Project: Mustang
Site: D Section 21
Well: Vogler State D33-759
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

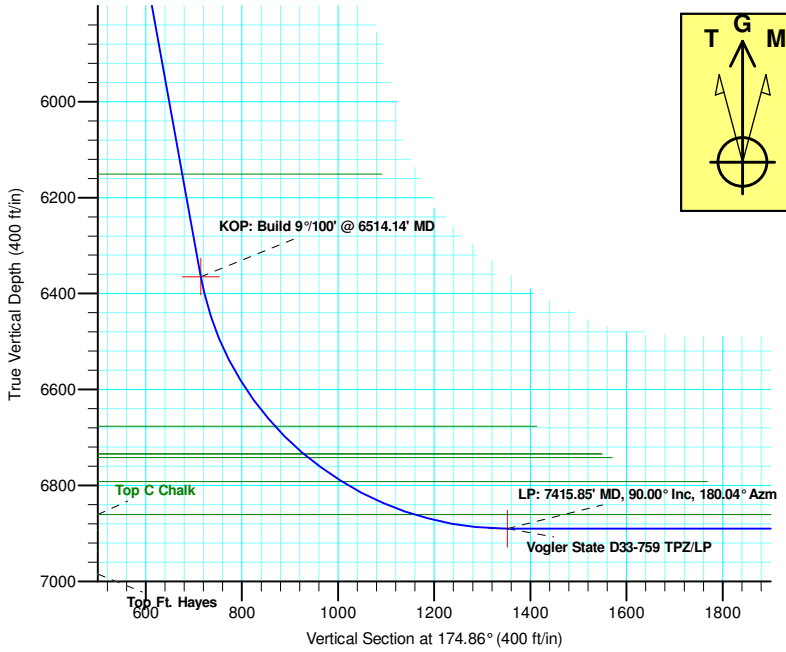
SECTION DETAILS

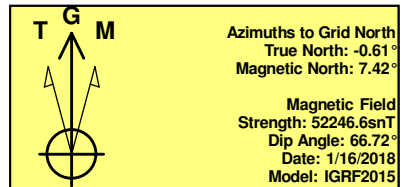
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	
3	2785.23	15.70	124.66	2775.44	-60.81	87.97	2.00	124.66	68.46	
4	6514.14	15.70	124.66	6365.14	-634.79	918.22	0.00	0.00	714.56	
5	7415.85	90.00	180.04	6890.00	-1263.92	1039.24	9.00	56.39	1352.01	Vogler State D33-759 TPZ/LP
6	17618.14	90.00	180.04	6890.00	-11466.20	1032.27	0.00	0.00	11512.57	Vogler State D33-759 BHL

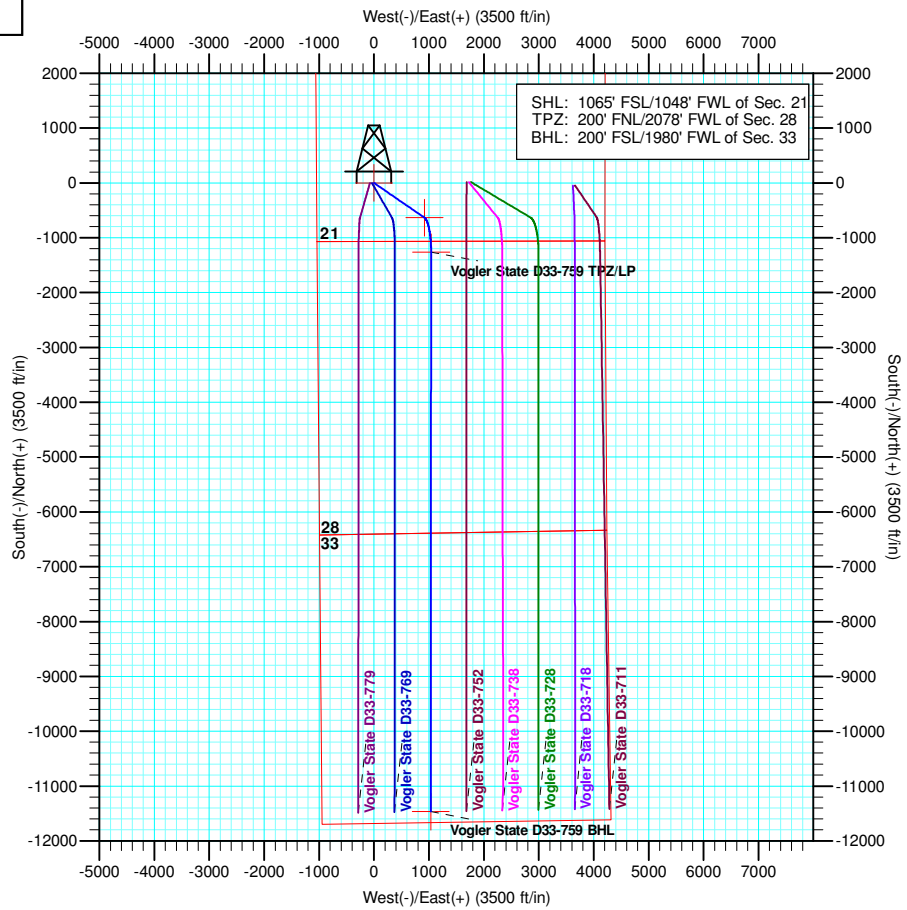
WELL DETAILS: Vogler State D33-759

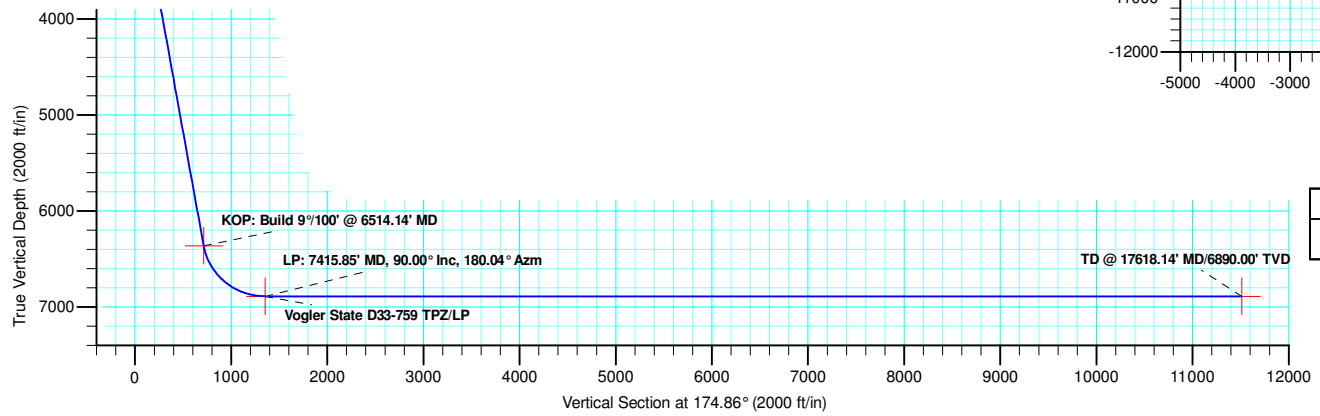
Ground Level: 4797.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1319509.93	3261995.15	40.2066478	-104.5619561	









Plan: Plan 1 (Vogler State D33-759/Wellbore #1)

Created By: Keith Noack Date: 13:08, August 09 2018

Northern Region - DJ Basin

Mustang
D Section 21
Vogler State D33-759

Wellbore #1

Plan: Plan 1

Standard Planning Report

09 August, 2018

Database:	EDMP	**Local Co-ordinate Reference:**	Well Vogler State D33-759
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4827.00ft
Project:	Mustang	**MD Reference:**	Well @ 4827.00ft
Site:	D Section 21	**North Reference:**	Grid
Well:	Vogler State D33-759	**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 D33-759

Well Position	**+N/-S**	-3,531.97 ft	**Northing:**	1,319,509.93 usft	**Latitude:**	40.2066479
	+E/-W	381.68 ft	**Easting:**	3,261,995.15 usft	**Longitude:**	-104.5619561
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	4,797.00 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/16/2018	8.02	66.72	52,246.57754553

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	174.86

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	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,785.23	15.70	124.66	2,775.44	-60.81	87.97	2.00	2.00	0.00	124.66	
6,514.14	15.70	124.66	6,365.14	-634.79	918.22	0.00	0.00	0.00	0.00	
7,415.85	90.00	180.04	6,890.00	-1,263.92	1,039.24	9.00	8.24	6.14	56.39	Vogler State D33-7
17,618.14	90.00	180.04	6,890.00	-11,466.20	1,032.27	0.00	0.00	0.00	0.00	Vogler State D33-7

