

Project: Mustang  
Site: Y Section 07  
Well: Pioneer Y18-725  
Wellbore: Pioneer Y18-725  
Design: Plan #1

# Northern Region - DJ Basin

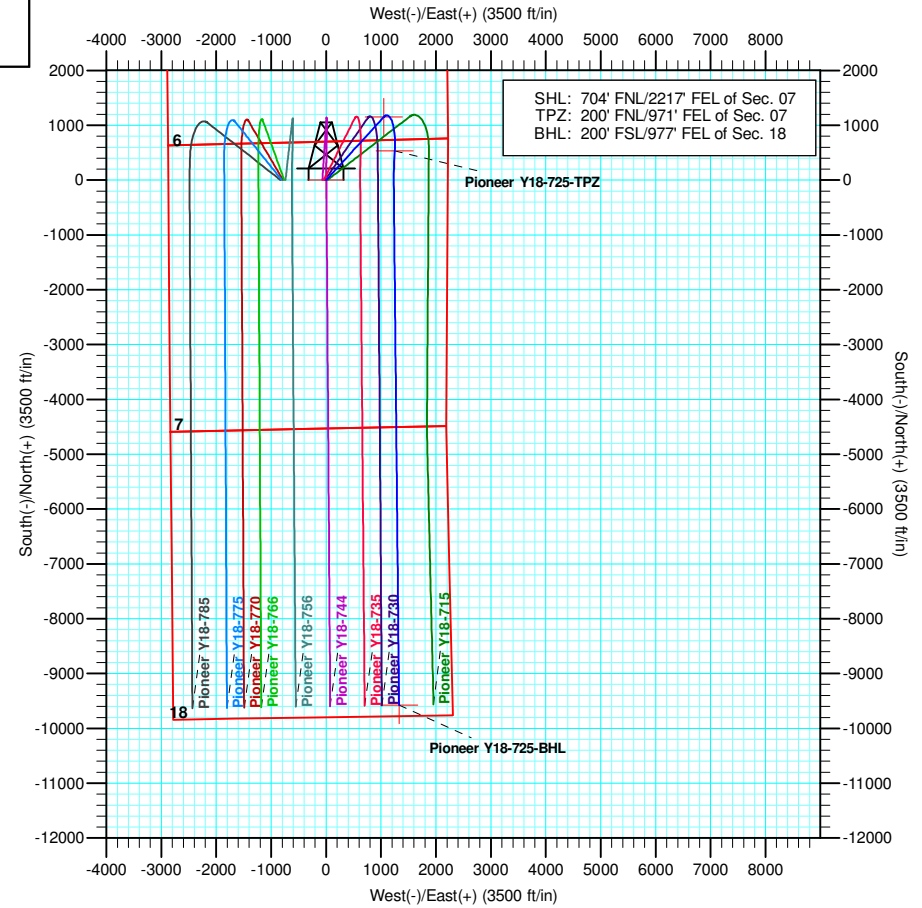
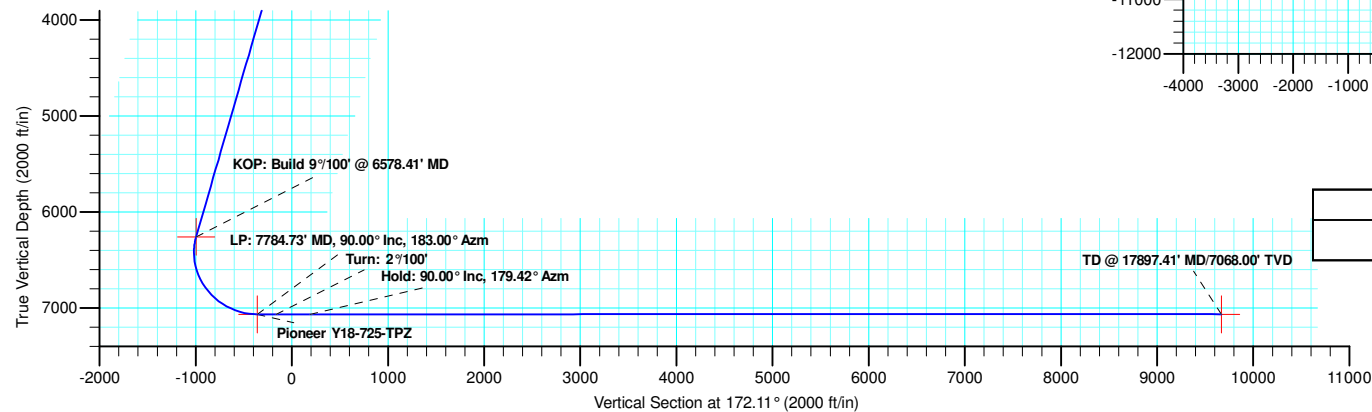
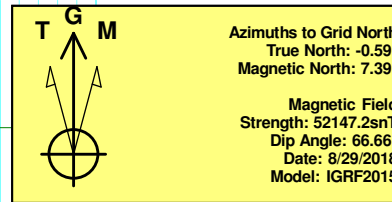
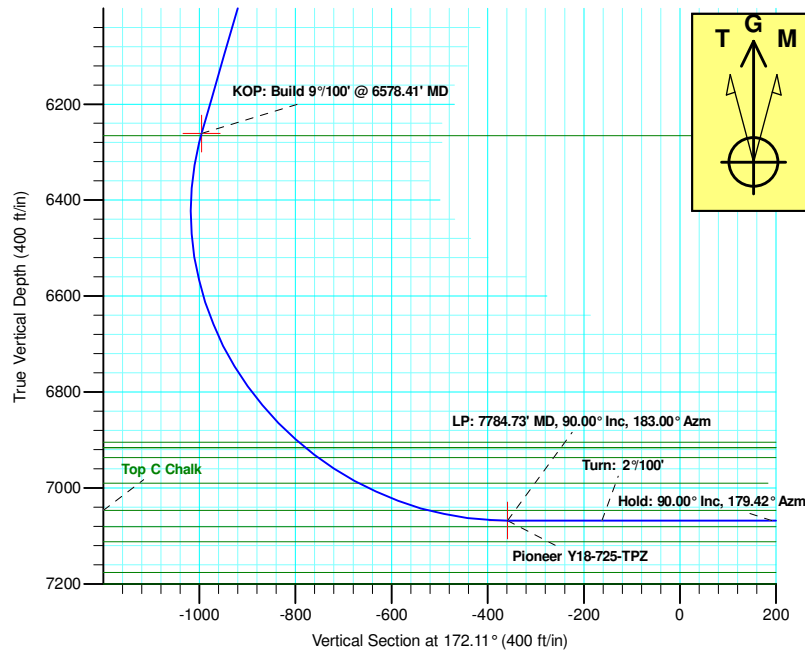
Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone  
System Datum: Mean Sea Level

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	3416.78	24.34	42.40	3380.53	187.98	171.63	2.00	42.40	-162.62	
4	6578.41	24.34	42.40	6261.23	1150.12	1050.10	0.00	0.00	-994.99	
5	7784.73	90.00	183.00	7068.00	535.34	1249.78	9.00	137.97	-358.62	Pioneer Y18-725-TPZ
6	7984.73	90.00	183.00	7068.00	335.62	1239.32	0.00	0.00	-162.22	
7	8342.37	90.00	179.42	7068.00	-21.89	1231.75	1.00	-90.00	190.86	
8	17897.41	90.00	179.42	7068.00	-9576.44	1327.88	0.00	0.00	9668.06	Pioneer Y18-725-BHL

WELL DETAILS: Pioneer Y18-725

+N/-S	+E/-W	Northing	Ground Level: Easting	4883.00 Latitude	Longitude	Slot
0.00	0.00	1301718.00	3253607.74	40.1580490	-104.5926360	



Plan: Plan #1 (Pioneer Y18-725/Pioneer Y18-725)

Created By: Shelly C. Peterkin Date: 7:36, September 27 2018

# **Northern Region - DJ Basin**

**Mustang**

**Y Section 07**

**Pioneer Y18-725**

**Pioneer Y18-725**

**Plan: Plan #1**

## **Standard Planning Report**

**26 September, 2018**

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site:</b>	Y Section 07	<b>North Reference:</b>	Grid
<b>Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pioneer Y18-725		
<b>Design:</b>	Plan #1		

<b>Project</b>	Mustang, Weld County Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 Y18-725					
Well Position	+N/-S	-46.67 ft	Northing:	1,301,718.00 usft	Latitude:	40.1580490
	+E/-W	2,248.93 ft	Easting:	3,253,607.74 usft	Longitude:	-104.5926360
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,883.00 ft

<b>Wellbore</b>	Pioneer Y18-725				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	8/29/2018	7.97	66.66	52,147.15803789

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	172.11

<b>Plan Sections</b>										
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	
3,416.78	24.34	42.40	3,380.53	187.98	171.63	2.00	2.00	0.00	42.40	
6,578.41	24.34	42.40	6,261.23	1,150.12	1,050.10	0.00	0.00	0.00	0.00	
7,784.73	90.00	183.00	7,068.00	535.34	1,249.78	9.00	5.44	11.66	137.97	Pioneer Y18-725-TI
7,984.73	90.00	183.00	7,068.00	335.62	1,239.32	0.00	0.00	0.00	0.00	
8,342.37	90.00	179.42	7,068.00	-21.89	1,231.75	1.00	0.00	-1.00	-90.00	
17,897.41	90.00	179.42	7,068.00	-9,576.44	1,327.88	0.00	0.00	0.00	0.00	Pioneer Y18-725-BI

