drilling - As Dr	17,482.05	7,121.13	3,778.92	3,661.60	32.212	CC, ES, SF
Y Section 10						
Bison Ridge State Y22-786 - Original Drilling - As-Drilled	17,482.05	6,613.00	8,408.49	8,352.50	150.181	CC, ES, SF
Bison Ridge Y22-711 - Original Drilling - As-Drilled	17,482.05	5,145.63	9,952.54	9,878.47	134.356	CC, ES, SF
Bison Ridge Y22-719 - Original Drilling - Original Drilling	17,482.05	6,108.00	9,762.75	9,687.12	129.084	CC, ES, SF
Bison Ridge Y22-726 - Original Drilling - As-Drilled	17,482.05	6,282.74	9,557.38	9,484.25	130.700	CC, ES, SF
Bison Ridge Y22-734 - Original Drilling - As-Drilled	17,482.05	6,232.00	9,319.52	9,249.40	132.909	CC, ES, SF
Bison Ridge Y22-741 - Original Drilling - As-Drilled	17,482.05	6,329.00	9,422.74	9,356.57	142.415	CC, ES, SF
Bison Ridge Y22-749 - Original Drilling - As-Drilled	17,482.05	6,329.00	8,961.81	8,896.89	138.031	CC, ES, SF
Bison Ridge Y22-756 - Original Drilling - As-Drilled	17,482.05	6,473.49	8,622.54	8,561.29	140.789	CC, ES, SF
Bison Ridge Y22-764 - Original Drilling - As-Drilled	17,482.05	6,423.00	8,691.84	8,633.54	149.102	CC, ES, SF
Bison Ridge Y22-771 - Original Drilling - As-Drilled	17,482.05	6,426.00	8,548.68	8,492.06	150.992	CC, ES, SF
Bison Ridge Y22-779 - Original Drilling - As-Drilled	17,482.05	6,521.00	8,483.16	8,427.41	152.167	CC, ES, SF
Oscar Y10-72-1HC - Original Drilling - Original Drilling - A	17,482.05	14,600.03	5,484.13	5,321.05	33.630	CC, ES, SF
Oscar Y10-72-1HN - Original Drilling - Original Drilling - A	17,482.05	14,333.03	5,630.75	5,460.74	33.120	CC, ES, SF
Oscar Y10-72HN - Original Drilling - Original Drilling - As	17,482.05	14,445.03	5,386.42	5,216.93	31.781	CC, ES, SF
Oscar Y10-73-1HC - Original Drilling - Original Drilling - A	17,482.05	14,438.03	4,810.88	4,642.29	28.536	CC, ES, SF
