Project: Mustang
Site: D Section 23
Well: Guttersen State D23-741
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

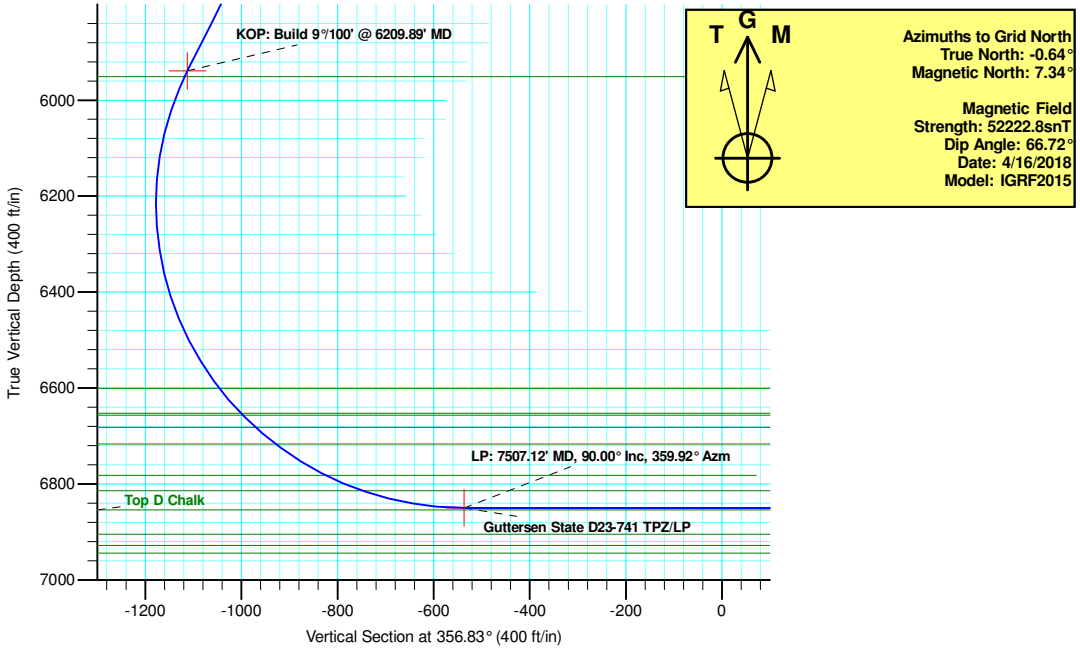
SECTION DETAILS

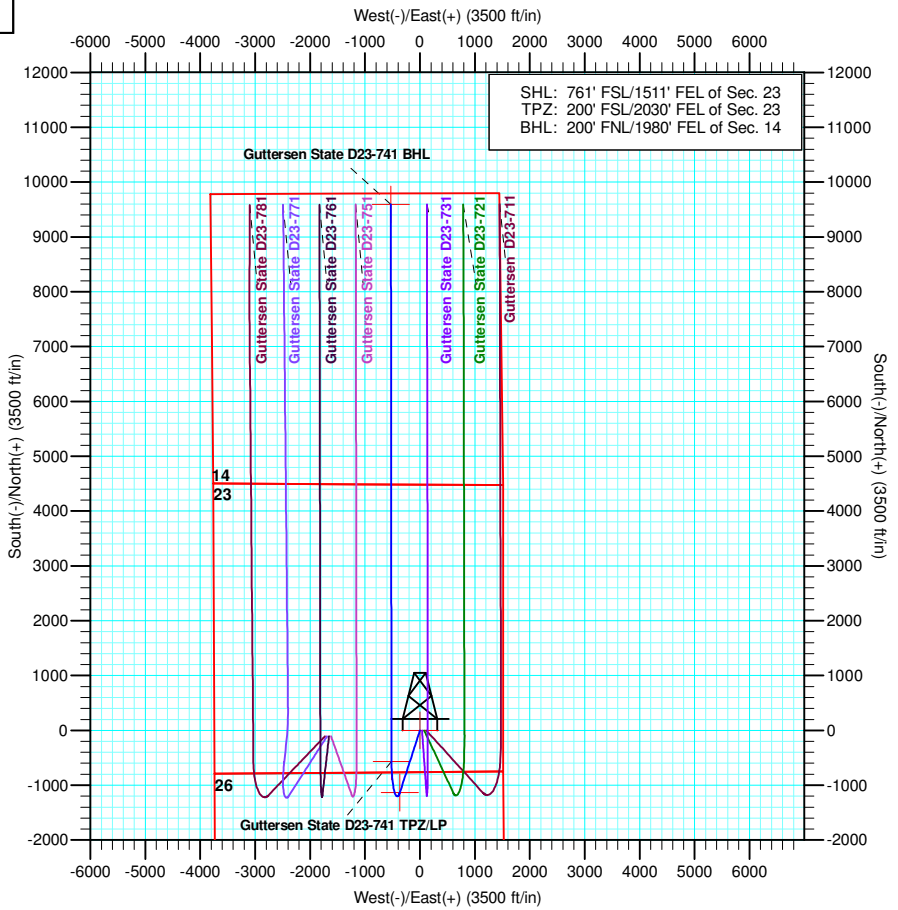
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.00	
3	4412.38	28.25	197.92	4355.86	-324.61	-105.00	2.00	197.92	-318.30	
4	6209.89	28.25	197.92	5939.30	-1134.05	-366.82	0.00	0.00	-1112.03	
5	7507.12	90.00	359.92	6850.00	-565.77	-518.79	9.00	159.75	-536.21	Guttersen State D23-741 TPZ/LP
6	17664.22	90.00	359.94	6850.00	9591.33	-531.20	0.00	90.00	9606.02	Guttersen State D23-741 BHL

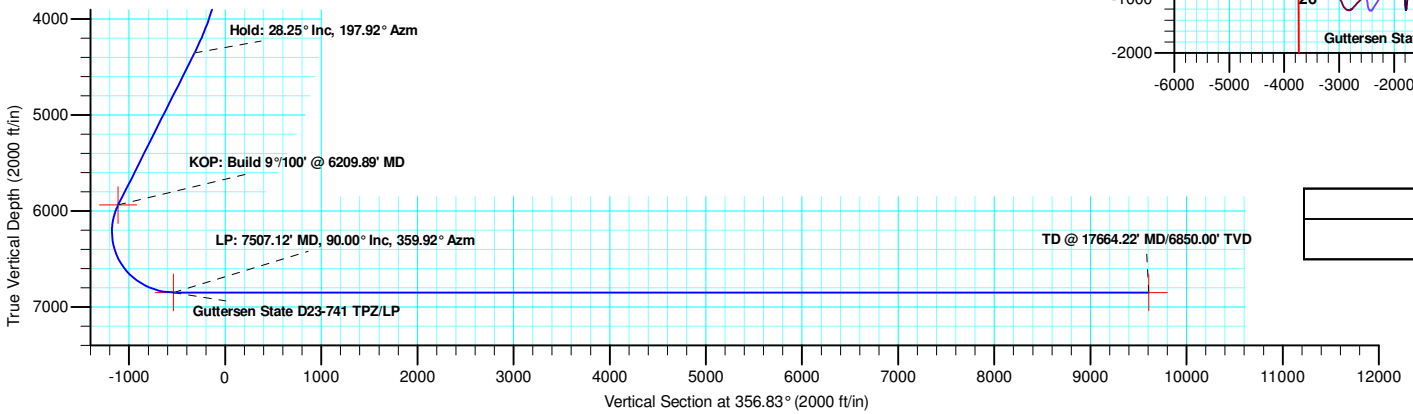
WELL DETAILS: Guttersen State D23-741

Ground Level: 4810.00

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.00	0.00	1319304.14	3275234.00	40.2056888	-104.5145679	







Plan: Plan #1 (Guttersen State D23-741/Wellbore #1)

Created By: Keith Noack Date: 15:39, August 15 2018

Northern Region - DJ Basin

Mustang
D Section 23
Guttersen State D23-741

Wellbore #1

Plan: Plan #1

Standard Planning Report

15 August, 2018

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen State D23-741
Company:	Northern Region - DJ Basin	**TVD Reference:**	KB @ 4840.00ft
Project:	Mustang	**MD Reference:**	KB @ 4840.00ft
Site:	D Section 23	**North Reference:**	Grid
Well:	Guttersen State D23-741	**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 23

Site Position:		**Northing:**	1,319,071.18 usft	**Latitude:**	40.2050590
From:	Lat/Long	**Easting:**	3,274,917.86 usft	**Longitude:**	-104.5157090
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.64 °