**Noble Energy, Inc.**  
Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site:</b>	Y Section 07	<b>North Reference:</b>	Grid
<b>Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pioneer Y18-725		
<b>Design:</b>	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
754.00	0.00	0.00	754.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills - Pierre</b>									
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
1,102.00	0.00	0.00	1,102.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Upper Pierre Aquifer Top</b>									
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
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,911.00	0.00	0.00	1,911.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Upper Pierre Aquifer Base</b>									
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
<b>Build: 2°/100'</b>									
2,300.00	2.00	42.40	2,299.98	1.29	1.18	-1.11	2.00	2.00	0.00
2,400.00	4.00	42.40	2,399.84	5.15	4.71	-4.46	2.00	2.00	0.00
2,500.00	6.00	42.40	2,499.45	11.59	10.58	-10.03	2.00	2.00	0.00
2,600.00	8.00	42.40	2,598.70	20.59	18.80	-17.81	2.00	2.00	0.00
2,700.00	10.00	42.40	2,697.47	32.14	29.35	-27.81	2.00	2.00	0.00
2,800.00	12.00	42.40	2,795.62	46.23	42.21	-40.00	2.00	2.00	0.00
2,900.00	14.00	42.40	2,893.06	62.84	57.38	-54.37	2.00	2.00	0.00
3,000.00	16.00	42.40	2,989.64	81.96	74.83	-70.90	2.00	2.00	0.00
3,100.00	18.00	42.40	3,085.27	103.55	94.54	-89.58	2.00	2.00	0.00
3,200.00	20.00	42.40	3,179.82	127.59	116.49	-110.38	2.00	2.00	0.00
3,300.00	22.00	42.40	3,273.17	154.05	140.65	-133.27	2.00	2.00	0.00
3,400.00	24.00	42.40	3,365.21	182.90	167.00	-158.23	2.00	2.00	0.00
3,416.78	24.34	42.40	3,380.53	187.98	171.63	-162.62	2.00	2.00	0.00
<b>Hold: 24.34° Inc, 42.40° Azm</b>									
3,500.00	24.34	42.40	3,456.35	213.30	194.75	-184.53	0.00	0.00	0.00
3,600.00	24.34	42.40	3,547.46	243.73	222.54	-210.86	0.00	0.00	0.00
3,700.00	24.34	42.40	3,638.58	274.17	250.32	-237.19	0.00	0.00	0.00
3,800.00	24.34	42.40	3,729.69	304.60	278.11	-263.51	0.00	0.00	0.00
3,900.00	24.34	42.40	3,820.81	335.03	305.90	-289.84	0.00	0.00	0.00
4,000.00	24.34	42.40	3,911.92	365.46	333.68	-316.17	0.00	0.00	0.00
4,085.69	24.34	42.40	3,990.00	391.54	357.49	-338.73	0.00	0.00	0.00
<b>Parkman</b>									
4,100.00	24.34	42.40	4,003.04	395.89	361.47	-342.49	0.00	0.00	0.00

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site:</b>	Y Section 07	<b>North Reference:</b>	Grid
<b>Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pioneer Y18-725		
<b>Design:</b>	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	24.34	42.40	4,094.15	426.32	389.25	-368.82	0.00	0.00	0.00
4,300.00	24.34	42.40	4,185.27	456.76	417.04	-395.15	0.00	0.00	0.00
4,400.00	24.34	42.40	4,276.38	487.19	444.82	-421.48	0.00	0.00	0.00
4,500.00	24.34	42.40	4,367.50	517.62	472.61	-447.80	0.00	0.00	0.00
4,600.00	24.34	42.40	4,458.61	548.05	500.39	-474.13	0.00	0.00	0.00
4,700.00	24.34	42.40	4,549.73	578.48	528.18	-500.46	0.00	0.00	0.00
4,707.98	24.34	42.40	4,557.00	580.91	530.40	-502.56	0.00	0.00	0.00
<b>Sussex</b>									
4,800.00	24.34	42.40	4,640.84	608.91	555.96	-526.78	0.00	0.00	0.00
4,900.00	24.34	42.40	4,731.96	639.35	583.75	-553.11	0.00	0.00	0.00
5,000.00	24.34	42.40	4,823.07	669.78	611.53	-579.44	0.00	0.00	0.00
5,100.00	24.34	42.40	4,914.18	700.21	639.32	-605.77	0.00	0.00	0.00
5,200.00	24.34	42.40	5,005.30	730.64	667.10	-632.09	0.00	0.00	0.00
5,300.00	24.34	42.40	5,096.41	761.07	694.89	-658.42	0.00	0.00	0.00
5,400.00	24.34	42.40	5,187.53	791.50	722.68	-684.75	0.00	0.00	0.00
5,500.00	24.34	42.40	5,278.64	821.94	750.46	-711.07	0.00	0.00	0.00
5,565.15	24.34	42.40	5,338.00	841.76	768.56	-728.22	0.00	0.00	0.00
<b>Shannon</b>									
5,600.00	24.34	42.40	5,369.76	852.37	778.25	-737.40	0.00	0.00	0.00
5,700.00	24.34	42.40	5,460.87	882.80	806.03	-763.73	0.00	0.00	0.00
5,800.00	24.34	42.40	5,551.99	913.23	833.82	-790.05	0.00	0.00	0.00
5,900.00	24.34	42.40	5,643.10	943.66	861.60	-816.38	0.00	0.00	0.00
6,000.00	24.34	42.40	5,734.22	974.09	889.39	-842.71	0.00	0.00	0.00
6,100.00	24.34	42.40	5,825.33	1,004.53	917.17	-869.04	0.00	0.00	0.00
6,200.00	24.34	42.40	5,916.45	1,034.96	944.96	-895.36	0.00	0.00	0.00
6,300.00	24.34	42.40	6,007.56	1,065.39	972.74	-921.69	0.00	0.00	0.00
6,400.00	24.34	42.40	6,098.68	1,095.82	1,000.53	-948.02	0.00	0.00	0.00
6,500.00	24.34	42.40	6,189.79	1,126.25	1,028.31	-974.34	0.00	0.00	0.00
6,578.41	24.34	42.40	6,261.23	1,150.12	1,050.10	-994.99	0.00	0.00	0.00
<b>KOP: Build 9°/100' @ 6578.41' MD</b>									
6,583.63	23.99	43.17	6,266.00	1,151.68	1,051.55	-996.34	9.00	-6.65	14.82
<b>Teepee Buttes</b>									
6,600.00	22.93	45.74	6,281.01	1,156.34	1,056.11	-1,000.32	9.00	-6.48	15.68
6,650.00	19.99	55.09	6,327.56	1,168.03	1,070.10	-1,009.98	9.00	-5.87	18.71
6,700.00	17.70	67.11	6,374.89	1,175.88	1,084.12	-1,015.84	9.00	-4.59	24.05
6,750.00	16.31	81.80	6,422.73	1,179.84	1,098.08	-1,017.84	9.00	-2.77	29.38
6,800.00	16.07	97.97	6,470.77	1,179.88	1,111.89	-1,015.98	9.00	-0.47	32.33
6,850.00	17.03	113.45	6,518.72	1,176.00	1,125.47	-1,010.28	9.00	1.92	30.96
6,900.00	19.01	126.56	6,566.28	1,168.23	1,138.74	-1,000.76	9.00	3.95	26.23
6,950.00	21.72	136.91	6,613.17	1,156.62	1,151.60	-987.49	9.00	5.43	20.69
7,000.00	24.94	144.88	6,659.08	1,141.23	1,164.00	-970.55	9.00	6.43	15.95
7,050.00	28.49	151.06	6,703.75	1,122.17	1,175.84	-950.03	9.00	7.09	12.36
7,100.00	32.25	155.94	6,746.89	1,099.54	1,187.05	-926.08	9.00	7.53	9.76
7,150.00	36.17	159.88	6,788.23	1,073.49	1,197.57	-898.83	9.00	7.84	7.88
7,200.00	40.20	163.14	6,827.53	1,044.18	1,207.33	-868.46	9.00	8.05	6.52
7,250.00	44.30	165.89	6,864.54	1,011.78	1,216.27	-835.14	9.00	8.21	5.51
7,300.00	48.46	168.27	6,899.03	976.51	1,224.33	-799.10	9.00	8.32	4.75
7,309.07	49.22	168.66	6,905.00	969.82	1,225.70	-792.28	9.00	8.37	4.38
<b>Sharon Springs</b>									
7,326.16	50.65	169.39	6,916.00	956.98	1,228.19	-779.22	9.00	8.39	4.24
<b>Top A Chalk - Top A Marl</b>									
7,350.00	52.66	170.35	6,930.79	938.58	1,231.48	-760.54	9.00	8.42	4.04
7,360.35	53.53	170.75	6,937.00	930.42	1,232.83	-752.27	9.00	8.45	3.88

