

Project: Mustang
Site: D Section 21
Well: Vogler State D21-780
Wellbore: Wellbore #1
Design: Plan 1

Northern Region - DJ Basin

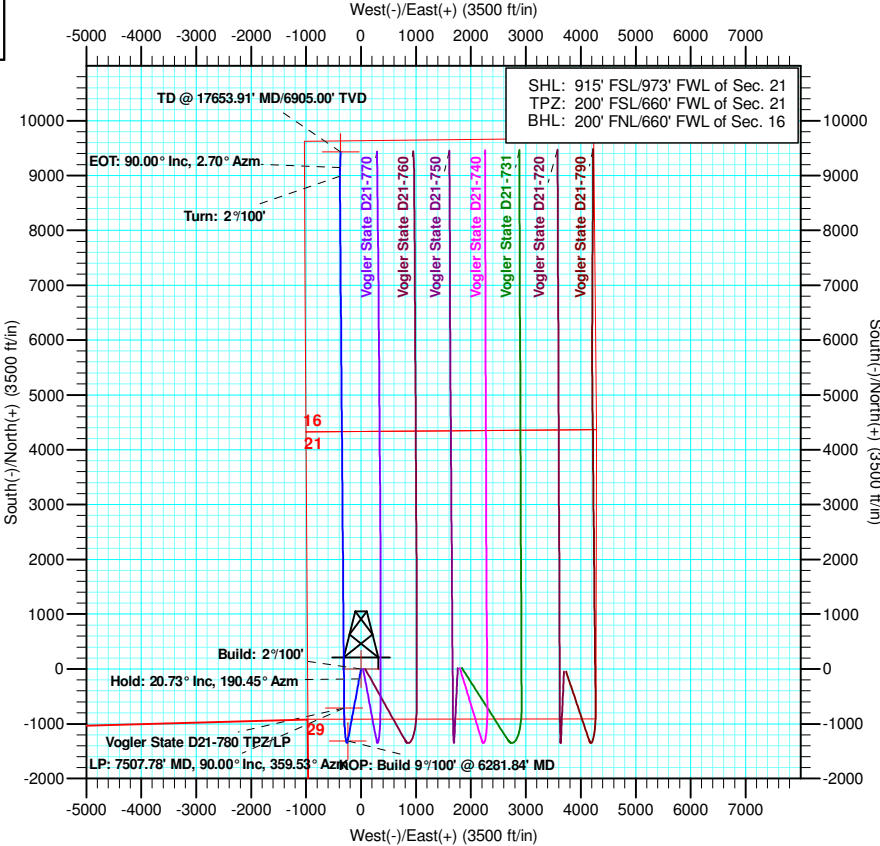
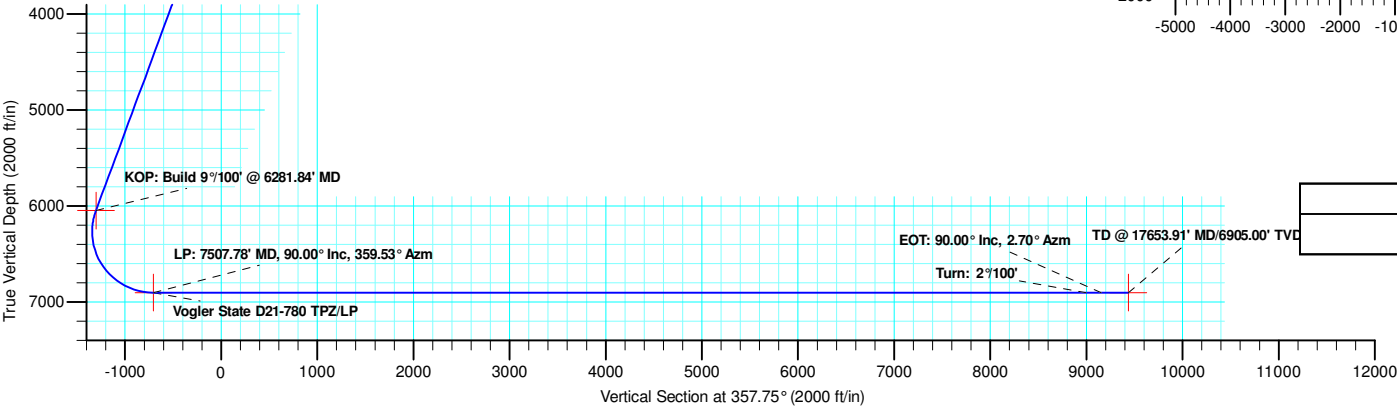
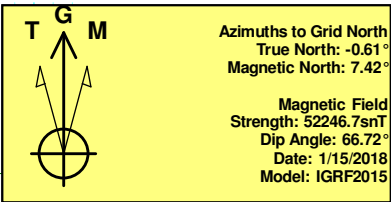
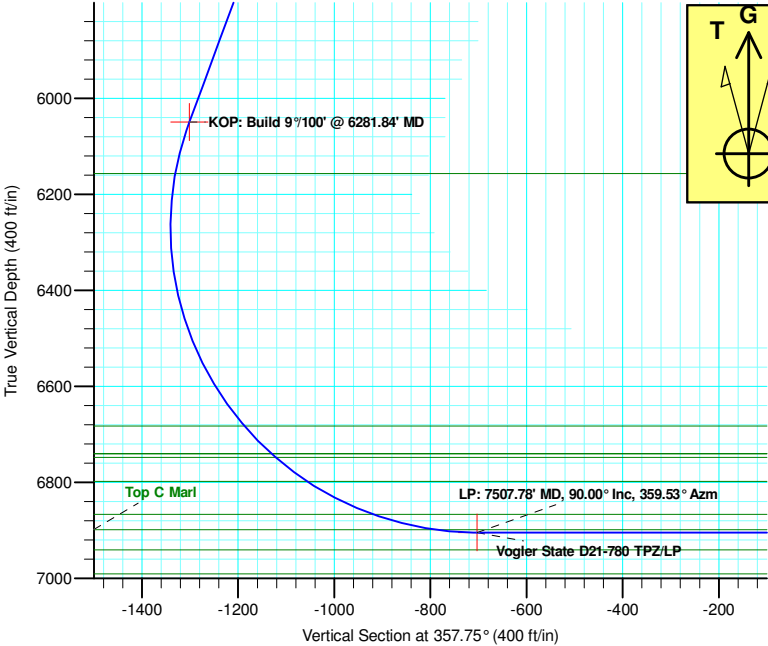
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
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	3036.30	20.73	190.45	3013.85	-182.32	-33.62	2.00	190.45	-180.86
4	6281.84	20.73	190.45	6049.35	-1311.87	-241.94	0.00	0.00	-1301.37
5	7507.78	90.00	359.53	6905.00	-715.44	-308.08	9.00	168.35	-702.80
6	17211.32	90.00	359.53	6905.00	8987.78	-386.85	0.00	0.00	8996.04
7	17369.67	90.00	2.70	6905.00	9146.08	-383.76	2.00	90.00	9154.09
8	17653.91	90.00	2.70	6905.00	9430.00	-370.36	0.00	0.00	9437.27

WELL DETAILS: Vogler State D21-780

+N/-S	+E/-W	Northing	Ground Level: Easting	4790.00	Latitude	Longitude
0.00	0.00	1319359.84	3261921.20		40.2062380	-104.5622266



Plan: Plan 1 (Vogler State D21-780/Wellbore #1)

Created By: Keith Noack Date: 13:53, August 08 2018

Northern Region - DJ Basin

Mustang

D Section 21

Vogler State D21-780

Wellbore #1

Plan: Plan 1

Standard Planning Report

08 August, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D21-780
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4820.00ft
Project:	Mustang	MD Reference:	Well @ 4820.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D21-780	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 D21-780				
Well Position	+N/-S	-3,682.05 ft	Northing:	1,319,359.84 usft	Latitude:	40.2062380
	+E/-W	307.73 ft	Easting:	3,261,921.20 usft	Longitude:	-104.5622266
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,790.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/15/2018	8.03	66.72	52,246.70606936

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	357.75

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	
3,036.30	20.73	190.45	3,013.85	-182.32	-33.62	2.00	2.00	0.00	190.45	
6,281.84	20.73	190.45	6,049.35	-1,311.87	-241.94	0.00	0.00	0.00	0.00	
7,507.78	90.00	359.53	6,905.00	-715.44	-308.08	9.00	5.65	13.79	168.35	Vogler State D21-780
17,211.32	90.00	359.53	6,905.00	8,987.78	-386.85	0.00	0.00	0.00	0.00	Vogler State D21-780
17,369.67	90.00	2.70	6,905.00	9,146.08	-383.76	2.00	0.00	2.00	90.00	Vogler State D21-780
17,653.91	90.00	2.70	6,905.00	9,430.00	-370.36	0.00	0.00	0.00	0.00	Vogler State D21-780

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4820.00ft
Project:	Mustang	MD Reference:	Well @ 4820.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D21-780	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
630.00	0.00	0.00	630.00	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
765.00	0.00	0.00	765.00	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
1,632.00	0.00	0.00	1,632.00	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	190.45	2,099.98	-1.72	-0.32	-1.70	2.00	2.00	0.00
2,200.00	4.00	190.45	2,199.84	-6.86	-1.27	-6.81	2.00	2.00	0.00
2,300.00	6.00	190.45	2,299.45	-15.43	-2.85	-15.31	2.00	2.00	0.00
2,400.00	8.00	190.45	2,398.70	-27.42	-5.06	-27.20	2.00	2.00	0.00
2,500.00	10.00	190.45	2,497.47	-42.80	-7.89	-42.46	2.00	2.00	0.00
2,600.00	12.00	190.45	2,595.62	-61.56	-11.35	-61.07	2.00	2.00	0.00
2,700.00	14.00	190.45	2,693.06	-83.69	-15.43	-83.02	2.00	2.00	0.00
2,800.00	16.00	190.45	2,789.64	-109.14	-20.13	-108.26	2.00	2.00	0.00
2,900.00	18.00	190.45	2,885.27	-137.89	-25.43	-136.78	2.00	2.00	0.00
3,000.00	20.00	190.45	2,979.82	-169.90	-31.33	-168.54	2.00	2.00	0.00
3,036.30	20.73	190.45	3,013.85	-182.32	-33.62	-180.86	2.00	2.00	0.00
Hold: 20.73° Inc, 190.45° Azm									
3,100.00	20.73	190.45	3,073.42	-204.49	-37.71	-202.86	0.00	0.00	0.00
3,200.00	20.73	190.45	3,166.95	-239.30	-44.13	-237.38	0.00	0.00	0.00
3,300.00	20.73	190.45	3,260.48	-274.10	-50.55	-271.91	0.00	0.00	0.00
3,400.00	20.73	190.45	3,354.01	-308.90	-56.97	-306.43	0.00	0.00	0.00
3,500.00	20.73	190.45	3,447.54	-343.71	-63.39	-340.95	0.00	0.00	0.00
3,600.00	20.73	190.45	3,541.07	-378.51	-69.81	-375.48	0.00	0.00	0.00
3,700.00	20.73	190.45	3,634.59	-413.31	-76.22	-410.00	0.00	0.00	0.00
3,800.00	20.73	190.45	3,728.12	-448.12	-82.64	-444.53	0.00	0.00	0.00
3,900.00	20.73	190.45	3,821.65	-482.92	-89.06	-479.05	0.00	0.00	0.00
3,933.52	20.73	190.45	3,853.00	-494.58	-91.21	-490.62	0.00	0.00	0.00
Parkman									
4,000.00	20.73	190.45	3,915.18	-517.72	-95.48	-513.58	0.00	0.00	0.00
4,100.00	20.73	190.45	4,008.71	-552.52	-101.90	-548.10	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4820.00ft
Project:	Mustang	MD Reference:	Well @ 4820.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D21-780	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)
4,182.64	20.73	190.45	4,086.00	-581.29	-107.20	-576.63	0.00	0.00	0.00
Sussex									
4,200.00	20.73	190.45	4,102.24	-587.33	-108.32	-582.62	0.00	0.00	0.00
4,300.00	20.73	190.45	4,195.76	-622.13	-114.73	-617.15	0.00	0.00	0.00
4,400.00	20.73	190.45	4,289.29	-656.93	-121.15	-651.67	0.00	0.00	0.00
4,500.00	20.73	190.45	4,382.82	-691.74	-127.57	-686.20	0.00	0.00	0.00
4,600.00	20.73	190.45	4,476.35	-726.54	-133.99	-720.72	0.00	0.00	0.00
4,700.00	20.73	190.45	4,569.88	-761.34	-140.41	-755.25	0.00	0.00	0.00
4,800.00	20.73	190.45	4,663.41	-796.15	-146.83	-789.77	0.00	0.00	0.00
4,900.00	20.73	190.45	4,756.93	-830.95	-153.25	-824.30	0.00	0.00	0.00
5,000.00	20.73	190.45	4,850.46	-865.75	-159.66	-858.82	0.00	0.00	0.00
5,100.00	20.73	190.45	4,943.99	-900.56	-166.08	-893.34	0.00	0.00	0.00
5,198.38	20.73	190.45	5,036.00	-934.79	-172.40	-927.31	0.00	0.00	0.00
Shannon									
5,200.00	20.73	190.45	5,037.52	-935.36	-172.50	-927.87	0.00	0.00	0.00
5,300.00	20.73	190.45	5,131.05	-970.16	-178.92	-962.39	0.00	0.00	0.00
5,400.00	20.73	190.45	5,224.58	-1,004.96	-185.34	-996.92	0.00	0.00	0.00
5,500.00	20.73	190.45	5,318.10	-1,039.77	-191.76	-1,031.44	0.00	0.00	0.00
5,600.00	20.73	190.45	5,411.63	-1,074.57	-198.18	-1,065.97	0.00	0.00	0.00
5,700.00	20.73	190.45	5,505.16	-1,109.37	-204.59	-1,100.49	0.00	0.00	0.00
5,800.00	20.73	190.45	5,598.69	-1,144.18	-211.01	-1,135.01	0.00	0.00	0.00
5,900.00	20.73	190.45	5,692.22	-1,178.98	-217.43	-1,169.54	0.00	0.00	0.00
6,000.00	20.73	190.45	5,785.75	-1,213.78	-223.85	-1,204.06	0.00	0.00	0.00
6,100.00	20.73	190.45	5,879.27	-1,248.59	-230.27	-1,238.59	0.00	0.00	0.00
6,200.00	20.73	190.45	5,972.80	-1,283.39	-236.69	-1,273.11	0.00	0.00	0.00
6,281.84	20.73	190.45	6,049.35	-1,311.87	-241.94	-1,301.37	0.00	0.00	0.00
KOP: Build 9°/100' @ 6281.84' MD									
6,300.00	19.13	191.46	6,066.42	-1,317.95	-243.11	-1,307.39	9.00	-8.80	5.55
6,350.00	14.77	195.30	6,114.24	-1,332.13	-246.42	-1,321.43	9.00	-8.72	7.70
6,393.88	11.03	201.10	6,157.00	-1,341.45	-249.41	-1,330.62	9.00	-8.52	13.20
Teepee Buttes									
6,400.00	10.52	202.22	6,163.02	-1,342.51	-249.83	-1,331.67	9.00	-8.32	18.40
6,450.00	6.62	217.67	6,212.45	-1,349.02	-253.32	-1,338.04	9.00	-7.81	30.90
6,500.00	4.16	259.83	6,262.25	-1,351.62	-256.87	-1,340.50	9.00	-4.92	84.31
6,550.00	5.59	312.44	6,312.09	-1,350.30	-260.45	-1,339.04	9.00	2.86	105.22
6,600.00	9.25	333.44	6,361.67	-1,345.06	-264.05	-1,333.66	9.00	7.33	41.99
6,650.00	13.43	342.07	6,410.69	-1,335.94	-267.63	-1,324.40	9.00	8.36	17.28
6,700.00	17.76	346.61	6,458.84	-1,322.99	-271.19	-1,311.32	9.00	8.67	9.08
6,750.00	22.16	349.40	6,505.82	-1,306.29	-274.69	-1,294.50	9.00	8.80	5.58
6,800.00	26.59	351.31	6,551.35	-1,285.94	-278.12	-1,274.04	9.00	8.86	3.81
6,850.00	31.04	352.70	6,595.15	-1,262.08	-281.45	-1,250.06	9.00	8.90	2.78
6,900.00	35.51	353.77	6,636.94	-1,234.84	-284.66	-1,222.72	9.00	8.92	2.15
6,950.00	39.98	354.63	6,676.47	-1,204.40	-287.74	-1,192.18	9.00	8.94	1.72
6,958.57	40.74	354.76	6,683.00	-1,198.88	-288.25	-1,186.64	9.00	8.95	1.53
Sharon Springs									
7,000.00	44.45	355.35	6,713.49	-1,170.94	-290.67	-1,158.64	9.00	8.95	1.41
7,038.28	47.88	355.82	6,740.00	-1,143.42	-292.79	-1,131.05	9.00	8.96	1.24
Top A Chalk									
7,039.77	48.01	355.84	6,741.00	-1,142.32	-292.87	-1,129.94	9.00	8.96	1.17
Top A Marl									
7,050.00	48.93	355.96	6,747.78	-1,134.68	-293.42	-1,122.29	9.00	8.96	1.15
7,050.33	48.96	355.96	6,748.00	-1,134.43	-293.44	-1,122.04	9.00	8.96	1.13
Top B Chalk									

Noble Energy, Inc.
Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4820.00ft
Project:	Mustang	MD Reference:	Well @ 4820.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D21-780	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	53.41	356.49	6,779.13	-1,095.82	-295.98	-1,083.36	9.00	8.96	1.06
7,132.81	56.35	356.80	6,798.00	-1,069.03	-297.55	-1,056.53	9.00	8.97	0.96
Top B Marl									
7,150.00	57.89	356.96	6,807.33	-1,054.62	-298.33	-1,042.10	9.00	8.97	0.91
7,200.00	62.38	357.39	6,832.22	-1,011.32	-300.47	-998.75	9.00	8.97	0.86
7,250.00	66.86	357.78	6,853.65	-966.20	-302.37	-953.59	9.00	8.97	0.79
7,286.42	70.13	358.05	6,867.00	-932.34	-303.60	-919.71	9.00	8.97	0.74
Top C Chalk									
7,300.00	71.35	358.15	6,871.48	-919.53	-304.03	-906.89	9.00	8.97	0.72
7,350.00	75.84	358.50	6,885.60	-871.60	-305.43	-858.94	9.00	8.97	0.70
7,400.00	80.32	358.84	6,895.92	-822.70	-306.56	-810.04	9.00	8.98	0.67
7,420.20	82.14	358.97	6,899.00	-802.75	-306.95	-790.08	9.00	8.98	0.66
Top C Marl									
7,450.00	84.81	359.16	6,902.39	-773.14	-307.43	-760.48	9.00	8.98	0.65
7,500.00	89.30	359.48	6,904.95	-723.22	-308.02	-710.58	9.00	8.98	0.65
7,507.78	90.00	359.53	6,905.00	-715.44	-308.08	-702.80	9.00	8.98	0.64
LP: 7507.78' MD, 90.00° Inc, 359.53° Azm									
7,600.00	90.00	359.53	6,905.00	-623.23	-308.83	-610.63	0.00	0.00	0.00
7,700.00	90.00	359.53	6,905.00	-523.23	-309.64	-510.68	0.00	0.00	0.00
7,800.00	90.00	359.53	6,905.00	-423.23	-310.46	-410.73	0.00	0.00	0.00
7,900.00	90.00	359.53	6,905.00	-323.24	-311.27	-310.77	0.00	0.00	0.00
8,000.00	90.00	359.53	6,905.00	-223.24	-312.08	-210.82	0.00	0.00	0.00
8,100.00	90.00	359.53	6,905.00	-123.24	-312.89	-110.87	0.00	0.00	0.00
8,200.00	90.00	359.53	6,905.00	-23.25	-313.70	-10.92	0.00	0.00	0.00
8,300.00	90.00	359.53	6,905.00	76.75	-314.52	89.03	0.00	0.00	0.00
8,400.00	90.00	359.53	6,905.00	176.75	-315.33	188.98	0.00	0.00	0.00
8,500.00	90.00	359.53	6,905.00	276.74	-316.14	288.94	0.00	0.00	0.00
8,600.00	90.00	359.53	6,905.00	376.74	-316.95	388.89	0.00	0.00	0.00
8,700.00	90.00	359.53	6,905.00	476.74	-317.76	488.84	0.00	0.00	0.00
8,800.00	90.00	359.53	6,905.00	576.73	-318.57	588.79	0.00	0.00	0.00
8,900.00	90.00	359.53	6,905.00	676.73	-319.39	688.74	0.00	0.00	0.00
9,000.00	90.00	359.53	6,905.00	776.73	-320.20	788.69	0.00	0.00	0.00
9,100.00	90.00	359.53	6,905.00	876.72	-321.01	888.64	0.00	0.00	0.00
9,200.00	90.00	359.53	6,905.00	976.72	-321.82	988.60	0.00	0.00	0.00
9,300.00	90.00	359.53	6,905.00	1,076.72	-322.63	1,088.55	0.00	0.00	0.00
9,400.00	90.00	359.53	6,905.00	1,176.71	-323.44	1,188.50	0.00	0.00	0.00
9,500.00	90.00	359.53	6,905.00	1,276.71	-324.26	1,288.45	0.00	0.00	0.00
9,600.00	90.00	359.53	6,905.00	1,376.71	-325.07	1,388.40	0.00	0.00	0.00
9,700.00	90.00	359.53	6,905.00	1,476.70	-325.88	1,488.35	0.00	0.00	0.00
9,800.00	90.00	359.53	6,905.00	1,576.70	-326.69	1,588.31	0.00	0.00	0.00
9,900.00	90.00	359.53	6,905.00	1,676.70	-327.50	1,688.26	0.00	0.00	0.00
10,000.00	90.00	359.53	6,905.00	1,776.69	-328.31	1,788.21	0.00	0.00	0.00
10,100.00	90.00	359.53	6,905.00	1,876.69	-329.13	1,888.16	0.00	0.00	0.00
10,200.00	90.00	359.53	6,905.00	1,976.69	-329.94	1,988.11	0.00	0.00	0.00
10,300.00	90.00	359.53	6,905.00	2,076.68	-330.75	2,088.06	0.00	0.00	0.00
10,400.00	90.00	359.53	6,905.00	2,176.68	-331.56	2,188.01	0.00	0.00	0.00
10,500.00	90.00	359.53	6,905.00	2,276.68	-332.37	2,287.97	0.00	0.00	0.00
10,600.00	90.00	359.53	6,905.00	2,376.67	-333.18	2,387.92	0.00	0.00	0.00
10,700.00	90.00	359.53	6,905.00	2,476.67	-334.00	2,487.87	0.00	0.00	0.00
10,800.00	90.00	359.53	6,905.00	2,576.67	-334.81	2,587.82	0.00	0.00	0.00
10,900.00	90.00	359.53	6,905.00	2,676.66	-335.62	2,687.77	0.00	0.00	0.00
11,000.00	90.00	359.53	6,905.00	2,776.66	-336.43	2,787.72	0.00	0.00	0.00
11,100.00	90.00	359.53	6,905.00	2,876.66	-337.24	2,887.68	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D21-780
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4820.00ft
Project:	Mustang	MD Reference:	Well @ 4820.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D21-780	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)
11,200.00	90.00	359.53	6,905.00	2,976.65	-338.05	2,987.63	0.00	0.00	0.00
11,300.00	90.00	359.53	6,905.00	3,076.65	-338.87	3,087.58	0.00	0.00	0.00
11,400.00	90.00	359.53	6,905.00	3,176.65	-339.68	3,187.53	0.00	0.00	0.00
11,500.00	90.00	359.53	6,905.00	3,276.64	-340.49	3,287.48	0.00	0.00	0.00
11,600.00	90.00	359.53	6,905.00	3,376.64	-341.30	3,387.43	0.00	0.00	0.00
11,700.00	90.00	359.53	6,905.00	3,476.64	-342.11	3,487.38	0.00	0.00	0.00
11,800.00	90.00	359.53	6,905.00	3,576.63	-342.92	3,587.34	0.00	0.00	0.00
11,900.00	90.00	359.53	6,905.00	3,676.63	-343.74	3,687.29	0.00	0.00	0.00
12,000.00	90.00	359.53	6,905.00	3,776.63	-344.55	3,787.24	0.00	0.00	0.00
12,100.00	90.00	359.53	6,905.00	3,876.62	-345.36	3,887.19	0.00	0.00	0.00
12,200.00	90.00	359.53	6,905.00	3,976.62	-346.17	3,987.14	0.00	0.00	0.00
12,300.00	90.00	359.53	6,905.00	4,076.62	-346.98	4,087.09	0.00	0.00	0.00
12,400.00	90.00	359.53	6,905.00	4,176.61	-347.79	4,187.05	0.00	0.00	0.00
12,500.00	90.00	359.53	6,905.00	4,276.61	-348.61	4,287.00	0.00	0.00	0.00
12,600.00	90.00	359.53	6,905.00	4,376.61	-349.42	4,386.95	0.00	0.00	0.00
12,700.00	90.00	359.53	6,905.00	4,476.60	-350.23	4,486.90	0.00	0.00	0.00
12,800.00	90.00	359.53	6,905.00	4,576.60	-351.04	4,586.85	0.00	0.00	0.00
12,900.00	90.00	359.53	6,905.00	4,676.60	-351.85	4,686.80	0.00	0.00	0.00
13,000.00	90.00	359.53	6,905.00	4,776.59	-352.66	4,786.75	0.00	0.00	0.00
13,100.00	90.00	359.53	6,905.00	4,876.59	-353.48	4,886.71	0.00	0.00	0.00
13,200.00	90.00	359.53	6,905.00	4,976.59	-354.29	4,986.66	0.00	0.00	0.00
13,300.00	90.00	359.53	6,905.00	5,076.58	-355.10	5,086.61	0.00	0.00	0.00
13,400.00	90.00	359.53	6,905.00	5,176.58	-355.91	5,186.56	0.00	0.00	0.00
13,500.00	90.00	359.53	6,905.00	5,276.58	-356.72	5,286.51	0.00	0.00	0.00
13,600.00	90.00	359.53	6,905.00	5,376.57	-357.53	5,386.46	0.00	0.00	0.00
13,700.00	90.00	359.53	6,905.00	5,476.57	-358.35	5,486.42	0.00	0.00	0.00
13,800.00	90.00	359.53	6,905.00	5,576.57	-359.16	5,586.37	0.00	0.00	0.00
13,900.00	90.00	359.53	6,905.00	5,676.56	-359.97	5,686.32	0.00	0.00	0.00
14,000.00	90.00	359.53	6,905.00	5,776.56	-360.78	5,786.27	0.00	0.00	0.00
14,100.00	90.00	359.53	6,905.00	5,876.56	-361.59	5,886.22	0.00	0.00	0.00
14,200.00	90.00	359.53	6,905.00	5,976.55	-362.40	5,986.17	0.00	0.00	0.00
14,300.00	90.00	359.53	6,905.00	6,076.55	-363.22	6,086.12	0.00	0.00	0.00
14,400.00	90.00	359.53	6,905.00	6,176.55	-364.03	6,186.08	0.00	0.00	0.00
14,500.00	90.00	359.53	6,905.00	6,276.54	-364.84	6,286.03	0.00	0.00	0.00
14,600.00	90.00	359.53	6,905.00	6,376.54	-365.65	6,385.98	0.00	0.00	0.00
14,700.00	90.00	359.53	6,905.00	6,476.54	-366.46	6,485.93	0.00	0.00	0.00
14,800.00	90.00	359.53	6,905.00	6,576.53	-367.28	6,585.88	0.00	0.00	0.00
14,900.00	90.00	359.53	6,905.00	6,676.53	-368.09	6,685.83	0.00	0.00	0.00
15,000.00	90.00	359.53	6,905.00	6,776.53	-368.90	6,785.79	0.00	0.00	0.00
15,100.00	90.00	359.53	6,905.00	6,876.52	-369.71	6,885.74	0.00	0.00	0.00
15,200.00	90.00	359.53	6,905.00	6,976.52	-370.52	6,985.69	0.00	0.00	0.00
15,300.00	90.00	359.53	6,905.00	7,076.52	-371.33	7,085.64	0.00	0.00	0.00
15,400.00	90.00	359.53	6,905.00	7,176.52	-372.15	7,185.59	0.00	0.00	0.00
15,500.00	90.00	359.53	6,905.00	7,276.51	-372.96	7,285.54	0.00	0.00	0.00
15,600.00	90.00	359.53	6,905.00	7,376.51	-373.77	7,385.49	0.00	0.00	0.00
15,700.00	90.00	359.53	6,905.00	7,476.51	-374.58	7,485.45	0.00	0.00	0.00
15,800.00	90.00	359.53	6,905.00	7,576.50	-375.39	7,585.40	0.00	0.00	0.00
15,900.00	90.00	359.53	6,905.00	7,676.50	-376.20	7,685.35	0.00	0.00	0.00
16,000.00	90.00	359.53	6,905.00	7,776.50	-377.02	7,785.30	0.00	0.00	0.00
16,100.00	90.00	359.53	6,905.00	7,876.49	-377.83	7,885.25	0.00	0.00	0.00
16,200.00	90.00	359.53	6,905.00	7,976.49	-378.64	7,985.20	0.00	0.00	0.00
16,300.00	90.00	359.53	6,905.00	8,076.49	-379.45	8,085.16	0.00	0.00	0.00
16,400.00	90.00	359.53	6,905.00	8,176.48	-380.26	8,185.11	0.00	0.00	0.00
16,500.00	90.00	359.53	6,905.00	8,276.48	-381.07	8,285.06	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D21-780
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4820.00ft
Project:	Mustang	MD Reference:	Well @ 4820.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D21-780	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)
16,600.00	90.00	359.53	6,905.00	8,376.48	-381.89	8,385.01	0.00	0.00	0.00
16,700.00	90.00	359.53	6,905.00	8,476.47	-382.70	8,484.96	0.00	0.00	0.00
16,800.00	90.00	359.53	6,905.00	8,576.47	-383.51	8,584.91	0.00	0.00	0.00
16,900.00	90.00	359.53	6,905.00	8,676.47	-384.32	8,684.86	0.00	0.00	0.00
17,000.00	90.00	359.53	6,905.00	8,776.46	-385.13	8,784.82	0.00	0.00	0.00
17,100.00	90.00	359.53	6,905.00	8,876.46	-385.94	8,884.77	0.00	0.00	0.00
17,200.00	90.00	359.53	6,905.00	8,976.46	-386.76	8,984.72	0.00	0.00	0.00
17,211.32	90.00	359.53	6,905.00	8,987.78	-386.85	8,996.04	0.00	0.00	0.00
Turn: 2°/100'									
17,300.00	90.00	1.31	6,905.00	9,076.45	-386.19	9,084.61	2.00	0.00	2.00
17,369.67	90.00	2.70	6,905.00	9,146.08	-383.76	9,154.09	2.00	0.00	2.00
EOT: 90.00° Inc, 2.70° Azm									
17,400.00	90.00	2.70	6,905.00	9,176.37	-382.33	9,184.31	0.00	0.00	0.00
17,500.00	90.00	2.70	6,905.00	9,276.26	-377.61	9,283.93	0.00	0.00	0.00
17,600.00	90.00	2.70	6,905.00	9,376.15	-372.90	9,383.56	0.00	0.00	0.00
17,653.91	90.00	2.70	6,905.00	9,430.00	-370.36	9,437.27	0.00	0.00	0.00
TD @ 17653.91' MD/6905.00' 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 D21-780	0.00	0.01	0.00	0.00	0.00	1,319,359.84	3,261,921.20	40.2062380	-104.5622266
- plan hits target center									
- Point									
Vogler State D21-780	0.00	0.00	6,049.35	-1,311.87	-241.94	1,318,047.97	3,261,679.26	40.2026440	-104.5631423
- plan hits target center									
- Point									
Vogler State D21-780	0.00	0.01	6,905.00	-715.44	-308.08	1,318,644.40	3,261,613.12	40.2042831	-104.5633566
- plan hits target center									
- Point									
Vogler State D21-780	0.00	0.01	6,905.00	9,430.00	-370.36	1,328,789.82	3,261,550.84	40.2321336	-104.5631958
- plan hits target center									
- Point									

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Vogler State D21-780
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4820.00ft
Project:	Mustang	MD Reference:	Well @ 4820.00ft
Site:	D Section 21	North Reference:	Grid
Well:	Vogler State D21-780	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
630.00	630.00	Pierre				
765.00	765.00	Upper Pierre Aquifer Top				
1,632.00	1,632.00	Upper Pierre Aquifer Base				
3,933.52	3,853.00	Parkman				
4,182.64	4,086.00	Sussex				
5,198.38	5,036.00	Shannon				
6,393.88	6,157.00	Teepee Buttes				
6,958.57	6,683.00	Sharon Springs				
7,038.28	6,740.00	Top A Chalk				
7,039.77	6,741.00	Top A Marl				
7,050.33	6,748.00	Top B Chalk				
7,132.81	6,798.00	Top B Marl				
7,286.42	6,867.00	Top C Chalk				
7,420.20	6,899.00	Top C Marl				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,000.00	2,000.00	0.00	0.00	Build: 2°/100'	
3,036.30	3,013.85	-182.32	-33.62	Hold: 20.73° Inc, 190.45° Azm	
6,281.84	6,049.35	-1,311.87	-241.94	KOP: Build 9°/100' @ 6281.84' MD	
7,507.78	6,905.00	-715.44	-308.08	LP: 7507.78' MD, 90.00° Inc, 359.53° Azm	
17,211.32	6,905.00	8,987.78	-386.85	Turn: 2°/100'	
17,369.67	6,905.00	9,146.08	-383.76	EOT: 90.00° Inc, 2.70° Azm	
17,653.91	6,905.00	9,430.00	-370.36	TD @ 17653.91' MD/6905.00' TVD	

Northern Region - DJ Basin

Mustang

D Section 21

Vogler State D21-780

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 D21-780
Project:	Mustang	TVD Reference:	Well @ 4820.00ft
Reference Site:	D Section 21	MD Reference:	Well @ 4820.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D21-780	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	17,653.67	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 16						
Diggen State D16-23 (SI) - Wellbore #1 - Gyro Surveys	13,910.08	6,856.86	3,299.59	3,216.60	39.759	CC, ES
Diggen State D16-23 (SI) - Wellbore #1 - Gyro Surveys	14,500.00	6,855.53	3,351.91	3,265.47	38.778	SF
Diggin State D 16-07 (SI) - Wellbore #1 - No Surveys	15,791.17	6,863.00	2,547.08	2,335.93	12.063	CC
Diggin State D 16-07 (SI) - Wellbore #1 - No Surveys	15,800.00	6,863.00	2,547.10	2,335.88	12.059	ES
Diggin State D 16-07 (SI) - Wellbore #1 - No Surveys	16,000.00	6,863.00	2,555.63	2,343.14	12.027	SF
Diggin State D 16-19J (PR) - Wellbore #1 - No Surveys	16,491.27	6,822.00	638.82	423.07	2.961	CC, ES
Diggin State D 16-19J (PR) - Wellbore #1 - No Surveys	16,500.00	6,822.00	638.88	423.08	2.960	SF
Diggin State D16-13 (PR) - Wellbore #1 - Gyro Surveys	13,283.53	6,848.76	46.76	-32.06	0.593	Level 1, CC, ES, SF
Guttersen ST D 15-32 (SI) - Wellbore #1 - Gyro Surveys	15,131.94	6,869.54	4,524.16	4,431.50	48.829	CC, ES
Guttersen ST D 15-32 (SI) - Wellbore #1 - Gyro Surveys	16,100.00	6,866.69	4,626.57	4,528.13	46.998	SF
Guttersen ST D 16-21 (SI) - Wellbore #1 - Gyro Surveys	15,117.27	6,843.29	2,045.23	1,952.78	22.122	CC, ES
Guttersen ST D 16-21 (SI) - Wellbore #1 - Gyro Surveys	15,300.00	6,843.57	2,053.38	1,959.83	21.950	SF
Guttersen ST D 16-22D (SI) - Wellbore #1 - MWD Surve	15,283.97	6,971.70	3,231.49	3,135.52	33.671	CC
Guttersen ST D 16-22D (SI) - Wellbore #1 - MWD Surve	15,300.00	6,971.77	3,231.53	3,135.42	33.623	ES
Guttersen ST D 16-22D (SI) - Wellbore #1 - MWD Surve	15,800.00	6,973.73	3,272.43	3,172.78	32.839	SF
Guttersen ST D 16-33 (SI) - Wellbore #1 - No Surveys	14,032.89	6,837.00	624.26	426.94	3.164	CC, ES, SF
Guttersen State D 15-31 (PR) - Wellbore #1 - Gyro Surve	16,834.45	6,863.91	4,456.57	4,350.85	42.152	CC
Guttersen State D 15-31 (PR) - Wellbore #1 - Gyro Surve	16,900.00	6,863.85	4,457.05	4,350.84	41.961	ES
Guttersen State D 15-31 (PR) - Wellbore #1 - Gyro Surve	17,653.67	6,863.22	4,511.40	4,400.74	40.765	SF
Guttersen State D 15-33 (SI) - Wellbore #1 - Gyro Survey	13,902.20	6,830.39	4,596.75	4,513.48	55.198	CC, ES
Guttersen State D 15-33 (SI) - Wellbore #1 - Gyro Survey	15,000.00	6,809.96	4,726.00	4,636.28	52.675	SF
Guttersen State D 16-15X (PR) - Wellbore #1 - Gyro Sur	13,364.00	6,880.95	2,589.38	2,509.89	32.574	CC, ES
Guttersen State D 16-15X (PR) - Wellbore #1 - Gyro Sur	13,700.00	6,881.46	2,611.09	2,529.61	32.047	SF
Guttersen State D 16-18 (SI) - Wellbore #1 - No Surveys	16,643.95	6,837.00	1,967.50	1,750.26	9.057	CC, ES
Guttersen State D 16-18 (SI) - Wellbore #1 - No Surveys	16,700.00	6,837.00	1,968.29	1,750.67	9.044	SF
Guttersen State D 16-20 (SI) - Wellbore #1 - Gyro Survey	15,182.36	6,851.93	666.62	573.59	7.166	CC, ES
Guttersen State D 16-20 (SI) - Wellbore #1 - Gyro Survey	15,200.00	6,851.93	666.85	573.73	7.161	SF
Guttersen State D 16-24 (SI) - Wellbore #1 - Gyro Survey	14,003.33	6,865.12	2,005.03	1,920.86	23.821	CC, ES
Guttersen State D 16-24 (SI) - Wellbore #1 - Gyro Survey	14,200.00	6,864.26	2,014.65	1,929.33	23.612	SF
Guttersen State D 16-27 (PR) - Wellbore #1 - No Survey	17,653.67	6,833.00	3,248.21	3,023.19	14.435	CC, ES, SF
Guttersen State D 16-31 (PR) - Wellbore #1 - No Survey	16,530.86	6,833.00	452.45	236.17	2.092	CC, ES, SF
Guttersen State D 16-32D (SI) - Wellbore #1 - MWD Sur	15,335.23	7,031.27	550.99	448.93	5.399	CC, ES, SF
Guttersen State D16-63-1HN - Original Drilling - Original	13,545.20	11,126.86	36.83	-51.82	0.415	Level 1, CC, SF
Guttersen State D16-63-1HN - Original Drilling - Original	13,600.00	11,127.89	66.02	-75.04	0.468	Level 1, ES
Guttersen State D16-65-1HN - Original Drilling - Original	14,859.40	11,090.02	48.54	-45.29	0.517	Level 1, CC
Guttersen State D16-65-1HN - Original Drilling - Original	14,900.00	11,090.02	63.29	-69.80	0.476	Level 1, ES, SF
Spike ST GWS D 16-01 (SI) - Wellbore #1 - Gyro Survey	17,553.12	6,856.35	3,993.90	3,882.78	35.943	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 D21-780
Project:	Mustang	TVD Reference:	Well @ 4820.00ft
Reference Site:	D Section 21	MD Reference:	Well @ 4820.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D21-780	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 16						
Spike ST GWS D 16-01 (SI) - Wellbore #1 - Gyro Survey	17,600.00	6,856.62	3,994.17	3,882.75	35.848	ES
Spike ST GWS D 16-01 (SI) - Wellbore #1 - Gyro Survey	17,653.67	6,856.94	3,995.16	3,883.41	35.751	SF
Spike ST GWS D 16-02 (P&A) - Wellbore #1 - Gyro Surv	17,425.09	6,852.22	2,499.75	2,371.94	19.558	CC, ES
Spike ST GWS D 16-02 (P&A) - Wellbore #1 - Gyro Surv	17,600.00	6,853.65	2,505.86	2,377.23	19.481	SF
Spike ST GWS D 16-03 (PR) - Wellbore #1 - No Surveys	17,223.80	6,831.00	1,326.65	1,105.01	5.986	CC, ES
Spike ST GWS D 16-03 (PR) - Wellbore #1 - No Surveys	17,300.00	6,831.00	1,327.82	1,105.78	5.980	SF
Spike ST GWS D 16-08 (PR) - Wellbore #1 - No Surveys	17,211.04	6,826.00	19.99	-201.45	0.090	Level 1, CC, ES, SF
Spike ST GWS D 16-05 (PR) - Wellbore #1 - Gyro Survey	15,854.25	6,839.64	30.98	-66.98	0.316	Level 1, CC, ES, SF
Spike ST GWS D 16-06 (SI) - Wellbore #1 - No Surveys	15,895.56	6,839.00	1,329.97	1,118.49	6.289	CC
Spike ST GWS D 16-06 (SI) - Wellbore #1 - No Surveys	15,900.00	6,839.00	1,329.98	1,118.47	6.288	ES, SF
Spike ST GWS D 16-08 (PR) - Wellbore #1 - Gyro Survey	15,844.38	6,888.64	4,149.91	4,051.90	42.341	CC
Spike ST GWS D 16-08 (PR) - Wellbore #1 - Gyro Survey	15,900.00	6,888.13	4,150.28	4,051.86	42.167	ES
Spike ST GWS D 16-08 (PR) - Wellbore #1 - Gyro Survey	16,600.00	6,881.83	4,218.14	4,115.56	41.119	SF
Spike ST GWS D 16-12 (PA) - Wellbore #1 - Gyro Survey	14,739.97	6,856.00	134.97	45.33	1.506	CC, ES, SF
Spike ST GWS D 16-14 (SI) - Wellbore #1 - No Surveys	13,025.13	6,872.00	1,387.41	1,196.76	7.277	CC, ES
Spike ST GWS D 16-14 (SI) - Wellbore #1 - No Surveys	13,100.00	6,872.00	1,389.43	1,198.34	7.271	SF
Spike ST GWS D 16-16 (SI) - Wellbore #1 - No Surveys	13,224.81	6,871.00	3,972.78	3,780.71	20.684	CC, ES
Spike ST GWS D 16-16 (SI) - Wellbore #1 - No Surveys	13,700.00	6,871.00	4,001.10	3,805.98	20.506	SF
Spike State D 16-10 (SI) - Wellbore #1 - Gyro Surveys	14,590.31	6,857.51	2,600.74	2,512.21	29.377	CC
Spike State D 16-10 (SI) - Wellbore #1 - Gyro Surveys	14,600.00	6,857.45	2,600.76	2,512.16	29.354	ES
Spike State D 16-10 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	6,855.79	2,619.11	2,528.73	28.979	SF
Spike State D 16-11 (SI) - Wellbore #1 - Gyro Surveys	14,664.74	6,842.91	1,386.46	1,297.46	15.578	CC, ES
Spike State D 16-11 (SI) - Wellbore #1 - Gyro Surveys	14,800.00	6,842.58	1,393.05	1,303.35	15.531	SF
Spike State D 16-9 (SI) - Wellbore #1 - Gyro Surveys	14,526.63	6,830.42	3,985.65	3,897.73	45.331	CC, ES
Spike State D 16-9 (SI) - Wellbore #1 - Gyro Surveys	15,300.00	6,833.00	4,059.99	3,967.42	43.857	SF
Spike State D16-15 (P&A) - Wellbore #1 - Wellbore #1	13,283.78	6,872.72	2,588.13	2,498.34	28.823	CC
Spike State D16-15 (P&A) - Wellbore #1 - Wellbore #1	13,300.00	6,873.07	2,588.18	2,498.27	28.787	ES
Spike State D16-15 (P&A) - Wellbore #1 - Wellbore #1	13,600.00	6,879.63	2,607.37	2,515.63	28.421	SF
Spike State D16-99HZ - Original Drilling - Original Drilling	14,033.56	11,100.08	86.09	-6.59	0.929	Level 1, CC
Spike State D16-99HZ - Original Drilling - Original Drilling	14,100.00	11,097.83	108.72	-20.68	0.840	Level 1, ES, SF
Spike State GWS D 16-7J (PR) - Wellbore #1 - No Surve	16,636.42	6,856.00	3,296.57	3,079.01	15.152	CC, ES
Spike State GWS D 16-7J (PR) - Wellbore #1 - No Surve	16,900.00	6,856.00	3,307.09	3,087.77	15.079	SF
Spike State GWS D16-13J (PR) - Wellbore #1 - Gyro Su	13,859.20	6,846.63	590.41	507.41	7.113	CC, ES, SF

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Vogler State D21-780
Project:	Mustang	TVD Reference:	Well @ 4820.00ft
Reference Site:	D Section 21	MD Reference:	Well @ 4820.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D21-780	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						
Casey Blue D 21-11 (PR) - Wellbore #1 - No Surveys	9,371.16	6,899.00	1,315.56	1,146.84	7.797	CC, ES
Casey Blue D 21-11 (PR) - Wellbore #1 - No Surveys	9,400.00	6,899.00	1,315.88	1,147.03	7.793	SF
Casey Blue D21-13 (PR) - Wellbore #1 - Gyro Surveys	7,931.32	6,873.44	19.93	-30.30	0.397	Level 1, CC, ES, SF
Casey Blue D21-14 (SI) - Wellbore #1 - Gyro Surveys	2,504.38	2,496.56	1,120.88	1,103.73	65.350	CC
Casey Blue D21-14 (SI) - Wellbore #1 - Gyro Surveys	2,700.00	2,689.72	1,121.38	1,102.90	60.681	ES
Casey Blue D21-14 (SI) - Wellbore #1 - Gyro Surveys	8,100.00	6,888.89	1,456.70	1,406.50	29.020	SF
Casey Blue D21-3J (PR) - Wellbore #1 - Gyro Surveys	8,955.55	6,886.37	306.56	253.88	5.819	CC, ES, SF
Guttersen 21-31 (SI) - Wellbore #1 - Gyro Surveys	11,890.64	6,862.72	2,677.57	2,608.48	38.753	CC
Guttersen 21-31 (SI) - Wellbore #1 - Gyro Surveys	11,900.00	6,862.70	2,677.59	2,608.43	38.719	ES
Guttersen 21-31 (SI) - Wellbore #1 - Gyro Surveys	12,300.00	6,861.96	2,708.68	2,637.28	37.933	SF
Guttersen 21-42 (SI) - Wellbore #1 - Gyro Surveys	10,566.24	6,919.30	3,981.01	3,920.19	65.456	CC
Guttersen 21-42 (SI) - Wellbore #1 - Gyro Surveys	10,600.00	6,919.37	3,981.15	3,920.14	65.252	ES
Guttersen 21-42 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	6,921.58	4,139.31	4,072.66	62.105	SF
Guttersen 32-21 (PR) - Wellbore #1 - No Surveys	10,532.92	6,903.00	2,633.66	2,458.87	15.068	CC, ES
Guttersen 32-21 (PR) - Wellbore #1 - No Surveys	10,700.00	6,903.00	2,638.95	2,463.26	15.020	SF
Guttersen 33-21 (PR) - Wellbore #1 - Gyro Surveys	0.00	0.00	2,545.16			
Guttersen 33-21 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,990.75	2,548.92	2,535.20	185.796	ES
Guttersen 33-21 (PR) - Wellbore #1 - Gyro Surveys	9,900.00	6,906.95	2,747.98	2,691.14	48.353	SF
Guttersen 34-21 (PR) - Wellbore #1 - Gyro Surveys	2,466.28	2,498.84	2,312.01	2,294.97	135.675	CC
Guttersen 34-21 (PR) - Wellbore #1 - Gyro Surveys	2,600.00	2,626.63	2,312.53	2,294.60	128.958	ES
Guttersen 34-21 (PR) - Wellbore #1 - Gyro Surveys	8,400.00	6,828.04	2,733.10	2,682.12	53.608	SF
Guttersen 41-21 (PR) - Wellbore #1 - Gyro Surveys	11,940.95	6,877.30	4,007.35	3,937.86	57.674	CC, ES
Guttersen 41-21 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,874.74	4,120.51	4,045.60	55.006	SF
Guttersen 43-21 (PR) - Wellbore #1 - Gyro Surveys	2,013.91	2,022.11	3,713.30	3,699.42	267.642	CC, ES
Guttersen 43-21 (PR) - Wellbore #1 - Gyro Surveys	10,300.00	6,927.26	3,962.54	3,903.97	67.664	SF
Guttersen D21-32D (SI) - Wellbore #1 - MWD Surveys	9,839.05	7,266.21	578.81	512.41	8.717	CC, ES
Guttersen D21-32D (SI) - Wellbore #1 - MWD Surveys	10,000.00	7,266.25	600.77	529.85	8.471	SF
Guttersen USX D21-17 (PR) - Wellbore #1 - No Surveys	11,277.89	6,887.00	3,343.91	3,164.89	18.679	CC
Guttersen USX D21-17 (PR) - Wellbore #1 - No Surveys	11,300.00	6,887.00	3,343.98	3,164.82	18.665	ES
Guttersen USX D21-17 (PR) - Wellbore #1 - No Surveys	11,600.00	6,887.00	3,359.38	3,178.46	18.568	SF
Guttersen USX D21-20D (PR) - Wellbore #1 - MWD Surv	9,821.99	7,049.44	665.81	601.75	10.393	CC, ES, SF
Guttersen USX D21-21D (SI) - Wellbore #1 - MWD Surve	164.67	164.67	856.65	855.97	1,243.106	CC
Guttersen USX D21-21D (SI) - Wellbore #1 - MWD Surve	200.00	196.54	856.73	855.80	921.712	ES
Guttersen USX D21-21D (SI) - Wellbore #1 - MWD Surve	10,100.00	7,108.24	1,882.36	1,815.68	28.230	SF
Guttersen USX D21-24D (PR) - Wellbore #1 - MWD Surv	247.71	247.72	864.06	862.78	677.000	CC
Guttersen USX D21-24D (PR) - Wellbore #1 - MWD Surv	1,000.00	987.55	867.60	860.99	131.287	ES
Guttersen USX D21-24D (PR) - Wellbore #1 - MWD Surv	8,800.00	6,967.86	1,873.12	1,819.86	35.166	SF
Guttersen USX D21-25 (PR) - Wellbore #1 - MWD Surve	0.00	0.99	843.21			
Guttersen USX D21-25 (PR) - Wellbore #1 - MWD Surve	2,014.98	2,019.12	848.93	834.93	60.659	ES
Guttersen USX D21-25 (PR) - Wellbore #1 - MWD Surve	8,800.00	6,898.72	1,084.76	1,032.06	20.583	SF
Guttersen USX D21-27D (PR) - Wellbore #1 - MWD Surv	12,492.93	7,046.09	3,321.79	3,240.95	41.092	CC
Guttersen USX D21-27D (PR) - Wellbore #1 - MWD Surv	12,500.00	7,046.12	3,321.80	3,240.91	41.068	ES
Guttersen USX D21-27D (PR) - Wellbore #1 - MWD Surv	13,100.00	7,048.19	3,376.81	3,292.70	40.150	SF
Guttersen USX D21-28D (PR) - Wellbore #1 - MWD Surv	12,494.91	7,217.94	2,084.14	2,002.04	25.388	CC, ES
Guttersen USX D21-28D (PR) - Wellbore #1 - MWD Surv	12,500.00	7,217.95	2,084.14	2,002.05	25.387	SF
Guttersen USX D21-33D (SI) - Wellbore #1 - MWD Surve	2,585.79	2,757.94	550.40	529.91	26.860	CC
Guttersen USX D21-33D (SI) - Wellbore #1 - MWD Surve	2,600.00	2,769.24	550.49	529.83	26.654	ES
Guttersen USX D21-33D (SI) - Wellbore #1 - MWD Surve	8,651.45	7,166.07	600.53	545.75	10.964	SF
Guttersen USX D22-30D (PR) - Wellbore #1 - MWD Surv	100.00	78.83	4,349.82	4,349.56	10,000.000	CC
Guttersen USX D22-30D (PR) - Wellbore #1 - MWD Surv	800.00	758.40	4,350.78	4,345.89	888.104	ES
Guttersen USX D22-30D (PR) - Wellbore #1 - MWD Surv	13,900.00	7,143.41	4,802.91	4,710.33	51.881	SF
Gutterson 18-21 (SI) - Wellbore #1 - Gyro Surveys	11,371.59	6,886.51	860.69	795.41	13.185	CC, ES
Gutterson 18-21 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,886.53	861.16	795.73	13.162	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 D21-780
Project:	Mustang	TVD Reference:	Well @ 4820.00ft
Reference Site:	D Section 21	MD Reference:	Well @ 4820.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D21-780	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 21						
HSR Gutttersen B 5-21 (PR) - Wellbore #1 - Gyro Survey	10,606.85	6,886.29	42.24	-18.00	0.701	Level 1, CC, ES, SF
HSR Gutterson 4-21 (PR) - Wellbore #1 - Gyro Surveys	11,823.42	6,895.44	22.43	-46.08	0.327	Level 1, CC, ES, SF
HSR-Gutttersen 3-21 (SI) - Wellbore #1 - Gyro Surveys	11,804.12	6,805.20	1,445.67	1,377.22	21.120	CC, ES
HSR-Gutttersen 3-21 (SI) - Wellbore #1 - Gyro Surveys	11,900.00	6,800.80	1,448.84	1,379.84	20.999	SF
HSR-Gutttersen 6-21 (SI) - Wellbore #1 - Gyro Surveys	10,597.72	6,888.72	1,380.25	1,319.46	22.706	CC
HSR-Gutttersen 6-21 (SI) - Wellbore #1 - Gyro Surveys	10,600.00	6,888.74	1,380.25	1,319.45	22.701	ES
HSR-Gutttersen 6-21 (SI) - Wellbore #1 - Gyro Surveys	10,700.00	6,889.47	1,384.03	1,322.72	22.575	SF
Two E Ranch 1-21C (SI) - Wellbore #1 - Gyro Surveys	2,106.42	2,143.09	3,288.95	3,274.33	225.003	CC
Two E Ranch 1-21C (SI) - Wellbore #1 - Gyro Surveys	2,200.00	2,233.92	3,289.46	3,274.22	215.873	ES
Two E Ranch 1-21C (SI) - Wellbore #1 - Gyro Surveys	9,500.00	6,887.86	3,651.93	3,597.11	66.619	SF
Vogler State D21-720 - Wellbore #1 - Plan 1	2,007.75	2,039.44	3,694.03	3,680.00	263.237	CC
Vogler State D21-720 - Wellbore #1 - Plan 1	2,100.00	2,135.79	3,694.23	3,679.56	251.864	ES
Vogler State D21-720 - Wellbore #1 - Plan 1	17,653.67	17,652.65	3,946.54	3,769.56	22.300	SF
Vogler State D21-731 - Wellbore #1 - Plan 1	2,000.00	2,035.00	1,835.90	1,821.90	131.152	CC
Vogler State D21-731 - Wellbore #1 - Plan 1	2,100.00	2,134.98	1,836.24	1,821.54	124.944	ES
Vogler State D21-731 - Wellbore #1 - Plan 1	17,653.67	17,773.94	3,251.88	3,075.20	18.406	SF
Vogler State D21-740 - Wellbore #1 - Plan 1	2,000.00	2,035.00	1,797.90	1,783.91	128.437	CC
Vogler State D21-740 - Wellbore #1 - Plan 1	2,100.00	2,134.98	1,798.24	1,783.54	122.359	ES
Vogler State D21-740 - Wellbore #1 - Plan 1	17,653.67	17,733.84	2,626.53	2,449.79	14.862	SF
Vogler State D21-750 - Wellbore #1 - Plan 1	2,016.00	2,051.87	1,760.89	1,746.78	124.856	CC
Vogler State D21-750 - Wellbore #1 - Plan 1	2,200.00	2,242.67	1,761.65	1,746.32	114.872	ES
Vogler State D21-750 - Wellbore #1 - Plan 1	17,653.67	17,600.38	1,982.12	1,805.49	11.222	SF
Vogler State D21-760 - Wellbore #1 - Plan 1	2,000.00	2,004.00	75.00	61.11	5.401	CC
Vogler State D21-760 - Wellbore #1 - Plan 1	2,100.00	2,103.98	75.34	60.75	5.165	ES
Vogler State D21-760 - Wellbore #1 - Plan 1	2,300.00	2,303.45	79.38	63.43	4.977	SF
Vogler State D21-770 - Wellbore #1 - Plan 1	2,000.00	2,002.00	37.00	23.12	2.666	CC
Vogler State D21-770 - Wellbore #1 - Plan 1	2,100.00	2,101.98	37.36	22.78	2.563	ES
Vogler State D21-770 - Wellbore #1 - Plan 1	2,200.00	2,201.84	38.88	23.63	2.548	SF
Vogler State D21-790 - Wellbore #1 - Plan 1	2,000.00	2,030.00	3,732.03	3,718.05	266.948	CC
Vogler State D21-790 - Wellbore #1 - Plan 1	2,100.00	2,129.98	3,732.33	3,717.65	254.272	ES
Vogler State D21-790 - Wellbore #1 - Plan 1	17,653.67	17,574.34	4,597.53	4,421.09	26.057	SF
Vogler State D33-711 - Wellbore #1 - Plan 1	1,903.05	1,932.05	3,733.39	3,720.11	281.092	CC
Vogler State D33-711 - Wellbore #1 - Plan 1	2,000.00	2,017.06	3,733.43	3,719.50	267.994	ES
Vogler State D33-711 - Wellbore #1 - Plan 1	6,950.00	7,348.59	4,481.49	4,429.61	86.372	SF
Vogler State D33-718 - Wellbore #1 - Plan 1	2,000.00	2,029.00	3,695.40	3,681.43	264.395	CC
Vogler State D33-718 - Wellbore #1 - Plan 1	2,100.00	2,128.98	3,695.77	3,681.09	251.842	ES
Vogler State D33-718 - Wellbore #1 - Plan 1	6,900.00	7,437.25	4,018.56	3,966.66	77.430	SF
Vogler State D33-728 - Wellbore #1 - Plan 1	1,905.36	1,944.36	1,843.59	1,830.26	138.261	CC
Vogler State D33-728 - Wellbore #1 - Plan 1	2,000.00	2,025.65	1,843.73	1,829.77	132.064	ES
Vogler State D33-728 - Wellbore #1 - Plan 1	8,000.00	6,220.03	3,270.81	3,222.36	67.506	SF
Vogler State D33-738 - Wellbore #1 - Plan 1	2,000.00	2,039.00	1,805.75	1,791.73	128.865	CC
Vogler State D33-738 - Wellbore #1 - Plan 1	2,100.00	2,138.98	1,806.22	1,791.51	122.782	ES
Vogler State D33-738 - Wellbore #1 - Plan 1	6,950.00	7,384.77	2,696.75	2,644.66	51.772	SF
Vogler State D33-752 - Wellbore #1 - Plan 1	2,000.00	2,039.00	1,768.90	1,754.89	126.236	CC
Vogler State D33-752 - Wellbore #1 - Plan 1	2,100.00	2,138.98	1,769.38	1,754.67	120.278	ES
Vogler State D33-752 - Wellbore #1 - Plan 1	7,015.88	7,409.30	2,052.40	2,000.26	39.365	SF
Vogler State D33-759 - Wellbore #1 - Plan 1	2,001.27	2,008.34	167.28	153.37	12.029	CC, ES
Vogler State D33-759 - Wellbore #1 - Plan 1	2,300.00	2,308.59	180.37	164.46	11.339	SF
Vogler State D33-769 - Wellbore #1 - Plan 1	2,000.00	2,006.00	154.27	140.37	11.103	CC, ES
Vogler State D33-769 - Wellbore #1 - Plan 1	2,200.00	2,205.84	161.24	145.96	10.555	SF
Vogler State D33-779 - Wellbore #1 - Plan 1	7,282.70	7,137.03	98.16	46.52	1.901	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 D21-780
Project:	Mustang	TVD Reference:	Well @ 4820.00ft
Reference Site:	D Section 21	MD Reference:	Well @ 4820.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D21-780	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	6,432.71	6,185.53	2,997.83	2,849.91	20.267	CC
O'SH D 28-7 (P&A) - Wellbore #1 - No Surveys	6,450.00	6,202.69	2,997.95	2,849.63	20.213	ES
O'SH D 28-7 (P&A) - Wellbore #1 - No Surveys	6,900.00	6,627.13	3,084.35	2,926.48	19.537	SF
Spike ST GWS D 28-12 (SI) - Wellbore #1 - Gyro Surve	6,505.58	6,233.64	2,910.12	2,865.01	64.521	CC, ES
Spike ST GWS D 28-12 (SI) - Wellbore #1 - Gyro Surve	6,700.00	6,408.00	2,940.27	2,894.03	63.590	SF
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	4,535.07	4,422.51	465.64	431.29	13.553	CC, ES
Guttersen D State 28-29D (PR) - Wellbore #1 - MWD Su	4,700.00	4,575.17	472.38	437.22	13.435	SF
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	7,254.40	6,936.15	766.03	715.59	15.187	CC, ES
Guttersen D State 28-30D - Wellbore #1 - Guttersen D S	7,300.00	6,953.04	767.34	716.66	15.139	SF
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	0.00	0.00	1,790.92			
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	100.00	55.95	1,791.00	1,790.76	7,350.196	ES
Guttersen State D28-18D (PR) - Wellbore #1 - MWD Sur	6,700.00	6,530.16	1,923.92	1,874.37	38.828	SF
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	6,471.35	6,308.27	2,768.72	2,719.76	56.544	CC, ES
Guttersen State D28-21D (SI) - Wellbore #1 - MWD Surv	6,750.00	6,582.30	2,813.73	2,763.16	55.637	SF
Guttersen State D28-24D (SI) - Wellbore #1 - MWD Surv	6,474.92	6,279.57	4,038.83	3,992.49	87.149	CC, ES
Guttersen State D28-24D (SI) - Wellbore #1 - MWD Surv	6,750.00	6,523.57	4,091.39	4,043.49	85.408	SF
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	3,773.51	3,655.16	1,613.42	1,584.67	56.107	CC
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	3,800.00	3,672.58	1,613.52	1,584.59	55.774	ES
Guttersen State D28-28D (PR) - Wellbore #1 - MWD Sur	7,600.00	6,940.64	1,870.57	1,817.83	35.467	SF
Guttersen State D28-79HN - Wellbore #1 - Actual	6,929.75	11,086.00	668.08	567.37	6.634	CC, ES, SF
HSR Guttersen State 10-28 (SI) - Wellbore #1 - Gyro Su	6,475.10	6,236.49	3,668.38	3,622.76	80.409	CC, ES
HSR Guttersen State 10-28 (SI) - Wellbore #1 - Gyro Su	6,800.00	6,708.14	3,719.94	3,672.03	77.648	SF
HSR Guttersen State 15-28 (SI) - Wellbore #1 - Gyro Su	6,462.05	6,112.18	5,287.65	5,242.55	117.244	CC, ES
HSR Guttersen State 15-28 (SI) - Wellbore #1 - Gyro Su	6,950.00	6,516.08	5,442.45	5,394.93	114.515	SF
HSR Guttersen State 7-28 (PR) - Wellbore #1 - Gyro Sur	6,421.13	6,122.82	2,771.86	2,726.48	61.083	CC, ES
HSR Guttersen State 7-28 (PR) - Wellbore #1 - Gyro Sur	6,750.00	6,423.76	2,818.88	2,771.53	59.535	SF
O'SH D 28-1 (SI) - Wellbore #1 - Gyro Surveys	5,382.97	5,124.84	3,602.53	3,564.96	95.892	CC
O'SH D 28-1 (SI) - Wellbore #1 - Gyro Surveys	6,281.74	6,054.17	3,608.14	3,563.45	80.745	ES
O'SH D 28-1 (SI) - Wellbore #1 - Gyro Surveys	7,250.00	6,940.42	3,737.25	3,687.30	74.826	SF
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	5,654.27	5,468.40	2,572.37	2,532.43	64.404	CC
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	5,800.00	5,613.94	2,572.85	2,531.77	62.639	ES
O'SH D 28-2 (SI) - Wellbore #1 - Gyro Surveys	7,000.00	6,718.37	2,648.76	2,599.80	54.098	SF
O'SH D 28-8 (SI) - Wellbore #1 - Gyro Surveys	6,366.75	6,059.80	4,219.54	4,174.50	93.689	CC, ES
O'SH D 28-8 (SI) - Wellbore #1 - Gyro Surveys	7,100.00	6,760.16	4,375.51	4,326.42	89.130	SF
Spike ST GWS D 28-03 (PR) - Wellbore #1 - Gyro Surve	5,937.71	5,706.74	1,333.24	1,280.12	25.098	CC
Spike ST GWS D 28-03 (PR) - Wellbore #1 - Gyro Surve	6,100.00	5,858.19	1,334.52	1,279.55	24.277	ES
Spike ST GWS D 28-03 (PR) - Wellbore #1 - Gyro Surve	6,950.00	6,655.92	1,392.94	1,329.25	21.868	SF
Spike ST GWS D 28-4 (SI) - Wellbore #1 - Gyro Surveys	6,565.08	6,294.07	39.00	-6.82	0.851	Level 1, CC, ES, SF
Spike State D 28-13 (SI) - Wellbore #1 - Gyro Surveys	6,525.62	6,400.00	4,362.14	4,316.54	95.646	CC, ES
Spike State D 28-13 (SI) - Wellbore #1 - Gyro Surveys	6,750.00	6,546.87	4,403.01	4,356.27	94.209	SF
Spike State D28-05 (PR) - Wellbore #1 - Gyro Surveys	6,517.08	6,263.38	1,381.27	1,336.08	30.565	CC, ES
Spike State D28-05 (PR) - Wellbore #1 - Gyro Surveys	6,650.00	6,392.69	1,395.16	1,349.15	30.323	SF
Spike State D28-06 (SI) - Wellbore #1 - Gyro Surveys	6,467.85	6,227.26	2,069.77	2,024.08	45.297	CC, ES
Spike State D28-06 (SI) - Wellbore #1 - Gyro Surveys	6,700.00	6,462.60	2,098.18	2,051.04	44.504	SF
Spike State D28-11 (SI) - Wellbore #1 - Gyro Surveys	6,490.46	6,263.37	3,059.46	3,013.95	67.217	CC, ES
Spike State D28-11 (SI) - Wellbore #1 - Gyro Surveys	6,700.00	6,412.91	3,091.46	3,044.80	66.256	SF
Spike State GWS D 28-14 (P&A) - Wellbore #1 - Gyro Su	6,475.72	6,104.13	4,624.76	4,579.90	103.083	CC, ES
Spike State GWS D 28-14 (P&A) - Wellbore #1 - Gyro Su	6,800.00	6,397.69	4,702.21	4,655.54	100.755	SF

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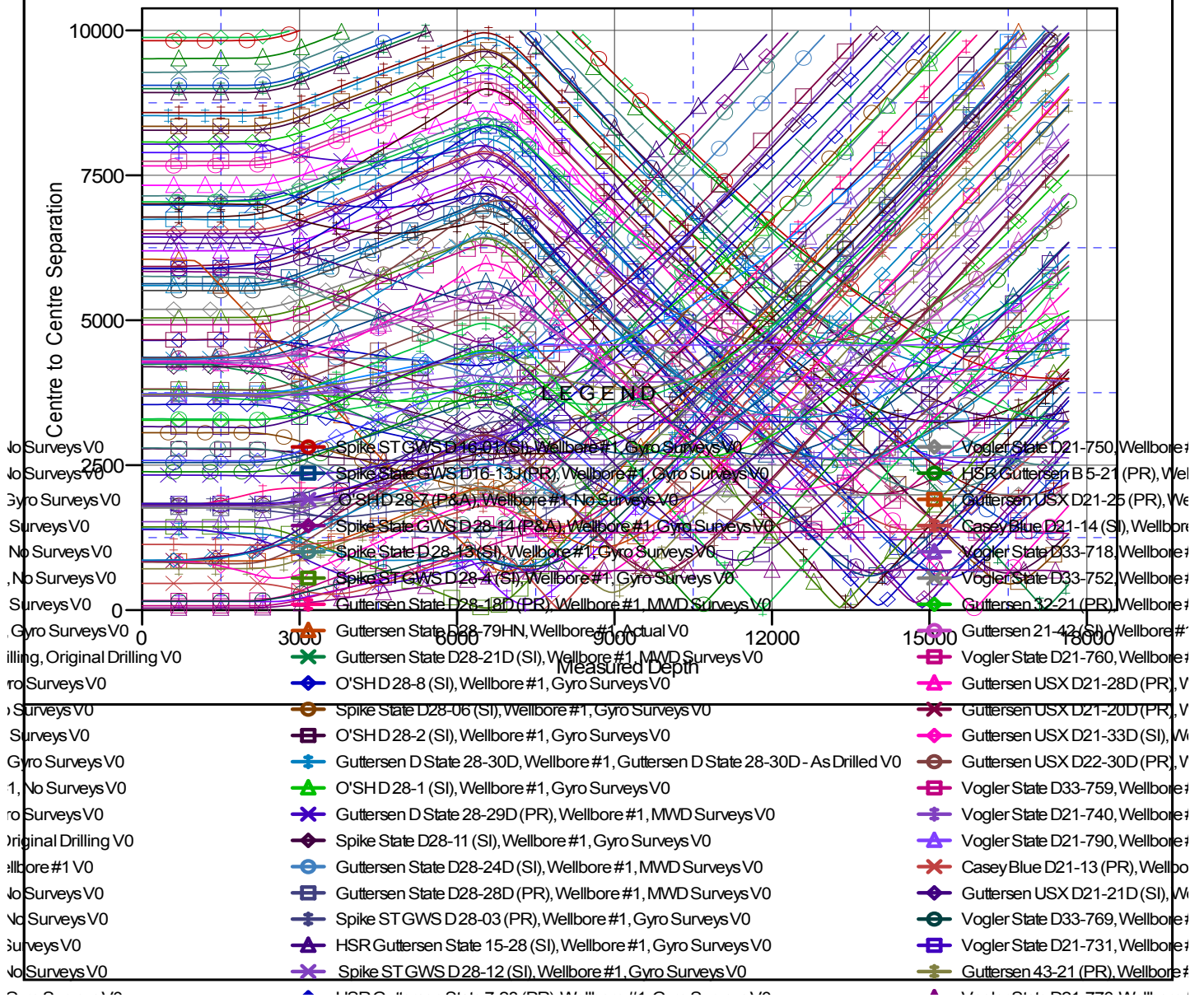
Noble Energy, Inc.
Anticollision Summary Report

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Project:	Mustang	TVD Reference:	Well @ 4820.00ft
Reference Site:	D Section 21	MD Reference:	Well @ 4820.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Vogler State D21-780	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 @ 4820.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Vogler State D21-780
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.61°

Ladder Plot



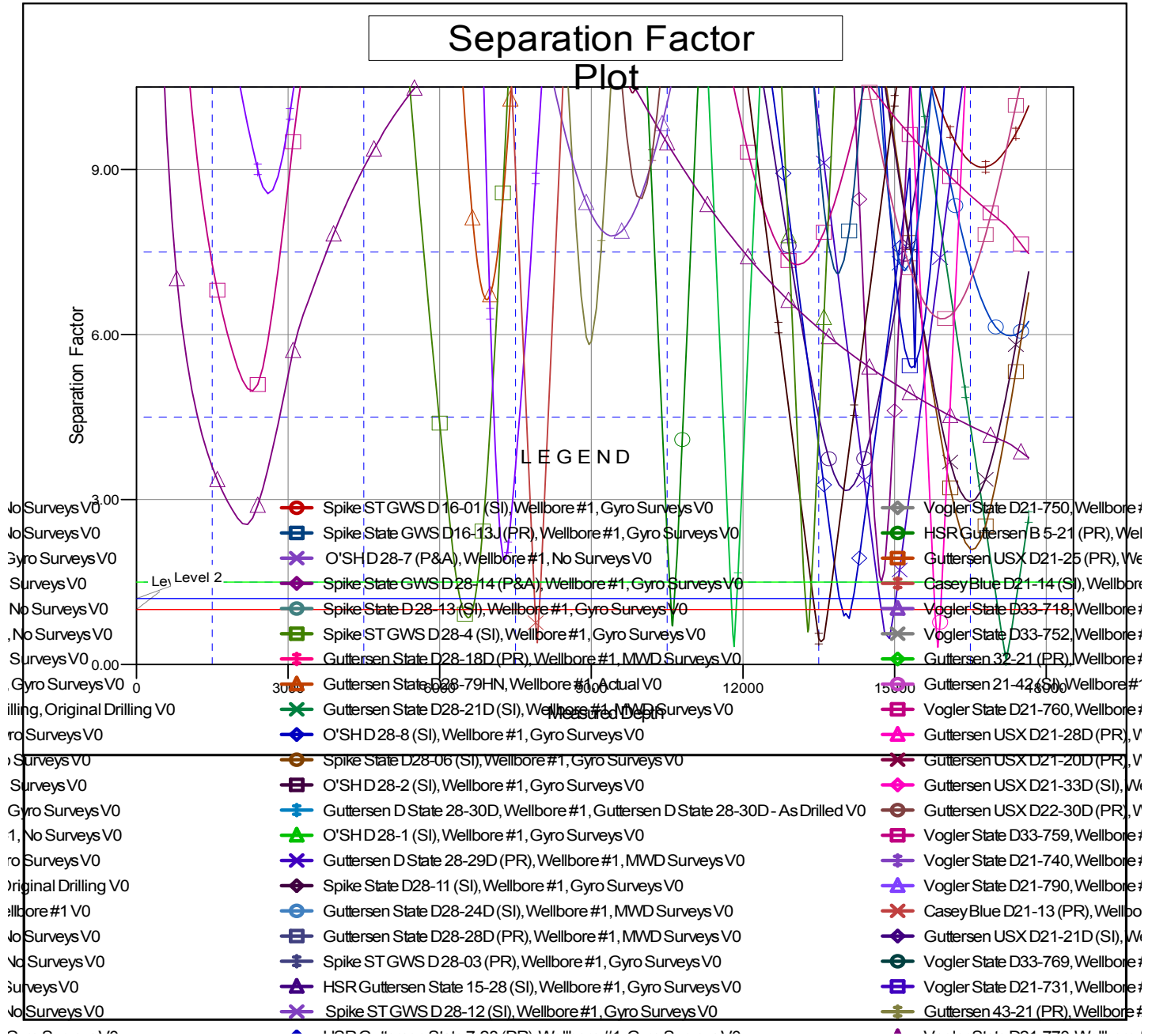
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Anticollision Summary Report

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