Well Guttersen State D23-741

Well Position	**+N/-S**	232.96 ft	**Northing:**	1,319,304.14 usft	**Latitude:**	40.2056888
	+E/-W	316.14 ft	**Easting:**	3,275,234.00 usft	**Longitude:**	-104.5145679
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	4,810.00 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/16/2018	7.97	66.72	52,222.78709966

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	356.83

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,412.38	28.25	197.92	4,355.86	-324.61	-105.00	2.00	2.00	0.00	197.92	
6,209.89	28.25	197.92	5,939.30	-1,134.05	-366.82	0.00	0.00	0.00	0.00	
7,507.12	90.00	359.92	6,850.00	-565.77	-518.79	9.00	4.76	12.49	159.75	Guttersen State D2
17,664.22	90.00	359.94	6,850.00	9,591.33	-531.20	0.00	0.00	0.00	90.00	Guttersen State D2

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Company:	Northern Region - DJ Basin	**TVD Reference:**	KB @ 4840.00ft
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Site:	D Section 23	**North Reference:**	Grid
Well:	Guttersen State D23-741	**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
551.00	0.00	0.00	551.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
753.00	0.00	0.00	753.00	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
1,641.00	0.00	0.00	1,641.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Base									
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Build: 2°/100'									
3,100.00	2.00	197.92	3,099.98	-1.66	-0.54	-1.63	2.00	2.00	0.00
3,200.00	4.00	197.92	3,199.84	-6.64	-2.15	-6.51	2.00	2.00	0.00
3,300.00	6.00	197.92	3,299.45	-14.93	-4.83	-14.64	2.00	2.00	0.00
3,400.00	8.00	197.92	3,398.70	-26.53	-8.58	-26.01	2.00	2.00	0.00
3,500.00	10.00	197.92	3,497.47	-41.41	-13.39	-40.61	2.00	2.00	0.00
3,600.00	12.00	197.92	3,595.62	-59.56	-19.27	-58.41	2.00	2.00	0.00
3,700.00	14.00	197.92	3,693.06	-80.97	-26.19	-79.39	2.00	2.00	0.00
3,745.38	14.91	197.92	3,737.00	-91.74	-29.68	-89.96	2.00	2.00	0.00
Parkman									
3,800.00	16.00	197.92	3,789.64	-105.59	-34.15	-103.54	2.00	2.00	0.00
3,900.00	18.00	197.92	3,885.27	-133.41	-43.15	-130.82	2.00	2.00	0.00
4,000.00	20.00	197.92	3,979.82	-164.38	-53.17	-161.19	2.00	2.00	0.00
4,100.00	22.00	197.92	4,073.17	-198.48	-64.20	-194.62	2.00	2.00	0.00
4,167.01	23.34	197.92	4,135.00	-223.05	-72.15	-218.72	2.00	2.00	0.00
Sussex									

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Site:	D Section 23	**North Reference:**	Grid
Well:	Guttersen State D23-741	**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)
4,200.00	24.00	197.92	4,165.21	-235.65	-76.23	-231.08	2.00	2.00	0.00
4,300.00	26.00	197.92	4,255.84	-275.86	-89.23	-270.50	2.00	2.00	0.00
4,400.00	28.00	197.92	4,344.94	-319.05	-103.20	-312.86	2.00	2.00	0.00
4,412.38	28.25	197.92	4,355.86	-324.61	-105.00	-318.30	2.00	2.00	0.00
Hold: 28.25° Inc, 197.92° Azm									
4,500.00	28.25	197.92	4,433.04	-364.06	-117.76	-356.99	0.00	0.00	0.00
4,600.00	28.25	197.92	4,521.13	-409.09	-132.33	-401.15	0.00	0.00	0.00
4,700.00	28.25	197.92	4,609.22	-454.13	-146.89	-445.31	0.00	0.00	0.00
4,800.00	28.25	197.92	4,697.31	-499.16	-161.46	-489.46	0.00	0.00	0.00
4,900.00	28.25	197.92	4,785.40	-544.19	-176.03	-533.62	0.00	0.00	0.00
5,000.00	28.25	197.92	4,873.50	-589.22	-190.59	-577.78	0.00	0.00	0.00
5,011.92	28.25	197.92	4,884.00	-594.59	-192.33	-583.04	0.00	0.00	0.00
Shannon									
5,100.00	28.25	197.92	4,961.59	-634.25	-205.16	-621.93	0.00	0.00	0.00
5,200.00	28.25	197.92	5,049.68	-679.28	-219.72	-666.09	0.00	0.00	0.00
5,300.00	28.25	197.92	5,137.77	-724.31	-234.29	-710.25	0.00	0.00	0.00
5,400.00	28.25	197.92	5,225.86	-769.34	-248.86	-754.40	0.00	0.00	0.00
5,500.00	28.25	197.92	5,313.95	-814.37	-263.42	-798.56	0.00	0.00	0.00
5,600.00	28.25	197.92	5,402.04	-859.41	-277.99	-842.72	0.00	0.00	0.00
5,700.00	28.25	197.92	5,490.13	-904.44	-292.55	-886.88	0.00	0.00	0.00
5,800.00	28.25	197.92	5,578.22	-949.47	-307.12	-931.03	0.00	0.00	0.00
5,900.00	28.25	197.92	5,666.31	-994.50	-321.68	-975.19	0.00	0.00	0.00
6,000.00	28.25	197.92	5,754.41	-1,039.53	-336.25	-1,019.35	0.00	0.00	0.00
6,100.00	28.25	197.92	5,842.50	-1,084.56	-350.82	-1,063.50	0.00	0.00	0.00
6,209.89	28.25	197.92	5,939.30	-1,134.05	-366.82	-1,112.03	0.00	0.00	0.00
KOP: Build 9°/100' @ 6209.89' MD									
6,223.10	27.13	198.83	5,951.00	-1,139.87	-368.76	-1,117.74	9.00	-8.42	6.83
Teepee Buttes									
6,250.00	24.89	200.89	5,975.17	-1,150.97	-372.76	-1,128.59	9.00	-8.35	7.68
6,300.00	20.81	205.82	6,021.24	-1,168.80	-380.38	-1,145.98	9.00	-8.15	9.86
6,350.00	16.94	212.95	6,068.55	-1,182.92	-388.22	-1,159.64	9.00	-7.74	14.26
6,400.00	13.45	223.88	6,116.80	-1,193.23	-396.22	-1,169.49	9.00	-6.98	21.85
6,450.00	10.73	241.14	6,165.71	-1,199.67	-404.33	-1,175.48	9.00	-5.45	34.53
6,500.00	9.45	266.02	6,214.95	-1,202.20	-412.50	-1,177.55	9.00	-2.56	49.74
6,550.00	10.18	292.31	6,264.25	-1,200.81	-420.69	-1,175.71	9.00	1.46	52.58
6,600.00	12.57	311.82	6,313.28	-1,195.50	-428.83	-1,169.96	9.00	4.79	39.02
6,650.00	15.90	324.26	6,361.75	-1,186.31	-436.89	-1,160.34	9.00	6.65	24.89
6,700.00	19.68	332.27	6,409.36	-1,173.29	-444.82	-1,146.90	9.00	7.57	16.01
6,750.00	23.71	337.71	6,455.81	-1,156.53	-452.55	-1,129.73	9.00	8.06	10.89
6,800.00	27.88	341.63	6,500.82	-1,136.12	-460.05	-1,108.94	9.00	8.33	7.84
6,850.00	32.13	344.59	6,544.11	-1,112.19	-467.27	-1,084.65	9.00	8.50	5.92
6,900.00	36.44	346.93	6,585.42	-1,084.90	-474.16	-1,057.02	9.00	8.61	4.66
6,919.59	38.13	347.71	6,601.00	-1,073.32	-476.77	-1,045.31	9.00	8.66	4.02
Sharon Springs									
6,950.00	40.78	348.82	6,624.48	-1,054.40	-480.69	-1,026.20	9.00	8.70	3.65
6,988.67	44.15	350.08	6,653.00	-1,028.74	-485.46	-1,000.32	9.00	8.73	3.24
Top A Chalk									
6,994.26	44.64	350.25	6,657.00	-1,024.88	-486.13	-996.43	9.00	8.75	3.01
Top A Marl									
7,000.00	45.14	350.42	6,661.06	-1,020.89	-486.81	-992.41	9.00	8.75	2.96
7,030.40	47.81	351.27	6,682.00	-999.13	-490.32	-970.48	9.00	8.77	2.81
Top B Chalk									
7,050.00	49.53	351.78	6,694.94	-984.57	-492.48	-955.83	9.00	8.78	2.61