Oscar Y10-73-1HN - Original Drilling - Original Drilling - A	17,482.05	14,398.03	4,996.49	4,826.61	29.412	CC, ES, SF
Oscar Y10-73HN - Original Drilling - Original Drilling - As	17,482.05	14,549.00	4,686.49	4,517.63	27.755	CC, ES, SF
Oscar Y10-74-1HC - Original Drilling - Original Drilling- A	17,482.05	14,684.00	4,151.55	3,988.43	25.451	CC, ES, SF
Oscar Y10-74-1HN - Original Drilling - Original Drilling - A	17,482.05	14,377.03	4,340.20	4,177.17	26.621	CC, ES, SF
Oscar Y10-74HN - Original Drilling - Original Drilling - As	17,482.05	12,678.03	4,468.19	4,331.33	32.648	CC, ES, SF
Oscar Y10-75-1HC - Original Drilling - Original Drilling - A	17,482.05	14,440.00	3,528.16	3,365.28	21.662	CC, ES, SF
Oscar Y10-75-1HN - Original Drilling - Original Drilling - A	17,482.05	14,437.03	3,663.11	3,500.26	22.494	CC, ES, SF
Oscar Y10-75HN - Original Drilling - Original Drilling - As	17,482.05	14,544.00	3,332.16	3,169.09	20.433	CC, ES, SF
Oscar Y10-76-1HN - Original Drilling - Original Drilling - A	17,482.05	14,399.00	3,072.29	2,909.56	18.880	CC, ES, SF
Oscar Y10-76HN - Original Drilling - Original Drilling - As	17,482.05	14,574.99	2,728.61	2,565.62	16.741	CC, ES, SF
Oscar Y10-77-1HC - Original Drilling - Original Drilling - A	17,482.05	14,740.00	2,413.39	2,245.28	14.356	CC, ES, SF
Oscar Y10-77HN - Original Drilling - Original Drilling - As	17,482.05	14,600.00	2,047.47	1,885.22	12.619	CC, ES, SF
Oscar Y10-78-1HC - Original Drilling - Original Drilling - A	17,482.05	14,759.00	1,749.30	1,513.67	7.424	CC, ES, SF
Oscar Y10-78-1HN - Original Drilling - Original Drilling - As	17,482.05	14,469.00	1,750.33	1,515.28	7.446	CC, ES, SF
Oscar Y10-78HN - Original Drilling - Original Drilling - As	17,482.05	13,936.00	1,674.31	1,534.34	11.962	CC, ES, SF