# Noble Energy, Inc.

## Planning Report

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<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4913.00ft
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<b>Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pioneer Y18-725		
<b>Design:</b>	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)
<b>Top B Chalk</b>									
7,400.00	56.90	172.21	6,959.62	898.21	1,237.65	-719.71	9.00	8.48	3.68
7,450.00	61.16	173.90	6,985.35	855.67	1,242.81	-676.86	9.00	8.52	3.38
7,459.77	61.99	174.22	6,990.00	847.12	1,243.70	-668.27	9.00	8.55	3.21
<b>Top B Marl</b>									
7,500.00	65.44	175.46	7,007.81	811.20	1,246.94	-632.25	9.00	8.56	3.09
7,550.00	69.73	176.91	7,026.87	765.09	1,250.00	-586.16	9.00	8.59	2.91
7,600.00	74.04	178.29	7,042.42	717.63	1,251.98	-538.87	9.00	8.61	2.75
7,617.46	75.54	178.76	7,047.00	700.78	1,252.42	-522.12	9.00	8.62	2.67
<b>Top C Chalk</b>									
7,650.00	78.35	179.61	7,054.35	669.09	1,252.87	-490.67	9.00	8.63	2.62
7,700.00	82.67	180.88	7,062.59	619.79	1,252.65	-441.87	9.00	8.64	2.55
7,750.00	87.00	182.14	7,067.09	570.02	1,251.34	-392.75	9.00	8.65	2.50
7,784.73	90.00	183.00	7,068.00	535.34	1,249.78	-358.62	9.00	8.65	2.49
<b>LP: 7784.73' MD, 90.00° Inc, 183.00° Azm</b>									
7,800.00	90.00	183.00	7,068.00	520.09	1,248.98	-343.62	0.00	0.00	0.00
7,900.00	90.00	183.00	7,068.00	420.23	1,243.75	-245.42	0.00	0.00	0.00
7,984.73	90.00	183.00	7,068.00	335.62	1,239.32	-162.22	0.00	0.00	0.00
<b>Turn: 2°/100'</b>									
8,000.00	90.00	182.85	7,068.00	320.37	1,238.54	-147.22	1.00	0.00	-1.00
8,100.00	90.00	181.85	7,068.00	220.45	1,234.44	-48.82	1.00	0.00	-1.00
8,200.00	90.00	180.85	7,068.00	120.48	1,232.09	49.88	1.00	0.00	-1.00
8,300.00	90.00	179.85	7,068.00	20.48	1,231.48	148.85	1.00	0.00	-1.00
8,342.37	90.00	179.42	7,068.00	-21.89	1,231.75	190.86	1.00	0.00	-1.00
<b>Hold: 90.00° Inc, 179.42° Azm</b>									
8,400.00	90.00	179.42	7,068.00	-79.51	1,232.33	248.02	0.00	0.00	0.00
8,500.00	90.00	179.42	7,068.00	-179.51	1,233.34	347.20	0.00	0.00	0.00
8,600.00	90.00	179.42	7,068.00	-279.50	1,234.35	446.39	0.00	0.00	0.00
8,700.00	90.00	179.42	7,068.00	-379.50	1,235.35	545.57	0.00	0.00	0.00
8,800.00	90.00	179.42	7,068.00	-479.49	1,236.36	644.76	0.00	0.00	0.00
8,900.00	90.00	179.42	7,068.00	-579.49	1,237.36	743.94	0.00	0.00	0.00
9,000.00	90.00	179.42	7,068.00	-679.48	1,238.37	843.13	0.00	0.00	0.00
9,100.00	90.00	179.42	7,068.00	-779.48	1,239.38	942.31	0.00	0.00	0.00
9,200.00	90.00	179.42	7,068.00	-879.47	1,240.38	1,041.50	0.00	0.00	0.00
9,300.00	90.00	179.42	7,068.00	-979.47	1,241.39	1,140.68	0.00	0.00	0.00
9,400.00	90.00	179.42	7,068.00	-1,079.46	1,242.39	1,239.87	0.00	0.00	0.00
9,500.00	90.00	179.42	7,068.00	-1,179.46	1,243.40	1,339.06	0.00	0.00	0.00
9,600.00	90.00	179.42	7,068.00	-1,279.45	1,244.41	1,438.24	0.00	0.00	0.00
9,700.00	90.00	179.42	7,068.00	-1,379.45	1,245.41	1,537.43	0.00	0.00	0.00
9,800.00	90.00	179.42	7,068.00	-1,479.44	1,246.42	1,636.61	0.00	0.00	0.00
9,900.00	90.00	179.42	7,068.00	-1,579.44	1,247.42	1,735.80	0.00	0.00	0.00
10,000.00	90.00	179.42	7,068.00	-1,679.43	1,248.43	1,834.98	0.00	0.00	0.00
10,100.00	90.00	179.42	7,068.00	-1,779.43	1,249.44	1,934.17	0.00	0.00	0.00
10,200.00	90.00	179.42	7,068.00	-1,879.42	1,250.44	2,033.35	0.00	0.00	0.00
10,300.00	90.00	179.42	7,068.00	-1,979.42	1,251.45	2,132.54	0.00	0.00	0.00
10,400.00	90.00	179.42	7,068.00	-2,079.41	1,252.45	2,231.72	0.00	0.00	0.00
10,500.00	90.00	179.42	7,068.00	-2,179.41	1,253.46	2,330.91	0.00	0.00	0.00
10,600.00	90.00	179.42	7,068.00	-2,279.40	1,254.47	2,430.10	0.00	0.00	0.00
10,700.00	90.00	179.42	7,068.00	-2,379.40	1,255.47	2,529.28	0.00	0.00	0.00
10,800.00	90.00	179.42	7,068.00	-2,479.39	1,256.48	2,628.47	0.00	0.00	0.00
10,900.00	90.00	179.42	7,068.00	-2,579.39	1,257.48	2,727.65	0.00	0.00	0.00
11,000.00	90.00	179.42	7,068.00	-2,679.38	1,258.49	2,826.84	0.00	0.00	0.00
11,100.00	90.00	179.42	7,068.00	-2,779.38	1,259.50	2,926.02	0.00	0.00	0.00

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site:</b>	Y Section 07	<b>North Reference:</b>	Grid
<b>Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pioneer Y18-725		
<b>Design:</b>	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	179.42	7,068.00	-2,879.37	1,260.50	3,025.21	0.00	0.00	0.00	
11,300.00	90.00	179.42	7,068.00	-2,979.36	1,261.51	3,124.39	0.00	0.00	0.00	
11,400.00	90.00	179.42	7,068.00	-3,079.36	1,262.51	3,223.58	0.00	0.00	0.00	
11,500.00	90.00	179.42	7,068.00	-3,179.35	1,263.52	3,322.76	0.00	0.00	0.00	
11,600.00	90.00	179.42	7,068.00	-3,279.35	1,264.53	3,421.95	0.00	0.00	0.00	
11,700.00	90.00	179.42	7,068.00	-3,379.34	1,265.53	3,521.14	0.00	0.00	0.00	
11,800.00	90.00	179.42	7,068.00	-3,479.34	1,266.54	3,620.32	0.00	0.00	0.00	
11,900.00	90.00	179.42	7,068.00	-3,579.33	1,267.54	3,719.51	0.00	0.00	0.00	
12,000.00	90.00	179.42	7,068.00	-3,679.33	1,268.55	3,818.69	0.00	0.00	0.00	
12,100.00	90.00	179.42	7,068.00	-3,779.32	1,269.56	3,917.88	0.00	0.00	0.00	
12,200.00	90.00	179.42	7,068.00	-3,879.32	1,270.56	4,017.06	0.00	0.00	0.00	
12,300.00	90.00	179.42	7,068.00	-3,979.31	1,271.57	4,116.25	0.00	0.00	0.00	
12,400.00	90.00	179.42	7,068.00	-4,079.31	1,272.57	4,215.43	0.00	0.00	0.00	
12,500.00	90.00	179.42	7,068.00	-4,179.30	1,273.58	4,314.62	0.00	0.00	0.00	
12,600.00	90.00	179.42	7,068.00	-4,279.30	1,274.59	4,413.81	0.00	0.00	0.00	
12,700.00	90.00	179.42	7,068.00	-4,379.29	1,275.59	4,512.99	0.00	0.00	0.00	
12,800.00	90.00	179.42	7,068.00	-4,479.29	1,276.60	4,612.18	0.00	0.00	0.00	
12,900.00	90.00	179.42	7,068.00	-4,579.28	1,277.60	4,711.36	0.00	0.00	0.00	
13,000.00	90.00	179.42	7,068.00	-4,679.28	1,278.61	4,810.55	0.00	0.00	0.00	
13,100.00	90.00	179.42	7,068.00	-4,779.27	1,279.62	4,909.73	0.00	0.00	0.00	
13,200.00	90.00	179.42	7,068.00	-4,879.27	1,280.62	5,008.92	0.00	0.00	0.00	
13,300.00	90.00	179.42	7,068.00	-4,979.26	1,281.63	5,108.10	0.00	0.00	0.00	
13,400.00	90.00	179.42	7,068.00	-5,079.26	1,282.64	5,207.29	0.00	0.00	0.00	
13,500.00	90.00	179.42	7,068.00	-5,179.25	1,283.64	5,306.47	0.00	0.00	0.00	
13,600.00	90.00	179.42	7,068.00	-5,279.25	1,284.65	5,405.66	0.00	0.00	0.00	
13,700.00	90.00	179.42	7,068.00	-5,379.24	1,285.65	5,504.85	0.00	0.00	0.00	
13,800.00	90.00	179.42	7,068.00	-5,479.24	1,286.66	5,604.03	0.00	0.00	0.00	
13,900.00	90.00	179.42	7,068.00	-5,579.23	1,287.67	5,703.22	0.00	0.00	0.00	
14,000.00	90.00	179.42	7,068.00	-5,679.23	1,288.67	5,802.40	0.00	0.00	0.00	
14,100.00	90.00	179.42	7,068.00	-5,779.22	1,289.68	5,901.59	0.00	0.00	0.00	
14,200.00	90.00	179.42	7,068.00	-5,879.22	1,290.68	6,000.77	0.00	0.00	0.00	
14,300.00	90.00	179.42	7,068.00	-5,979.21	1,291.69	6,099.96	0.00	0.00	0.00	
14,400.00	90.00	179.42	7,068.00	-6,079.21	1,292.70	6,199.14	0.00	0.00	0.00	
14,500.00	90.00	179.42	7,068.00	-6,179.20	1,293.70	6,298.33	0.00	0.00	0.00	
14,600.00	90.00	179.42	7,068.00	-6,279.20	1,294.71	6,397.51	0.00	0.00	0.00	
14,700.00	90.00	179.42	7,068.00	-6,379.19	1,295.71	6,496.70	0.00	0.00	0.00	
14,800.00	90.00	179.42	7,068.00	-6,479.19	1,296.72	6,595.89	0.00	0.00	0.00	
14,900.00	90.00	179.42	7,068.00	-6,579.18	1,297.73	6,695.07	0.00	0.00	0.00	
15,000.00	90.00	179.42	7,068.00	-6,679.18	1,298.73	6,794.26	0.00	0.00	0.00	
15,100.00	90.00	179.42	7,068.00	-6,779.17	1,299.74	6,893.44	0.00	0.00	0.00	
15,200.00	90.00	179.42	7,068.00	-6,879.17	1,300.74	6,992.63	0.00	0.00	0.00	
15,300.00	90.00	179.42	7,068.00	-6,979.16	1,301.75	7,091.81	0.00	0.00	0.00	
15,400.00	90.00	179.42	7,068.00	-7,079.16	1,302.76	7,191.00	0.00	0.00	0.00	
15,500.00	90.00	179.42	7,068.00	-7,179.15	1,303.76	7,290.18	0.00	0.00	0.00	
15,600.00	90.00	179.42	7,068.00	-7,279.15	1,304.77	7,389.37	0.00	0.00	0.00	
15,700.00	90.00	179.42	7,068.00	-7,379.14	1,305.77	7,488.55	0.00	0.00	0.00	
15,800.00	90.00	179.42	7,068.00	-7,479.14	1,306.78	7,587.74	0.00	0.00	0.00	
15,900.00	90.00	179.42	7,068.00	-7,579.13	1,307.79	7,686.93	0.00	0.00	0.00	
16,000.00	90.00	179.42	7,068.00	-7,679.13	1,308.79	7,786.11	0.00	0.00	0.00	
16,100.00	90.00	179.42	7,068.00	-7,779.12	1,309.80	7,885.30	0.00	0.00	0.00	
16,200.00	90.00	179.42	7,068.00	-7,879.12	1,310.80	7,984.48	0.00	0.00	0.00	
16,300.00	90.00	179.42	7,068.00	-7,979.11	1,311.81	8,083.67	0.00	0.00	0.00	
16,400.00	90.00	179.42	7,068.00	-8,079.11	1,312.82	8,182.85	0.00	0.00	0.00	
16,500.00	90.00	179.42	7,068.00	-8,179.10	1,313.82	8,282.04	0.00	0.00	0.00	