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Site:	D Section 23	**North Reference:**	Grid
Well:	Guttersen State D23-741	**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)
7,085.12	52.62	352.64	6,717.00	-957.51	-496.18	-928.61	9.00	8.80	2.44
Top B Marl									
7,100.00	53.93	352.98	6,725.90	-945.67	-497.68	-916.70	9.00	8.81	2.29
7,150.00	58.34	354.05	6,753.75	-904.43	-502.35	-875.27	9.00	8.82	2.14
7,200.00	62.76	355.02	6,778.33	-861.10	-506.49	-831.77	9.00	8.84	1.95
7,208.12	63.48	355.17	6,782.00	-853.88	-507.11	-824.53	9.00	8.85	1.85
Top C Chalk									
7,250.00	67.19	355.92	6,799.47	-815.94	-510.06	-786.49	9.00	8.85	1.79
7,290.51	70.78	356.61	6,814.00	-778.21	-512.53	-748.68	9.00	8.86	1.69
Top C Marl									
7,300.00	71.62	356.76	6,817.06	-769.25	-513.04	-739.70	9.00	8.86	1.64
7,350.00	76.05	357.56	6,830.97	-721.29	-515.42	-691.69	9.00	8.87	1.60
7,400.00	80.49	358.33	6,841.13	-672.38	-517.17	-642.75	9.00	8.87	1.54
7,450.00	84.93	359.08	6,847.48	-622.81	-518.29	-593.20	9.00	8.88	1.50
7,500.00	89.37	359.82	6,849.96	-572.89	-518.77	-543.32	9.00	8.88	1.48
7,507.12	90.00	359.92	6,850.00	-565.77	-518.79	-536.21	9.00	8.88	1.47
LP: 7507.12' MD, 90.00° Inc, 359.92° Azm									
7,600.00	90.00	359.92	6,850.00	-472.89	-518.91	-443.47	0.00	0.00	0.00
7,700.00	90.00	359.92	6,850.00	-372.89	-519.04	-343.62	0.00	0.00	0.00
7,800.00	90.00	359.92	6,850.00	-272.89	-519.18	-243.76	0.00	0.00	0.00
7,900.00	90.00	359.92	6,850.00	-172.89	-519.31	-143.91	0.00	0.00	0.00
8,000.00	90.00	359.92	6,850.00	-72.89	-519.44	-44.05	0.00	0.00	0.00
8,100.00	90.00	359.92	6,850.00	27.11	-519.57	55.80	0.00	0.00	0.00
8,200.00	90.00	359.92	6,850.00	127.11	-519.70	155.66	0.00	0.00	0.00
8,300.00	90.00	359.92	6,850.00	227.11	-519.83	255.51	0.00	0.00	0.00
8,400.00	90.00	359.92	6,850.00	327.11	-519.97	355.36	0.00	0.00	0.00
8,500.00	90.00	359.92	6,850.00	427.11	-520.10	455.22	0.00	0.00	0.00
8,600.00	90.00	359.93	6,850.00	527.11	-520.23	555.07	0.00	0.00	0.00
8,700.00	90.00	359.93	6,850.00	627.11	-520.36	654.93	0.00	0.00	0.00
8,800.00	90.00	359.93	6,850.00	727.11	-520.49	754.78	0.00	0.00	0.00
8,900.00	90.00	359.93	6,850.00	827.11	-520.62	854.63	0.00	0.00	0.00
9,000.00	90.00	359.93	6,850.00	927.11	-520.75	954.49	0.00	0.00	0.00
9,100.00	90.00	359.93	6,850.00	1,027.11	-520.88	1,054.34	0.00	0.00	0.00
9,200.00	90.00	359.93	6,850.00	1,127.11	-521.01	1,154.20	0.00	0.00	0.00
9,300.00	90.00	359.93	6,850.00	1,227.11	-521.14	1,254.05	0.00	0.00	0.00
9,400.00	90.00	359.93	6,850.00	1,327.11	-521.27	1,353.90	0.00	0.00	0.00
9,500.00	90.00	359.93	6,850.00	1,427.11	-521.40	1,453.76	0.00	0.00	0.00
9,600.00	90.00	359.93	6,850.00	1,527.11	-521.53	1,553.61	0.00	0.00	0.00
9,700.00	90.00	359.93	6,850.00	1,627.11	-521.65	1,653.47	0.00	0.00	0.00
9,800.00	90.00	359.93	6,850.00	1,727.11	-521.78	1,753.32	0.00	0.00	0.00
9,900.00	90.00	359.93	6,850.00	1,827.11	-521.91	1,853.18	0.00	0.00	0.00
10,000.00	90.00	359.93	6,850.00	1,927.11	-522.04	1,953.03	0.00	0.00	0.00
10,100.00	90.00	359.93	6,850.00	2,027.11	-522.17	2,052.88	0.00	0.00	0.00
10,200.00	90.00	359.93	6,850.00	2,127.11	-522.29	2,152.74	0.00	0.00	0.00
10,300.00	90.00	359.93	6,850.00	2,227.11	-522.42	2,252.59	0.00	0.00	0.00
10,400.00	90.00	359.93	6,850.00	2,327.11	-522.55	2,352.44	0.00	0.00	0.00
10,500.00	90.00	359.93	6,850.00	2,427.11	-522.67	2,452.30	0.00	0.00	0.00
10,600.00	90.00	359.93	6,850.00	2,527.11	-522.80	2,552.15	0.00	0.00	0.00
10,700.00	90.00	359.93	6,850.00	2,627.11	-522.93	2,652.01	0.00	0.00	0.00
10,800.00	90.00	359.93	6,850.00	2,727.11	-523.05	2,751.86	0.00	0.00	0.00
10,900.00	90.00	359.93	6,850.00	2,827.11	-523.18	2,851.71	0.00	0.00	0.00
11,000.00	90.00	359.93	6,850.00	2,927.11	-523.31	2,951.57	0.00	0.00	0.00
11,100.00	90.00	359.93	6,850.00	3,027.11	-523.43	3,051.42	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen State D23-741
Company:	Northern Region - DJ Basin	**TVD Reference:**	KB @ 4840.00ft
Project:	Mustang	**MD Reference:**	KB @ 4840.00ft
Site:	D Section 23	**North Reference:**	Grid
Well:	Guttersen State D23-741	**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	359.93	6,850.00	3,127.11	-523.56	3,151.28	0.00	0.00	0.00
11,300.00	90.00	359.93	6,850.00	3,227.11	-523.68	3,251.13	0.00	0.00	0.00
11,400.00	90.00	359.93	6,850.00	3,327.11	-523.81	3,350.98	0.00	0.00	0.00
11,500.00	90.00	359.93	6,850.00	3,427.11	-523.93	3,450.84	0.00	0.00	0.00
11,600.00	90.00	359.93	6,850.00	3,527.11	-524.06	3,550.69	0.00	0.00	0.00
11,700.00	90.00	359.93	6,850.00	3,627.11	-524.18	3,650.54	0.00	0.00	0.00
11,800.00	90.00	359.93	6,850.00	3,727.11	-524.30	3,750.40	0.00	0.00	0.00
11,900.00	90.00	359.93	6,850.00	3,827.11	-524.43	3,850.25	0.00	0.00	0.00
12,000.00	90.00	359.93	6,850.00	3,927.11	-524.55	3,950.11	0.00	0.00	0.00
12,100.00	90.00	359.93	6,850.00	4,027.11	-524.68	4,049.96	0.00	0.00	0.00
12,200.00	90.00	359.93	6,850.00	4,127.11	-524.80	4,149.81	0.00	0.00	0.00
12,300.00	90.00	359.93	6,850.00	4,227.11	-524.92	4,249.67	0.00	0.00	0.00
12,400.00	90.00	359.93	6,850.00	4,327.11	-525.04	4,349.52	0.00	0.00	0.00
12,500.00	90.00	359.93	6,850.00	4,427.11	-525.17	4,449.37	0.00	0.00	0.00
12,600.00	90.00	359.93	6,850.00	4,527.11	-525.29	4,549.23	0.00	0.00	0.00
12,700.00	90.00	359.93	6,850.00	4,627.11	-525.41	4,649.08	0.00	0.00	0.00
12,800.00	90.00	359.93	6,850.00	4,727.11	-525.53	4,748.94	0.00	0.00	0.00
12,900.00	90.00	359.93	6,850.00	4,827.11	-525.65	4,848.79	0.00	0.00	0.00
13,000.00	90.00	359.93	6,850.00	4,927.11	-525.78	4,948.64	0.00	0.00	0.00
13,100.00	90.00	359.93	6,850.00	5,027.11	-525.90	5,048.50	0.00	0.00	0.00
13,200.00	90.00	359.93	6,850.00	5,127.11	-526.02	5,148.35	0.00	0.00	0.00
13,300.00	90.00	359.93	6,850.00	5,227.11	-526.14	5,248.20	0.00	0.00	0.00
13,400.00	90.00	359.93	6,850.00	5,327.11	-526.26	5,348.06	0.00	0.00	0.00
13,500.00	90.00	359.93	6,850.00	5,427.11	-526.38	5,447.91	0.00	0.00	0.00
13,600.00	90.00	359.93	6,850.00	5,527.11	-526.50	5,547.76	0.00	0.00	0.00
13,700.00	90.00	359.93	6,850.00	5,627.11	-526.62	5,647.62	0.00	0.00	0.00
13,800.00	90.00	359.93	6,850.00	5,727.11	-526.74	5,747.47	0.00	0.00	0.00
13,900.00	90.00	359.93	6,850.00	5,827.11	-526.86	5,847.33	0.00	0.00	0.00
14,000.00	90.00	359.93	6,850.00	5,927.11	-526.98	5,947.18	0.00	0.00	0.00
14,100.00	90.00	359.93	6,850.00	6,027.11	-527.10	6,047.03	0.00	0.00	0.00
14,200.00	90.00	359.93	6,850.00	6,127.11	-527.22	6,146.89	0.00	0.00	0.00
14,300.00	90.00	359.93	6,850.00	6,227.11	-527.34	6,246.74	0.00	0.00	0.00
14,400.00	90.00	359.93	6,850.00	6,327.11	-527.45	6,346.59	0.00	0.00	0.00
14,500.00	90.00	359.93	6,850.00	6,427.11	-527.57	6,446.45	0.00	0.00	0.00
14,600.00	90.00	359.93	6,850.00	6,527.11	-527.69	6,546.30	0.00	0.00	0.00
14,700.00	90.00	359.93	6,850.00	6,627.11	-527.81	6,646.15	0.00	0.00	0.00
14,800.00	90.00	359.93	6,850.00	6,727.11	-527.93	6,746.01	0.00	0.00	0.00
14,900.00	90.00	359.93	6,850.00	6,827.11	-528.04	6,845.86	0.00	0.00	0.00
15,000.00	90.00	359.93	6,850.00	6,927.11	-528.16	6,945.71	0.00	0.00	0.00
15,100.00	90.00	359.93	6,850.00	7,027.11	-528.28	7,045.57	0.00	0.00	0.00
15,200.00	90.00	359.93	6,850.00	7,127.11	-528.39	7,145.42	0.00	0.00	0.00
15,300.00	90.00	359.93	6,850.00	7,227.11	-528.51	7,245.27	0.00	0.00	0.00
15,400.00	90.00	359.93	6,850.00	7,327.11	-528.63	7,345.13	0.00	0.00	0.00
15,500.00	90.00	359.93	6,850.00	7,427.11	-528.74	7,444.98	0.00	0.00	0.00
15,600.00	90.00	359.93	6,850.00	7,527.11	-528.86	7,544.83	0.00	0.00	0.00
15,700.00	90.00	359.93	6,850.00	7,627.11	-528.97	7,644.69	0.00	0.00	0.00
15,800.00	90.00	359.93	6,850.00	7,727.11	-529.09	7,744.54	0.00	0.00	0.00
15,900.00	90.00	359.93	6,850.00	7,827.11	-529.21	7,844.39	0.00	0.00	0.00
16,000.00	90.00	359.93	6,850.00	7,927.11	-529.32	7,944.25	0.00	0.00	0.00
16,100.00	90.00	359.93	6,850.00	8,027.11	-529.44	8,044.10	0.00	0.00	0.00
16,200.00	90.00	359.93	6,850.00	8,127.11	-529.55	8,143.95	0.00	0.00	0.00
16,300.00	90.00	359.93	6,850.00	8,227.11	-529.66	8,243.81	0.00	0.00	0.00
16,400.00	90.00	359.93	6,850.00	8,327.11	-529.78	8,343.66	0.00	0.00	0.00
16,500.00	90.00	359.93	6,850.00	8,427.10	-529.89	8,443.51	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen State D23-741
Company:	Northern Region - DJ Basin	**TVD Reference:**	KB @ 4840.00ft
Project:	Mustang	**MD Reference:**	KB @ 4840.00ft
Site:	D Section 23	**North Reference:**	Grid
Well:	Guttersen State D23-741	**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	359.93	6,850.00	8,527.10	-530.01	8,543.37	0.00	0.00	0.00
16,700.00	90.00	359.94	6,850.00	8,627.10	-530.12	8,643.22	0.00	0.00	0.00
16,800.00	90.00	359.94	6,850.00	8,727.10	-530.23	8,743.07	0.00	0.00	0.00
16,900.00	90.00	359.94	6,850.00	8,827.10	-530.35	8,842.93	0.00	0.00	0.00
17,000.00	90.00	359.94	6,850.00	8,927.10	-530.46	8,942.78	0.00	0.00	0.00
17,100.00	90.00	359.94	6,850.00	9,027.10	-530.57	9,042.63	0.00	0.00	0.00
17,200.00	90.00	359.94	6,850.00	9,127.10	-530.68	9,142.48	0.00	0.00	0.00
17,300.00	90.00	359.94	6,850.00	9,227.10	-530.80	9,242.34	0.00	0.00	0.00
17,400.00	90.00	359.94	6,850.00	9,327.10	-530.91	9,342.19	0.00	0.00	0.00
17,500.00	90.00	359.94	6,850.00	9,427.10	-531.02	9,442.04	0.00	0.00	0.00
17,600.00	90.00	359.94	6,850.00	9,527.10	-531.13	9,541.90	0.00	0.00	0.00
17,664.22	90.00	359.94	6,850.00	9,591.33	-531.20	9,606.02	0.00	0.00	0.00
TD @ 17664.22' MD/6850.00' 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
Guttersen State D23-7 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,319,304.14	3,275,234.00	40.2056888	-104.5145679
Guttersen State D23-7 - plan hits target center - Point	0.00	0.00	5,939.30	-1,134.05	-366.82	1,318,170.10	3,274,867.18	40.2025871	-104.5159262
Guttersen State D23-7 - plan hits target center - Point	0.00	0.00	6,850.00	9,591.33	-531.20	1,328,895.45	3,274,702.80	40.2320326	-104.5160886
Guttersen State D23-7 - plan hits target center - Point	0.00	0.00	6,850.00	-565.77	-518.79	1,318,738.38	3,274,715.22	40.2041517	-104.5164477

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen State D23-741
Company:	Northern Region - DJ Basin	**TVD Reference:**	KB @ 4840.00ft
Project:	Mustang	**MD Reference:**	KB @ 4840.00ft
Site:	D Section 23	**North Reference:**	Grid
Well:	Guttersen State D23-741	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
551.00	551.00	Pierre			
753.00	753.00	Upper Pierre Aquifer Top			
1,641.00	1,641.00	Upper Pierre Aquifer Base			
3,745.38	3,737.00	Parkman			
4,167.01	4,135.00	Sussex			
5,011.92	4,884.00	Shannon			
6,223.10	5,951.00	Teepee Buttes			
6,919.59	6,601.00	Sharon Springs			
6,988.67	6,653.00	Top A Chalk			
6,994.26	6,657.00	Top A Marl			
7,030.40	6,682.00	Top B Chalk			
7,085.12	6,717.00	Top B Marl			
7,208.12	6,782.00	Top C Chalk			
7,290.51	6,814.00	Top C Marl			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
3,000.00	3,000.00	0.00	0.00	Build: 2°/100'
4,412.38	4,355.86	-324.61	-105.00	Hold: 28.25° Inc, 197.92° Azm
6,209.89	5,939.30	-1,134.05	-366.82	KOP: Build 9°/100' @ 6209.89' MD
7,507.12	6,850.00	-565.77	-518.79	LP: 7507.12' MD, 90.00° Inc, 359.92° Azm
17,664.22	6,850.00	9,591.33	-531.20	TD @ 17664.22' MD/6850.00' TVD

Northern Region - DJ Basin

Mustang
D Section 23
Guttersen State D23-741

Wellbore #1
Plan #1

Anticollision Summary Report

15 August, 2018

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen State D23-741
Project:	Mustang	**TVD Reference:**	KB @ 4840.00ft
Reference Site:	D Section 23	**MD Reference:**	KB @ 4840.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen State D23-741	**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** 7/31/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	17,664.22	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 14						
Spike D 14-09 (SI) - Wellbore #1 - Gyro Surveys	14,748.54	6,749.97	1,526.76	1,437.85	17.171	CC, ES
Spike D 14-09 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	6,749.91	1,534.26	1,444.60	17.113	SF
Spike State D 14-13 (SI) - Wellbore #1 - Gyro Surveys	13,129.53	6,857.74	2,619.60	2,542.33	33.906	CC, ES
Spike State D 14-13 (SI) - Wellbore #1 - Gyro Surveys	13,600.00	6,858.58	2,661.51	2,581.31	33.184	SF
Dalbey D 14-1 (SI) - Wellbore #1 - Gyro Surveys	17,170.69	6,758.07	1,236.19	1,128.51	11.481	CC, ES
Dalbey D 14-1 (SI) - Wellbore #1 - Gyro Surveys	17,200.00	6,758.02	1,236.54	1,128.69	11.465	SF
Dalbey D 14-2 (SI) - Wellbore #1 - Gyro Surveys	16,923.74	6,757.26	321.42	215.70	3.040	CC, ES, SF
Dalbey D 14-3 (SI) - Wellbore #1 - Gyro Surveys	17,137.70	6,811.65	1,113.16	1,005.60	10.349	CC, ES
Dalbey D 14-3 (SI) - Wellbore #1 - Gyro Surveys	17,200.00	6,811.51	1,114.90	1,006.89	10.322	SF
Dalbey D 14-6 (SI) - Wellbore #1 - Gyro Surveys	15,972.65	6,799.35	1,319.77	1,221.27	13.399	CC, ES
Dalbey D 14-6 (SI) - Wellbore #1 - Gyro Surveys	16,100.00	6,799.19	1,325.90	1,226.58	13.350	SF
Dalbey D 14-7 (SI) - Wellbore #1 - Gyro Surveys	15,842.49	6,773.39	60.84	-36.53	0.625	Level 1, CC, ES, SF
Dalbey D 14-8 (SI) - Wellbore #1 - Gyro Surveys	15,884.49	6,747.70	1,191.17	1,093.57	12.204	CC, ES
Dalbey D 14-8 (SI) - Wellbore #1 - Gyro Surveys	15,900.00	6,747.76	1,191.27	1,093.57	12.193	SF
Guttersen State D 14-23 (SI) - Wellbore #1 - Gyro Survey	13,806.68	6,755.77	742.05	660.30	9.078	CC, ES, SF
Guttersen State D 14-24 (PR) - Wellbore #1 - Gyro Surve	13,919.59	6,809.56	722.31	639.35	8.707	CC, ES, SF
Guttersen State D 14-33 (PR) - Wellbore #1 - Gyro Surve	13,984.77	6,902.51	2,981.59	2,897.92	35.634	CC
Guttersen State D 14-33 (PR) - Wellbore #1 - Gyro Surve	14,000.00	6,902.40	2,981.63	2,897.84	35.584	ES
Guttersen State D 14-33 (PR) - Wellbore #1 - Gyro Surve	14,500.00	6,898.96	3,025.78	2,938.82	34.796	SF
HSR-Guttersen State 4-14 (PA) - Wellbore #1 - Gyro Sur	17,107.40	6,819.11	2,587.33	2,480.62	24.246	CC, ES
HSR-Guttersen State 4-14 (PA) - Wellbore #1 - Gyro Sur	17,400.00	6,817.98	2,603.83	2,495.14	23.956	SF
HSR-Guttersen State 5-14 (PA) - Wellbore #1 - Gyro Sur	15,911.62	6,803.20	2,556.05	2,458.87	26.304	CC, ES
HSR-Guttersen State 5-14 (PA) - Wellbore #1 - Gyro Sur	16,200.00	6,802.48	2,572.27	2,473.11	25.942	SF
Spike D 14-16 (SI) - Wellbore #1 - Gyro Surveys	13,115.85	6,768.51	1,475.45	1,398.60	19.200	CC, ES
Spike D 14-16 (SI) - Wellbore #1 - Gyro Surveys	13,200.00	6,768.24	1,477.85	1,400.53	19.114	SF
Spike State D 14-11 (PR) - Wellbore #1 - Gyro Surveys	14,747.53	6,820.93	1,091.60	1,002.49	12.250	CC, ES
Spike State D 14-11 (PR) - Wellbore #1 - Gyro Surveys	14,800.00	6,820.30	1,092.86	1,003.34	12.208	SF
Spike State D 14-12 (PR) - Wellbore #1 - Gyro Surveys	14,706.17	6,822.45	2,621.34	2,532.44	29.485	CC, ES
Spike State D 14-12 (PR) - Wellbore #1 - Gyro Surveys	15,100.00	6,822.61	2,650.76	2,559.30	28.983	SF
Spike State D 14-14 (SI) - Wellbore #1 - Gyro Surveys	13,054.21	6,830.20	1,123.78	1,047.09	14.655	CC, ES
Spike State D 14-14 (SI) - Wellbore #1 - Gyro Surveys	13,100.00	6,830.42	1,124.71	1,047.68	14.601	SF
Spike State D 14-15 (SI) - Wellbore #1 - Gyro Surveys	13,164.71	6,806.06	201.77	124.57	2.614	CC, ES, SF
Spike State D14-13J (SI) - Wellbore #1 - Gyro Surveys	13,918.92	6,844.83	2,166.43	2,083.29	26.056	CC, ES
Spike State D14-13J (SI) - Wellbore #1 - Gyro Surveys	14,200.00	6,845.01	2,184.59	2,099.60	25.702	SF
Spike State GWS D 14-10 (SI) - Wellbore #1 - Gyro Surv	14,406.03	6,788.17	87.46	0.98	1.011	Level 2, CC, ES, SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen State D23-741
Project:	Mustang	**TVD Reference:**	KB @ 4840.00ft
Reference Site:	D Section 23	**MD Reference:**	KB @ 4840.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen State D23-741	**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 15						
Cally Blue D 15-12 (PR) - Wellbore #1 - Gyro Surveys	14,660.97	6,800.00	7,992.65	7,904.18	90.338	CC
Cally Blue D 15-12 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,800.00	7,992.75	7,903.97	90.033	ES
Cally Blue D 15-12 (PR) - Wellbore #1 - Gyro Surveys	17,664.22	6,800.00	8,538.36	8,431.14	79.634	SF
Cally Blue D 15-14 (PR) - Wellbore #1 - Gyro Surveys	13,082.48	6,816.38	6,449.10	6,372.27	83.938	CC
Cally Blue D 15-14 (PR) - Wellbore #1 - Gyro Surveys	13,100.00	6,816.40	6,449.13	6,372.16	83.796	ES
Cally Blue D 15-14 (PR) - Wellbore #1 - Gyro Surveys	15,400.00	6,819.33	6,852.93	6,761.82	75.222	SF
Cally Blue D15-04J - Wellbore #1 - Wellbore #1- As Drille	13,580.46	6,953.19	4,221.67	4,140.75	52.166	CC
Cally Blue D15-04J - Wellbore #1 - Wellbore #1- As Drille	13,600.00	6,953.43	4,221.72	4,140.64	52.070	ES
Cally Blue D15-04J - Wellbore #1 - Wellbore #1- As Drille	14,600.00	6,965.82	4,343.03	4,255.62	49.685	SF
Cally Blue D15-09 - Wellbore #1 - Wellbore #1- As Drilled	14,459.17	6,869.64	4,017.54	3,930.39	46.096	CC
Cally Blue D15-09 - Wellbore #1 - Wellbore #1- As Drilled	14,500.00	6,869.61	4,017.75	3,930.28	45.931	ES
Cally Blue D15-09 - Wellbore #1 - Wellbore #1- As Drilled	15,300.00	6,868.92	4,104.60	4,012.04	44.346	SF
Cally Blue D15-10 - Wellbore #1 - Wellbore #1- As Drilled	14,575.06	6,843.40	5,264.55	5,176.59	59.850	CC
Cally Blue D15-10 - Wellbore #1 - Wellbore #1- As Drilled	14,600.00	6,843.49	5,264.61	5,176.46	59.718	ES
Cally Blue D15-10 - Wellbore #1 - Wellbore #1- As Drilled	16,000.00	6,848.33	5,454.01	5,357.03	56.242	SF
Cally Blue D15-11 (PA) - Wellbore #1 - Gyro Surveys	14,710.19	6,855.57	6,476.30	6,387.28	72.751	CC
Cally Blue D15-11 (PA) - Wellbore #1 - Gyro Surveys	14,800.00	6,855.16	6,476.92	6,387.20	72.195	ES
Cally Blue D15-11 (PA) - Wellbore #1 - Gyro Surveys	16,800.00	6,845.96	6,805.16	6,703.10	66.674	SF