Oscar Y10-79-1HC - Original Drilling - Original Drilling - A	17,482.05	14,740.00	1,110.00	879.94	4.825	CC, ES, SF
Oscar Y10-79-1HN - Original Drilling - Original Drilling - A	17,482.05	14,437.00	1,117.69	888.20	4.870	CC, ES, SF
Oscar Y10-79HN - Original Drilling - Original Drilling - As	17,482.05	7,926.00	6,983.17	6,926.53	123.290	CC, ES, SF
Oscar Y10-79HN - Original Drilling - ST01 - ST01 - As Dr	17,482.05	14,611.00	862.24	637.56	3.838	CC, ES, SF
Oscar Y11-79HN - Original Drilling - Original Drilling - As	17,482.05	8,396.02	8,644.06	8,542.82	85.377	CC, ES, SF
Oscar Y11-79HN - ST01 Original Drilling - ST01 Original	17,482.05	14,458.03	5,923.25	5,753.72	34.938	CC, ES, SF

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

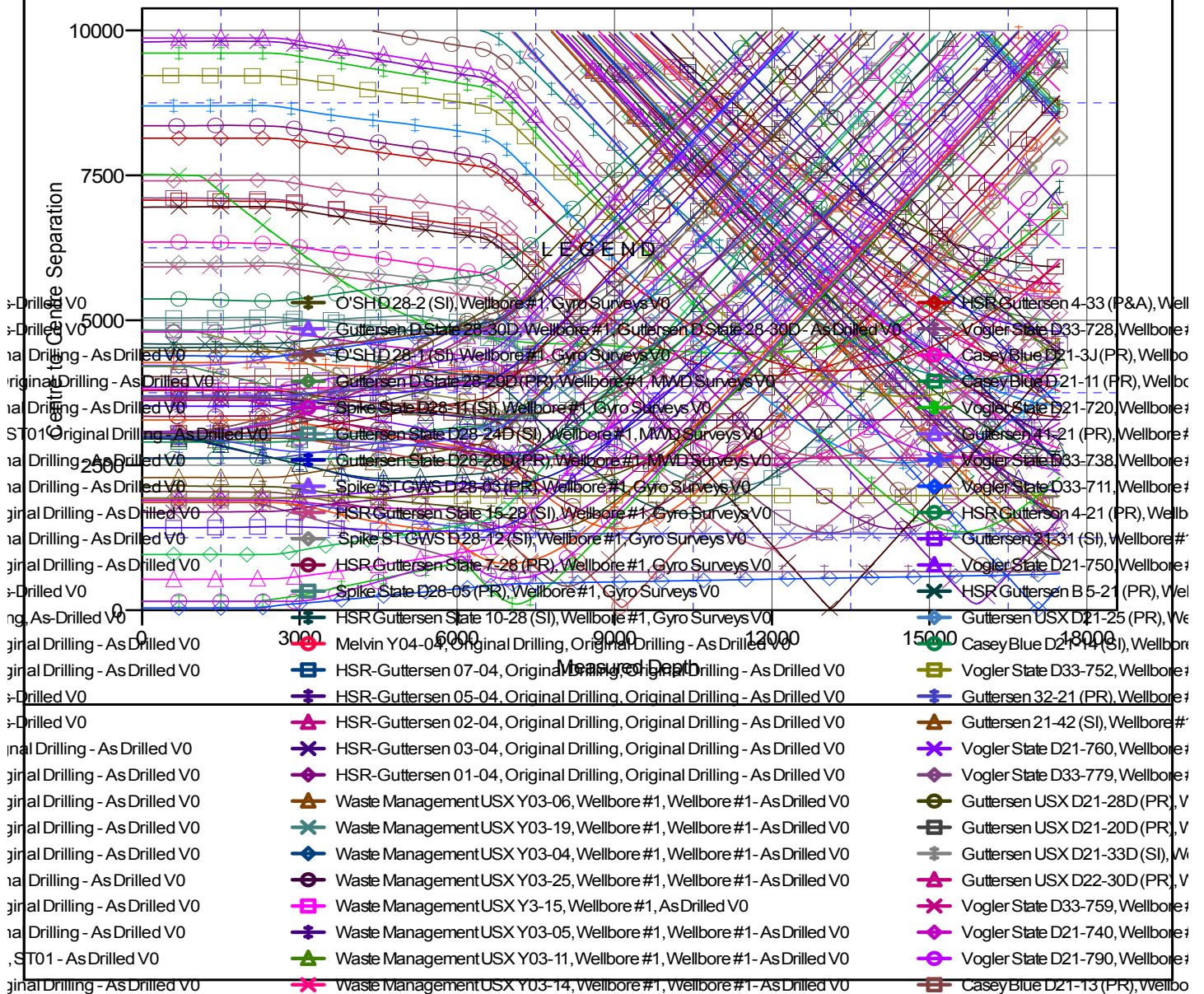
Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Vogler State D33-718
Project:	Mustang	TVD Reference:	KB @ 4849.00ft
Reference Site:	D Section 21	MD Reference:	KB @ 4849.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 4849.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Vogler State D33-718
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.61°

Ladder Plot



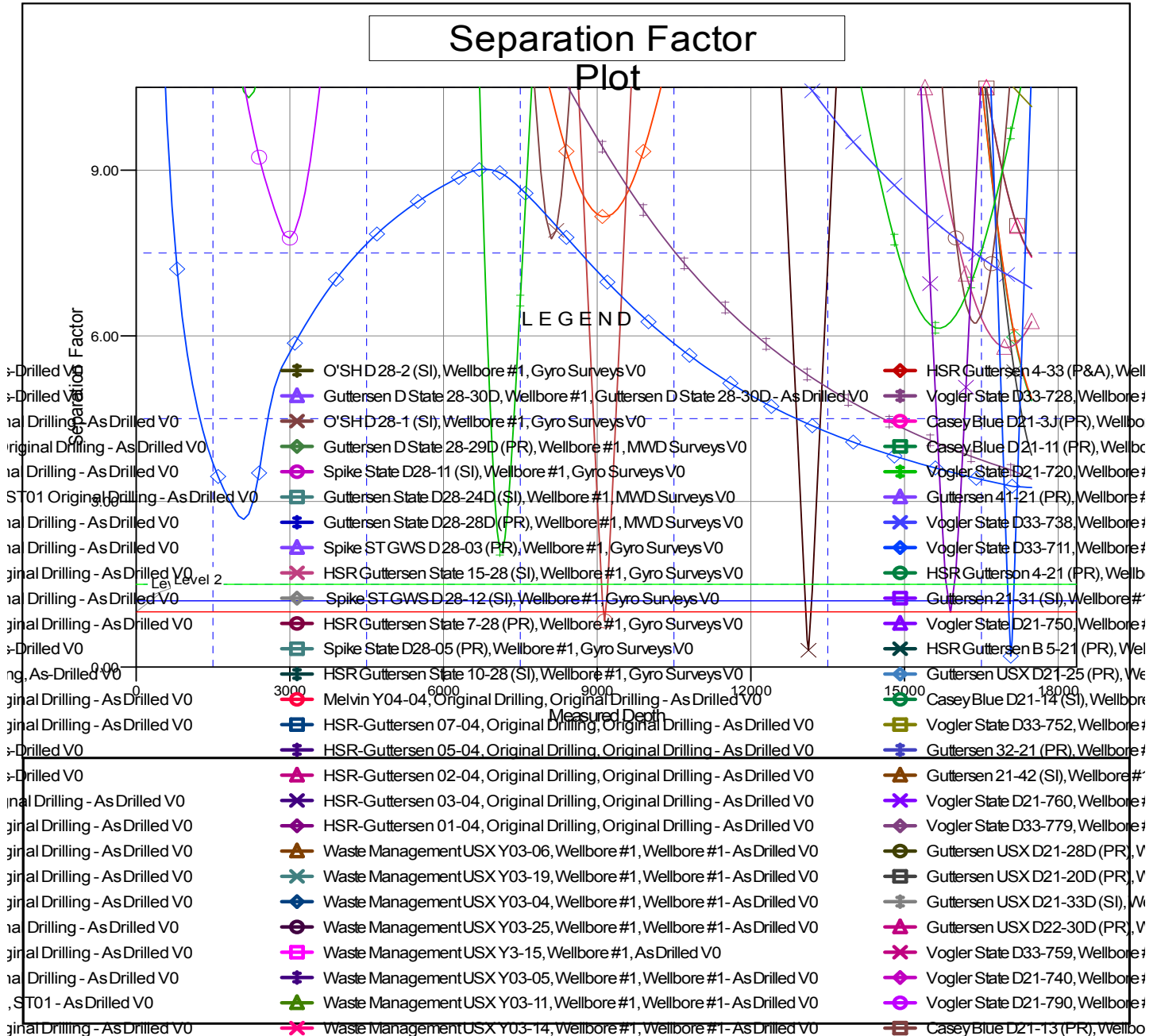
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Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Vogler State D33-718
Project:	Mustang	TVD Reference:	KB @ 4849.00ft
Reference Site:	D Section 21	MD Reference:	KB @ 4849.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D33-718	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 4849.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Vogler State D33-718
Coordinate System is US State Plane 1983, Colorado Northern Zone
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CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation