

Project: Mustang
 Site: Y Section 07
 Well: Pioneer Y18-766
 Wellbore: Pioneer Y18-766
 Design: Plan #1

Northern Region - DJ Basin

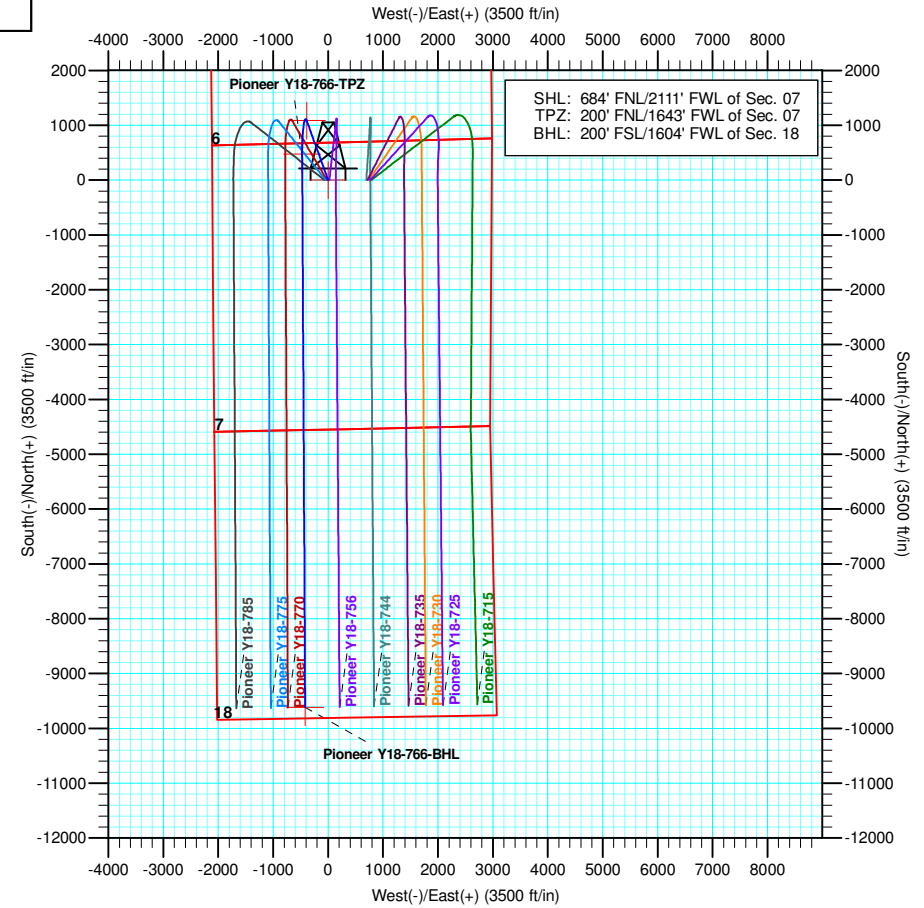
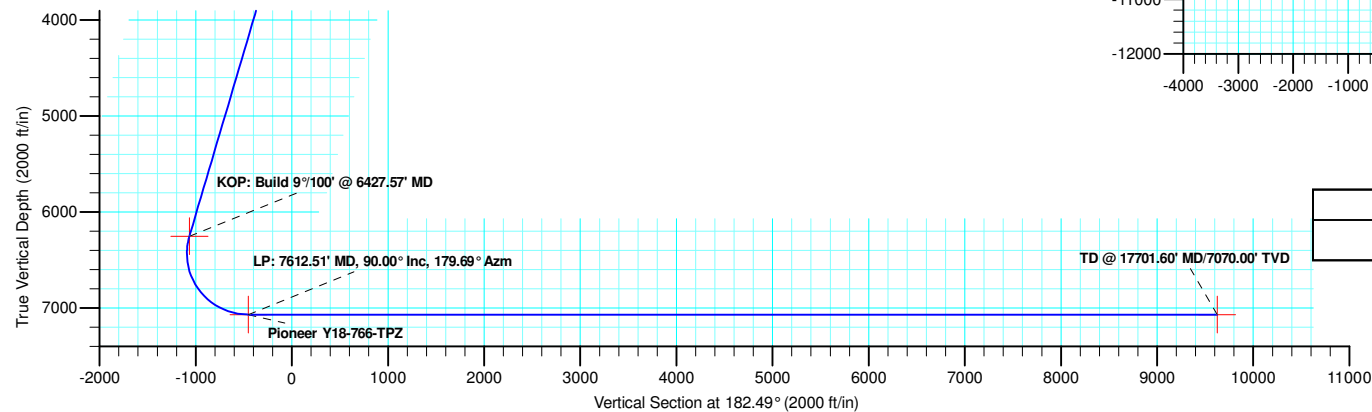
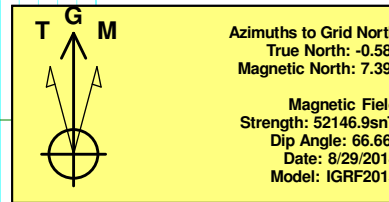
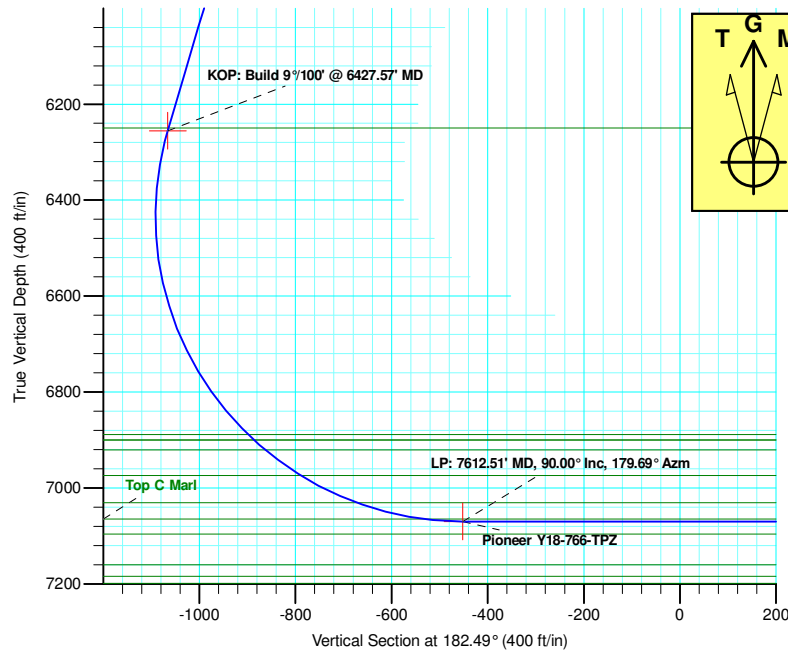
Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level

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	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	3084.20	17.68	340.24	3070.23	127.40	-45.77	2.00	340.24	-125.29	
4	6427.57	17.68	340.24	6255.61	1083.19	-389.17	0.00	0.00	-1065.29	
5	7612.51	90.00	179.69	7070.00	472.78	-472.32	9.00	-159.66	-451.85	Pioneer Y18-766-TPZ
6	17701.60	90.00	179.69	7070.00	-9616.16	-417.52	0.00	0.00	9625.22	Pioneer Y18-766-BHL

WELL DETAILS: Pioneer Y18-766

+N/-S	+E/-W	Northing	Ground Level: Easting	4884.00 Latitude	Longitude	Slot
0.00	0.00	1301718.58	3252845.20	40.1580720	-104.5953640	



Plan: Plan #1 (Pioneer Y18-766/Pioneer Y18-766)

Created By: Keith Noack Date: 9:00, September 27 2018

Northern Region - DJ Basin

Mustang

Y Section 07

Pioneer Y18-766

Pioneer Y18-766

Plan: Plan #1

Standard Planning Report

26 September, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-766
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4914.00ft
Project:	Mustang	MD Reference:	Well @ 4914.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-766		
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	Y Section 07				
Site Position:		Northing:	1,301,764.67 usft	Latitude:	40.1582400
From:	Lat/Long	Easting:	3,251,358.82 usft	Longitude:	-104.6006800
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.58 °

Well	Pioneer Y18-766					
Well Position	+N/-S	-46.08 ft	Northing:	1,301,718.58 usft	Latitude:	40.1580720
	+E/-W	1,486.39 ft	Easting:	3,252,845.20 usft	Longitude:	-104.5953640
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,884.00 ft

Wellbore	Pioneer Y18-766				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/29/2018	7.97	66.66	52,146.88631119

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	182.49

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,084.20	17.68	340.24	3,070.23	127.40	-45.77	2.00	2.00	0.00	340.24	
6,427.57	17.68	340.24	6,255.61	1,083.19	-389.17	0.00	0.00	0.00	0.00	
7,612.51	90.00	179.69	7,070.00	472.78	-472.32	9.00	6.10	-13.55	-159.66	Pioneer Y18-766-TI
17,701.60	90.00	179.69	7,070.00	-9,616.16	-417.52	0.00	0.00	0.00	0.00	Pioneer Y18-766-B

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4914.00ft
Project:	Mustang	MD Reference:	Well @ 4914.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-766		
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
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
738.00	0.00	0.00	738.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills - Pierre									
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
1,086.00	0.00	0.00	1,086.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
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
1,700.00	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
1,895.00	0.00	0.00	1,895.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Base									
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
Build: 2°/100'									
2,300.00	2.00	340.24	2,299.98	1.64	-0.59	-1.62	2.00	2.00	0.00
2,400.00	4.00	340.24	2,399.84	6.57	-2.36	-6.46	2.00	2.00	0.00
2,500.00	6.00	340.24	2,499.45	14.77	-5.31	-14.53	2.00	2.00	0.00
2,600.00	8.00	340.24	2,598.70	26.24	-9.43	-25.80	2.00	2.00	0.00
2,700.00	10.00	340.24	2,697.47	40.96	-14.72	-40.28	2.00	2.00	0.00
2,800.00	12.00	340.24	2,795.62	58.92	-21.17	-57.94	2.00	2.00	0.00
2,900.00	14.00	340.24	2,893.06	80.08	-28.77	-78.76	2.00	2.00	0.00
3,000.00	16.00	340.24	2,989.64	104.44	-37.52	-102.71	2.00	2.00	0.00
3,084.20	17.68	340.24	3,070.23	127.40	-45.77	-125.29	2.00	2.00	0.00
Hold: 17.68° Inc, 340.24° Azm									
3,100.00	17.68	340.24	3,085.28	131.92	-47.39	-129.74	0.00	0.00	0.00
3,200.00	17.68	340.24	3,180.56	160.50	-57.67	-157.85	0.00	0.00	0.00
3,300.00	17.68	340.24	3,275.83	189.09	-67.94	-185.97	0.00	0.00	0.00
3,400.00	17.68	340.24	3,371.11	217.68	-78.21	-214.08	0.00	0.00	0.00
3,500.00	17.68	340.24	3,466.38	246.27	-88.48	-242.20	0.00	0.00	0.00
3,600.00	17.68	340.24	3,561.65	274.85	-98.75	-270.31	0.00	0.00	0.00
3,700.00	17.68	340.24	3,656.93	303.44	-109.02	-298.43	0.00	0.00	0.00
3,800.00	17.68	340.24	3,752.20	332.03	-119.29	-326.54	0.00	0.00	0.00
3,900.00	17.68	340.24	3,847.48	360.62	-129.56	-354.66	0.00	0.00	0.00
4,000.00	17.68	340.24	3,942.75	389.21	-139.83	-382.77	0.00	0.00	0.00
4,032.80	17.68	340.24	3,974.00	398.58	-143.20	-391.99	0.00	0.00	0.00
Parkman									
4,100.00	17.68	340.24	4,038.03	417.79	-150.10	-410.89	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

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Project:	Mustang	MD Reference:	Well @ 4914.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-766		
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	17.68	340.24	4,133.30	446.38	-160.37	-439.00	0.00	0.00	0.00
4,300.00	17.68	340.24	4,228.58	474.97	-170.65	-467.12	0.00	0.00	0.00
4,400.00	17.68	340.24	4,323.85	503.56	-180.92	-495.23	0.00	0.00	0.00
4,500.00	17.68	340.24	4,419.13	532.14	-191.19	-523.35	0.00	0.00	0.00
4,600.00	17.68	340.24	4,514.40	560.73	-201.46	-551.46	0.00	0.00	0.00
4,627.92	17.68	340.24	4,541.00	568.71	-204.33	-559.31	0.00	0.00	0.00
Sussex									
4,700.00	17.68	340.24	4,609.68	589.32	-211.73	-579.58	0.00	0.00	0.00
4,800.00	17.68	340.24	4,704.95	617.91	-222.00	-607.70	0.00	0.00	0.00
4,900.00	17.68	340.24	4,800.22	646.49	-232.27	-635.81	0.00	0.00	0.00
5,000.00	17.68	340.24	4,895.50	675.08	-242.54	-663.93	0.00	0.00	0.00
5,100.00	17.68	340.24	4,990.77	703.67	-252.81	-692.04	0.00	0.00	0.00
5,200.00	17.68	340.24	5,086.05	732.26	-263.08	-720.16	0.00	0.00	0.00
5,300.00	17.68	340.24	5,181.32	760.85	-273.35	-748.27	0.00	0.00	0.00
5,400.00	17.68	340.24	5,276.60	789.43	-283.63	-776.39	0.00	0.00	0.00
5,447.65	17.68	340.24	5,322.00	803.06	-288.52	-789.79	0.00	0.00	0.00
Shannon									
5,500.00	17.68	340.24	5,371.87	818.02	-293.90	-804.50	0.00	0.00	0.00
5,600.00	17.68	340.24	5,467.15	846.61	-304.17	-832.62	0.00	0.00	0.00
5,700.00	17.68	340.24	5,562.42	875.20	-314.44	-860.73	0.00	0.00	0.00
5,800.00	17.68	340.24	5,657.70	903.78	-324.71	-888.85	0.00	0.00	0.00
5,900.00	17.68	340.24	5,752.97	932.37	-334.98	-916.96	0.00	0.00	0.00
6,000.00	17.68	340.24	5,848.25	960.96	-345.25	-945.08	0.00	0.00	0.00
6,100.00	17.68	340.24	5,943.52	989.55	-355.52	-973.19	0.00	0.00	0.00
6,200.00	17.68	340.24	6,038.79	1,018.13	-365.79	-1,001.31	0.00	0.00	0.00
6,300.00	17.68	340.24	6,134.07	1,046.72	-376.06	-1,029.42	0.00	0.00	0.00
6,400.00	17.68	340.24	6,229.34	1,075.31	-386.34	-1,057.54	0.00	0.00	0.00
6,421.68	17.68	340.24	6,250.00	1,081.51	-388.56	-1,063.64	0.00	0.00	0.00
Teepee Buttes									
6,427.57	17.68	340.24	6,255.61	1,083.19	-389.17	-1,065.29	0.00	0.00	0.00
KOP: Build 9°/100' @ 6427.57' MD									
6,450.00	15.81	337.66	6,277.09	1,089.22	-391.48	-1,071.22	9.00	-8.37	-11.49
6,500.00	11.78	329.10	6,325.64	1,099.91	-396.69	-1,081.67	9.00	-8.04	-17.13
6,550.00	8.26	312.70	6,374.88	1,106.73	-401.96	-1,088.25	9.00	-7.05	-32.79
6,600.00	6.16	280.23	6,424.50	1,109.64	-407.24	-1,090.94	9.00	-4.20	-64.94
6,650.00	6.93	240.51	6,474.20	1,108.64	-412.51	-1,089.70	9.00	1.54	-79.45
6,700.00	9.92	217.05	6,523.67	1,103.71	-417.74	-1,084.55	9.00	5.98	-46.92
6,750.00	13.76	205.39	6,572.60	1,094.89	-422.89	-1,075.52	9.00	7.67	-23.32
6,800.00	17.90	198.88	6,620.70	1,082.24	-427.92	-1,062.66	9.00	8.28	-13.01
6,850.00	22.18	194.79	6,667.66	1,065.84	-432.82	-1,046.06	9.00	8.56	-8.19
6,900.00	26.53	191.97	6,713.21	1,045.78	-437.55	-1,025.82	9.00	8.70	-5.63
6,950.00	30.92	189.90	6,757.05	1,022.19	-442.07	-1,002.06	9.00	8.78	-4.14
7,000.00	35.33	188.30	6,798.91	995.22	-446.37	-974.92	9.00	8.83	-3.20
7,050.00	39.76	187.02	6,838.54	965.03	-450.42	-944.58	9.00	8.86	-2.57
7,100.00	44.21	185.96	6,875.70	931.80	-454.18	-911.23	9.00	8.89	-2.13
7,118.82	45.88	185.60	6,889.00	918.55	-455.52	-897.93	9.00	8.90	-1.90
Sharon Springs									
7,134.83	47.31	185.31	6,900.00	906.98	-456.63	-886.31	9.00	8.90	-1.80
Top A Chalk - Top A Marl									
7,150.00	48.66	185.05	6,910.15	895.75	-457.64	-875.06	9.00	8.91	-1.72
7,166.67	50.14	184.77	6,921.00	883.14	-458.73	-862.41	9.00	8.91	-1.65
Top B Chalk									
7,200.00	53.12	184.26	6,941.69	857.09	-460.78	-836.30	9.00	8.92	-1.55

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4914.00ft
Project:	Mustang	MD Reference:	Well @ 4914.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-766		
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)
7,250.00	57.58	183.56	6,970.11	816.07	-463.58	-795.19	9.00	8.93	-1.41
7,257.32	58.23	183.46	6,974.00	809.88	-463.96	-788.99	9.00	8.93	-1.32
Top B Marl									
7,300.00	62.05	182.92	6,995.25	772.93	-466.01	-751.99	9.00	8.93	-1.26
7,350.00	66.51	182.33	7,016.94	727.94	-468.07	-706.95	9.00	8.94	-1.17
7,387.88	69.90	181.92	7,031.00	692.80	-469.37	-671.79	9.00	8.94	-1.10
Top C Chalk									
7,400.00	70.99	181.79	7,035.06	681.38	-469.74	-660.37	9.00	8.94	-1.07
7,450.00	75.46	181.27	7,049.49	633.54	-471.01	-612.51	9.00	8.95	-1.04
7,500.00	79.93	180.77	7,060.14	584.71	-471.88	-563.69	9.00	8.95	-1.00
7,532.44	82.83	180.45	7,065.00	552.64	-472.22	-531.64	9.00	8.95	-0.97
Top C Marl									
7,550.00	84.41	180.28	7,066.95	535.19	-472.33	-514.20	9.00	8.95	-0.96
7,600.00	88.88	179.81	7,069.88	485.29	-472.37	-464.34	9.00	8.95	-0.95
7,612.51	90.00	179.69	7,070.00	472.78	-472.32	-451.85	9.00	8.95	-0.95
LP: 7612.51' MD, 90.00° Inc, 179.69° Azm									
7,700.00	90.00	179.69	7,070.00	385.29	-471.84	-364.46	0.00	0.00	0.00
7,800.00	90.00	179.69	7,070.00	285.29	-471.30	-264.58	0.00	0.00	0.00
7,900.00	90.00	179.69	7,070.00	185.30	-470.76	-164.70	0.00	0.00	0.00
8,000.00	90.00	179.69	7,070.00	85.30	-470.21	-64.82	0.00	0.00	0.00
8,100.00	90.00	179.69	7,070.00	-14.70	-469.67	35.06	0.00	0.00	0.00
8,200.00	90.00	179.69	7,070.00	-114.70	-469.13	134.94	0.00	0.00	0.00
8,300.00	90.00	179.69	7,070.00	-214.70	-468.58	234.82	0.00	0.00	0.00
8,400.00	90.00	179.69	7,070.00	-314.70	-468.04	334.70	0.00	0.00	0.00
8,500.00	90.00	179.69	7,070.00	-414.70	-467.50	434.58	0.00	0.00	0.00
8,600.00	90.00	179.69	7,070.00	-514.69	-466.95	534.46	0.00	0.00	0.00
8,700.00	90.00	179.69	7,070.00	-614.69	-466.41	634.35	0.00	0.00	0.00
8,800.00	90.00	179.69	7,070.00	-714.69	-465.87	734.23	0.00	0.00	0.00
8,900.00	90.00	179.69	7,070.00	-814.69	-465.32	834.11	0.00	0.00	0.00
9,000.00	90.00	179.69	7,070.00	-914.69	-464.78	933.99	0.00	0.00	0.00
9,100.00	90.00	179.69	7,070.00	-1,014.69	-464.24	1,033.87	0.00	0.00	0.00
9,200.00	90.00	179.69	7,070.00	-1,114.68	-463.70	1,133.75	0.00	0.00	0.00
9,300.00	90.00	179.69	7,070.00	-1,214.68	-463.15	1,233.63	0.00	0.00	0.00
9,400.00	90.00	179.69	7,070.00	-1,314.68	-462.61	1,333.51	0.00	0.00	0.00
9,500.00	90.00	179.69	7,070.00	-1,414.68	-462.07	1,433.39	0.00	0.00	0.00
9,600.00	90.00	179.69	7,070.00	-1,514.68	-461.52	1,533.27	0.00	0.00	0.00
9,700.00	90.00	179.69	7,070.00	-1,614.68	-460.98	1,633.15	0.00	0.00	0.00
9,800.00	90.00	179.69	7,070.00	-1,714.68	-460.44	1,733.03	0.00	0.00	0.00
9,900.00	90.00	179.69	7,070.00	-1,814.67	-459.89	1,832.92	0.00	0.00	0.00
10,000.00	90.00	179.69	7,070.00	-1,914.67	-459.35	1,932.80	0.00	0.00	0.00
10,100.00	90.00	179.69	7,070.00	-2,014.67	-458.81	2,032.68	0.00	0.00	0.00
10,200.00	90.00	179.69	7,070.00	-2,114.67	-458.26	2,132.56	0.00	0.00	0.00
10,300.00	90.00	179.69	7,070.00	-2,214.67	-457.72	2,232.44	0.00	0.00	0.00
10,400.00	90.00	179.69	7,070.00	-2,314.67	-457.18	2,332.32	0.00	0.00	0.00
10,500.00	90.00	179.69	7,070.00	-2,414.67	-456.63	2,432.20	0.00	0.00	0.00
10,600.00	90.00	179.69	7,070.00	-2,514.66	-456.09	2,532.08	0.00	0.00	0.00
10,700.00	90.00	179.69	7,070.00	-2,614.66	-455.55	2,631.96	0.00	0.00	0.00
10,800.00	90.00	179.69	7,070.00	-2,714.66	-455.00	2,731.84	0.00	0.00	0.00
10,900.00	90.00	179.69	7,070.00	-2,814.66	-454.46	2,831.72	0.00	0.00	0.00
11,000.00	90.00	179.69	7,070.00	-2,914.66	-453.92	2,931.60	0.00	0.00	0.00
11,100.00	90.00	179.69	7,070.00	-3,014.66	-453.38	3,031.49	0.00	0.00	0.00
11,200.00	90.00	179.69	7,070.00	-3,114.66	-452.83	3,131.37	0.00	0.00	0.00
11,300.00	90.00	179.69	7,070.00	-3,214.65	-452.29	3,231.25	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-766
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4914.00ft
Project:	Mustang	MD Reference:	Well @ 4914.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-766		
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)
11,400.00	90.00	179.69	7,070.00	-3,314.65	-451.75	3,331.13	0.00	0.00	0.00
11,500.00	90.00	179.69	7,070.00	-3,414.65	-451.20	3,431.01	0.00	0.00	0.00
11,600.00	90.00	179.69	7,070.00	-3,514.65	-450.66	3,530.89	0.00	0.00	0.00
11,700.00	90.00	179.69	7,070.00	-3,614.65	-450.12	3,630.77	0.00	0.00	0.00
11,800.00	90.00	179.69	7,070.00	-3,714.65	-449.57	3,730.65	0.00	0.00	0.00
11,900.00	90.00	179.69	7,070.00	-3,814.65	-449.03	3,830.53	0.00	0.00	0.00
12,000.00	90.00	179.69	7,070.00	-3,914.64	-448.49	3,930.41	0.00	0.00	0.00
12,100.00	90.00	179.69	7,070.00	-4,014.64	-447.94	4,030.29	0.00	0.00	0.00
12,200.00	90.00	179.69	7,070.00	-4,114.64	-447.40	4,130.18	0.00	0.00	0.00
12,300.00	90.00	179.69	7,070.00	-4,214.64	-446.86	4,230.06	0.00	0.00	0.00
12,400.00	90.00	179.69	7,070.00	-4,314.64	-446.31	4,329.94	0.00	0.00	0.00
12,500.00	90.00	179.69	7,070.00	-4,414.64	-445.77	4,429.82	0.00	0.00	0.00
12,600.00	90.00	179.69	7,070.00	-4,514.63	-445.23	4,529.70	0.00	0.00	0.00
12,700.00	90.00	179.69	7,070.00	-4,614.63	-444.68	4,629.58	0.00	0.00	0.00
12,800.00	90.00	179.69	7,070.00	-4,714.63	-444.14	4,729.46	0.00	0.00	0.00
12,900.00	90.00	179.69	7,070.00	-4,814.63	-443.60	4,829.34	0.00	0.00	0.00
13,000.00	90.00	179.69	7,070.00	-4,914.63	-443.06	4,929.22	0.00	0.00	0.00
13,100.00	90.00	179.69	7,070.00	-5,014.63	-442.51	5,029.10	0.00	0.00	0.00
13,200.00	90.00	179.69	7,070.00	-5,114.63	-441.97	5,128.98	0.00	0.00	0.00
13,300.00	90.00	179.69	7,070.00	-5,214.62	-441.43	5,228.86	0.00	0.00	0.00
13,400.00	90.00	179.69	7,070.00	-5,314.62	-440.88	5,328.75	0.00	0.00	0.00
13,500.00	90.00	179.69	7,070.00	-5,414.62	-440.34	5,428.63	0.00	0.00	0.00
13,600.00	90.00	179.69	7,070.00	-5,514.62	-439.80	5,528.51	0.00	0.00	0.00
13,700.00	90.00	179.69	7,070.00	-5,614.62	-439.25	5,628.39	0.00	0.00	0.00
13,800.00	90.00	179.69	7,070.00	-5,714.62	-438.71	5,728.27	0.00	0.00	0.00
13,900.00	90.00	179.69	7,070.00	-5,814.62	-438.17	5,828.15	0.00	0.00	0.00
14,000.00	90.00	179.69	7,070.00	-5,914.61	-437.62	5,928.03	0.00	0.00	0.00
14,100.00	90.00	179.69	7,070.00	-6,014.61	-437.08	6,027.91	0.00	0.00	0.00
14,200.00	90.00	179.69	7,070.00	-6,114.61	-436.54	6,127.79	0.00	0.00	0.00
14,300.00	90.00	179.69	7,070.00	-6,214.61	-435.99	6,227.67	0.00	0.00	0.00
14,400.00	90.00	179.69	7,070.00	-6,314.61	-435.45	6,327.55	0.00	0.00	0.00
14,500.00	90.00	179.69	7,070.00	-6,414.61	-434.91	6,427.43	0.00	0.00	0.00
14,600.00	90.00	179.69	7,070.00	-6,514.61	-434.37	6,527.32	0.00	0.00	0.00
14,700.00	90.00	179.69	7,070.00	-6,614.60	-433.82	6,627.20	0.00	0.00	0.00
14,800.00	90.00	179.69	7,070.00	-6,714.60	-433.28	6,727.08	0.00	0.00	0.00
14,900.00	90.00	179.69	7,070.00	-6,814.60	-432.74	6,826.96	0.00	0.00	0.00
15,000.00	90.00	179.69	7,070.00	-6,914.60	-432.19	6,926.84	0.00	0.00	0.00
15,100.00	90.00	179.69	7,070.00	-7,014.60	-431.65	7,026.72	0.00	0.00	0.00
15,200.00	90.00	179.69	7,070.00	-7,114.60	-431.11	7,126.60	0.00	0.00	0.00
15,300.00	90.00	179.69	7,070.00	-7,214.60	-430.56	7,226.48	0.00	0.00	0.00
15,400.00	90.00	179.69	7,070.00	-7,314.59	-430.02	7,326.36	0.00	0.00	0.00
15,500.00	90.00	179.69	7,070.00	-7,414.59	-429.48	7,426.24	0.00	0.00	0.00
15,600.00	90.00	179.69	7,070.00	-7,514.59	-428.93	7,526.12	0.00	0.00	0.00
15,700.00	90.00	179.69	7,070.00	-7,614.59	-428.39	7,626.00	0.00	0.00	0.00
15,800.00	90.00	179.69	7,070.00	-7,714.59	-427.85	7,725.89	0.00	0.00	0.00
15,900.00	90.00	179.69	7,070.00	-7,814.59	-427.30	7,825.77	0.00	0.00	0.00
16,000.00	90.00	179.69	7,070.00	-7,914.58	-426.76	7,925.65	0.00	0.00	0.00
16,100.00	90.00	179.69	7,070.00	-8,014.58	-426.22	8,025.53	0.00	0.00	0.00
16,200.00	90.00	179.69	7,070.00	-8,114.58	-425.67	8,125.41	0.00	0.00	0.00
16,300.00	90.00	179.69	7,070.00	-8,214.58	-425.13	8,225.29	0.00	0.00	0.00
16,400.00	90.00	179.69	7,070.00	-8,314.58	-424.59	8,325.17	0.00	0.00	0.00
16,500.00	90.00	179.69	7,070.00	-8,414.58	-424.05	8,425.05	0.00	0.00	0.00
16,600.00	90.00	179.69	7,070.00	-8,514.58	-423.50	8,524.93	0.00	0.00	0.00
16,700.00	90.00	179.69	7,070.00	-8,614.57	-422.96	8,624.81	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-766
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4914.00ft
Project:	Mustang	MD Reference:	Well @ 4914.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-766		
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)
16,800.00	90.00	179.69	7,070.00	-8,714.57	-422.42	8,724.69	0.00	0.00	0.00
16,900.00	90.00	179.69	7,070.00	-8,814.57	-421.87	8,824.57	0.00	0.00	0.00
17,000.00	90.00	179.69	7,070.00	-8,914.57	-421.33	8,924.46	0.00	0.00	0.00
17,100.00	90.00	179.69	7,070.00	-9,014.57	-420.79	9,024.34	0.00	0.00	0.00
17,200.00	90.00	179.69	7,070.00	-9,114.57	-420.24	9,124.22	0.00	0.00	0.00
17,300.00	90.00	179.69	7,070.00	-9,214.57	-419.70	9,224.10	0.00	0.00	0.00
17,400.00	90.00	179.69	7,070.00	-9,314.56	-419.16	9,323.98	0.00	0.00	0.00
17,500.00	90.00	179.69	7,070.00	-9,414.56	-418.61	9,423.86	0.00	0.00	0.00
17,600.00	90.00	179.69	7,070.00	-9,514.56	-418.07	9,523.74	0.00	0.00	0.00
17,701.60	90.00	179.69	7,070.00	-9,616.16	-417.52	9,625.22	0.00	0.00	0.00
TD @ 17701.60' MD/7070.00' 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									
Pioneer Y18-766-SHL	0.00	0.00	0.00	0.00	0.00	1,301,718.58	3,252,845.20	40.1580720	-104.5953640
- plan hits target center									
- Point									
Pioneer Y18-766-KOF	0.00	0.00	6,255.61	1,083.19	-389.17	1,302,801.77	3,252,456.04	40.1610563	-104.5967168
- plan hits target center									
- Point									
Pioneer Y18-766-TPZ	0.00	0.00	7,070.00	472.78	-472.32	1,302,191.37	3,252,372.89	40.1593830	-104.5970365
- plan hits target center									
- Point									
Pioneer Y18-766-BHL	0.00	0.00	7,070.00	-9,616.16	-417.52	1,292,102.44	3,252,427.69	40.1316874	-104.5972079
- plan hits target center									
- Point									

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-766
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4914.00ft
Project:	Mustang	MD Reference:	Well @ 4914.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-766		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
738.00	738.00	Fox Hills				
738.00	738.00	Pierre				
1,086.00	1,086.00	Upper Pierre Aquifer Top				
1,895.00	1,895.00	Upper Pierre Aquifer Base				
4,032.80	3,974.00	Parkman				
4,627.92	4,541.00	Sussex				
5,447.65	5,322.00	Shannon				
6,421.68	6,250.00	Teepee Buttes				
7,118.82	6,889.00	Sharon Springs				
7,134.83	6,900.00	Top A Chalk				
7,134.83	6,900.00	Top A Marl				
7,166.67	6,921.00	Top B Chalk				
7,257.32	6,974.00	Top B Marl				
7,387.88	7,031.00	Top C Chalk				
7,532.44	7,065.00	Top C Marl				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,200.00	2,200.00	0.00	0.00	Build: 2°/100'	
3,084.20	3,070.23	127.40	-45.77	Hold: 17.68° Inc, 340.24° Azm	
6,427.57	6,255.61	1,083.19	-389.17	KOP: Build 9°/100' @ 6427.57' MD	
7,612.51	7,070.00	472.78	-472.32	LP: 7612.51' MD, 90.00° Inc, 179.69° Azm	
17,701.60	7,070.00	-9,616.16	-417.52	TD @ 17701.60' MD/7070.00' TVD	

Northern Region - DJ Basin

Mustang

Y Section 07

Pioneer Y18-766

Pioneer Y18-766

Plan #1

Anticollision Summary Report

26 September, 2018

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	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	9/26/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,701.60	Plan #1 (Pioneer Y18-766)	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 30						
Adams D30-27D - Adams D30-27D - Adams D30-27D - /						Out of range
Adams D30-29D - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Adams D30-30D - Adams D30-30D Gyros - Gyros						Out of range
Adams D30-30D - Adams D30-30D OH - As Drilled						Out of range
Adams D30-31D - Adams D30-31D Gyros - Gyros						Out of range
Adams D30-31D - Adams D30-31D OH - As-drilled						Out of range
Corbin D30-23D - Corbin D30-23D - Corbin D30-23D - A						Out of range
Corbin Red D30-04J - Corbin Red D30-04J - Corbin Red						Out of range
Corbin Red D30-09 - Corbin Red D30-09 - Corbin Red D						Out of range
Corbin Red D30-15 - Corbin Red D30-15 - Corbin Red D						Out of range
Corbin Red D30-16 - Corbin Red D30-16 - Corbin Red D						Out of range
Dechant D30-17D - Dechant D30-17D - Dechant D30-17						Out of range
Dechant D30-20D - Dechant D30-20D - Dechant D30-20						Out of range
Dechant D30-24D - Dechant D30-24D - Dechant D30-24						Out of range
Dechant D30-25D - Dechant D30-25D - Dechant D30-25						Out of range
Dechant D31-27D - Dechant D31-27D - Dechant D31-27						Out of range
Dechant D31-28D - Dechant D31-28D - Dechant D31-28						Out of range
Dechant D31-29D - Dechant D31-29D - Dechant D31-29						Out of range
Dechant D31-77HN - Original Drilling - Original Drilling - /	6,677.06	11,360.01	5,400.58	5,345.67	98.354	CC, ES
Dechant D31-77HN - Original Drilling - Original Drilling - /	6,800.00	11,360.01	5,413.78	5,358.60	98.117	SF
Hanson D30-11 - Hanson D30-11 - Hanson D30-11 - As						Out of range
Hanson D30-12 - Hanson D30-12 - Hanson D30-12 - As						Out of range
Hanson D30-13 - Hanson D30-13 - Hanson D30-13 - As						Out of range
Hanson D30-14 - Hanson D30-14 - Hanson D30-14 - As						Out of range
Hettinger C Unit 1 - Hettinger C Unit 1 - Hettinger C Unit						Out of range
Hettinger D30-02 - Hettinger D30-02 - Hettinger D30-02 -						Out of range
Hettinger D30-03 - Hettinger D30-03 - Hettinger D30-03 -						Out of range
Hettinger D30-04 - Hettinger D30-04 - Hettinger D30-04 -						Out of range
Hettinger D30-05 - Hettinger D30-05 - Hettinger D30-05 -						Out of range
Hettinger D30-06 - Hettinger D30-06 - Hettinger D30-06 -						Out of range
Hettinger D30-08 - Hettinger D30-08 - Hettinger D30-08 -						Out of range
Leslie E Hanson Gas Unit 1 - Leslie E Hanson Gas Unit						Out of range
McWilliams D29-32 - McWilliams D29-32 - McWilliams D						Out of range
McWilliams D30-07 - McWilliams D30-07 - McWilliams D						Out of range
McWilliams D30-18 - McWilliams D30-18 - McWilliams D						Out of range
McWilliams D30-19 - McWilliams D30-19 - McWilliams D						Out of range
McWilliams D30-21 - McWilliams D30-21 - McWilliams D						Out of range

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 Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	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 30						
McWilliams D30-22 - McWilliams D30-22 - McWilliams D						Out of range

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 31						
Offset Well - Wellbore - Design						
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	6,608.59	6,223.93	5,842.05	5,796.31	127.707	CC, ES
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	6,750.00	6,750.00	5,857.55	5,809.57	122.091	SF
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	6,592.40	6,390.53	7,791.24	7,739.37	150.232	CC, ES
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,884.66	7,880.27	7,826.31	146.026	SF
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	103.80	0.00	8,152.77	8,152.63	10,000.000	CC
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	400.00	256.31	8,153.66	8,151.75	4,282.961	ES
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	6,750.00	3,934.00	8,592.89	8,550.06	200.647	SF
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	6,581.03	6,156.97	6,338.71	6,290.25	130.788	CC, ES
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	7,050.00	7,175.57	6,473.21	6,420.94	123.833	SF
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	6,463.32	4,100.00	8,786.25	8,747.35	225.888	CC, ES
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	7,050.00	6,815.19	8,953.26	8,903.87	181.274	SF
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	6,601.69	6,379.19	7,677.69	7,628.96	157.575	CC, ES
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	7,000.00	6,905.46	7,795.33	7,744.25	152.623	SF
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	6,629.93	6,424.10	7,783.81	7,748.05	217.670	CC, ES
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	7,200.00	7,200.00	8,022.17	7,984.14	210.949	SF
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	6,575.95	6,358.15	5,349.61	5,298.51	104.691	CC, ES
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	6,950.00	6,800.28	5,446.21	5,392.94	102.237	SF
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	6,610.49	6,517.79	4,956.81	4,909.39	104.520	CC, ES
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	6,950.00	6,959.05	5,039.19	4,989.59	101.587	SF
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	6,590.90	6,269.30	5,974.65	5,928.68	129.960	CC, ES
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,609.35	6,071.86	6,023.86	126.507	SF
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	6,573.09	6,213.96	6,089.81	6,044.05	133.059	CC, ES
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,621.28	6,187.24	6,139.18	128.718	SF
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	6,594.39	6,387.05	7,278.35	7,232.01	157.046	CC
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	6,600.00	6,398.22	7,278.37	7,231.97	156.858	ES
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	7,000.00	6,764.43	7,396.57	7,348.02	152.351	SF
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	6,582.58	6,179.81	6,733.34	6,687.67	147.444	CC, ES
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	7,100.00	7,101.48	6,907.13	6,857.16	138.218	SF
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	6,598.79	6,209.43	7,004.36	6,957.96	150.964	CC
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	6,600.00	6,210.63	7,004.36	6,957.95	150.931	ES
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	7,050.00	6,621.93	7,157.58	7,108.24	145.073	SF
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	6,613.92	6,225.99	6,980.75	6,934.98	152.538	CC
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	6,650.00	6,650.00	6,981.37	6,934.06	147.578	ES
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	7,150.00	6,912.00	7,180.72	7,131.75	146.620	SF
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	6,600.30	6,317.80	7,130.02	6,979.45	47.355	CC, ES
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	7,100.00	6,768.70	7,313.32	7,152.80	45.560	SF
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	6,627.00	6,478.00	8,759.36	8,712.75	187.939	CC, ES
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	7,050.00	6,855.88	8,893.84	8,845.09	182.444	SF
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys	6,601.97	6,184.76	9,768.19	9,722.49	213.788	CC, ES
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys	7,050.00	6,935.31	9,907.79	9,858.73	201.945	SF
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	6,610.46	6,328.91	8,021.83	7,871.06	53.208	CC, ES
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	7,150.00	6,804.15	8,237.11	8,075.92	51.099	SF
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	6,625.29	6,528.27	8,257.46	8,210.70	176.603	CC, ES
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	7,050.00	6,989.83	8,392.79	8,343.72	171.025	SF
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	6,585.42	6,168.83	9,848.34	9,802.75	215.996	CC, ES
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	7,000.00	6,427.52	9,976.81	9,929.37	210.303	SF
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	6,602.90	6,351.57	8,391.85	8,345.63	181.581	CC, ES
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	7,000.00	6,866.09	8,511.40	8,462.61	174.439	SF
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	6,630.00	6,839.88	8,478.59	8,430.78	177.332	CC, ES
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	7,000.00	7,175.26	8,578.67	8,529.27	173.647	SF
River Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	6,613.17	6,369.00	5,200.41	5,154.12	112.361	CC, ES
River Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	6,900.00	6,561.98	5,266.33	5,218.64	110.411	SF
River Red D 31-4 (PA) - Wellbore #1 - Gyro Surveys	6,601.24	5,989.39	9,756.75	9,674.87	119.161	CC, ES

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

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	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 31						
River Red D 31-4 (PA) - Wellbore #1 - Gyro Surveys	7,150.00	6,471.90	9,976.25	9,880.15	103.808	SF
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	6,597.12	6,308.63	9,042.28	8,891.90	60.127	CC
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	6,600.00	6,311.50	9,042.29	8,891.84	60.100	ES
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	7,150.00	6,797.15	9,262.03	9,100.89	57.481	SF
D Section 32						
HP D32-21D - Wellbore #1 - MWD Surveys	6,575.24	6,648.41	9,729.20	9,677.35	187.635	CC, ES
HP D32-21D - Wellbore #1 - MWD Surveys	7,150.00	7,142.54	9,920.87	9,866.57	182.707	SF
HP D32-23D - Wellbore #1 - MWD Surveys	6,524.25	6,209.49	9,736.89	9,687.88	198.683	CC, ES
HP D32-23D - Wellbore #1 - MWD Surveys	7,150.00	6,781.10	9,929.49	9,877.29	190.240	SF
HP Farms D 32-22D - Wellbore #1 - MWD Surveys						Out of range
HP Farms D32-03 - Wellbore #1 - Gyro Surveys						Out of range
HP Farms D32-18D - Wellbore #1 - MWD Surveys						Out of range
HP Farms D32-24D - Wellbore #1 - MWD Surveys	6,538.52	6,460.00	8,731.69	8,676.19	157.343	CC, ES
HP Farms D32-24D - Wellbore #1 - MWD Surveys	7,050.00	7,026.29	8,870.65	8,812.58	152.746	SF
Norris 14-32 - Wellbore #1 - Projection Survey	6,563.45	6,301.20	6,640.93	6,561.74	83.857	CC, ES
Norris 14-32 - Wellbore #1 - Projection Survey	7,100.00	6,788.70	6,813.68	6,729.11	80.570	SF
Norris A Unit 2 - Wellbore #1 - As-Drilled	6,550.55	6,188.56	7,596.56	7,550.86	166.233	CC, ES
Norris A Unit 2 - Wellbore #1 - As-Drilled	6,950.00	6,500.00	7,693.95	7,646.16	160.999	SF
Norris D32-1 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-10 - Wellbore #1 - Gyro Surveys	6,542.73	6,215.76	9,503.19	9,457.45	207.807	CC
Norris D32-10 - Wellbore #1 - Gyro Surveys	6,550.00	6,221.81	9,503.22	9,457.44	207.589	ES
Norris D32-10 - Wellbore #1 - Gyro Surveys	7,500.00	7,500.00	9,942.70	9,891.19	192.993	SF
Norris D32-15 - Wellbore #1 - Gyro Surveys	6,498.92	5,943.14	8,612.97	8,568.33	192.957	CC
Norris D32-15 - Wellbore #1 - Gyro Surveys	6,500.00	5,943.55	8,612.97	8,568.33	192.933	ES
Norris D32-15 - Wellbore #1 - Gyro Surveys	6,850.00	6,850.00	8,677.63	8,628.81	177.768	SF
Norris D32-1J - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-2 - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-2J - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-4 (P&A) - Wellbore #1 - No Surveys						Out of range
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,568.92	6,166.90	9,091.83	9,046.24	199.444	CC, ES
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,900.00	6,900.00	9,164.44	9,115.50	187.273	SF
Norris D32-6 - Wellbore #1 - Gyro Surveys	6,589.43	6,600.00	9,689.88	9,642.77	205.697	CC, ES
Norris D32-6 - Wellbore #1 - Gyro Surveys	7,050.00	6,858.54	9,828.03	9,778.99	200.403	SF
Norris D32-7 - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys						Out of range

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 Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	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
H Section 36						
Offset Well - Wellbore - Design						
Dechant 07-36 - Original Drilling - Original Drilling - As D	6,656.06	6,508.95	8,808.99	8,762.32	188.728	CC, ES
Dechant 07-36 - Original Drilling - Original Drilling - As D	7,100.00	6,886.90	8,943.94	8,895.10	183.160	SF
Dechant 13N-1HZ - Production Hole - Production Hole -	7,239.47	11,468.00	6,260.95	6,146.02	54.476	CC, ES
Dechant 13N-1HZ - Production Hole - Production Hole -	7,350.00	11,468.00	6,263.21	6,148.14	54.429	SF
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	8,638.37	8,638.24	10,000.000	CC
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	200.00	51.83	8,638.76	8,638.18	10,000.000	ES
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	6,750.00	600.00	9,600.96	9,576.46	391.831	SF
Dechant 14C-1HZ - Production Hole - Production Hole -	7,250.00	11,731.00	5,056.34	4,972.59	60.375	SF
Dechant 14C-1HZ - Production Hole - Production Hole -	7,272.60	11,731.00	5,056.23	4,972.48	60.376	CC, ES
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	8,575.82	8,575.69	10,000.000	CC
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	700.00	607.56	8,578.67	8,574.44	2,027.906	ES
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	6,750.00	610.00	9,542.74	9,518.25	389.559	SF
Dechant 15-36 - Original Drilling - Original Drilling - As D	6,666.17	6,446.85	6,703.04	6,650.95	128.670	CC
Dechant 15-36 - Original Drilling - Original Drilling - As D	6,700.00	6,480.28	6,703.78	6,650.70	126.308	ES
Dechant 15-36 - Original Drilling - Original Drilling - As D	7,450.00	7,007.79	7,056.01	6,988.18	104.015	SF
Dechant 24-36 - Original Drilling - Original Drilling - As D	6,635.34	6,400.30	8,205.48	8,154.33	160.428	CC, ES
Dechant 24-36 - Original Drilling - Original Drilling - As D	7,500.00	7,500.00	8,670.66	8,615.14	156.163	SF
Dechant 35N-E1HZ - Production Hole - Production Hole	7,200.00	11,619.00	5,262.10	5,145.96	45.309	SF
Dechant 35N-E1HZ - Production Hole - Production Hole	7,222.52	11,619.00	5,262.00	5,145.87	45.312	CC, ES
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	100.00	13.14	8,596.60	8,596.45	10,000.000	CC
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	700.00	612.00	8,597.42	8,593.18	2,027.572	ES
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	6,750.00	612.00	9,556.50	9,531.99	389.906	SF
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	7,238.29	11,494.00	5,726.35	5,611.35	49.793	CC, ES
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	7,250.00	11,494.00	5,726.38	5,611.37	49.791	SF
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	7,100.00	11,651.36	4,575.73	4,459.38	39.329	SF
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	7,231.47	11,651.36	4,571.97	4,455.89	39.386	CC, ES
Dechant 37N-E1HZ - Production Hole - Production Hole	7,000.00	11,723.00	2,754.41	2,639.10	23.887	SF
Dechant 37N-E1HZ - Production Hole - Production Hole	7,148.85	11,723.00	2,747.84	2,633.40	24.010	CC, ES
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	734.99	648.00	7,743.25	7,738.76	1,722.750	CC, ES
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	8,400.00	648.00	9,993.01	9,964.84	354.648	SF
Dechant 37N-W1HZ - Production Hole - Production Hole	7,100.00	12,384.00	3,320.57	3,200.94	27.759	SF
Dechant 37N-W1HZ - Production Hole - Production Hole	7,196.20	12,384.00	3,318.04	3,198.67	27.796	CC, ES
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	424.19	337.20	7,715.00	7,712.71	3,365.821	CC
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	800.00	655.00	7,715.53	7,710.79	1,625.450	ES
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	8,400.00	655.00	9,967.40	9,939.23	353.754	SF
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	7,250.00	16,665.00	3,738.90	3,604.36	27.790	SF
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	7,271.89	16,665.00	3,738.76	3,604.25	27.794	CC, ES
Dechant State 16C-1HZ - Original Drilling - Original Drilling	7,235.81	16,839.03	2,608.85	2,408.69	13.034	CC, ES, SF
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	7,231.78	16,517.00	4,180.73	4,046.56	31.161	CC, ES, SF
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,697.47	11,466.00	5,994.88	5,936.62	102.903	CC
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,700.00	11,466.00	5,994.89	5,936.62	102.887	ES
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,850.00	11,466.00	6,012.98	5,954.31	102.490	SF
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,714.17	11,490.00	6,268.75	6,209.58	105.943	CC, ES
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,800.00	11,490.00	6,274.27	6,214.96	105.787	SF
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	7,150.00	16,675.00	2,003.69	1,867.83	14.748	SF
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	7,174.01	16,675.00	2,003.46	1,867.65	14.753	CC, ES
Dechant State H36-11D - Original Drilling - Original Drilling	6,655.79	6,306.87	8,395.55	8,349.52	182.394	CC, ES
Dechant State H36-11D - Original Drilling - Original Drilling	7,100.00	6,679.68	8,515.59	8,467.38	176.649	SF
Dechant State H36-18D - Dechant State H36-18D Gyros	6,656.65	6,720.69	9,860.07	9,782.20	126.628	CC, ES
Dechant State H36-18D - Dechant State H36-18D Gyros	6,950.00	7,200.00	9,913.98	9,834.60	124.897	SF
Dechant State H36-18D - Dechant State H36-18D OH - A	6,656.65	6,733.69	9,860.08	9,782.22	126.628	CC, ES
Dechant State H36-18D - Dechant State H36-18D OH - A	6,950.00	7,213.00	9,913.99	9,834.61	124.896	SF
Dechant State H36-19 - Original Drilling - Original Drilling						Out of range

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 Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	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						
H Section 36						
Dechant State H36-20D - Dechant State H36-20D Gyros	6,656.26	6,410.81	9,264.88	9,200.43	143.736	CC, ES
Dechant State H36-20D - Dechant State H36-20D Gyros	7,100.00	6,773.71	9,385.04	9,318.81	141.707	SF
Dechant State H36-20D - Dechant State H36-20D OH - /	6,656.26	6,423.81	9,264.87	9,200.42	143.736	CC, ES
Dechant State H36-20D - Dechant State H36-20D OH - /	7,100.00	6,786.71	9,385.03	9,318.80	141.707	SF
Dechant State H36-21D - Dechant State H36-21D Gyros	6,650.94	6,423.48	8,592.15	8,534.31	148.553	CC, ES
Dechant State H36-21D - Dechant State H36-21D Gyros	7,000.00	6,813.71	8,670.84	8,611.36	145.794	SF
Dechant State H36-21D - Dechant State H36-21D OH - /	6,650.94	6,436.48	8,592.15	8,534.31	148.553	CC, ES
Dechant State H36-21D - Dechant State H36-21D OH - /	7,000.00	6,826.71	8,670.83	8,611.36	145.794	SF
Dechant State H36-24 - Original Drilling - Original Drilling	6,652.39	6,460.42	7,556.30	7,504.44	145.705	CC, ES
Dechant State H36-24 - Original Drilling - Original Drilling	7,050.00	6,897.30	7,651.82	7,597.71	141.423	SF
Dechant State H36-31D - Dechant State H36-31D OH - /						Out of range
Dechant State H36-32D - Dechant State H36-32D Gyros						Out of range
Dechant State H36-32D - Dechant State H36-32D OH - /						Out of range
Dechant State H36-33 - Dechant State H36-33D Gyros -	6,445.31	3,926.29	9,291.01	9,240.56	184.166	CC
Dechant State H36-33 - Dechant State H36-33D Gyros -	6,685.92	6,600.00	9,303.15	9,237.21	141.096	ES
Dechant State H36-33 - Dechant State H36-33D Gyros -	7,200.00	6,860.25	9,442.51	9,374.25	138.339	SF
Dechant State H36-33 - Dechant State H36-33D OH - As	6,445.31	3,939.29	9,290.98	9,240.53	184.165	CC
Dechant State H36-33 - Dechant State H36-33D OH - As	6,685.92	6,613.00	9,303.13	9,237.19	141.095	ES
Dechant State H36-33 - Dechant State H36-33D OH - As	7,200.00	6,873.25	9,442.48	9,374.23	138.338	SF
HSR Dechant State 01-36 - Wellbore #1 - As Drilled	6,640.57	6,555.59	9,879.52	9,832.60	210.544	CC, ES
HSR Dechant State 01-36 - Wellbore #1 - As Drilled	7,000.00	6,786.89	9,978.42	9,929.90	205.633	SF
HSR Dechant State 02-36 - Original Drilling - Original Dri						Out of range
HSR Dechant/State 07-36 (PA) - Original Drilling - Origin	6,639.38	6,358.66	9,095.43	8,944.11	60.111	CC
HSR Dechant/State 07-36 (PA) - Original Drilling - Origin	6,650.00	6,369.20	9,095.51	8,943.95	60.014	ES
HSR Dechant/State 07-36 (PA) - Original Drilling - Origin	7,200.00	6,836.69	9,311.43	9,149.64	57.553	SF
Spike State GWS H36-03 - Original Drilling - Original Dri						Out of range
Spike State GWS H36-04 - Original Drilling - Original Dri						Out of range
Spike State GWS H36-13 - Original Drilling - Original Dri	6,719.59	6,677.04	8,412.43	8,365.01	177.421	CC, ES
Spike State GWS H36-13 - Original Drilling - Original Dri	7,150.00	7,005.87	8,506.15	8,456.44	171.138	SF
Spike State GWS H36-14 - Original Drilling - Original Dri	6,657.32	6,261.64	7,175.74	7,129.84	156.320	CC, ES
Spike State GWS H36-14 - Original Drilling - Original Dri	7,350.00	7,350.00	7,437.14	7,386.35	146.420	SF
Spike State H36-02J - Original Drilling - Original Drilling -						Out of range
Spike State H36-05 - Original Drilling - Original Drilling - /						Out of range
Spike State H36-11J - Original Drilling - Original Drilling -	6,676.35	6,425.37	8,316.76	8,270.30	179.033	CC, ES
Spike State H36-11J - Original Drilling - Original Drilling -	7,100.00	6,730.02	8,419.79	8,371.42	174.042	SF
Spike State H36-12 - Original Drilling - Original Drilling - /	6,678.96	6,459.08	9,566.27	9,519.70	205.425	CC, ES
Spike State H36-12 - Original Drilling - Original Drilling - /	7,150.00	6,700.01	9,693.72	9,645.38	200.536	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 Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	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
Y Section 05						
Olsen Red Y05-02D - Olsen Red Y05-02D - Olsen Red Y05-02D	6,511.95	6,160.26	6,353.64	6,308.26	140.000	CC, ES
Olsen Red Y05-02D - Olsen Red Y05-02D - Olsen Red Y05-02D	7,300.00	6,962.33	6,623.65	6,574.03	133.492	SF
Olsen Y5-05J1 - Olsen Y5-05J1 - Olsen Y5-05J1 - As Drille	6,523.10	6,264.32	4,949.80	4,914.78	141.344	CC, ES
Olsen Y5-05J1 - Olsen Y5-05J1 - Olsen Y5-05J1 - As Drille	7,000.00	6,714.91	5,053.12	5,016.10	136.507	SF
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	6,465.17	6,259.72	7,294.17	7,215.73	92.990	CC
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	6,500.00	6,293.64	7,294.58	7,215.71	92.489	ES
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	7,300.00	6,963.25	7,497.53	7,411.16	86.816	SF
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	6,438.20	6,250.76	8,502.77	8,424.53	108.674	CC
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	6,450.00	6,262.09	8,502.81	8,424.43	108.473	ES
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	7,350.00	7,001.94	8,708.72	8,621.99	100.409	SF
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	2,925.63	2,907.90	8,066.52	8,030.93	226.609	CC
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	4,000.00	3,932.75	8,072.95	8,024.48	166.561	ES
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	7,400.00	7,025.06	8,308.49	8,221.52	95.536	SF
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins USX Y05-16	2,204.32	2,183.35	7,301.60	7,286.47	482.595	CC
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins USX Y05-16	2,700.00	2,742.74	7,302.93	7,284.09	387.580	ES
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins USX Y05-16	11,100.00	6,981.38	8,947.06	8,888.38	152.482	SF
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	2,200.00	2,186.00	6,150.94	6,135.68	403.167	CC, ES
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	17,701.60	17,671.71	8,431.11	8,252.25	47.139	SF
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	2,200.00	2,185.00	6,128.98	6,113.72	401.822	CC, ES
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	17,701.60	17,649.38	7,773.12	7,594.20	43.445	SF
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	2,200.00	2,183.00	6,106.81	6,091.56	400.557	CC, ES
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	17,701.60	17,245.11	7,116.89	6,939.76	40.178	SF
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	2,200.00	2,182.00	6,084.85	6,069.61	399.211	CC
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	2,300.00	2,281.98	6,085.10	6,069.15	381.323	ES
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	17,701.60	17,587.51	6,788.49	6,610.35	38.108	SF
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	2,200.00	2,181.00	6,062.69	6,047.46	397.850	CC
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	2,300.00	2,280.98	6,062.94	6,046.99	380.020	ES
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	17,701.60	17,446.55	6,461.12	6,283.38	36.351	SF
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	2,200.00	2,172.00	4,351.96	4,336.75	286.193	CC
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	2,300.00	2,228.96	4,352.44	4,336.68	276.087	ES
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	17,701.60	17,471.02	5,807.39	5,628.67	32.495	SF
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	2,200.00	2,172.00	4,330.11	4,314.90	284.756	CC
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	2,500.00	2,471.45	4,331.23	4,313.88	249.685	ES
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	17,701.60	17,506.58	5,148.11	4,969.86	28.881	SF
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	2,200.00	2,172.00	4,308.63	4,293.42	283.344	CC
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	2,500.00	2,471.45	4,309.73	4,292.38	248.446	ES
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	17,701.60	17,357.35	4,495.31	4,317.89	25.337	SF
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	6,646.58	6,935.01	4,116.74	4,068.14	84.713	CC
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	17,701.60	17,616.46	4,163.87	3,985.56	23.352	ES, SF
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	6,744.32	7,050.00	3,793.09	3,743.55	76.568	CC
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	17,701.60	17,564.41	3,835.42	3,657.12	21.512	ES, SF
Y Section 06						
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,541.48	6,274.76	2,190.37	2,144.40	47.647	CC
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,550.00	6,282.13	2,190.42	2,144.39	47.588	ES
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,750.00	6,477.80	2,215.78	2,168.46	46.828	SF
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	6,690.24	6,471.97	922.30	875.62	19.758	CC
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	6,700.00	6,481.74	922.35	875.60	19.733	ES
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	6,800.00	6,586.05	928.52	881.18	19.615	SF
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	6,566.10	6,280.53	4,597.54	4,551.57	100.020	CC, ES
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	7,000.00	6,748.46	4,714.42	4,665.85	97.064	SF
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	6,638.51	6,418.83	3,422.40	3,376.06	73.845	CC, ES
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	6,850.00	6,617.31	3,456.62	3,409.04	72.650	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 Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	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
Y Section 07						
Harkis 11-7 (PA) - Wellbore #1 - Gyro Surveys	8,059.47	7,065.37	1,001.48	951.04	19.855	CC, ES
Harkis 11-7 (PA) - Wellbore #1 - Gyro Surveys	8,100.00	7,065.56	1,002.30	951.81	19.851	SF
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	8,835.97	7,071.96	611.06	559.05	11.749	CC, ES, SF
HP Farms Y 7-15Jl (PR) - Wellbore #1 - No Surveys	12,066.32	7,067.00	1,286.57	1,100.42	6.912	CC, ES
HP Farms Y 7-15Jl (PR) - Wellbore #1 - No Surveys	12,100.00	7,067.00	1,287.01	1,100.69	6.908	SF
HP Y07-09 (PR) - Wellbore #1 - No Surveys	10,714.53	7,016.00	2,853.87	2,677.29	16.162	CC, ES
HP Y07-09 (PR) - Wellbore #1 - No Surveys	10,900.00	7,016.00	2,859.89	2,682.35	16.109	SF
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,566.68	7,264.40	1,344.48	1,282.43	21.668	CC
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,600.00	7,264.55	1,344.89	1,282.35	21.504	ES
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	11,200.00	7,267.44	1,486.17	1,410.29	19.586	SF
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	2,200.00	2,151.00	1,013.84	963.16	20.007	CC
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	2,400.00	2,350.84	1,015.87	960.49	18.343	ES
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	8,040.02	7,021.00	1,482.45	1,316.09	8.911	SF
Perkins USX Y 7-17 (SI) - Wellbore #1 - Gyro Surveys	2,245.99	2,227.93	1,750.43	1,734.98	113.285	CC, ES
Perkins USX Y 7-17 (SI) - Wellbore #1 - Gyro Surveys	8,900.00	7,059.13	2,200.56	2,148.37	42.161	SF
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	9,550.04	7,043.00	329.69	158.55	1.926	CC, ES, SF
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,200.00	2,196.00	905.09	889.80	59.186	CC, ES
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,900.00	2,719.11	997.36	978.03	51.600	SF
Pioneer D31-725 - Pioneer D31-725 - Plan #1	2,200.00	2,197.00	882.45	867.15	57.691	CC, ES
Pioneer D31-725 - Pioneer D31-725 - Plan #1	7,700.00	6,644.84	2,352.61	2,303.94	48.342	SF
Pioneer D31-735 - Pioneer D31-735 - Plan #1	2,200.00	2,197.00	860.09	844.79	56.230	CC, ES
Pioneer D31-735 - Pioneer D31-735 - Plan #1	7,100.00	7,203.06	1,792.19	1,741.73	35.515	SF
Pioneer D31-744 - Pioneer D31-744 - Plan #1	2,200.00	2,203.00	837.45	822.13	54.673	CC
Pioneer D31-744 - Pioneer D31-744 - Plan #1	2,300.00	2,303.02	838.04	822.01	52.269	ES
Pioneer D31-744 - Pioneer D31-744 - Plan #1	7,200.00	7,311.21	1,179.25	1,128.35	23.168	SF
Pioneer D31-756 - Pioneer D31-756 - Plan #1	2,671.43	2,671.31	113.49	94.82	6.079	CC
Pioneer D31-756 - Pioneer D31-756 - Plan #1	2,700.00	2,700.53	113.59	94.72	6.018	ES
Pioneer D31-756 - Pioneer D31-756 - Plan #1	2,800.00	2,802.38	115.98	96.39	5.919	SF
Pioneer D31-761 - Pioneer D31-761 - Plan #1	2,726.28	2,725.32	134.16	115.10	7.040	CC, ES
Pioneer D31-761 - Pioneer D31-761 - Plan #1	7,510.64	7,214.29	243.32	192.29	4.768	SF
Pioneer D31-775 - Pioneer D31-775 - Plan #1	2,200.00	2,203.00	164.91	149.60	10.766	CC, ES
Pioneer D31-775 - Pioneer D31-775 - Plan #1	2,500.00	2,486.39	174.60	157.30	10.090	SF
Pioneer D31-785 - Pioneer D31-785 - Plan #1	2,200.00	2,203.00	186.16	170.84	12.153	CC, ES
Pioneer D31-785 - Pioneer D31-785 - Plan #1	2,500.00	2,483.92	196.12	178.83	11.343	SF
Pioneer USX Y07-08D (PR) - Wellbore #1 - As Drilled	9,444.58	7,183.74	2,788.25	2,727.22	45.686	CC, ES
Pioneer USX Y07-08D (PR) - Wellbore #1 - As Drilled	9,900.00	7,193.18	2,825.19	2,762.49	45.059	SF
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,255.62	7,458.20	1,474.51	1,386.68	16.788	CC
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,300.00	7,458.35	1,475.18	1,385.87	16.517	ES
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,700.00	7,459.67	1,540.02	1,439.77	15.362	SF
Pioneer Y18-715 - Pioneer Y18-715 - Plan #1	2,200.00	2,198.00	784.90	769.60	51.302	CC, ES
Pioneer Y18-715 - Pioneer Y18-715 - Plan #1	17,701.60	17,959.61	3,137.75	2,963.77	18.035	SF
Pioneer Y18-725 - Pioneer Y18-725 - Plan #1	2,200.00	2,199.00	762.54	747.23	49.829	CC, ES
Pioneer Y18-725 - Pioneer Y18-725 - Plan #1	17,701.60	17,897.41	2,508.24	2,334.52	14.438	SF
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	2,200.00	2,200.00	740.17	724.87	48.356	CC, ES
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	17,701.60	17,871.13	2,196.30	2,022.68	12.650	SF
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,200.00	2,201.00	717.53	702.22	46.866	CC, ES
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	17,701.60	17,666.62	1,883.94	1,710.21	10.844	SF
Pioneer Y18-744 - Pioneer Y18-744 - Plan #1	2,200.00	2,201.00	695.17	679.86	45.405	CC
Pioneer Y18-744 - Pioneer Y18-744 - Plan #1	2,300.00	2,299.43	695.88	679.86	43.439	ES
Pioneer Y18-744 - Pioneer Y18-744 - Plan #1	17,701.60	17,711.08	1,254.18	1,080.45	7.219	SF
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	2,200.00	2,199.00	22.64	7.34	1.480	Level 3, CC, ES
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	2,300.00	2,298.91	23.43	7.41	1.463	Level 3, SF
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	2,200.00	2,200.00	22.36	7.05	1.461	Level 3, 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 Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Y Section 07						
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	2,300.00	2,299.61	22.65	6.63	1.414	Level 3, ES
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	2,400.00	2,399.22	23.51	6.79	1.406	Level 3, SF
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	2,200.00	2,201.00	43.60	28.29	2.848	CC
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	2,300.00	2,300.05	44.12	28.10	2.754	ES
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	2,400.00	2,399.08	45.63	28.91	2.730	SF
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	2,200.00	2,201.00	67.36	52.05	4.400	CC, ES
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	2,400.00	2,397.28	70.48	53.78	4.221	SF
UPRC 7-10Q (PR) - Wellbore #1 - No Surveys	11,298.72	7,026.00	1,825.20	1,644.88	10.122	CC
UPRC 7-10Q (PR) - Wellbore #1 - No Surveys	11,300.00	7,026.00	1,825.20	1,644.87	10.122	ES
UPRC 7-10Q (PR) - Wellbore #1 - No Surveys	11,400.00	7,026.00	1,828.00	1,647.17	10.109	SF
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	11,321.49	7,094.41	577.53	512.97	8.945	CC, ES, SF
Y Section 08						
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	11,625.72	7,027.00	4,391.91	4,209.48	24.075	CC, ES
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	12,200.00	7,027.00	4,429.29	4,243.53	23.844	SF
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	11,451.75	7,204.08	7,118.70	7,053.08	108.474	CC
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	11,500.00	7,205.14	7,118.86	7,052.94	107.986	ES
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	7,270.81	7,743.59	7,661.22	93.999	SF
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	2,207.81	2,193.27	7,334.79	7,319.61	483.205	CC
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	2,300.00	2,288.07	7,335.33	7,319.49	463.085	ES
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	13,000.00	6,975.75	9,030.93	8,961.59	130.243	SF
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	2,367.84	2,405.05	3,866.50	3,850.01	234.411	CC
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	2,400.00	2,429.91	3,866.61	3,849.91	231.584	ES
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	9,600.00	6,991.79	4,509.21	4,455.15	83.409	SF
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	100.00	41.93	6,119.52	6,119.32	10,000.000	CC
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	2,300.00	2,284.17	6,129.37	6,113.55	387.455	ES
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	11,600.00	6,951.48	7,461.92	7,399.83	120.191	SF
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	2,165.22	2,106.24	5,060.41	5,045.70	344.033	CC
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	2,200.00	2,132.47	5,060.44	5,045.51	339.052	ES
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	10,100.00	6,953.33	5,934.81	5,879.24	106.796	SF
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	295.31	250.32	3,682.71	3,681.18	2,407.195	CC
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	2,200.00	2,140.29	3,686.00	3,671.05	246.531	ES
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	10,500.00	7,018.50	4,135.36	4,077.06	70.931	SF
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	2,200.00	2,198.00	7,679.84	7,628.23	148.795	CC
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	2,300.00	2,297.98	7,680.70	7,626.73	142.313	ES
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	11,400.00	7,068.00	8,281.52	8,100.81	45.829	SF
Y Section 09						
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Perkins USX Y09-23 - Original Drilling - Original Drilling -						Out of range