Cally Blue D15-15 - Wellbore #1 - Wellbore #1- As Drilled	13,271.21	6,802.03	5,220.51	5,142.33	66.772	CC
Cally Blue D15-15 - Wellbore #1 - Wellbore #1- As Drilled	13,300.00	6,802.28	5,220.59	5,142.19	66.588	ES
Cally Blue D15-15 - Wellbore #1 - Wellbore #1- As Drilled	14,900.00	6,813.26	5,468.72	5,380.49	61.981	SF
Cally D15-02 - Wellbore #1 - Wellbore #1-As Drilled	17,208.11	6,814.13	5,200.43	5,092.27	48.078	CC, ES
Cally D15-02 - Wellbore #1 - Wellbore #1-As Drilled	17,664.22	6,813.30	5,220.40	5,108.82	46.787	SF
Cally White D15-01 - Wellbore #1 - Wellbore #1- As Drille	17,155.55	6,840.59	3,896.42	3,788.59	36.134	CC
Cally White D15-01 - Wellbore #1 - Wellbore #1- As Drille	17,200.00	6,840.16	3,896.67	3,788.48	36.016	ES
Cally White D15-01 - Wellbore #1 - Wellbore #1- As Drille	17,664.22	6,835.60	3,929.48	3,818.14	35.292	SF
Cally White D15-07 - Wellbore #1 - Wellbore #1- As Drille	15,897.15	6,881.21	5,338.97	5,240.80	54.389	CC
Cally White D15-07 - Wellbore #1 - Wellbore #1- As Drille	15,900.00	6,881.20	5,338.97	5,240.78	54.376	ES
Cally White D15-07 - Wellbore #1 - Wellbore #1- As Drille	17,200.00	6,872.39	5,495.65	5,389.17	51.613	SF
Cally White D15-08 - Wellbore #1 - Wellbore #1- As Drille	15,875.82	6,854.97	3,864.35	3,766.42	39.457	CC
Cally White D15-08 - Wellbore #1 - Wellbore #1- As Drille	15,900.00	6,854.87	3,864.43	3,766.30	39.379	ES
Cally White D15-08 - Wellbore #1 - Wellbore #1- As Drille	16,600.00	6,852.15	3,931.63	3,829.03	38.318	SF
Chandler State D15-72-1HN - Original Drilling - Original D	14,096.34	10,193.24	3,569.05	3,473.71	37.433	CC
Chandler State D15-72-1HN - Original Drilling - Original D	14,400.00	14,400.00	3,575.15	3,451.15	28.831	ES, SF
Chandler State D15-73-1HN - Original Drilling - Original D	12,639.39	11,629.00	4,121.43	4,026.42	43.377	CC, ES
Chandler State D15-73-1HN - Original Drilling - Original D	15,500.00	15,500.00	4,195.39	4,062.71	31.619	SF
Chandler State D15-74-1HN - Original Drilling - Original D	12,400.00	11,785.00	4,900.91	4,763.24	35.598	SF
Chandler State D15-74-1HN - Original Drilling - Original D	17,664.22	5,691.18	4,798.78	4,690.70	44.400	CC, ES
Chandler State D23-79HN - Original Drilling - Original Dr	7,800.00	12,187.94	3,163.98	3,044.55	26.494	SF
Chandler State D23-79HN - Original Drilling - Original Dr	8,800.00	11,205.69	3,148.11	3,043.06	29.968	ES
Chandler State D23-79HN - Original Drilling - Original Dr	12,756.67	7,259.83	3,129.44	3,055.93	42.570	CC
Duff D15-5 (PR) - Wellbore #1 - Gyro Surveys	15,850.30	7,044.06	7,925.73	7,828.21	81.267	CC
Duff D15-5 (PR) - Wellbore #1 - Gyro Surveys	15,900.00	7,042.75	7,925.89	7,827.97	80.945	ES
Duff D15-5 (PR) - Wellbore #1 - Gyro Surveys	17,664.22	6,996.41	8,130.55	8,020.54	73.905	SF
Guttersen D 15-21 (PR) - Wellbore #1 - Gyro Surveys	15,123.61	6,851.67	5,811.55	5,719.50	63.133	CC
Guttersen D 15-21 (PR) - Wellbore #1 - Gyro Surveys	15,200.00	6,852.09	5,812.05	5,719.40	62.731	ES
Guttersen D 15-21 (PR) - Wellbore #1 - Gyro Surveys	16,800.00	6,860.95	6,048.53	5,945.93	58.951	SF
Guttersen D 15-24 (PR) - Wellbore #1 - Gyro Surveys	13,903.92	6,831.56	5,910.75	5,827.89	71.335	CC, ES
Guttersen D 15-24 (PR) - Wellbore #1 - Gyro Surveys	15,800.00	6,836.66	6,207.46	6,112.80	65.579	SF
Guttersen D 15-29 (SI) - Wellbore #1 - Gyro Surveys	17,664.22	6,765.01	7,216.16	7,104.56	64.663	CC, ES, SF
Guttersen D 22-28 (PR) - Wellbore #1 - Gyro Surveys	12,689.53	6,845.29	5,999.64	5,925.52	80.950	CC
Guttersen D 22-28 (PR) - Wellbore #1 - Gyro Surveys	12,700.00	6,845.29	5,999.64	5,925.45	80.867	ES
Guttersen D 22-28 (PR) - Wellbore #1 - Gyro Surveys	14,800.00	6,844.05	6,360.06	6,273.06	73.107	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 Guttersen State D23-741
Project:	Mustang	**TVD Reference:**	KB @ 4840.00ft
Reference Site:	D Section 23	**MD Reference:**	KB @ 4840.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen State D23-741	**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 15						
Guttersen D14-32 - Wellbore #1 - Wellbore #1- As Drillec	15,324.99	6,850.48	3,407.46	3,313.81	36.384	CC, ES
Guttersen D14-32 - Wellbore #1 - Wellbore #1- As Drillec	15,900.00	6,855.93	3,455.64	3,358.22	35.472	SF
Guttersen D15-17 - Wellbore #1 - Wellbore #1- As Drillec	16,602.42	6,860.18	4,575.11	4,471.52	44.168	CC, ES
Guttersen D15-17 - Wellbore #1 - Wellbore #1- As Drillec	17,500.00	6,868.46	4,662.32	4,552.86	42.594	SF
Guttersen D15-18 (SI) - Wellbore #1 - Gyro Surveys	16,737.21	6,862.55	5,729.97	5,625.34	54.766	CC
Guttersen D15-18 (SI) - Wellbore #1 - Gyro Surveys	16,800.00	6,862.86	5,730.31	5,625.18	54.508	ES
Guttersen D15-18 (SI) - Wellbore #1 - Gyro Surveys	17,664.22	6,867.18	5,804.48	5,693.36	52.238	SF
Guttersen D15-20 (PR) - Wellbore #1 - Gyro Surveys	15,284.97	6,865.50	7,283.09	7,189.72	78.001	CC
Guttersen D15-20 (PR) - Wellbore #1 - Gyro Surveys	15,300.00	6,865.50	7,283.11	7,189.62	77.903	ES
Guttersen D15-20 (PR) - Wellbore #1 - Gyro Surveys	17,664.22	6,865.42	7,661.93	7,553.51	70.666	SF
Guttersen D15-22 - Wellbore #1 - Wellbore #1- As Drillec	15,008.45	6,889.33	4,582.80	4,491.42	50.153	CC, ES
Guttersen D15-22 - Wellbore #1 - Wellbore #1- As Drillec	16,100.00	6,894.27	4,711.01	4,612.73	47.931	SF
Guttersen D15-28 (SI) - Wellbore #1 - Gyro Surveys	17,664.22	6,866.51	5,916.99	5,805.17	52.914	CC, ES, SF
Guttersen D15-30 (SI) - Wellbore #1 - Gyro Surveys	17,472.98	6,786.19	8,254.62	8,144.46	74.936	CC
Guttersen D15-30 (SI) - Wellbore #1 - Gyro Surveys	17,500.00	6,786.39	8,254.66	8,144.29	74.788	ES
Guttersen D15-30 (SI) - Wellbore #1 - Gyro Surveys	17,664.22	6,787.58	8,256.84	8,145.16	73.934	SF
Guttersen D22-27 - Wellbore #1 - Wellbore #1- As Drillec	12,781.05	6,862.37	4,611.86	4,537.03	61.631	CC
Guttersen D22-27 - Wellbore #1 - Wellbore #1- As Drillec	12,800.00	6,862.27	4,611.90	4,536.93	61.517	ES
Guttersen D22-27 - Wellbore #1 - Wellbore #1- As Drillec	14,100.00	6,855.94	4,796.77	4,713.86	57.856	SF
Guttersen D23-69HN - Plan A - Plan A	12,481.87	9,946.38	30.21	-42.47	0.416	Level 1, CC
Guttersen D23-69HN - Plan A - Plan A	12,500.00	9,946.43	35.19	-62.12	0.362	Level 1, ES, SF
HSR Guttersen 03-15 (SI) - Wellbore #1 - Gyro Surveys	17,185.24	6,827.11	6,570.81	6,462.80	60.835	CC
HSR Guttersen 03-15 (SI) - Wellbore #1 - Gyro Surveys	17,200.00	6,827.20	6,570.83	6,462.70	60.769	ES