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site:</b>	Y Section 07	<b>North Reference:</b>	Grid
<b>Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pioneer Y18-725		
<b>Design:</b>	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	179.42	7,068.00	-8,279.10	1,314.83	8,381.22	0.00	0.00	0.00
16,700.00	90.00	179.42	7,068.00	-8,379.09	1,315.83	8,480.41	0.00	0.00	0.00
16,800.00	90.00	179.42	7,068.00	-8,479.09	1,316.84	8,579.59	0.00	0.00	0.00
16,900.00	90.00	179.42	7,068.00	-8,579.08	1,317.85	8,678.78	0.00	0.00	0.00
17,000.00	90.00	179.42	7,068.00	-8,679.08	1,318.85	8,777.97	0.00	0.00	0.00
17,100.00	90.00	179.42	7,068.00	-8,779.07	1,319.86	8,877.15	0.00	0.00	0.00
17,200.00	90.00	179.42	7,068.00	-8,879.07	1,320.86	8,976.34	0.00	0.00	0.00
17,300.00	90.00	179.42	7,068.00	-8,979.06	1,321.87	9,075.52	0.00	0.00	0.00
17,400.00	90.00	179.42	7,068.00	-9,079.06	1,322.88	9,174.71	0.00	0.00	0.00
17,500.00	90.00	179.42	7,068.00	-9,179.05	1,323.88	9,273.89	0.00	0.00	0.00
17,600.00	90.00	179.42	7,068.00	-9,279.05	1,324.89	9,373.08	0.00	0.00	0.00
17,700.00	90.00	179.42	7,068.00	-9,379.04	1,325.89	9,472.26	0.00	0.00	0.00
17,800.00	90.00	179.42	7,068.00	-9,479.04	1,326.90	9,571.45	0.00	0.00	0.00
17,897.41	90.00	179.42	7,068.00	-9,576.44	1,327.88	9,668.06	0.00	0.00	0.00
TD @ 17897.41' MD/7068.00' 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 Y18-725-SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,301,718.00	3,253,607.74	40.1580490	-104.5926360
Pioneer Y18-725-KOF - plan hits target center - Point	0.00	0.00	6,261.23	1,150.11	1,050.10	1,302,868.11	3,254,657.84	40.1611765	-104.5888369
Pioneer Y18-725-TPZ - plan hits target center - Point	0.00	0.00	7,068.00	535.34	1,249.78	1,302,253.34	3,254,857.52	40.1594833	-104.5881451
Pioneer Y18-725-BHL - plan hits target center - Point	0.00	0.00	7,068.00	-9,576.44	1,327.88	1,292,141.58	3,254,935.62	40.1317244	-104.5882377



# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Project:</b>	Mustang	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site:</b>	Y Section 07	<b>North Reference:</b>	Grid
<b>Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Pioneer Y18-725		
<b>Design:</b>	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
754.00	754.00	Fox Hills				
754.00	754.00	Pierre				
1,102.00	1,102.00	Upper Pierre Aquifer Top				
1,911.00	1,911.00	Upper Pierre Aquifer Base				
4,085.69	3,990.00	Parkman				
4,707.98	4,557.00	Sussex				
5,565.15	5,338.00	Shannon				
6,583.63	6,266.00	Teepee Buttes				
7,309.07	6,905.00	Sharon Springs				
7,326.16	6,916.00	Top A Chalk				
7,326.16	6,916.00	Top A Marl				
7,360.35	6,937.00	Top B Chalk				
7,459.77	6,990.00	Top B Marl				
7,617.46	7,047.00	Top C Chalk				

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'	
3,416.78	3,380.53	187.98	171.63	Hold: 24.34° Inc, 42.40° Azm	
6,578.41	6,261.23	1,150.12	1,050.10	KOP: Build 9°/100' @ 6578.41' MD	
7,784.73	7,068.00	535.34	1,249.78	LP: 7784.73' MD, 90.00° Inc, 183.00° Azm	
7,984.73	7,068.00	335.62	1,239.32	Turn: 2°/100'	
8,342.37	7,068.00	-21.89	1,231.75	Hold: 90.00° Inc, 179.42° Azm	
17,897.41	7,068.00	-9,576.44	1,327.88	TD @ 17897.41' MD/7068.00' TVD	

# **Northern Region - DJ Basin**

**Mustang**

**Y Section 07**

**Pioneer Y18-725**

**Pioneer Y18-725**

**Plan #1**

## **Anticollision Summary Report**

**26 September, 2018**

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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	17,897.41	Plan #1 (Pioneer Y18-725)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
D Section 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 - /	6,755.22	11,360.01	5,940.03	5,861.40	75.536	CC, ES
Dechant D31-77HN - Original Drilling - Original Drilling - /	6,950.00	11,360.01	5,968.78	5,888.97	74.795	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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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						
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	6,671.35	6,153.05	6,465.62	6,418.60	137.514	CC, ES
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	7,150.00	7,150.00	6,612.14	6,560.38	127.746	SF
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	6,760.58	6,378.88	7,505.36	7,453.91	145.874	CC, ES
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	7,100.00	6,903.75	7,587.19	7,533.50	141.327	SF
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	102.00	0.00	8,102.13	8,102.00	10,000.000	CC
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	400.00	255.71	8,103.13	8,101.23	4,261.163	ES
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	5,400.00	5,400.00	8,314.24	8,271.16	192.991	SF
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	6,706.67	6,165.47	6,387.87	6,339.06	130.871	CC, ES
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	7,100.00	7,100.00	6,483.72	6,431.07	123.147	SF
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	100.00	0.00	9,135.32	9,135.19	10,000.000	CC
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	200.00	60.92	9,135.54	9,134.94	10,000.000	ES
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	7,250.00	6,818.39	9,660.29	9,608.85	187.791	SF
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	6,739.55	6,373.87	7,696.60	7,647.33	156.209	CC, ES
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	7,150.00	6,928.81	7,818.48	7,766.55	150.554	SF
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	6,697.77	6,377.76	8,424.09	8,386.82	225.998	CC
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	6,700.00	6,379.93	8,424.09	8,386.81	225.914	ES
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	7,400.00	7,400.00	8,737.63	8,697.18	216.015	SF
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	6,763.35	6,438.37	4,890.69	4,840.31	97.070	CC, ES
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	7,050.00	7,050.00	4,952.80	4,899.73	93.330	SF
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	6,730.15	6,478.13	5,034.82	4,983.80	98.686	CC, ES
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	7,100.00	6,944.64	5,129.57	5,076.02	95.791	SF
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	6,751.23	6,364.30	5,819.84	5,772.00	121.670	CC, ES
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	7,100.00	6,644.48	5,913.11	5,863.30	118.717	SF
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	6,771.72	6,276.72	5,525.44	5,477.97	116.400	CC, ES
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	7,100.00	6,628.04	5,606.70	5,557.13	113.099	SF
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	6,788.35	6,455.71	6,787.37	6,739.36	141.379	CC, ES
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	7,150.00	6,777.94	6,888.41	6,838.34	137.583	SF
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	6,750.15	6,228.10	6,480.19	6,432.81	136.793	CC, ES
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	7,250.00	7,146.67	6,645.08	6,593.25	128.210	SF
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	6,718.41	6,203.68	7,189.06	7,141.11	149.920	CC, ES
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	7,200.00	6,637.82	7,354.97	7,303.67	143.354	SF
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	6,666.86	6,073.73	7,658.81	7,612.04	163.758	CC, ES
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	6,850.00	6,850.00	7,681.11	7,631.01	153.303	SF
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	6,749.23	6,315.99	7,028.51	6,876.44	46.218	CC
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	6,750.00	6,316.73	7,028.51	6,876.42	46.212	ES
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	7,250.00	6,758.54	7,212.68	7,050.60	44.500	SF
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	6,723.23	6,414.67	9,155.37	9,107.35	190.637	CC, ES
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	7,150.00	6,835.55	9,282.45	9,231.84	183.418	SF
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys	6,726.35	6,121.79	9,917.78	9,870.77	210.939	CC, ES
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys	6,950.00	6,950.00	9,953.92	9,903.39	197.002	SF
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	6,729.34	6,297.92	8,214.23	8,062.50	54.136	CC
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	6,750.00	6,317.73	8,214.55	8,062.34	53.968	ES
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	7,300.00	6,794.03	8,443.42	8,280.51	51.829	SF
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	6,743.72	6,521.45	8,473.04	8,424.71	175.282	CC
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	6,750.00	6,528.77	8,473.07	8,424.68	175.102	ES
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	7,100.00	6,996.76	8,564.35	8,513.53	168.527	SF
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	6,768.70	6,139.11	9,442.88	9,395.90	201.024	CC, ES
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	7,200.00	6,429.79	9,586.40	9,537.32	195.303	SF
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	6,761.51	6,368.02	8,231.80	8,184.00	172.226	CC, ES
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	7,100.00	7,100.00	8,320.22	8,268.98	162.365	SF
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	6,811.53	6,779.75	8,029.37	7,980.35	163.793	CC, ES
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	7,150.00	7,065.56	8,118.44	8,067.77	160.199	SF
River Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	6,706.21	6,305.51	5,530.06	5,482.41	116.043	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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
D Section 31						
River Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	7,050.00	6,563.17	5,615.25	5,565.63	113.177	SF
River Red D 31-4 (PA) - Wellbore #1 - Gyro Surveys						Out of range
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	6,769.44	6,329.40	8,759.95	8,607.65	57.520	CC, ES
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	7,300.00	6,787.03	8,968.52	8,805.94	55.162	SF
D Section 32						
HP D32-21D - Wellbore #1 - MWD Surveys	6,873.76	6,775.40	8,438.66	8,385.86	159.825	CC, ES
HP D32-21D - Wellbore #1 - MWD Surveys	7,300.00	7,232.24	8,567.72	8,512.95	156.452	SF
HP D32-23D - Wellbore #1 - MWD Surveys	6,891.28	6,444.31	8,136.91	8,085.65	158.724	CC
HP D32-23D - Wellbore #1 - MWD Surveys	6,900.00	6,451.78	8,136.96	8,085.65	158.562	ES
HP D32-23D - Wellbore #1 - MWD Surveys	7,350.00	6,861.79	8,272.11	8,218.62	154.638	SF
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	6,693.05	4,050.00	9,009.68	8,966.75	209.886	CC, ES
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	7,200.00	7,200.00	9,170.37	9,108.65	148.577	SF
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	6,840.92	6,533.29	9,843.76	9,795.65	204.625	CC
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	6,850.00	6,543.70	9,843.82	9,795.65	204.342	ES
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	7,300.00	6,951.70	9,997.85	9,947.34	197.952	SF
HP Farms D32-18D - Wellbore #1 - MWD Surveys	6,847.06	6,610.53	9,580.57	9,522.47	164.886	CC
HP Farms D32-18D - Wellbore #1 - MWD Surveys	6,850.00	6,612.44	9,580.58	9,522.46	164.840	ES
HP Farms D32-18D - Wellbore #1 - MWD Surveys	7,200.00	7,017.59	9,669.63	9,609.64	161.170	SF
HP Farms D32-24D - Wellbore #1 - MWD Surveys	6,870.50	6,638.10	7,271.54	7,212.43	123.020	CC, ES
HP Farms D32-24D - Wellbore #1 - MWD Surveys	7,200.00	7,029.16	7,343.63	7,282.83	120.797	SF
Norris 14-32 - Wellbore #1 - Projection Survey	6,827.87	6,411.53	5,549.21	5,467.75	68.119	CC, ES
Norris 14-32 - Wellbore #1 - Projection Survey	7,200.00	6,741.53	5,653.42	5,568.18	66.322	SF
Norris A Unit 2 - Wellbore #1 - As-Drilled	6,833.55	6,367.27	6,439.11	6,391.50	135.239	CC, ES
Norris A Unit 2 - Wellbore #1 - As-Drilled	7,150.00	6,551.74	6,515.81	6,466.67	132.598	SF
Norris D32-1 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-10 - Wellbore #1 - Gyro Surveys	6,879.41	6,400.00	8,023.86	7,976.23	168.469	CC, ES
Norris D32-10 - Wellbore #1 - Gyro Surveys	7,350.00	6,662.84	8,176.63	8,127.08	165.020	SF
Norris D32-15 - Wellbore #1 - Gyro Surveys	6,863.88	6,021.35	6,965.34	6,918.90	150.000	CC, ES
Norris D32-15 - Wellbore #1 - Gyro Surveys	7,000.00	7,000.00	6,977.44	6,927.22	138.948	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	6,796.64	6,000.00	9,323.81	9,277.40	200.888	CC
Norris D32-2J - Wellbore #1 - Gyro Surveys	6,800.00	6,000.00	9,323.82	9,277.39	200.828	ES
Norris D32-2J - Wellbore #1 - Gyro Surveys	7,250.00	7,250.00	9,476.01	9,424.35	183.454	SF
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	6,806.22	6,373.74	9,591.13	9,438.07	62.662	CC, ES
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	7,350.00	6,827.79	9,809.37	9,646.15	60.098	SF
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,803.05	6,256.08	8,277.81	8,230.53	175.085	CC, ES
Norris D32-5 - Wellbore #1 - Gyro Surveys	7,200.00	6,747.41	8,393.18	8,343.30	168.269	SF
Norris D32-6 - Wellbore #1 - Gyro Surveys	6,851.71	6,636.87	8,609.31	8,560.89	177.793	CC, ES
Norris D32-6 - Wellbore #1 - Gyro Surveys	7,250.00	6,844.82	8,729.83	8,679.71	174.179	SF
Norris D32-7 - Wellbore #1 - Gyro Surveys	6,903.07	7,000.00	9,200.13	9,150.71	186.157	CC, ES
Norris D32-7 - Wellbore #1 - Gyro Surveys	7,150.00	7,000.00	9,246.99	9,196.81	184.255	SF
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	6,912.55	6,441.68	8,896.09	8,848.30	186.160	CC, ES
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	7,350.00	6,775.64	9,016.22	8,966.42	181.029	SF

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



# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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 07-36 - Original Drilling - Original Drilling - As D	6,640.76	6,328.84	9,977.75	9,930.26	210.103	CC
Dechant 07-36 - Original Drilling - Original Drilling - As D	6,650.00	6,337.23	9,977.80	9,930.25	209.799	ES
Dechant 07-36 - Original Drilling - Original Drilling - As D	6,800.00	6,515.42	9,992.94	9,944.18	204.956	SF
Dechant 13N-1HZ - Production Hole - Production Hole -	4,922.15	11,468.00	8,392.86	8,289.21	80.973	CC
Dechant 13N-1HZ - Production Hole - Production Hole -	5,000.00	11,468.00	8,393.22	8,289.03	80.561	ES
Dechant 13N-1HZ - Production Hole - Production Hole -	7,050.00	11,468.00	8,653.62	8,538.25	75.007	SF
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	9,194.14	9,194.02	10,000.000	CC
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	200.00	51.39	9,194.52	9,193.95	10,000.000	ES
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	4,600.00	600.00	9,979.73	9,962.12	566.903	SF
Dechant 14C-1HZ - Production Hole - Production Hole -	5,390.07	11,731.00	7,274.38	7,196.82	93.792	CC
Dechant 14C-1HZ - Production Hole - Production Hole -	5,400.00	11,731.00	7,274.39	7,196.77	93.726	ES
Dechant 14C-1HZ - Production Hole - Production Hole -	7,000.00	11,731.00	7,445.96	7,361.07	87.712	SF
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	9,127.89	9,127.76	10,000.000	CC
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	700.00	607.20	9,130.94	9,126.72	2,159.111	ES
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	4,800.00	610.00	9,987.70	9,969.39	545.387	SF
Dechant 15-36 - Original Drilling - Original Drilling - As D	5,126.41	4,673.17	8,159.49	8,124.37	232.326	CC
Dechant 15-36 - Original Drilling - Original Drilling - As D	5,200.00	4,700.01	8,159.66	8,124.13	229.672	ES
Dechant 15-36 - Original Drilling - Original Drilling - As D	7,650.00	7,027.29	8,655.87	8,585.56	123.106	SF
Dechant 24-36 - Original Drilling - Original Drilling - As D	6,637.36	6,256.31	9,279.36	9,229.51	186.142	CC, ES
Dechant 24-36 - Original Drilling - Original Drilling - As D	7,700.00	7,700.00	9,836.97	9,781.08	175.992	SF
Dechant 35N-E1HZ - Production Hole - Production Hole	5,150.20	11,619.00	7,420.80	7,314.01	69.484	CC
Dechant 35N-E1HZ - Production Hole - Production Hole	5,200.00	11,619.00	7,420.97	7,313.81	69.249	ES
Dechant 35N-E1HZ - Production Hole - Production Hole	6,850.00	11,619.00	7,612.34	7,495.50	65.147	SF
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	100.00	13.87	9,149.90	9,149.75	10,000.000	CC
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	700.00	612.00	9,150.70	9,146.46	2,158.132	ES
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	4,700.00	612.00	9,966.70	9,948.72	554.415	SF
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	5,072.35	11,494.00	7,880.69	7,775.75	75.100	CC
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	5,100.00	11,494.00	7,880.73	7,775.60	74.960	ES
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	6,950.00	11,494.00	8,099.16	7,983.57	70.068	SF
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	5,359.59	11,651.36	6,766.05	6,657.58	62.379	CC
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	5,400.00	11,651.36	6,766.17	6,657.39	62.200	ES
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	6,800.00	11,651.36	6,917.12	6,799.62	58.872	SF
Dechant 37N-E1HZ - Production Hole - Production Hole	5,791.17	11,723.00	4,987.90	4,877.42	45.146	CC
Dechant 37N-E1HZ - Production Hole - Production Hole	5,800.00	11,723.00	4,987.91	4,877.35	45.114	ES
Dechant 37N-E1HZ - Production Hole - Production Hole	6,700.00	11,723.00	5,069.88	4,952.88	43.330	SF
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	733.99	648.00	8,230.29	8,225.80	1,832.630	CC, ES
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	6,700.00	648.00	9,977.30	9,953.01	410.725	SF
Dechant 37N-W1HZ - Production Hole - Production Hole	5,704.40	12,384.00	5,557.85	5,444.12	48.870	CC, ES
Dechant 37N-W1HZ - Production Hole - Production Hole	6,800.00	12,384.00	5,664.03	5,543.10	46.838	SF
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	411.61	325.61	8,201.63	8,199.42	3,716.647	CC
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	800.00	655.00	8,202.15	8,197.40	1,727.970	ES
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	6,750.00	655.00	9,984.03	9,959.62	409.081	SF
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	5,826.60	16,665.00	6,022.43	5,892.94	46.510	CC
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	5,900.00	16,665.00	6,022.87	5,892.87	46.329	ES
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	6,900.00	16,665.00	6,114.78	5,979.04	45.050	SF
Dechant State 16C-1HZ - Original Drilling - Original Drilling	6,061.69	16,839.03	4,914.98	4,722.31	25.510	CC
Dechant State 16C-1HZ - Original Drilling - Original Drilling	6,100.00	16,839.03	4,915.13	4,721.98	25.447	ES
Dechant State 16C-1HZ - Original Drilling - Original Drilling	7,150.00	16,839.03	5,019.41	4,817.14	24.815	SF
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	5,573.39	16,444.78	6,408.28	6,281.83	50.675	CC
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	5,600.00	16,438.45	6,408.33	6,281.76	50.629	ES
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	7,600.00	16,506.20	6,657.50	6,521.95	49.116	SF
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,669.73	11,466.00	7,293.22	7,224.47	106.091	CC, ES
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,950.00	11,466.00	7,340.15	7,270.04	104.693	SF

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

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
H Section 36						
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,663.52	11,490.00	7,682.06	7,613.09	111.376	CC, ES
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,900.00	11,490.00	7,713.83	7,643.90	110.303	SF
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	6,089.62	16,675.00	4,298.34	4,166.32	32.558	CC
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	6,100.00	16,675.00	4,298.35	4,166.24	32.537	ES
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	7,250.00	16,676.13	4,427.76	4,289.68	32.067	SF
Dechant State H36-11D - Original Drilling - Original Drillir	6,273.59	5,860.60	9,877.60	9,833.39	223.404	CC
Dechant State H36-11D - Original Drilling - Original Drillir	6,578.41	6,119.11	9,879.02	9,832.56	212.655	ES
Dechant State H36-11D - Original Drilling - Original Drillir	7,050.00	6,481.16	9,995.77	9,946.51	202.915	SF
Dechant State H36-18D - Dechant State H36-18D Gyros						Out of range
Dechant State H36-18D - Dechant State H36-18D OH - /						Out of range
Dechant State H36-19 - Original Drilling - Original Drilling						Out of range
Dechant State H36-20D - Dechant State H36-20D Gyros						Out of range
Dechant State H36-20D - Dechant State H36-20D OH - /						Out of range
Dechant State H36-21D - Dechant State H36-21D Gyros	6,609.50	6,300.00	9,918.05	9,858.74	167.219	CC, ES
Dechant State H36-21D - Dechant State H36-21D Gyros	6,950.00	6,582.66	9,983.77	9,922.60	163.196	SF
Dechant State H36-21D - Dechant State H36-21D OH - /	6,609.50	6,313.00	9,918.06	9,858.74	167.219	CC, ES
Dechant State H36-21D - Dechant State H36-21D OH - /	6,950.00	6,595.66	9,983.78	9,922.60	163.196	SF
Dechant State H36-24 - Original Drilling - Original Drilling	6,307.43	6,063.01	9,024.50	8,975.23	183.150	CC
Dechant State H36-24 - Original Drilling - Original Drilling	6,500.00	6,219.79	9,024.89	8,974.37	178.670	ES
Dechant State H36-24 - Original Drilling - Original Drilling	6,900.00	6,900.00	9,081.17	9,027.03	167.752	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 -	217.49	129.49	9,954.24	9,953.41	10,000.000	CC
Dechant State H36-33 - Dechant State H36-33D Gyros -	300.00	167.12	9,954.42	9,953.17	7,949.084	ES
Dechant State H36-33 - Dechant State H36-33D Gyros -	1,700.00	1,000.00	9,995.19	9,985.97	1,083.828	SF
Dechant State H36-33 - Dechant State H36-33D OH - As	217.49	142.49	9,954.21	9,953.39	10,000.000	CC
Dechant State H36-33 - Dechant State H36-33D OH - As	300.00	180.12	9,954.40	9,953.15	7,948.397	ES
Dechant State H36-33 - Dechant State H36-33D OH - As	1,700.00	1,013.00	9,995.17	9,985.94	1,083.822	SF
HSR Dechant State 01-36 - Wellbore #1 - As Drilled						Out of range
HSR Dechant State 02-36 - Original Drilling - Original Dri						Out of range
HSR Dechant/State 07-36 (PA) - Original Drilling - Origin						Out of range
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	100.00	9.25	9,980.01	9,979.87	10,000.000	CC
Spike State GWS H36-13 - Original Drilling - Original Dri	2,300.00	2,168.62	9,988.98	9,973.56	648.010	ES
Spike State GWS H36-13 - Original Drilling - Original Dri	2,800.00	2,542.97	9,997.39	9,978.91	540.843	SF
Spike State GWS H36-14 - Original Drilling - Original Dri	4,565.86	4,382.39	8,756.17	8,724.48	276.308	CC
Spike State GWS H36-14 - Original Drilling - Original Dri	4,800.00	4,562.38	8,756.87	8,723.57	262.995	ES
Spike State GWS H36-14 - Original Drilling - Original Dri	7,400.00	7,400.00	9,119.89	9,067.10	172.768	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 -	4,400.00	4,210.23	9,909.19	9,878.80	326.088	CC
Spike State H36-11J - Original Drilling - Original Drilling -	4,600.00	4,359.49	9,909.85	9,878.11	312.249	ES
Spike State H36-11J - Original Drilling - Original Drilling -	6,850.00	6,475.94	9,996.79	9,948.10	205.346	SF
Spike State H36-12 - 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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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	6,886.12	6,452.20	4,729.74	4,681.97	99.009	CC, ES
Olsen Red Y05-02D - Olsen Red Y05-02D - Olsen Red Y05-02D	7,200.00	6,697.67	4,797.63	4,748.22	97.113	SF
Olsen Y5-05J1 - Olsen Y5-05J1 - Olsen Y5-05J1 - As Drille	6,872.20	6,456.90	3,352.32	3,315.60	91.298	CC, ES
Olsen Y5-05J1 - Olsen Y5-05J1 - Olsen Y5-05J1 - As Drille	7,100.00	6,663.89	3,389.77	3,352.08	89.932	SF
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	7,004.27	6,631.95	5,243.40	5,159.97	62.844	CC, ES
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	7,350.00	6,899.79	5,306.59	5,220.20	61.430	SF
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	7,057.37	6,696.21	6,365.10	6,280.96	75.648	CC, ES
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	7,450.00	6,971.35	6,437.17	6,350.05	73.887	SF
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	7,189.45	6,810.42	5,864.08	5,778.59	68.591	CC
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	7,200.00	6,818.53	5,864.12	5,778.54	68.521	ES
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	7,550.00	7,017.87	5,914.25	5,826.58	67.458	SF
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins USX Y05-16	7,320.98	6,843.96	5,126.21	5,076.08	102.253	CC, ES
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins USX Y05-16	7,550.00	6,947.60	5,144.32	5,093.65	101.520	SF
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	4,971.65	3,144.87	5,125.54	5,097.28	181.358	CC
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	5,000.00	3,154.61	5,125.59	5,097.20	180.494	ES
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	17,897.41	17,692.09	5,923.91	5,744.29	32.981	SF
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	6,878.54	5,307.08	5,012.31	4,967.54	111.949	CC
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	6,950.00	5,362.42	5,012.61	4,967.40	110.868	ES
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	17,897.41	17,649.38	5,265.01	5,085.92	29.400	SF
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	7,378.38	6,458.79	4,555.63	4,505.83	91.473	CC
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	17,200.00	16,684.87	4,592.28	4,424.44	27.361	ES
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	17,897.41	17,302.37	4,610.49	4,432.20	25.859	SF
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	7,349.18	6,415.78	4,215.02	4,165.63	85.334	CC
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	17,897.41	17,587.51	4,280.27	4,102.23	24.041	ES, SF
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	7,639.40	7,223.27	3,914.42	3,862.99	76.112	CC
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	17,897.41	17,446.55	3,953.36	3,775.33	22.207	ES, SF
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	7,015.61	5,962.91	3,194.02	3,146.30	66.934	CC
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	17,897.41	17,471.02	3,301.60	3,121.99	18.382	ES, SF
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	7,457.83	6,889.29	2,610.44	2,559.54	51.280	CC
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	17,893.12	17,516.50	2,640.09	2,461.59	14.790	ES, SF
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	7,651.92	7,166.48	1,974.62	1,923.34	38.506	CC
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	17,897.41	17,357.35	1,991.67	1,813.28	11.165	ES, SF
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	7,679.68	7,425.11	1,643.82	1,592.01	31.725	CC
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	17,897.41	17,616.46	1,656.30	1,478.37	9.309	ES, SF
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	7,680.40	7,380.81	1,318.39	1,266.22	25.274	CC
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	17,893.40	17,569.85	1,327.30	1,148.87	7.439	ES, SF
Y Section 06						
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,674.12	6,250.75	1,732.42	1,684.96	36.499	CC, ES
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,850.00	6,409.17	1,755.36	1,706.68	36.059	SF
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	100.00	43.56	2,516.57	2,516.36	10,000.000	CC
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	2,600.00	2,551.99	2,523.03	2,505.22	141.676	ES
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	7,150.00	6,786.28	3,138.72	3,088.66	62.696	SF
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	6,792.61	6,440.38	3,831.08	3,783.14	79.921	CC
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	6,800.00	6,447.99	3,831.12	3,783.13	79.833	ES
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	7,150.00	6,801.57	3,931.07	3,881.01	78.541	SF
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	6,624.57	6,320.18	4,495.66	4,448.31	94.949	CC, ES
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	7,000.00	6,600.00	4,576.05	4,526.46	92.271	SF

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

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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	2,022.01	2,009.46	2,230.69	2,216.82	160.811	CC, ES
Harkis 11-7 (PA) - Wellbore #1 - Gyro Surveys	9,400.00	9,400.00	3,646.07	3,584.78	59.488	SF
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	1,145.68	1,149.69	2,010.61	2,002.89	260.474	CC
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	1,900.00	1,892.74	2,013.25	2,000.24	154.738	ES
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	9,500.00	7,062.64	3,111.94	3,058.11	57.802	SF
HP Farms Y 7-15Jl (PR) - Wellbore #1 - No Surveys	12,282.04	7,066.00	1,195.56	1,009.09	6.411	CC, ES
HP Farms Y 7-15Jl (PR) - Wellbore #1 - No Surveys	12,300.00	7,066.00	1,195.70	1,009.18	6.410	SF
HP Y07-09 (PR) - Wellbore #1 - No Surveys	10,937.52	7,015.00	377.98	200.86	2.134	CC, ES, SF
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,300.00	7,277.96	1,229.41	1,157.36	17.064	SF
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,782.78	7,280.80	1,130.65	1,067.86	18.007	CC, ES
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	3,299.22	3,224.45	148.19	72.15	1.949	CC
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	3,300.00	3,225.17	148.19	72.13	1.948	ES, SF
Perkins USX Y 7-17 (SI) - Wellbore #1 - Gyro Surveys	8,867.76	7,032.16	280.12	227.88	5.362	CC, ES, SF
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	2,200.00	2,174.00	1,714.30	1,663.17	33.526	CC
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	2,300.00	2,273.98	1,716.02	1,662.53	32.081	ES
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	9,800.00	7,042.00	2,141.13	1,969.23	12.455	SF
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,200.00	2,197.00	142.55	127.26	9.320	CC
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,300.00	2,292.49	142.91	126.93	8.943	ES
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,700.00	2,672.81	155.00	136.47	8.364	SF
Pioneer D31-725 - Pioneer D31-725 - Plan #1	7,468.58	7,412.59	54.00	0.27	1.005	Level 2, CC, ES, SF
Pioneer D31-735 - Pioneer D31-735 - Plan #1	3,098.50	3,083.29	89.58	68.00	4.151	CC
Pioneer D31-735 - Pioneer D31-735 - Plan #1	3,100.00	3,084.76	89.58	67.99	4.149	ES
Pioneer D31-735 - Pioneer D31-735 - Plan #1	3,200.00	3,182.48	91.91	69.58	4.116	SF
Pioneer D31-744 - Pioneer D31-744 - Plan #1	2,738.90	2,733.73	55.29	36.17	2.891	CC, ES
Pioneer D31-744 - Pioneer D31-744 - Plan #1	2,800.00	2,806.38	56.60	36.99	2.887	SF
Pioneer D31-756 - Pioneer D31-756 - Plan #1	2,200.00	2,203.00	882.43	867.11	57.609	CC, ES
Pioneer D31-756 - Pioneer D31-756 - Plan #1	7,000.00	7,607.40	1,841.37	1,789.23	35.316	SF
Pioneer D31-761 - Pioneer D31-761 - Plan #1	2,200.00	2,203.00	905.09	889.77	59.089	CC, ES
Pioneer D31-761 - Pioneer D31-761 - Plan #1	7,150.00	7,713.74	2,224.37	2,171.64	42.180	SF
Pioneer D31-775 - Pioneer D31-775 - Plan #1	2,200.00	2,204.00	927.45	912.13	60.534	CC, ES
Pioneer D31-775 - Pioneer D31-775 - Plan #1	2,800.00	2,649.36	1,015.82	997.03	54.049	SF
Pioneer D31-785 - Pioneer D31-785 - Plan #1	2,200.00	2,204.00	948.69	933.37	61.921	CC, ES
Pioneer D31-785 - Pioneer D31-785 - Plan #1	2,800.00	2,643.82	1,037.72	1,018.96	55.304	SF
Pioneer USX Y07-08D (PR) - Wellbore #1 - As Drilled	9,667.63	7,201.41	318.30	256.39	5.141	CC, ES
Pioneer USX Y07-08D (PR) - Wellbore #1 - As Drilled	9,700.00	7,202.05	319.94	257.71	5.141	SF
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,200.00	7,445.17	1,031.15	932.58	10.460	SF
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,400.00	7,445.83	997.19	905.42	10.865	ES
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,472.20	7,446.07	994.58	905.84	11.208	CC
Pioneer Y18-715 - Pioneer Y18-715 - Plan #1	2,200.00	2,199.00	22.36	7.06	1.461	Level 3, CC
Pioneer Y18-715 - Pioneer Y18-715 - Plan #1	2,400.00	2,397.78	23.12	6.43	1.385	Level 3, ES, SF
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	2,205.35	2,206.38	22.36	7.01	1.457	Level 3, CC
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	2,400.00	2,401.88	23.07	6.35	1.380	Level 3, ES
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	2,500.00	2,502.30	24.01	6.59	1.378	Level 3, SF
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,204.11	2,206.15	45.00	29.66	2.933	CC
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,300.00	2,302.72	45.36	29.33	2.830	ES
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,400.00	2,403.42	46.50	29.77	2.779	SF
Pioneer Y18-744 - Pioneer Y18-744 - Plan #1	2,200.21	2,202.22	67.37	52.05	4.399	CC, ES
Pioneer Y18-744 - Pioneer Y18-744 - Plan #1	2,300.00	2,302.14	68.42	52.40	4.269	SF
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	2,200.00	2,200.00	739.89	724.59	48.338	CC, ES
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	17,897.41	17,589.52	1,883.13	1,710.24	10.893	SF
Pioneer Y18-766 - Pioneer Y18-766 - Plan #1	2,200.00	2,201.00	762.54	747.23	49.805	CC, ES
Pioneer Y18-766 - Pioneer Y18-766 - Plan #1	17,897.41	17,676.09	2,508.11	2,334.62	14.457	SF
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	2,200.00	2,201.00	784.89	769.58	51.266	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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Y Section 07						
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	17,897.41	17,786.93	2,822.96	2,649.25	16.251	SF
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	2,200.00	2,202.00	806.14	790.83	52.641	CC, ES
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	17,897.41	17,667.28	3,136.47	2,963.07	18.088	SF
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	2,200.00	2,202.00	829.90	814.59	54.193	CC, ES
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	17,897.41	17,877.91	3,762.25	3,588.64	21.671	SF
UPRC 7-10Q (PR) - Wellbore #1 - No Surveys	11,516.95	7,025.00	653.39	472.63	3.615	CC, ES, SF
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	11,528.64	7,087.56	3,056.18	2,991.29	47.100	CC, ES
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	12,000.00	7,083.84	3,092.31	3,025.46	46.254	SF
Y Section 08						
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	11,855.83	7,026.00	1,911.78	1,728.88	10.453	CC, ES
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	12,000.00	7,026.00	1,917.21	1,733.12	10.414	SF
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	11,693.17	7,144.17	4,640.09	4,574.37	70.594	CC
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	11,700.00	7,144.31	4,640.10	4,574.32	70.542	ES
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	13,300.00	7,179.16	4,910.31	4,834.30	64.598	SF
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	8,616.61	6,989.62	5,289.31	5,237.56	102.212	CC, ES
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	11,200.00	6,993.43	5,886.49	5,824.01	94.219	SF
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	8,569.46	6,999.45	1,864.61	1,812.95	36.092	CC, ES
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	8,800.00	7,001.76	1,878.81	1,826.53	35.938	SF
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	8,249.10	6,978.37	4,113.49	4,062.35	80.447	CC, ES
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	9,700.00	6,973.54	4,340.25	4,284.82	78.300	SF
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	7,907.86	6,965.43	3,023.88	2,972.96	59.375	CC, ES
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	8,400.00	6,967.90	3,049.06	2,997.67	59.341	SF
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	9,551.15	7,018.99	1,494.84	1,440.36	27.436	CC, ES
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	9,800.00	7,019.22	1,515.44	1,459.60	27.143	SF
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	9,647.65	7,067.00	5,566.69	5,394.85	32.396	CC, ES
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	10,600.00	7,067.00	5,647.56	5,470.86	31.961	SF
Y Section 09						
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,176.91	6,770.74	9,628.95	9,560.64	140.963	CC
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,200.00	6,771.16	9,628.98	9,560.51	140.625	ES
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled	14,800.00	6,818.19	9,979.67	9,892.99	115.136	SF
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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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 16						
Hullabaloo State Y21-716 - Original Drilling - Original Drill						Out of range
Hullabaloo State Y21-726 - Original Drilling - Original Drill						Out of range
Hullabaloo State Y21-736 - Original Drilling - Original Drill	13,608.51	7,511.62	9,784.65	9,714.11	138.697	CC
Hullabaloo State Y21-736 - Original Drilling - Original Drill	17,800.00	11,585.56	9,821.92	9,694.65	77.174	ES
Hullabaloo State Y21-736 - Original Drilling - Original Drill	17,897.41	11,630.00	9,823.48	9,695.11	76.520	SF
Hullabaloo State Y21-746 - Original Drilling - Original Drill	14,488.34	8,411.00	9,133.00	9,048.29	107.824	CC
Hullabaloo State Y21-746 - Original Drilling - Original Drill	17,400.00	11,243.62	9,142.91	9,019.63	74.164	ES
Hullabaloo State Y21-746 - Original Drilling - Original Drill	17,897.41	11,520.96	9,153.63	9,024.58	70.930	SF
Hullabaloo State Y21-756 - Original Drilling - Original Drill	16,549.90	10,396.00	8,477.95	8,367.16	76.527	CC
Hullabaloo State Y21-756 - Original Drilling - Original Drill	17,700.00	17,700.00	8,520.56	8,347.27	49.169	ES, SF
Hullabaloo State Y21-763 - Original Drilling - Original Drill	13,450.72	7,654.00	7,995.35	7,921.72	108.593	CC
Hullabaloo State Y21-763 - Original Drilling - Original Drill	13,700.00	13,700.00	7,997.90	7,908.49	89.453	ES
Hullabaloo State Y21-763 - Original Drilling - Original Drill	17,897.41	11,850.00	8,106.60	7,976.45	62.285	SF
Hullabaloo State Y21-769 - Original Drilling - Original Drill	12,740.51	6,700.00	7,578.94	7,511.77	112.836	CC
Hullabaloo State Y21-769 - Original Drilling - Original Drill	12,800.00	6,700.00	7,579.17	7,511.55	112.089	ES
Hullabaloo State Y21-769 - Original Drilling - Original Drill	17,897.41	11,616.00	7,667.62	7,538.26	59.272	SF
Hullabaloo State Y21-775 - Original Drilling - Original Drill	13,300.00	7,237.59	7,184.03	7,112.89	100.986	CC
Hullabaloo State Y21-775 - Original Drilling - Original Drill	17,400.00	17,400.00	7,242.72	7,074.66	43.095	ES, SF
Hullabaloo State Y21-781 - Original Drilling - Original Drill	13,389.73	7,434.12	6,772.37	6,700.07	93.676	CC
Hullabaloo State Y21-781 - Original Drilling - Original Drill	16,200.00	10,163.14	6,799.81	6,694.00	64.263	ES
Hullabaloo State Y21-781 - Original Drilling - Original Drill	17,897.41	11,805.00	6,852.10	6,721.49	52.461	SF
Hullabaloo State Y21-787 - Original Drilling - Original Drill	13,218.45	7,225.30	6,339.50	6,268.40	89.161	CC
Hullabaloo State Y21-787 - Original Drilling - Original Drill	14,900.00	14,900.00	6,370.93	6,252.89	53.971	ES
Hullabaloo State Y21-787 - Original Drilling - Original Drill	17,897.41	12,252.00	6,421.68	6,287.68	47.925	SF
State 01 - Original Drilling - Original Drilling - As Drilled						Out of range
State 21 (PA) - Original Drilling - Original Drilling - As Drilled	16,752.42	7,082.00	7,425.28	7,205.73	33.820	CC
State 21 (PA) - Original Drilling - Original Drilling - As Drilled	16,800.00	7,082.00	7,425.44	7,205.48	33.759	ES
State 21 (PA) - Original Drilling - Original Drilling - As Drilled	17,897.41	7,082.00	7,513.04	7,284.62	32.891	SF
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,709.13	7,065.98	6,933.66	6,846.53	79.584	CC
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,800.00	7,064.06	6,934.25	6,846.40	78.929	ES
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	17,200.00	7,013.34	7,367.31	7,263.74	71.134	SF