Database:	EDMP	**Local Co-ordinate Reference:**	Well Vogler State D33-759
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4827.00ft
Project:	Mustang	**MD Reference:**	Well @ 4827.00ft
Site:	D Section 21	**North Reference:**	Grid
Well:	Vogler State D33-759	**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
624.00	0.00	0.00	624.00	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
759.00	0.00	0.00	759.00	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
1,626.00	0.00	0.00	1,626.00	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
Build: 2°/100'									
2,100.00	2.00	124.66	2,099.98	-0.99	1.44	1.12	2.00	2.00	0.00
2,200.00	4.00	124.66	2,199.84	-3.97	5.74	4.47	2.00	2.00	0.00
2,300.00	6.00	124.66	2,299.45	-8.92	12.91	10.05	2.00	2.00	0.00
2,400.00	8.00	124.66	2,398.70	-15.85	22.93	17.85	2.00	2.00	0.00
2,500.00	10.00	124.66	2,497.47	-24.75	35.80	27.86	2.00	2.00	0.00
2,600.00	12.00	124.66	2,595.62	-35.60	51.49	40.07	2.00	2.00	0.00
2,700.00	14.00	124.66	2,693.06	-48.39	70.00	54.47	2.00	2.00	0.00
2,785.23	15.70	124.66	2,775.44	-60.81	87.97	68.46	2.00	2.00	0.00
Hold: 15.70° Inc, 124.66° Azm									
2,800.00	15.70	124.66	2,789.65	-63.09	91.26	71.02	0.00	0.00	0.00
2,900.00	15.70	124.66	2,885.92	-78.48	113.52	88.34	0.00	0.00	0.00
3,000.00	15.70	124.66	2,982.19	-93.87	135.79	105.67	0.00	0.00	0.00
3,100.00	15.70	124.66	3,078.45	-109.27	158.05	123.00	0.00	0.00	0.00
3,200.00	15.70	124.66	3,174.72	-124.66	180.32	140.32	0.00	0.00	0.00
3,300.00	15.70	124.66	3,270.99	-140.05	202.58	157.65	0.00	0.00	0.00
3,400.00	15.70	124.66	3,367.26	-155.44	224.85	174.98	0.00	0.00	0.00
3,500.00	15.70	124.66	3,463.52	-170.84	247.11	192.30	0.00	0.00	0.00
3,600.00	15.70	124.66	3,559.79	-186.23	269.38	209.63	0.00	0.00	0.00
3,700.00	15.70	124.66	3,656.06	-201.62	291.64	226.96	0.00	0.00	0.00
3,800.00	15.70	124.66	3,752.32	-217.01	313.91	244.29	0.00	0.00	0.00
3,898.35	15.70	124.66	3,847.00	-232.15	335.81	261.33	0.00	0.00	0.00
Parkman									
3,900.00	15.70	124.66	3,848.59	-232.41	336.17	261.61	0.00	0.00	0.00
4,000.00	15.70	124.66	3,944.86	-247.80	358.44	278.94	0.00	0.00	0.00
4,100.00	15.70	124.66	4,041.12	-263.19	380.70	296.27	0.00	0.00	0.00

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Project:	Mustang	**MD Reference:**	Well @ 4827.00ft
Site:	D Section 21	**North Reference:**	Grid
Well:	Vogler State D33-759	**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)
4,140.38	15.70	124.66	4,080.00	-269.41	389.69	303.26	0.00	0.00	0.00
Sussex									
4,200.00	15.70	124.66	4,137.39	-278.58	402.97	313.59	0.00	0.00	0.00
4,300.00	15.70	124.66	4,233.66	-293.98	425.23	330.92	0.00	0.00	0.00
4,400.00	15.70	124.66	4,329.93	-309.37	447.50	348.25	0.00	0.00	0.00
4,500.00	15.70	124.66	4,426.19	-324.76	469.76	365.57	0.00	0.00	0.00
4,600.00	15.70	124.66	4,522.46	-340.15	492.03	382.90	0.00	0.00	0.00
4,700.00	15.70	124.66	4,618.73	-355.55	514.29	400.23	0.00	0.00	0.00
4,800.00	15.70	124.66	4,714.99	-370.94	536.56	417.55	0.00	0.00	0.00
4,900.00	15.70	124.66	4,811.26	-386.33	558.82	434.88	0.00	0.00	0.00
5,000.00	15.70	124.66	4,907.53	-401.72	581.09	452.21	0.00	0.00	0.00
5,100.00	15.70	124.66	5,003.79	-417.12	603.36	469.54	0.00	0.00	0.00
5,127.22	15.70	124.66	5,030.00	-421.31	609.42	474.25	0.00	0.00	0.00
Shannon									
5,200.00	15.70	124.66	5,100.06	-432.51	625.62	486.86	0.00	0.00	0.00
5,300.00	15.70	124.66	5,196.33	-447.90	647.89	504.19	0.00	0.00	0.00
5,400.00	15.70	124.66	5,292.59	-463.29	670.15	521.52	0.00	0.00	0.00
5,500.00	15.70	124.66	5,388.86	-478.69	692.42	538.84	0.00	0.00	0.00
5,600.00	15.70	124.66	5,485.13	-494.08	714.68	556.17	0.00	0.00	0.00
5,700.00	15.70	124.66	5,581.40	-509.47	736.95	573.50	0.00	0.00	0.00
5,800.00	15.70	124.66	5,677.66	-524.86	759.21	590.82	0.00	0.00	0.00
5,900.00	15.70	124.66	5,773.93	-540.26	781.48	608.15	0.00	0.00	0.00
6,000.00	15.70	124.66	5,870.20	-555.65	803.74	625.48	0.00	0.00	0.00
6,100.00	15.70	124.66	5,966.46	-571.04	826.01	642.80	0.00	0.00	0.00
6,200.00	15.70	124.66	6,062.73	-586.43	848.27	660.13	0.00	0.00	0.00
6,291.69	15.70	124.66	6,151.00	-600.55	868.69	676.02	0.00	0.00	0.00
Teepee Buttes									
6,300.00	15.70	124.66	6,159.00	-601.83	870.54	677.46	0.00	0.00	0.00
6,400.00	15.70	124.66	6,255.26	-617.22	892.80	694.79	0.00	0.00	0.00
6,500.00	15.70	124.66	6,351.53	-632.61	915.07	712.11	0.00	0.00	0.00
6,514.14	15.70	124.66	6,365.14	-634.79	918.22	714.56	0.00	0.00	0.00
KOP: Build 9°/100' @ 6514.14' MD									
6,550.00	17.69	133.53	6,399.50	-641.30	926.16	721.76	9.00	5.54	24.75
6,600.00	20.97	142.89	6,446.68	-653.68	937.07	735.07	9.00	6.55	18.72
6,650.00	24.62	149.71	6,492.78	-669.81	947.73	752.09	9.00	7.30	13.63
6,700.00	28.50	154.81	6,537.50	-689.61	958.06	772.74	9.00	7.76	10.21
6,750.00	32.53	158.77	6,580.57	-712.95	968.01	796.87	9.00	8.06	7.91
6,800.00	36.66	161.93	6,621.72	-739.68	977.52	824.35	9.00	8.26	6.32
6,850.00	40.86	164.52	6,660.71	-769.65	986.52	855.00	9.00	8.39	5.19
6,871.85	42.71	165.52	6,677.00	-783.71	990.28	869.35	9.00	8.47	4.57
Sharon Springs									
6,900.00	45.10	166.71	6,697.28	-802.66	994.96	888.64	9.00	8.51	4.22
6,950.00	49.38	168.59	6,731.22	-838.52	1,002.78	925.05	9.00	8.56	3.77
6,954.29	49.75	168.74	6,734.00	-841.72	1,003.43	928.30	9.00	8.60	3.50
Top A Chalk									
6,955.84	49.89	168.80	6,735.00	-842.88	1,003.66	929.47	9.00	8.60	3.48
Top A Marl									
6,966.81	50.83	169.17	6,742.00	-851.17	1,005.27	937.88	9.00	8.61	3.42
Top B Chalk									
7,000.00	53.69	170.25	6,762.31	-876.99	1,009.95	964.02	9.00	8.63	3.25
7,050.00	58.02	171.73	6,790.37	-917.86	1,016.42	1,005.30	9.00	8.66	2.97
7,053.09	58.29	171.82	6,792.00	-920.46	1,016.79	1,007.92	9.00	8.68	2.81
Top B Marl									

Database:	EDMP	**Local Co-ordinate Reference:**	Well Vogler State D33-759
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4827.00ft
Project:	Mustang	**MD Reference:**	Well @ 4827.00ft
Site:	D Section 21	**North Reference:**	Grid
Well:	Vogler State D33-759	**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)
7,100.00	62.37	173.08	6,815.22	-960.85	1,022.14	1,048.63	9.00	8.69	2.69
7,150.00	66.73	174.33	6,836.70	-1,005.72	1,027.08	1,093.76	9.00	8.71	2.49
7,200.00	71.09	175.49	6,854.69	-1,052.17	1,031.21	1,140.40	9.00	8.73	2.33
7,220.41	72.88	175.95	6,861.00	-1,071.52	1,032.66	1,159.80	9.00	8.74	2.24
Top C Chalk									
7,250.00	75.47	176.60	6,869.07	-1,099.93	1,034.50	1,188.26	9.00	8.75	2.19
7,300.00	79.84	177.66	6,879.76	-1,148.70	1,036.94	1,237.05	9.00	8.76	2.13
7,350.00	84.23	178.70	6,886.68	-1,198.18	1,038.51	1,286.47	9.00	8.76	2.07
7,400.00	88.61	179.72	6,889.81	-1,248.07	1,039.20	1,336.22	9.00	8.77	2.04
7,415.85	90.00	180.04	6,890.00	-1,263.92	1,039.24	1,352.01	9.00	8.77	2.03
LP: 7415.85' MD, 90.00° Inc, 180.04° Azm									
7,500.00	90.00	180.04	6,890.00	-1,348.06	1,039.18	1,435.81	0.00	0.00	0.00
7,600.00	90.00	180.04	6,890.00	-1,448.06	1,039.11	1,535.40	0.00	0.00	0.00
7,700.00	90.00	180.04	6,890.00	-1,548.06	1,039.04	1,634.99	0.00	0.00	0.00
7,800.00	90.00	180.04	6,890.00	-1,648.06	1,038.97	1,734.58	0.00	0.00	0.00
7,900.00	90.00	180.04	6,890.00	-1,748.06	1,038.90	1,834.18	0.00	0.00	0.00
8,000.00	90.00	180.04	6,890.00	-1,848.06	1,038.84	1,933.77	0.00	0.00	0.00
8,100.00	90.00	180.04	6,890.00	-1,948.06	1,038.77	2,033.36	0.00	0.00	0.00
8,200.00	90.00	180.04	6,890.00	-2,048.06	1,038.70	2,132.95	0.00	0.00	0.00
8,300.00	90.00	180.04	6,890.00	-2,148.06	1,038.63	2,232.54	0.00	0.00	0.00
8,400.00	90.00	180.04	6,890.00	-2,248.06	1,038.56	2,332.13	0.00	0.00	0.00
8,500.00	90.00	180.04	6,890.00	-2,348.06	1,038.49	2,431.72	0.00	0.00	0.00
8,600.00	90.00	180.04	6,890.00	-2,448.06	1,038.43	2,531.31	0.00	0.00	0.00
8,700.00	90.00	180.04	6,890.00	-2,548.06	1,038.36	2,630.90	0.00	0.00	0.00
8,800.00	90.00	180.04	6,890.00	-2,648.06	1,038.29	2,730.50	0.00	0.00	0.00
8,900.00	90.00	180.04	6,890.00	-2,748.06	1,038.22	2,830.09	0.00	0.00	0.00
9,000.00	90.00	180.04	6,890.00	-2,848.06	1,038.15	2,929.68	0.00	0.00	0.00
9,100.00	90.00	180.04	6,890.00	-2,948.06	1,038.09	3,029.27	0.00	0.00	0.00
9,200.00	90.00	180.04	6,890.00	-3,048.06	1,038.02	3,128.86	0.00	0.00	0.00
9,300.00	90.00	180.04	6,890.00	-3,148.06	1,037.95	3,228.45	0.00	0.00	0.00
9,400.00	90.00	180.04	6,890.00	-3,248.06	1,037.88	3,328.04	0.00	0.00	0.00
9,500.00	90.00	180.04	6,890.00	-3,348.06	1,037.81	3,427.63	0.00	0.00	0.00
9,600.00	90.00	180.04	6,890.00	-3,448.06	1,037.74	3,527.22	0.00	0.00	0.00
9,700.00	90.00	180.04	6,890.00	-3,548.06	1,037.68	3,626.81	0.00	0.00	0.00
9,800.00	90.00	180.04	6,890.00	-3,648.06	1,037.61	3,726.41	0.00	0.00	0.00
9,900.00	90.00	180.04	6,890.00	-3,748.06	1,037.54	3,826.00	0.00	0.00	0.00
10,000.00	90.00	180.04	6,890.00	-3,848.06	1,037.47	3,925.59	0.00	0.00	0.00
10,100.00	90.00	180.04	6,890.00	-3,948.06	1,037.40	4,025.18	0.00	0.00	0.00
10,200.00	90.00	180.04	6,890.00	-4,048.06	1,037.33	4,124.77	0.00	0.00	0.00
10,300.00	90.00	180.04	6,890.00	-4,148.06	1,037.27	4,224.36	0.00	0.00	0.00
10,400.00	90.00	180.04	6,890.00	-4,248.06	1,037.20	4,323.95	0.00	0.00	0.00
10,500.00	90.00	180.04	6,890.00	-4,348.06	1,037.13	4,423.54	0.00	0.00	0.00
10,600.00	90.00	180.04	6,890.00	-4,448.06	1,037.06	4,523.13	0.00	0.00	0.00
10,700.00	90.00	180.04	6,890.00	-4,548.06	1,036.99	4,622.73	0.00	0.00	0.00
10,800.00	90.00	180.04	6,890.00	-4,648.06	1,036.92	4,722.32	0.00	0.00	0.00
10,900.00	90.00	180.04	6,890.00	-4,748.06	1,036.86	4,821.91	0.00	0.00	0.00
11,000.00	90.00	180.04	6,890.00	-4,848.06	1,036.79	4,921.50	0.00	0.00	0.00
11,100.00	90.00	180.04	6,890.00	-4,948.06	1,036.72	5,021.09	0.00	0.00	0.00
11,200.00	90.00	180.04	6,890.00	-5,048.06	1,036.65	5,120.68	0.00	0.00	0.00
11,300.00	90.00	180.04	6,890.00	-5,148.06	1,036.58	5,220.27	0.00	0.00	0.00
11,400.00	90.00	180.04	6,890.00	-5,248.06	1,036.51	5,319.86	0.00	0.00	0.00
11,500.00	90.00	180.04	6,890.00	-5,348.06	1,036.45	5,419.45	0.00	0.00	0.00
11,600.00	90.00	180.04	6,890.00	-5,448.06	1,036.38	5,519.04	0.00	0.00	0.00
11,700.00	90.00	180.04	6,890.00	-5,548.06	1,036.31	5,618.64	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Vogler State D33-759
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4827.00ft
Project:	Mustang	**MD Reference:**	Well @ 4827.00ft
Site:	D Section 21	**North Reference:**	Grid
Well:	Vogler State D33-759	**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)
11,800.00	90.00	180.04	6,890.00	-5,648.06	1,036.24	5,718.23	0.00	0.00	0.00
11,900.00	90.00	180.04	6,890.00	-5,748.06	1,036.17	5,817.82	0.00	0.00	0.00
12,000.00	90.00	180.04	6,890.00	-5,848.06	1,036.10	5,917.41	0.00	0.00	0.00
12,100.00	90.00	180.04	6,890.00	-5,948.06	1,036.04	6,017.00	0.00	0.00	0.00
12,200.00	90.00	180.04	6,890.00	-6,048.06	1,035.97	6,116.59	0.00	0.00	0.00
12,300.00	90.00	180.04	6,890.00	-6,148.06	1,035.90	6,216.18	0.00	0.00	0.00
12,400.00	90.00	180.04	6,890.00	-6,248.06	1,035.83	6,315.77	0.00	0.00	0.00
12,500.00	90.00	180.04	6,890.00	-6,348.06	1,035.76	6,415.36	0.00	0.00	0.00
12,600.00	90.00	180.04	6,890.00	-6,448.06	1,035.69	6,514.96	0.00	0.00	0.00
12,700.00	90.00	180.04	6,890.00	-6,548.06	1,035.63	6,614.55	0.00	0.00	0.00
12,800.00	90.00	180.04	6,890.00	-6,648.06	1,035.56	6,714.14	0.00	0.00	0.00
12,900.00	90.00	180.04	6,890.00	-6,748.06	1,035.49	6,813.73	0.00	0.00	0.00
13,000.00	90.00	180.04	6,890.00	-6,848.06	1,035.42	6,913.32	0.00	0.00	0.00
13,100.00	90.00	180.04	6,890.00	-6,948.06	1,035.35	7,012.91	0.00	0.00	0.00
13,200.00	90.00	180.04	6,890.00	-7,048.06	1,035.29	7,112.50	0.00	0.00	0.00
13,300.00	90.00	180.04	6,890.00	-7,148.06	1,035.22	7,212.09	0.00	0.00	0.00
13,400.00	90.00	180.04	6,890.00	-7,248.06	1,035.15	7,311.68	0.00	0.00	0.00
13,500.00	90.00	180.04	6,890.00	-7,348.06	1,035.08	7,411.27	0.00	0.00	0.00
13,600.00	90.00	180.04	6,890.00	-7,448.06	1,035.01	7,510.87	0.00	0.00	0.00
13,700.00	90.00	180.04	6,890.00	-7,548.06	1,034.94	7,610.46	0.00	0.00	0.00
13,800.00	90.00	180.04	6,890.00	-7,648.06	1,034.88	7,710.05	0.00	0.00	0.00
13,900.00	90.00	180.04	6,890.00	-7,748.06	1,034.81	7,809.64	0.00	0.00	0.00
14,000.00	90.00	180.04	6,890.00	-7,848.06	1,034.74	7,909.23	0.00	0.00	0.00
14,100.00	90.00	180.04	6,890.00	-7,948.06	1,034.67	8,008.82	0.00	0.00	0.00
14,200.00	90.00	180.04	6,890.00	-8,048.06	1,034.60	8,108.41	0.00	0.00	0.00
14,300.00	90.00	180.04	6,890.00	-8,148.06	1,034.53	8,208.00	0.00	0.00	0.00
14,400.00	90.00	180.04	6,890.00	-8,248.06	1,034.47	8,307.59	0.00	0.00	0.00
14,500.00	90.00	180.04	6,890.00	-8,348.06	1,034.40	8,407.19	0.00	0.00	0.00
14,600.00	90.00	180.04	6,890.00	-8,448.06	1,034.33	8,506.78	0.00	0.00	0.00
14,700.00	90.00	180.04	6,890.00	-8,548.06	1,034.26	8,606.37	0.00	0.00	0.00
14,800.00	90.00	180.04	6,890.00	-8,648.06	1,034.19	8,705.96	0.00	0.00	0.00
14,900.00	90.00	180.04	6,890.00	-8,748.06	1,034.12	8,805.55	0.00	0.00	0.00
15,000.00	90.00	180.04	6,890.00	-8,848.06	1,034.06	8,905.14	0.00	0.00	0.00
15,100.00	90.00	180.04	6,890.00	-8,948.06	1,033.99	9,004.73	0.00	0.00	0.00
15,200.00	90.00	180.04	6,890.00	-9,048.06	1,033.92	9,104.32	0.00	0.00	0.00
15,300.00	90.00	180.04	6,890.00	-9,148.06	1,033.85	9,203.91	0.00	0.00	0.00
15,400.00	90.00	180.04	6,890.00	-9,248.06	1,033.78	9,303.51	0.00	0.00	0.00
15,500.00	90.00	180.04	6,890.00	-9,348.06	1,033.71	9,403.10	0.00	0.00	0.00
15,600.00	90.00	180.04	6,890.00	-9,448.06	1,033.65	9,502.69	0.00	0.00	0.00
15,700.00	90.00	180.04	6,890.00	-9,548.06	1,033.58	9,602.28	0.00	0.00	0.00
15,800.00	90.00	180.04	6,890.00	-9,648.06	1,033.51	9,701.87	0.00	0.00	0.00
15,900.00	90.00	180.04	6,890.00	-9,748.06	1,033.44	9,801.46	0.00	0.00	0.00
16,000.00	90.00	180.04	6,890.00	-9,848.06	1,033.37	9,901.05	0.00	0.00	0.00
16,100.00	90.00	180.04	6,890.00	-9,948.06	1,033.30	10,000.64	0.00	0.00	0.00
16,200.00	90.00	180.04	6,890.00	-10,048.06	1,033.24	10,100.23	0.00	0.00	0.00
16,300.00	90.00	180.04	6,890.00	-10,148.06	1,033.17	10,199.82	0.00	0.00	0.00
16,400.00	90.00	180.04	6,890.00	-10,248.06	1,033.10	10,299.42	0.00	0.00	0.00
16,500.00	90.00	180.04	6,890.00	-10,348.06	1,033.03	10,399.01	0.00	0.00	0.00
16,600.00	90.00	180.04	6,890.00	-10,448.06	1,032.96	10,498.60	0.00	0.00	0.00
16,700.00	90.00	180.04	6,890.00	-10,548.06	1,032.90	10,598.19	0.00	0.00	0.00
16,800.00	90.00	180.04	6,890.00	-10,648.06	1,032.83	10,697.78	0.00	0.00	0.00
16,900.00	90.00	180.04	6,890.00	-10,748.06	1,032.76	10,797.37	0.00	0.00	0.00
17,000.00	90.00	180.04	6,890.00	-10,848.06	1,032.69	10,896.96	0.00	0.00	0.00
17,100.00	90.00	180.04	6,890.00	-10,948.06	1,032.62	10,996.55	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Vogler State D33-759
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4827.00ft
Project:	Mustang	**MD Reference:**	Well @ 4827.00ft
Site:	D Section 21	**North Reference:**	Grid
Well:	Vogler State D33-759	**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)
17,200.00	90.00	180.04	6,890.00	-11,048.06	1,032.55	11,096.14	0.00	0.00	0.00
17,300.00	90.00	180.04	6,890.00	-11,148.06	1,032.49	11,195.74	0.00	0.00	0.00
17,400.00	90.00	180.04	6,890.00	-11,248.06	1,032.42	11,295.33	0.00	0.00	0.00
17,500.00	90.00	180.04	6,890.00	-11,348.06	1,032.35	11,394.92	0.00	0.00	0.00
17,600.00	90.00	180.04	6,890.00	-11,448.06	1,032.28	11,494.51	0.00	0.00	0.00
17,618.14	90.00	180.04	6,890.00	-11,466.20	1,032.27	11,512.57	0.00	0.00	0.00
TD @ 17618.14' MD/6890.00' TVD									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Vogler State D33-759 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,319,509.93	3,261,995.15	40.2066479	-104.5619561
Vogler State D33-759 - plan hits target center - Point	0.00	0.01	6,365.14	-634.79	918.22	1,318,875.14	3,262,913.37	40.2048787	-104.5586929
Vogler State D33-759 - plan hits target center - Point	0.00	0.00	6,890.00	-1,263.92	1,039.24	1,318,246.01	3,263,034.39	40.2031482	-104.5582836
Vogler State D33-759 - plan hits target center - Point	0.00	0.00	6,890.00	-11,466.20	1,032.27	1,308,043.75	3,263,027.42	40.1751436	-104.5586963

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
624.00	624.00	Pierre			
759.00	759.00	Upper Pierre Aquifer Top			
1,626.00	1,626.00	Upper Pierre Aquifer Base			
3,898.35	3,847.00	Parkman			
4,140.38	4,080.00	Sussex			
5,127.22	5,030.00	Shannon			
6,291.69	6,151.00	Teepee Buttes			
6,871.85	6,677.00	Sharon Springs			
6,954.29	6,734.00	Top A Chalk			
6,955.84	6,735.00	Top A Marl			
6,966.81	6,742.00	Top B Chalk			
7,053.09	6,792.00	Top B Marl			
7,220.41	6,861.00	Top C Chalk			

Database:	EDMP	**Local Co-ordinate Reference:**	Well Vogler State D33-759
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4827.00ft
Project:	Mustang	**MD Reference:**	Well @ 4827.00ft
Site:	D Section 21	**North Reference:**	Grid
Well:	Vogler State D33-759	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,000.00	2,000.00	0.00	0.00	Build: 2°/100'
2,785.23	2,775.44	-60.81	87.97	Hold: 15.70° Inc, 124.66° Azm
6,514.14	6,365.14	-634.79	918.22	KOP: Build 9°/100' @ 6514.14' MD
7,415.85	6,890.00	-1,263.92	1,039.24	LP: 7415.85' MD, 90.00° Inc, 180.04° Azm
17,618.14	6,890.00	-11,466.20	1,032.27	TD @ 17618.14' MD/6890.00' TVD

Northern Region - DJ Basin

Mustang
D Section 21
Vogler State D33-759

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 D33-759
Project:	Mustang	**TVD Reference:**	Well @ 4827.00ft
Reference Site:	D Section 21	**MD Reference:**	Well @ 4827.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Vogler State D33-759	**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	17,617.91	Plan 1 (Wellbore #1)	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
D Section 21						
Casey Blue D 21-11 (PR) - Wellbore #1 - No Surveys	3,062.39	3,029.26	1,352.40	1,281.19	18.991	CC
Casey Blue D 21-11 (PR) - Wellbore #1 - No Surveys	3,500.00	3,450.55	1,357.57	1,276.30	16.704	ES
Casey Blue D 21-11 (PR) - Wellbore #1 - No Surveys	6,550.00	6,386.62	1,650.05	1,498.28	10.872	SF
Casey Blue D21-13 (PR) - Wellbore #1 - Gyro Surveys	333.70	293.71	622.81	621.00	342.957	CC
Casey Blue D21-13 (PR) - Wellbore #1 - Gyro Surveys	2,100.00	2,058.06	629.74	615.44	44.028	ES
Casey Blue D21-13 (PR) - Wellbore #1 - Gyro Surveys	4,600.00	4,482.96	912.07	880.23	28.651	SF
Casey Blue D21-14 (SI) - Wellbore #1 - Gyro Surveys	6,369.39	6,213.09	306.17	260.95	6.771	CC
Casey Blue D21-14 (SI) - Wellbore #1 - Gyro Surveys	6,400.00	6,242.10	306.30	260.86	6.741	ES
Casey Blue D21-14 (SI) - Wellbore #1 - Gyro Surveys	6,513.89	6,351.12	308.99	262.74	6.681	SF
Casey Blue D21-3J (PR) - Wellbore #1 - Gyro Surveys	100.00	76.44	579.23	578.97	2,232.748	CC
Casey Blue D21-3J (PR) - Wellbore #1 - Gyro Surveys	2,013.02	1,992.01	579.73	565.97	42.126	ES
Casey Blue D21-3J (PR) - Wellbore #1 - Gyro Surveys	3,100.00	3,057.37	724.28	703.07	34.161	SF
Guttersen 21-31 (SI) - Wellbore #1 - Gyro Surveys	260.53	226.53	4,195.65	4,194.33	3,180.656	CC
Guttersen 21-31 (SI) - Wellbore #1 - Gyro Surveys	2,200.00	2,158.81	4,200.73	4,185.75	280.325	ES
Guttersen 21-31 (SI) - Wellbore #1 - Gyro Surveys	6,850.00	6,623.90	4,492.55	4,444.12	92.776	SF
Guttersen 21-42 (SI) - Wellbore #1 - Gyro Surveys	6,544.63	6,369.87	3,902.53	3,856.06	83.974	CC
Guttersen 21-42 (SI) - Wellbore #1 - Gyro Surveys	6,550.00	6,375.29	3,902.55	3,856.04	83.901	ES
Guttersen 21-42 (SI) - Wellbore #1 - Gyro Surveys	6,950.00	6,723.83	3,999.85	3,950.46	80.988	SF
Guttersen 32-21 (PR) - Wellbore #1 - No Surveys	4,579.78	4,494.05	3,060.77	2,954.42	28.779	CC
Guttersen 32-21 (PR) - Wellbore #1 - No Surveys	5,600.00	5,476.23	3,073.19	2,943.12	23.627	ES
Guttersen 32-21 (PR) - Wellbore #1 - No Surveys	6,750.00	6,571.68	3,156.10	2,999.49	20.152	SF
Guttersen 33-21 (PR) - Wellbore #1 - Gyro Surveys	6,531.87	6,371.82	2,142.40	2,095.90	46.072	CC, ES
Guttersen 33-21 (PR) - Wellbore #1 - Gyro Surveys	6,800.00	6,620.83	2,187.87	2,139.39	45.124	SF
Guttersen 34-21 (PR) - Wellbore #1 - Gyro Surveys	6,763.43	6,545.40	1,412.59	1,364.75	29.525	CC, ES
Guttersen 34-21 (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,677.76	1,427.88	1,378.71	29.039	SF
Guttersen 41-21 (PR) - Wellbore #1 - Gyro Surveys	4,899.27	4,738.31	4,992.24	4,958.11	146.273	CC
Guttersen 41-21 (PR) - Wellbore #1 - Gyro Surveys	5,800.00	5,639.80	4,992.70	4,951.80	122.057	ES
Guttersen 41-21 (PR) - Wellbore #1 - Gyro Surveys	7,050.00	6,756.25	5,199.28	5,149.48	104.408	SF
Guttersen 43-21 (PR) - Wellbore #1 - Gyro Surveys	6,606.12	6,357.31	2,907.22	2,860.56	62.317	CC, ES
Guttersen 43-21 (PR) - Wellbore #1 - Gyro Surveys	7,000.00	6,799.84	2,969.55	2,919.69	59.564	SF
Guttersen D21-32D (SI) - Wellbore #1 - MWD Surveys	1,786.65	1,835.82	633.31	618.34	42.303	CC
Guttersen D21-32D (SI) - Wellbore #1 - MWD Surveys	1,800.00	1,846.94	633.35	618.24	41.935	ES
Guttersen D21-32D (SI) - Wellbore #1 - MWD Surveys	2,400.00	2,381.77	689.29	668.58	33.286	SF
Guttersen USX D21-17 (PR) - Wellbore #1 - No Surveys	5,144.61	5,021.82	4,078.64	3,959.48	34.227	CC
Guttersen USX D21-17 (PR) - Wellbore #1 - No Surveys	6,400.00	6,230.39	4,092.76	3,944.37	27.580	ES
Guttersen USX D21-17 (PR) - Wellbore #1 - No Surveys	6,850.00	6,635.81	4,181.28	4,022.94	26.408	SF
Guttersen USX D21-20D (PR) - Wellbore #1 - MWD Surv	0.00	0.00	713.67			

CC - Min centre to center distance or covergent 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 D33-759
Project:	Mustang	**TVD Reference:**	Well @ 4827.00ft
Reference Site:	D Section 21	**MD Reference:**	Well @ 4827.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Vogler State D33-759	**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)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 21						
Guttersen USX D21-20D (PR) - Wellbore #1 - MWD Surv	400.00	383.45	714.39	712.07	308.550	ES
Guttersen USX D21-20D (PR) - Wellbore #1 - MWD Surv	3,200.00	3,027.98	1,041.85	1,018.74	45.095	SF
Guttersen USX D21-21D (SI) - Wellbore #1 - MWD Surve	182.38	175.39	723.01	722.22	914.311	CC
Guttersen USX D21-21D (SI) - Wellbore #1 - MWD Surve	300.00	286.49	723.66	722.05	449.906	ES
Guttersen USX D21-21D (SI) - Wellbore #1 - MWD Surve	6,650.00	6,694.31	2,164.91	2,114.26	42.739	SF
Guttersen USX D21-24D (PR) - Wellbore #1 - MWD Surv	233.57	226.57	733.18	732.03	636.639	CC
Guttersen USX D21-24D (PR) - Wellbore #1 - MWD Surv	500.00	488.43	734.30	731.27	242.362	ES
Guttersen USX D21-24D (PR) - Wellbore #1 - MWD Surv	6,600.00	6,523.20	1,057.90	1,007.33	20.917	SF
Guttersen USX D21-25 (PR) - Wellbore #1 - MWD Surve	3,491.34	3,441.05	633.62	609.32	26.082	CC
Guttersen USX D21-25 (PR) - Wellbore #1 - MWD Surve	3,500.00	3,449.36	633.62	609.26	26.015	ES
Guttersen USX D21-25 (PR) - Wellbore #1 - MWD Surve	5,300.00	5,178.07	817.08	779.73	21.879	SF
Guttersen USX D21-27D (PR) - Wellbore #1 - MWD Surv	258.45	232.45	4,170.49	4,169.22	3,269.868	CC
Guttersen USX D21-27D (PR) - Wellbore #1 - MWD Surv	900.00	851.34	4,171.35	4,165.62	728.181	ES
Guttersen USX D21-27D (PR) - Wellbore #1 - MWD Surv	6,900.00	6,804.86	5,302.05	5,250.59	103.030	SF
Guttersen USX D21-28D (PR) - Wellbore #1 - MWD Surv	3,040.69	3,212.00	4,002.77	3,974.50	141.607	CC
Guttersen USX D21-28D (PR) - Wellbore #1 - MWD Surv	3,100.00	3,254.04	4,003.01	3,974.18	138.846	ES
Guttersen USX D21-28D (PR) - Wellbore #1 - MWD Surv	6,700.00	6,847.96	4,878.36	4,818.80	81.907	SF
Guttersen USX D21-33D (SI) - Wellbore #1 - MWD Surve	2,701.75	2,789.35	331.97	310.12	15.196	CC, ES
Guttersen USX D21-33D (SI) - Wellbore #1 - MWD Surve	2,800.00	2,866.58	338.05	315.00	14.670	SF
Guttersen USX D22-30D (PR) - Wellbore #1 - MWD Surv	100.00	72.07	4,191.08	4,190.83	10,000.000	CC
Guttersen USX D22-30D (PR) - Wellbore #1 - MWD Surv	800.00	754.85	4,192.01	4,187.12	857.871	ES
Guttersen USX D22-30D (PR) - Wellbore #1 - MWD Surv	7,050.00	7,011.63	5,958.11	5,904.81	111.775	SF
Gutterson 18-21 (SI) - Wellbore #1 - Gyro Surveys	2,038.29	2,039.05	2,989.90	2,975.87	213.034	CC, ES
Gutterson 18-21 (SI) - Wellbore #1 - Gyro Surveys	6,750.00	6,552.44	3,754.51	3,707.11	79.212	SF
HSR Guttersen B 5-21 (PR) - Wellbore #1 - Gyro Survey	385.21	359.23	2,248.14	2,245.90	1,007.141	CC
HSR Guttersen B 5-21 (PR) - Wellbore #1 - Gyro Survey	2,000.00	1,969.20	2,249.05	2,235.41	164.925	ES
HSR Guttersen B 5-21 (PR) - Wellbore #1 - Gyro Survey	6,700.00	6,537.13	3,211.17	3,164.23	68.413	SF
HSR Gutterson 4-21 (PR) - Wellbore #1 - Gyro Surveys	2,155.01	2,261.59	3,488.33	3,473.10	229.045	CC, ES
HSR Gutterson 4-21 (PR) - Wellbore #1 - Gyro Surveys	6,800.00	6,590.08	4,421.40	4,373.85	92.979	SF
HSR-Guttersen 3-21 (SI) - Wellbore #1 - Gyro Surveys	2,106.50	2,130.68	3,632.28	3,617.69	248.947	CC
HSR-Guttersen 3-21 (SI) - Wellbore #1 - Gyro Surveys	2,200.00	2,221.14	3,632.86	3,617.64	238.700	ES
HSR-Guttersen 3-21 (SI) - Wellbore #1 - Gyro Surveys	6,900.00	6,868.97	4,246.92	4,197.15	85.330	SF
HSR-Guttersen 6-21 (SI) - Wellbore #1 - Gyro Surveys	1,820.27	1,796.30	2,409.36	2,396.95	194.194	CC
HSR-Guttersen 6-21 (SI) - Wellbore #1 - Gyro Surveys	2,100.00	2,072.81	2,410.06	2,395.71	167.860	ES
HSR-Guttersen 6-21 (SI) - Wellbore #1 - Gyro Surveys	6,700.00	6,503.01	2,923.50	2,876.31	61.950	SF
Two E Ranch 1-21C (SI) - Wellbore #1 - Gyro Surveys	6,705.30	6,516.22	2,398.15	2,350.61	50.438	CC, ES
Two E Ranch 1-21C (SI) - Wellbore #1 - Gyro Surveys	7,050.00	6,772.45	2,449.35	2,399.40	49.040	SF
Vogler State D21-720 - Wellbore #1 - Plan 1	7,344.20	7,210.71	2,509.42	2,456.59	47.496	CC
Vogler State D21-720 - Wellbore #1 - Plan 1	7,350.00	7,206.49	2,509.43	2,456.58	47.479	ES
Vogler State D21-720 - Wellbore #1 - Plan 1	8,000.00	6,879.71	2,568.95	2,513.87	46.638	SF
Vogler State D21-731 - Wellbore #1 - Plan 1	3,880.93	3,515.30	1,591.66	1,566.31	62.785	CC
Vogler State D21-731 - Wellbore #1 - Plan 1	3,900.00	3,529.30	1,591.69	1,566.23	62.514	ES
Vogler State D21-731 - Wellbore #1 - Plan 1	7,900.00	6,759.90	1,780.59	1,725.15	32.120	SF
Vogler State D21-740 - Wellbore #1 - Plan 1	7,434.29	7,123.23	1,176.23	1,122.47	21.881	CC, ES
Vogler State D21-740 - Wellbore #1 - Plan 1	7,600.00	7,016.25	1,182.21	1,127.95	21.787	SF
Vogler State D21-750 - Wellbore #1 - Plan 1	7,204.38	7,278.14	571.78	519.30	10.897	CC, ES, SF
Vogler State D21-760 - Wellbore #1 - Plan 1	7,216.53	7,428.95	105.64	51.77	1.961	CC, ES, SF
Vogler State D21-770 - Wellbore #1 - Plan 1	2,302.64	2,292.86	150.94	135.02	9.479	CC, ES
Vogler State D21-770 - Wellbore #1 - Plan 1	2,500.00	2,480.77	156.02	138.85	9.086	SF
Vogler State D21-780 - Wellbore #1 - Plan 1	2,000.00	1,993.00	167.28	153.43	12.080	CC, ES
Vogler State D21-780 - Wellbore #1 - Plan 1	2,300.00	2,276.62	178.96	163.21	11.364	SF
Vogler State D21-790 - Wellbore #1 - Plan 1	7,563.33	6,789.17	3,143.94	3,090.72	59.068	CC, ES
Vogler State D21-790 - Wellbore #1 - Plan 1	8,500.00	6,586.45	3,265.97	3,208.87	57.198	SF

CC - Min centre to center distance or covergent 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 D33-759
Project:	Mustang	**TVD Reference:**	Well @ 4827.00ft
Reference Site:	D Section 21	**MD Reference:**	Well @ 4827.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Vogler State D33-759	**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)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 21						
Vogler State D33-711 - Wellbore #1 - Plan 1	7,218.56	6,924.36	3,071.39	3,019.70	59.419	CC
Vogler State D33-711 - Wellbore #1 - Plan 1	7,250.00	6,971.63	3,071.48	3,019.52	59.108	ES
Vogler State D33-711 - Wellbore #1 - Plan 1	17,618.00	17,482.25	3,251.51	3,057.40	16.750	SF
Vogler State D33-718 - Wellbore #1 - Plan 1	7,410.75	7,312.72	2,613.17	2,559.95	49.101	CC
Vogler State D33-718 - Wellbore #1 - Plan 1	17,600.00	17,482.05	2,621.27	2,427.47	13.526	ES
Vogler State D33-718 - Wellbore #1 - Plan 1	17,618.00	17,482.05	2,621.50	2,427.52	13.514	SF
Vogler State D33-728 - Wellbore #1 - Plan 1	3,109.24	2,750.36	1,729.40	1,709.49	86.862	CC, ES
Vogler State D33-728 - Wellbore #1 - Plan 1	17,618.00	17,663.97	1,961.51	1,767.11	10.090	SF
Vogler State D33-738 - Wellbore #1 - Plan 1	7,389.35	7,265.01	1,296.25	1,242.52	24.128	CC
Vogler State D33-738 - Wellbore #1 - Plan 1	17,618.00	17,481.14	1,304.61	1,109.58	6.689	ES, SF
Vogler State D33-752 - Wellbore #1 - Plan 1	7,413.04	7,342.67	641.16	587.70	11.994	CC
Vogler State D33-752 - Wellbore #1 - Plan 1	17,618.00	17,537.69	651.04	456.38	3.345	ES, SF
Vogler State D33-769 - Wellbore #1 - Plan 1	2,000.00	2,001.00	38.00	24.12	2.738	CC, ES
Vogler State D33-769 - Wellbore #1 - Plan 1	2,100.00	2,101.02	39.45	24.87	2.706	SF
Vogler State D33-779 - Wellbore #1 - Plan 1	2,000.00	1,999.00	75.00	61.13	5.408	CC, ES
Vogler State D33-779 - Wellbore #1 - Plan 1	2,100.00	2,098.25	76.91	62.36	5.286	SF

CC - Min centre to center distance or covergent 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 D33-759
Project:	Mustang	**TVD Reference:**	Well @ 4827.00ft
Reference Site:	D Section 21	**MD Reference:**	Well @ 4827.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Vogler State D33-759	**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)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 28						
O'SH D 28-7 (P&A) - Wellbore #1 - No Surveys	9,179.88	6,873.00	1,212.97	1,040.32	7.026	CC
O'SH D 28-7 (P&A) - Wellbore #1 - No Surveys	9,200.00	6,873.00	1,213.14	1,040.30	7.019	ES
O'SH D 28-7 (P&A) - Wellbore #1 - No Surveys	9,300.00	6,873.00	1,218.90	1,045.18	7.016	SF
Spike ST GWS D 28-12 (SI) - Wellbore #1 - Gyro Surve	10,568.55	6,864.24	1,513.49	1,445.83	22.369	CC, ES
Spike ST GWS D 28-12 (SI) - Wellbore #1 - Gyro Surve	10,600.00	6,864.53	1,513.82	1,446.07	22.344	SF
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	5,471.42	5,417.20	644.61	605.86	16.634	CC
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	5,500.00	5,444.45	644.66	605.72	16.556	ES
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	7,150.00	6,890.03	717.44	666.21	14.002	SF
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	2,639.84	2,621.25	1,487.97	1,468.47	76.309	CC
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	2,700.00	2,671.68	1,488.26	1,468.27	74.446	ES
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	7,350.00	6,973.29	2,180.97	2,129.55	42.411	SF
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	8,363.41	6,938.24	390.02	332.17	6.742	CC, ES
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	8,400.00	6,937.93	391.73	333.18	6.691	SF
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	9,685.76	6,934.84	506.53	441.63	7.805	CC, ES
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	9,700.00	6,934.70	506.73	441.67	7.789	SF
Guttersen State D28-24D (SI) - Wellbore #1 - MWD Surv	11,247.74	6,989.06	500.21	422.99	6.477	CC, ES
Guttersen State D28-24D (SI) - Wellbore #1 - MWD Surv	11,300.00	6,990.57	502.93	424.64	6.423	SF
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	7,093.08	6,849.55	464.96	412.81	8.917	CC, ES
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	7,100.00	6,852.77	465.00	412.84	8.914	SF
Guttersen State D28-79HN - Wellbore #1 - Actual	7,700.00	11,087.06	1,994.42	1,882.46	17.815	SF
Guttersen State D28-79HN - Wellbore #1 - Actual	11,298.22	7,565.88	1,811.69	1,734.10	23.350	CC, ES
HSR Guttersen State 10-28 (SI) - Wellbore #1 - Gyro Su	10,463.94	6,877.20	951.50	884.59	14.221	CC, ES
HSR Guttersen State 10-28 (SI) - Wellbore #1 - Gyro Su	10,600.00	6,873.89	961.17	892.81	14.059	SF
HSR Guttersen State 15-28 (SI) - Wellbore #1 - Gyro Su	12,096.25	6,837.14	1,555.44	1,476.91	19.807	CC
HSR Guttersen State 15-28 (SI) - Wellbore #1 - Gyro Su	12,100.00	6,837.40	1,555.45	1,476.88	19.797	ES
HSR Guttersen State 15-28 (SI) - Wellbore #1 - Gyro Su	12,300.00	6,851.87	1,568.64	1,488.18	19.496	SF
HSR Guttersen State 7-28 (PR) - Wellbore #1 - Gyro Sur	9,121.48	6,813.86	1,006.44	947.56	17.092	CC, ES
HSR Guttersen State 7-28 (PR) - Wellbore #1 - Gyro Sur	9,300.00	6,821.68	1,022.12	961.64	16.901	SF
O'SH D 28-1 (SI) - Wellbore #1 - Gyro Surveys	8,204.63	6,913.22	2,202.54	2,148.40	40.678	CC, ES
O'SH D 28-1 (SI) - Wellbore #1 - Gyro Surveys	8,700.00	6,915.58	2,257.56	2,200.42	39.504	SF
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	7,839.83	6,881.29	1,219.29	1,167.13	23.375	CC, ES
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	8,000.00	6,881.17	1,229.77	1,176.62	23.142	SF
O'SH D 28-8 (SI) - Wellbore #1 - Gyro Surveys	9,236.94	6,845.72	2,566.84	2,507.57	43.303	CC, ES
O'SH D 28-8 (SI) - Wellbore #1 - Gyro Surveys	9,900.00	6,872.49	2,650.96	2,587.08	41.496	SF
Spike ST GWS D 28-03 (PR) - Wellbore #1 - Gyro Surve	7,707.65	6,854.14	23.62	-44.13	0.349	Level 1, CC, ES, SF
Spike ST GWS D 28-4 (SI) - Wellbore #1 - Gyro Surveys	7,679.46	6,949.72	1,401.50	1,349.37	26.883	CC, ES
Spike ST GWS D 28-4 (SI) - Wellbore #1 - Gyro Surveys	7,700.00	6,949.82	1,401.65	1,349.48	26.868	SF
Spike State D 28-13 (SI) - Wellbore #1 - Gyro Surveys	12,011.05	6,875.69	1,423.80	1,345.98	18.296	CC, ES
Spike State D 28-13 (SI) - Wellbore #1 - Gyro Surveys	12,100.00	6,876.00	1,426.58	1,348.58	18.290	SF
Spike State D28-05 (PR) - Wellbore #1 - Gyro Surveys	9,024.75	6,865.45	1,534.53	1,476.46	26.429	CC, ES
Spike State D28-05 (PR) - Wellbore #1 - Gyro Surveys	9,100.00	6,866.10	1,536.37	1,478.13	26.378	SF
Spike State D28-06 (SI) - Wellbore #1 - Gyro Surveys	9,052.06	6,858.21	156.93	98.59	2.690	CC, ES, SF
Spike State D28-11 (SI) - Wellbore #1 - Gyro Surveys	10,360.71	6,865.48	79.26	13.12	1.198	Level 2, CC, ES, SF
Spike State GWS D 28-14 (P&A) - Wellbore #1 - Gyro Su	12,064.05	6,867.54	110.88	32.67	1.418	Level 3, CC, ES, SF

CC - Min centre to center distance or covergent 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 D33-759
Project:	Mustang	**TVD Reference:**	Well @ 4827.00ft
Reference Site:	D Section 21	**MD Reference:**	Well @ 4827.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Vogler State D33-759	**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

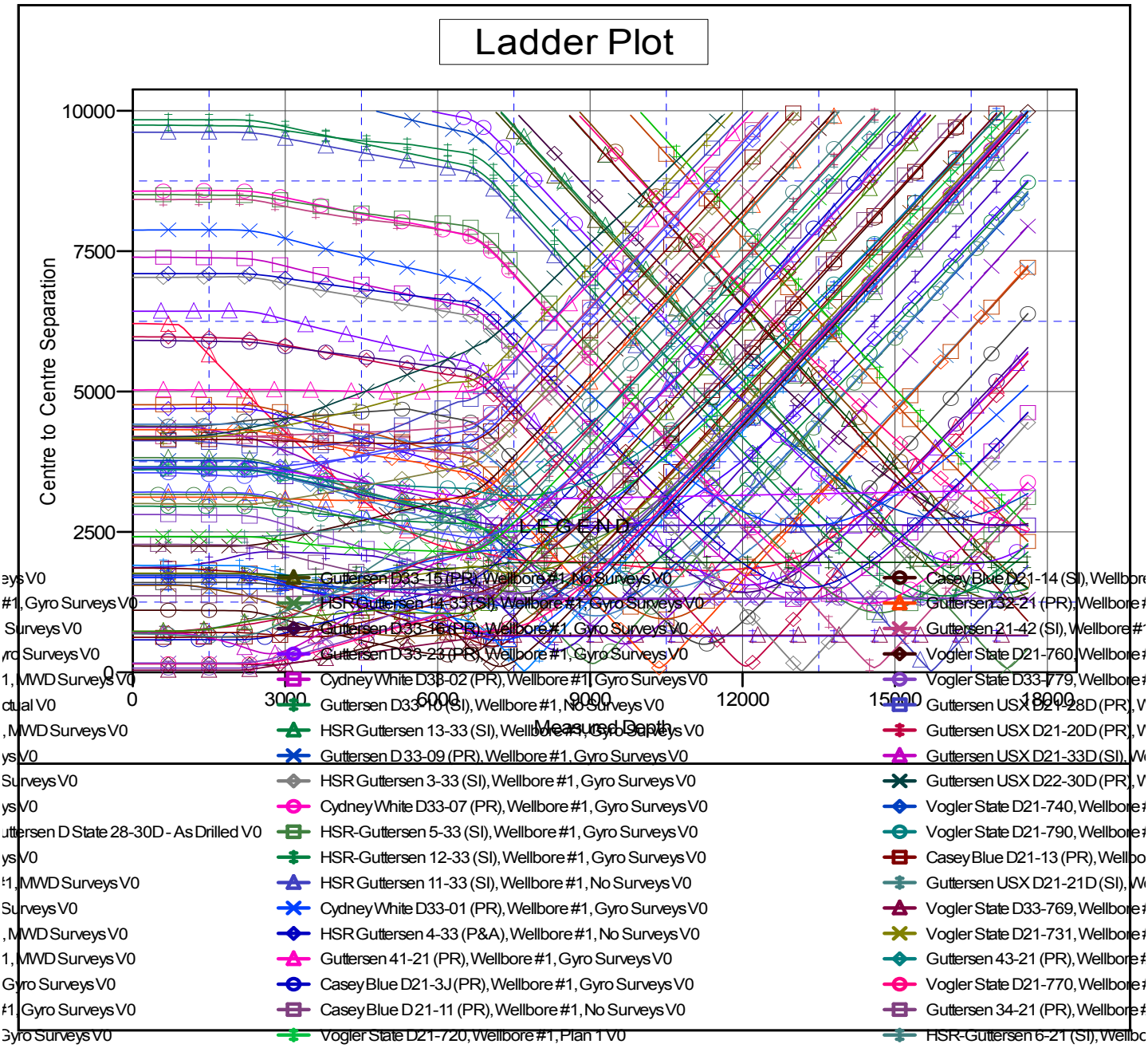
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 33						
Cydney White D33-01 (PR) - Wellbore #1 - Gyro Surveys	13,218.81	6,926.64	2,596.68	2,509.89	29.921	CC, ES
Cydney White D33-01 (PR) - Wellbore #1 - Gyro Surveys	13,700.00	6,930.87	2,640.88	2,550.17	29.112	SF
Cydney White D33-02 (PR) - Wellbore #1 - Gyro Surveys	13,174.15	6,887.08	1,286.76	1,200.29	14.881	CC
Cydney White D33-02 (PR) - Wellbore #1 - Gyro Surveys	13,200.00	6,887.30	1,287.02	1,200.23	14.830	ES
Cydney White D33-02 (PR) - Wellbore #1 - Gyro Surveys	13,300.00	6,888.17	1,292.90	1,205.09	14.723	SF
Cydney White D33-07 (PR) - Wellbore #1 - Gyro Surveys	14,464.20	6,907.70	1,223.02	1,126.65	12.691	CC, ES
Cydney White D33-07 (PR) - Wellbore #1 - Gyro Surveys	14,600.00	6,906.68	1,230.53	1,132.75	12.584	SF
Guttersen D 33-09 (PR) - Wellbore #1 - Gyro Surveys	15,987.18	6,968.23	2,735.67	2,627.37	25.259	CC
Guttersen D 33-09 (PR) - Wellbore #1 - Gyro Surveys	16,000.00	6,968.22	2,735.70	2,627.27	25.229	ES
Guttersen D 33-09 (PR) - Wellbore #1 - Gyro Surveys	16,400.00	6,967.79	2,766.65	2,654.92	24.763	SF
Guttersen D 33-16 (PR) - Wellbore #1 - Gyro Surveys	17,166.84	6,922.28	2,609.75	2,509.18	25.951	CC
Guttersen D 33-16 (PR) - Wellbore #1 - Gyro Surveys	17,200.00	6,921.98	2,609.96	2,509.05	25.864	ES
Guttersen D 33-16 (PR) - Wellbore #1 - Gyro Surveys	17,600.00	6,918.29	2,645.45	2,541.47	25.442	SF
Guttersen D 33-23 (PR) - Wellbore #1 - Gyro Surveys	16,452.98	6,913.69	1,931.86	1,820.09	17.284	CC, ES
Guttersen D 33-23 (PR) - Wellbore #1 - Gyro Surveys	16,700.00	6,912.38	1,947.59	1,833.62	17.088	SF
Guttersen D33-10 (SI) - Wellbore #1 - No Surveys	15,717.73	6,894.00	1,276.85	1,056.84	5.804	CC, ES
Guttersen D33-10 (SI) - Wellbore #1 - No Surveys	15,800.00	6,894.00	1,279.49	1,058.55	5.791	SF
Guttersen D33-15 (PR) - Wellbore #1 - No Surveys	17,043.60	6,899.00	1,294.69	1,064.16	5.616	CC, ES
Guttersen D33-15 (PR) - Wellbore #1 - No Surveys	17,100.00	6,899.00	1,295.92	1,064.72	5.605	SF
HSR Guttersen 11-33 (SI) - Wellbore #1 - No Surveys	15,717.88	6,888.00	22.51	-197.38	0.102	Level 1, CC, ES, SF
HSR Guttersen 13-33 (SI) - Wellbore #1 - Gyro Surveys	17,129.85	6,926.68	1,418.08	1,300.84	12.096	CC, ES, SF
HSR Guttersen 14-33 (SI) - Wellbore #1 - Gyro Surveys	17,209.45	6,906.92	71.50	-46.07	0.608	Level 1, CC, ES, SF
HSR Guttersen 3-33 (SI) - Wellbore #1 - Gyro Surveys	13,163.19	6,884.37	21.76	-64.72	0.252	Level 1, CC, ES, SF
HSR Guttersen 4-33 (P&A) - Wellbore #1 - No Surveys	13,239.81	6,903.00	1,504.24	1,303.10	7.479	CC, ES, SF
HSR-Guttersen 12-33 (SI) - Wellbore #1 - Gyro Surveys	15,962.12	6,929.39	1,361.37	1,253.29	12.596	CC, ES
HSR-Guttersen 12-33 (SI) - Wellbore #1 - Gyro Surveys	16,000.00	6,929.40	1,361.90	1,253.74	12.592	SF
HSR-Guttersen 5-33 (SI) - Wellbore #1 - Gyro Surveys	14,689.59	6,895.96	1,061.30	963.23	10.822	CC, ES
HSR-Guttersen 5-33 (SI) - Wellbore #1 - Gyro Surveys	14,700.00	6,895.89	1,061.35	963.27	10.822	SF
HSR-Guttersen 6-33 (SI) - Wellbore #1 - Gyro Surveys	14,595.41	6,882.96	82.49	-14.52	0.850	Level 1, CC
HSR-Guttersen 6-33 (SI) - Wellbore #1 - Gyro Surveys	14,600.00	6,883.01	82.62	-14.71	0.849	Level 1, ES, SF
Y Section 04						
HSR-Guttersen 01-04 - Original Drilling - Original Drilling	17,618.00	6,984.84	2,504.22	2,389.97	21.918	CC, ES, SF
HSR-Guttersen 02-04 - Original Drilling - Original Drilling	17,618.00	6,919.30	1,505.42	1,401.26	14.453	CC, ES, SF
HSR-Guttersen 03-04 - Original Drilling - Original Drilling	17,618.00	6,946.44	913.12	849.95	14.453	CC, ES, SF
HSR-Guttersen 05-04 - Original Drilling - Original Drilling	17,618.00	7,024.04	2,600.63	2,516.40	30.877	CC, ES, SF
HSR-Guttersen 07-04 - Original Drilling - Original Drilling	17,618.00	6,935.35	2,332.28	2,259.15	31.894	CC, ES, SF
Melvin Y04-04 - Original Drilling - Original Drilling - As Dr	17,618.00	7,011.84	1,482.53	1,384.89	15.184	CC, ES, SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Vogler State D33-759
Project:	Mustang	**TVD Reference:**	Well @ 4827.00ft
Reference Site:	D Section 21	**MD Reference:**	Well @ 4827.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Vogler State D33-759	**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 Well @ 4827.00ft	Coordinates are relative to: Vogler State D33-759
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.5000000	Grid Convergence at Surface is: 0.61°



Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Vogler State D33-759
Project:	Mustang	**TVD Reference:**	Well @ 4827.00ft
Reference Site:	D Section 21	**MD Reference:**	Well @ 4827.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Vogler State D33-759	**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 Well @ 4827.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Vogler State D33-759
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.61°