HSR Guttersen 03-15 (SI) - Wellbore #1 - Gyro Surveys	17,664.22	6,830.24	6,588.25	6,476.57	58.992	SF
HSR Guttersen 6-15 (SI) - Wellbore #1 - Gyro Surveys	15,731.51	6,868.55	6,395.38	6,298.58	66.062	CC
HSR Guttersen 6-15 (SI) - Wellbore #1 - Gyro Surveys	15,800.00	6,868.40	6,395.75	6,298.40	65.700	ES
HSR Guttersen 6-15 (SI) - Wellbore #1 - Gyro Surveys	17,600.00	6,864.57	6,662.78	6,554.14	61.330	SF
Mills UPRC D 15-04 (SI) - Wellbore #1 - Gyro Surveys	16,881.80	6,811.68	7,541.02	7,435.41	71.405	CC
Mills UPRC D 15-04 (SI) - Wellbore #1 - Gyro Surveys	16,900.00	6,811.74	7,541.04	7,435.28	71.307	ES
Mills UPRC D 15-04 (SI) - Wellbore #1 - Gyro Surveys	17,664.22	6,814.52	7,581.51	7,470.02	68.002	SF
Two E Ranch 1-15B (SI) - Wellbore #1 - Gyro Surveys	13,527.73	6,770.28	7,543.01	7,463.34	94.684	CC
Two E Ranch 1-15B (SI) - Wellbore #1 - Gyro Surveys	13,600.00	6,770.23	7,543.35	7,463.15	94.049	ES
Two E Ranch 1-15B (SI) - Wellbore #1 - Gyro Surveys	16,500.00	6,768.48	8,107.58	8,009.62	82.766	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen State D23-741
Project:	Mustang	**TVD Reference:**	KB @ 4840.00ft
Reference Site:	D Section 23	**MD Reference:**	KB @ 4840.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen State D23-741	**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 23						
Guttersen 23-20 (SI) - Wellbore #1 - Gyro Surveys	10,070.35	6,862.23	1,935.37	1,878.00	33.738	CC, ES
Guttersen 23-20 (SI) - Wellbore #1 - Gyro Surveys	10,400.00	6,860.71	1,963.24	1,904.18	33.241	SF
Guttersen 23-32 (SI) - Wellbore #1 - Gyro Surveys	10,588.31	6,801.48	219.44	159.48	3.660	CC, ES, SF
Guttersen 23-41 (PR) - Wellbore #1 - Gyro Surveys	11,900.52	6,740.24	1,373.54	1,305.45	20.171	CC, ES
Guttersen 23-41 (PR) - Wellbore #1 - Gyro Surveys	12,000.00	6,738.97	1,377.14	1,308.52	20.071	SF
Guttersen 31-23 (PR) - Wellbore #1 - Gyro Surveys	11,884.12	6,949.86	32.77	-35.93	0.477	Level 1, CC, ES, SF
Guttersen 42-23 (PR) - Wellbore #1 - Gyro Surveys	10,563.50	6,800.63	1,351.81	1,291.93	22.575	CC, ES
Guttersen 42-23 (PR) - Wellbore #1 - Gyro Surveys	10,700.00	6,799.07	1,358.69	1,298.19	22.459	SF
Guttersen D23-711 - Wellbore #1 - Plan #1	2,600.00	2,600.00	112.51	94.34	6.191	CC, ES
Guttersen D23-711 - Wellbore #1 - Plan #1	2,700.00	2,696.13	114.21	95.36	6.058	SF
Guttersen D35-720 - Wellbore #1 - Plan #1	2,567.22	2,569.24	166.60	148.73	9.323	CC
Guttersen D35-720 - Wellbore #1 - Plan #1	2,600.00	2,601.70	166.66	148.56	9.210	ES
Guttersen D35-720 - Wellbore #1 - Plan #1	2,900.00	2,905.53	177.29	157.12	8.792	SF
Guttersen D35-730 - Wellbore #1 - Plan #1	3,234.59	3,246.13	98.74	76.31	4.402	CC, ES
Guttersen D35-730 - Wellbore #1 - Plan #1	3,300.00	3,311.35	99.56	76.68	4.352	SF
Guttersen D35-740 - Wellbore #1 - Plan #1	7,228.44	7,098.80	50.90	0.65	1.013	Level 2, CC, ES, SF
Guttersen D35-750 - Wellbore #1 - Plan #1	7,300.00	7,083.07	592.19	541.91	11.778	SF
Guttersen D35-750 - Wellbore #1 - Plan #1	7,306.46	7,078.35	592.17	541.90	11.781	CC, ES
Guttersen D35-760 - Wellbore #1 - Plan #1	7,400.00	6,861.71	1,212.86	1,163.44	24.543	SF
Guttersen D35-760 - Wellbore #1 - Plan #1	7,498.34	6,804.19	1,210.27	1,161.07	24.601	CC, ES
Guttersen D35-770 - Wellbore #1 - Plan #1	2,308.85	2,327.85	1,694.67	1,678.51	104.899	CC
Guttersen D35-770 - Wellbore #1 - Plan #1	2,400.00	2,412.60	1,694.71	1,677.92	100.972	ES
Guttersen D35-770 - Wellbore #1 - Plan #1	7,233.60	7,331.71	1,925.03	1,874.38	38.008	SF
Guttersen D35-780 - Wellbore #1 - Plan #1	2,108.85	2,127.85	1,732.15	1,717.43	117.663	CC
Guttersen D35-780 - Wellbore #1 - Plan #1	2,200.00	2,212.18	1,732.19	1,716.84	112.855	ES
Guttersen D35-780 - Wellbore #1 - Plan #1	7,900.00	6,350.46	2,362.61	2,313.68	48.288	SF
Guttersen State D23-721 - Wellbore #1 - Plan #1	2,600.00	2,599.00	75.01	56.84	4.128	CC, ES
Guttersen State D23-721 - Wellbore #1 - Plan #1	2,800.00	2,796.54	78.11	58.57	3.998	SF
Guttersen State D23-731 - Wellbore #1 - Plan #1	2,400.00	2,399.00	37.50	20.76	2.241	CC
Guttersen State D23-731 - Wellbore #1 - Plan #1	2,500.00	2,498.88	37.65	20.22	2.160	ES
Guttersen State D23-731 - Wellbore #1 - Plan #1	2,600.00	2,598.51	38.57	20.46	2.130	SF
Guttersen State D23-751 - Wellbore #1 - Plan #1	7,505.62	7,417.36	633.79	583.03	12.485	CC
Guttersen State D23-751 - Wellbore #1 - Plan #1	17,664.22	17,575.78	640.10	463.12	3.617	ES, SF
Guttersen State D23-761 - Wellbore #1 - Plan #1	7,504.26	7,325.00	1,298.03	1,247.79	25.835	CC
Guttersen State D23-761 - Wellbore #1 - Plan #1	17,664.22	17,484.61	1,304.34	1,127.15	7.361	ES, SF
Guttersen State D23-771 - Wellbore #1 - Plan #1	2,309.84	2,326.84	1,697.41	1,681.26	105.069	CC
Guttersen State D23-771 - Wellbore #1 - Plan #1	2,400.00	2,412.59	1,697.43	1,680.65	101.137	ES
Guttersen State D23-771 - Wellbore #1 - Plan #1	17,664.22	17,651.76	1,960.07	1,783.66	11.111	SF
Guttersen State D23-781 - Wellbore #1 - Plan #1	2,109.35	2,127.35	1,734.85	1,720.13	117.846	CC
Guttersen State D23-781 - Wellbore #1 - Plan #1	2,200.00	2,212.46	1,734.88	1,719.53	113.026	ES
Guttersen State D23-781 - Wellbore #1 - Plan #1	17,664.22	17,668.61	2,571.70	2,394.93	14.548	SF
Guttersen State D35-790 - Wellbore #1 - Plan #1	2,200.00	2,203.00	188.28	172.96	12.292	CC
Guttersen State D35-790 - Wellbore #1 - Plan #1	2,300.00	2,301.09	188.79	172.78	11.789	ES
Guttersen State D35-790 - Wellbore #1 - Plan #1	2,700.00	2,689.08	204.57	185.85	10.928	SF
Guttersen USX D 23-17 (PR) - Wellbore #1 - Gyro Surve	11,240.76	6,821.18	627.96	563.79	9.786	CC, ES, SF
Parker Blue D 23-09 (SI) - Wellbore #1 - Gyro Surveys	1,638.83	1,577.11	1,429.54	1,418.55	130.097	CC
Parker Blue D 23-09 (SI) - Wellbore #1 - Gyro Surveys	3,100.00	3,063.02	1,434.43	1,413.04	67.038	ES
Parker Blue D 23-09 (SI) - Wellbore #1 - Gyro Surveys	9,100.00	6,788.87	1,626.96	1,574.71	31.138	SF
Parker Blue D 23-10 (SI) - Wellbore #1 - Gyro Surveys	9,093.92	6,816.95	354.15	301.62	6.743	CC, ES
Parker Blue D 23-10 (SI) - Wellbore #1 - Gyro Surveys	9,100.00	6,816.93	354.20	301.66	6.742	SF
Parker Blue D 23-11 (SI) - Wellbore #1 - Gyro Surveys	9,502.63	6,851.31	1,117.88	1,063.40	20.517	CC, ES
Parker Blue D 23-11 (SI) - Wellbore #1 - Gyro Surveys	9,600.00	6,850.62	1,122.11	1,067.17	20.423	SF
Parker Blue D 23-13 (SI) - Wellbore #1 - Gyro Surveys	8,308.61	6,837.71	2,651.29	2,601.13	52.859	CC, ES