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 Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Y Section 16						
Hullabaloo State Y21-716 - Original Drilling - Original Dril						Out of range
Hullabaloo State Y21-726 - Original Drilling - Original Dril						Out of range
Hullabaloo State Y21-736 - Original Drilling - Original Dril						Out of range
Hullabaloo State Y21-746 - Original Drilling - Original Dril						Out of range
Hullabaloo State Y21-756 - Original Drilling - Original Dril						Out of range
Hullabaloo State Y21-763 - Original Drilling - Original Drilli						Out of range
Hullabaloo State Y21-769 - Original Drilling - Original Dril						Out of range
Hullabaloo State Y21-775 - Original Drilling - Original Dril	13,034.01	7,223.79	9,670.18	9,600.03	137.835	CC
Hullabaloo State Y21-775 - Original Drilling - Original Dril	17,200.00	17,200.00	9,747.89	9,581.56	58.602	ES, SF
Hullabaloo State Y21-781 - Original Drilling - Original Dril	13,099.10	7,396.08	9,259.27	9,188.01	129.941	CC
Hullabaloo State Y21-781 - Original Drilling - Original Dril	13,900.00	13,900.00	9,270.17	9,175.67	98.094	ES
Hullabaloo State Y21-781 - Original Drilling - Original Dril	17,701.60	11,805.00	9,359.92	9,229.57	71.807	SF
Hullabaloo State Y21-787 - Original Drilling - Original Dril	12,953.00	7,208.53	8,824.79	8,754.77	126.037	CC
Hullabaloo State Y21-787 - Original Drilling - Original Dril	13,000.00	7,217.96	8,824.90	8,754.54	125.425	ES
Hullabaloo State Y21-787 - Original Drilling - Original Dril	17,701.60	12,294.74	8,925.17	8,790.69	66.366	SF
State 01 - Original Drilling - Original Drilling - As Drilled						Out of range
State 21 (PA) - Original Drilling - Original Drilling - As Dril	16,496.74	7,083.00	9,928.01	9,708.86	45.301	CC
State 21 (PA) - Original Drilling - Original Drilling - As Dril	16,600.00	7,083.00	9,928.55	9,708.62	45.144	ES
State 21 (PA) - Original Drilling - Original Drilling - As Dril	17,600.00	7,083.00	9,989.13	9,762.06	43.992	SF
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,455.72	7,067.61	9,426.93	9,340.27	108.773	CC
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,500.00	7,066.68	9,427.04	9,340.06	108.381	ES
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	17,701.60	7,001.01	9,969.86	9,863.53	93.761	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 Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	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
Y Section 17						
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	16,842.53	7,031.00	7,122.53	6,901.73	32.258	CC
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	16,900.00	7,031.00	7,122.77	6,901.54	32.196	ES
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,701.60	7,031.00	7,174.16	6,947.44	31.643	SF
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,115.17	7,031.00	4,408.93	4,208.92	22.044	CC, ES
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,700.00	7,031.00	4,447.55	4,243.88	21.838	SF
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,119.74	7,026.00	5,479.51	5,286.86	28.443	CC, ES
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	14,000.00	7,026.00	5,549.76	5,351.60	28.005	SF
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	13,025.41	7,120.79	4,296.39	4,220.16	56.361	CC, ES
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	14,000.00	7,117.47	4,405.51	4,323.81	53.921	SF
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	14,552.17	6,865.07	5,614.19	5,527.82	65.004	CC
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	14,600.00	6,864.68	5,614.39	5,527.68	64.751	ES
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	16,100.00	6,853.36	5,823.64	5,728.27	61.070	SF
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,327.47	6,954.83	5,340.84	5,232.79	49.433	CC
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,400.00	6,954.62	5,341.33	5,232.75	49.194	ES
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,701.60	6,953.74	5,353.92	5,243.27	48.384	SF
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,094.75	6,989.92	7,151.36	7,067.90	85.686	CC
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,100.00	6,989.98	7,151.36	7,067.87	85.647	ES
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	16,600.00	7,021.35	7,577.42	7,479.30	77.229	SF
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,080.72	7,034.53	8,167.20	8,090.92	107.071	CC
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,100.00	7,033.86	8,167.22	8,090.81	106.888	ES
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	16,500.00	6,951.68	8,853.44	8,757.73	92.500	SF
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	15,798.30	6,864.05	4,556.14	4,460.36	47.565	CC
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	15,800.00	6,864.04	4,556.15	4,460.34	47.559	ES
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	16,700.00	6,859.13	4,644.51	4,543.42	45.944	SF
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	16,855.24	7,043.00	4,572.58	4,351.44	20.677	CC
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	16,900.00	7,043.00	4,572.80	4,351.33	20.648	ES
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,400.00	7,043.00	4,604.91	4,380.29	20.500	SF
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	13,036.13	7,040.72	6,503.63	6,427.66	85.609	CC
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	13,100.00	7,041.54	6,503.94	6,427.54	85.122	ES
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	15,300.00	7,066.82	6,886.34	6,797.33	77.366	SF
Y Section 18						
ADA Harkins Unit A1 (PA) - Wellbore #1 - Gyro Surveys	13,953.98	7,100.55	443.62	360.71	5.350	CC, ES, SF
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surveys	16,423.61	7,127.05	614.73	513.09	6.048	CC, ES, SF
HSR Harkis 15-18 (PR) - Wellbore #1 - No Surveys	16,609.82	7,081.00	2,012.43	1,792.44	9.148	CC, ES
HSR Harkis 15-18 (PR) - Wellbore #1 - No Surveys	16,700.00	7,081.00	2,014.45	1,793.91	9.134	SF
Lyle V Cooksey Gas Unit 1 (PR) - Wellbore #1 - Gyro Su	14,339.22	7,038.82	2,411.33	2,325.90	28.226	CC, ES
Lyle V Cooksey Gas Unit 1 (PR) - Wellbore #1 - Gyro Su	14,600.00	7,031.81	2,425.38	2,338.53	27.925	SF