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 Guttersen State D23-741
Project:	Mustang	**TVD Reference:**	KB @ 4840.00ft
Reference Site:	D Section 23	**MD Reference:**	KB @ 4840.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen State D23-741	**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

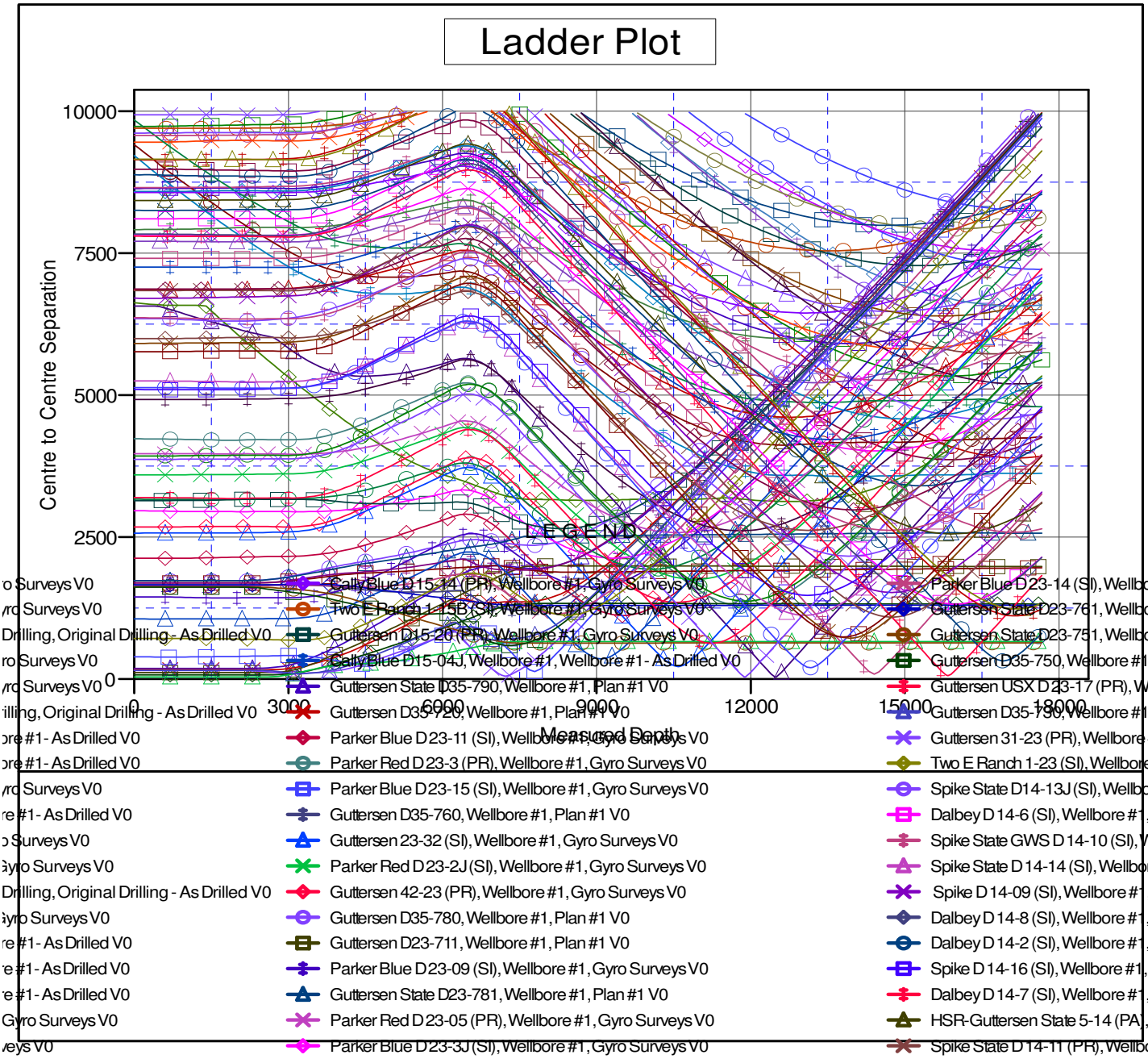
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 23						
Parker Blue D 23-13 (SI) - Wellbore #1 - Gyro Surveys	8,700.00	6,837.13	2,680.02	2,628.82	52.342	SF
Parker Blue D 23-14 (SI) - Wellbore #1 - Gyro Surveys	8,219.70	6,846.11	1,152.19	1,102.23	23.062	CC, ES
Parker Blue D 23-14 (SI) - Wellbore #1 - Gyro Surveys	8,300.00	6,845.84	1,154.99	1,104.87	23.046	SF
Parker Blue D 23-15 (SI) - Wellbore #1 - Gyro Surveys	7,791.17	6,821.24	134.35	85.24	2.736	CC, ES, SF
Parker Blue D 23-3J (SI) - Wellbore #1 - Gyro Surveys	9,330.23	6,879.28	2,132.07	2,074.91	37.298	CC, ES
Parker Blue D 23-3J (SI) - Wellbore #1 - Gyro Surveys	9,700.00	6,880.87	2,163.90	2,105.12	36.815	SF
Parker Red D 23-05 (PR) - Wellbore #1 - Gyro Surveys	10,541.95	6,851.82	2,581.23	2,521.22	43.011	CC, ES
Parker Red D 23-05 (PR) - Wellbore #1 - Gyro Surveys	11,100.00	6,850.17	2,640.87	2,577.79	41.866	SF
Parker Red D 23-2J (SI) - Wellbore #1 - Gyro Surveys	10,906.31	6,795.76	1,753.48	1,691.34	28.220	CC, ES
Parker Red D 23-2J (SI) - Wellbore #1 - Gyro Surveys	11,200.00	6,799.71	1,777.90	1,714.05	27.846	SF
Parker Red D 23-3 (PR) - Wellbore #1 - Gyro Surveys	11,893.55	6,824.56	1,277.06	1,208.51	18.630	CC
Parker Red D 23-3 (PR) - Wellbore #1 - Gyro Surveys	11,900.00	6,824.46	1,277.08	1,208.48	18.617	ES
Parker Red D 23-3 (PR) - Wellbore #1 - Gyro Surveys	12,000.00	6,822.93	1,281.49	1,212.22	18.501	SF
Parker Red D 23-4 (SI) - Wellbore #1 - Gyro Surveys	11,800.15	6,846.82	2,610.72	2,542.72	38.394	CC, ES
Parker Red D 23-4 (SI) - Wellbore #1 - Gyro Surveys	12,300.00	6,851.09	2,658.14	2,587.10	37.416	SF
Two E Ranch 1-23 (SI) - Wellbore #1 - Gyro Surveys	3,129.42	3,119.16	683.73	662.04	31.514	CC, ES
Two E Ranch 1-23 (SI) - Wellbore #1 - Gyro Surveys	8,500.00	6,814.14	1,125.50	1,074.97	22.273	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen State D23-741
Project:	Mustang	**TVD Reference:**	KB @ 4840.00ft
Reference Site:	D Section 23	**MD Reference:**	KB @ 4840.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen State D23-741	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 4840.00ft	Coordinates are relative to: Guttersen State D23-741
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: 0.64°



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 Guttersen State D23-741
Project:	Mustang	**TVD Reference:**	KB @ 4840.00ft
Reference Site:	D Section 23	**MD Reference:**	KB @ 4840.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen State D23-741	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 4840.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Guttersen State D23-741
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.64°