Noble Energy, Inc.

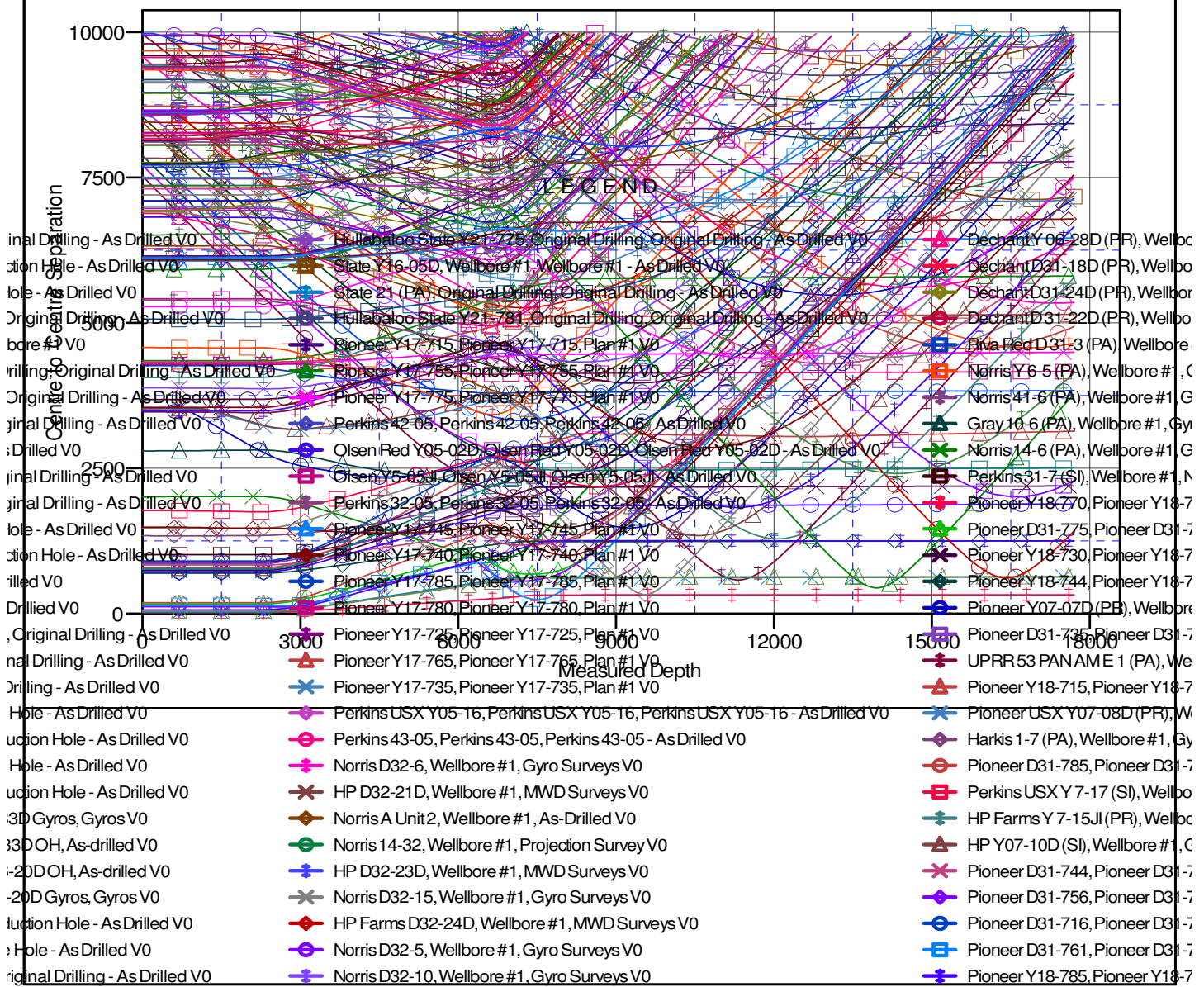
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4914.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Pioneer Y18-766
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.58°

Ladder Plot



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

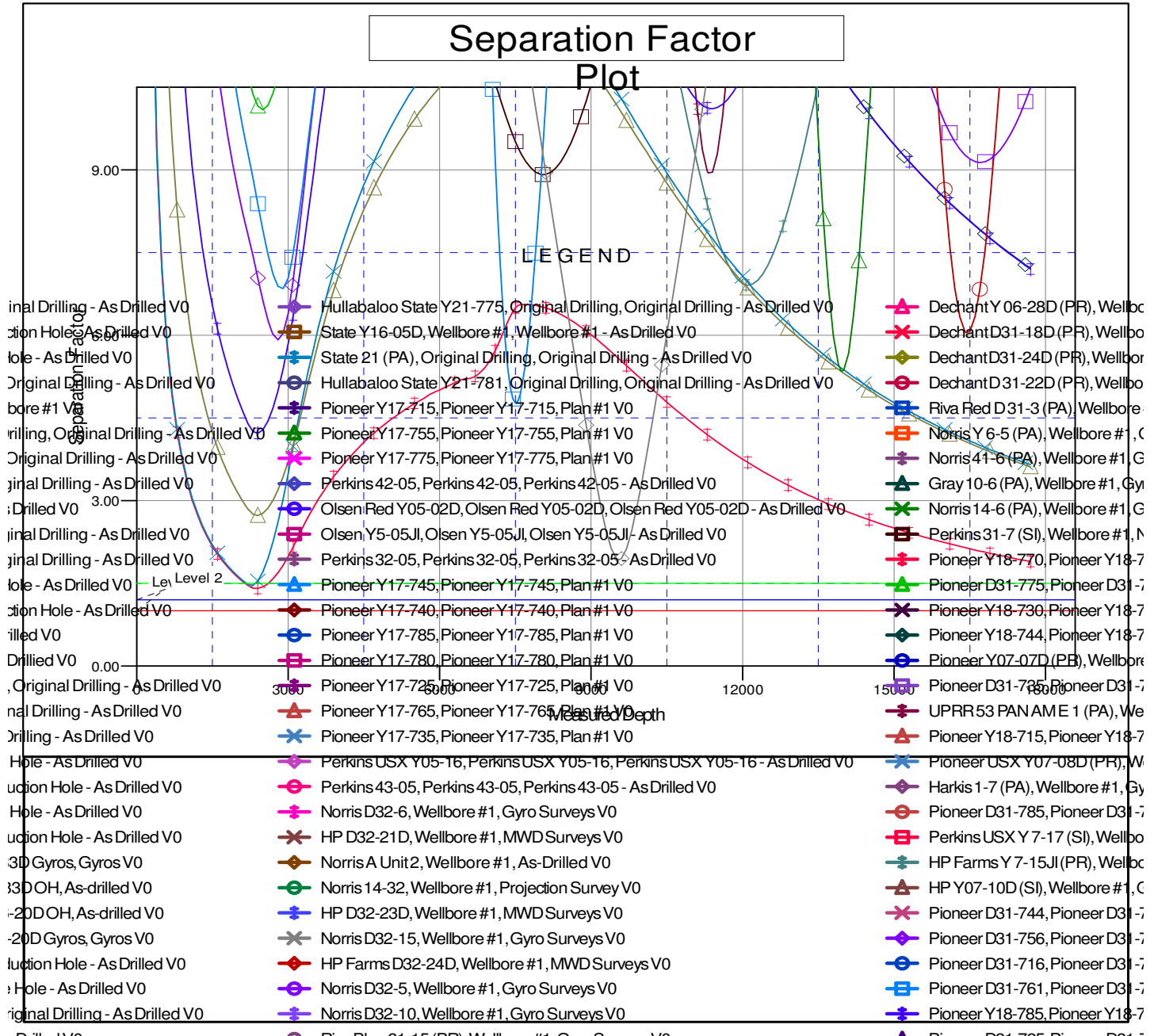
Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-766
Project:	Mustang	TVD Reference:	Well @ 4914.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4914.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-766	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-766	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4914.00ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.5000000

Coordinates are relative to: Pioneer Y18-766
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.58°



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