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

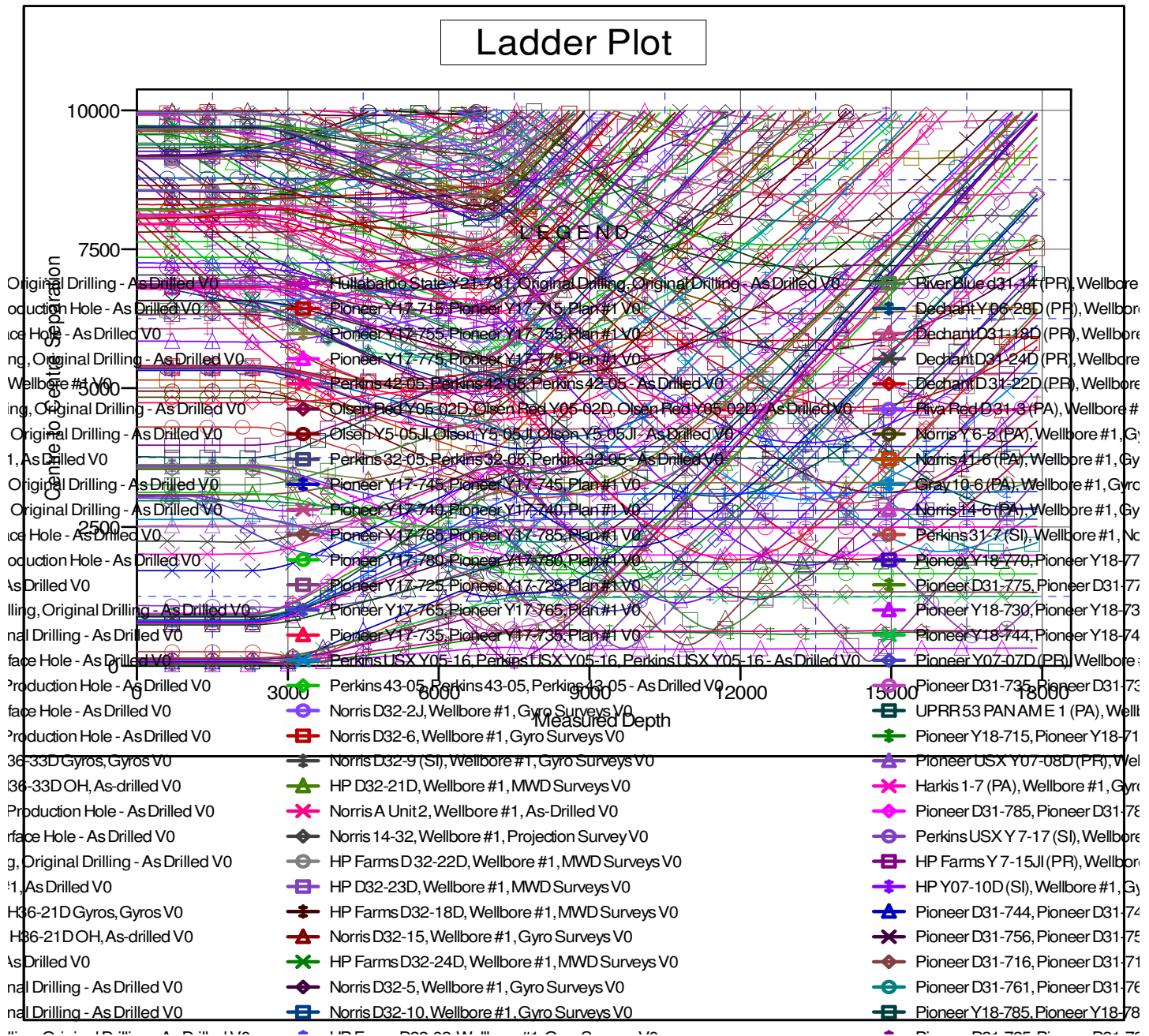
Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Y Section 17						
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,085.21	7,030.00	4,618.23	4,397.15	20.889	CC
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,100.00	7,030.00	4,618.26	4,397.04	20.876	ES
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,700.00	7,030.00	4,658.97	4,433.01	20.619	SF
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,345.32	7,030.00	1,917.28	1,716.98	9.572	CC, ES
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,500.00	7,030.00	1,923.51	1,721.80	9.536	SF
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,354.86	7,025.00	2,992.46	2,799.42	15.502	CC
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,400.00	7,025.00	2,992.80	2,799.37	15.472	ES
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,700.00	7,025.00	3,012.30	2,816.48	15.384	SF
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	13,255.85	7,069.99	1,810.34	1,734.20	23.775	CC, ES
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	13,500.00	7,064.97	1,826.72	1,748.53	23.360	SF
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	14,787.07	6,952.72	3,121.57	3,034.19	35.724	CC
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	14,800.00	6,952.59	3,121.59	3,034.09	35.676	ES
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	15,400.00	6,946.09	3,181.17	3,089.16	34.576	SF
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,561.83	6,995.94	2,834.72	2,726.04	26.084	CC
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,600.00	6,995.93	2,834.97	2,725.93	25.999	ES
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,897.41	6,995.80	2,854.51	2,743.06	25.613	SF
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,337.78	7,003.07	4,659.82	4,575.83	55.481	CC
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,400.00	7,003.90	4,660.23	4,575.72	55.143	ES
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	15,700.00	7,021.09	4,854.82	4,761.47	52.009	SF
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,328.35	7,032.74	5,680.30	5,603.53	73.990	CC
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,400.00	7,030.22	5,680.75	5,603.42	73.457	ES
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	15,300.00	6,974.72	6,012.39	5,922.50	66.884	SF
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	16,028.91	6,941.09	2,057.84	1,961.13	21.279	CC, ES
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	16,300.00	6,940.25	2,075.62	1,976.63	20.969	SF
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,086.12	7,042.00	2,068.25	1,846.91	9.344	CC
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,100.00	7,042.00	2,068.29	1,846.81	9.339	ES
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,200.00	7,042.00	2,071.38	1,848.96	9.313	SF
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	13,275.92	7,034.65	4,016.96	3,940.60	52.602	CC
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	13,300.00	7,034.95	4,017.03	3,940.47	52.467	ES
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	7,047.89	4,171.26	4,087.10	49.568	SF
Y Section 18						
ADA Harkins Unit A1 (PA) - Wellbore #1 - Gyro Surveys	14,161.69	7,030.49	2,933.47	2,851.04	35.584	CC, ES
ADA Harkins Unit A1 (PA) - Wellbore #1 - Gyro Surveys	14,500.00	7,028.06	2,952.92	2,868.90	35.145	SF
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surveys	16,630.42	7,133.66	3,117.00	3,015.27	30.638	CC, ES
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surveys	17,000.00	7,125.77	3,138.83	3,035.42	30.353	SF
HSR Harkins 15-18 (PR) - Wellbore #1 - No Surveys	16,828.86	7,080.00	490.74	270.64	2.230	CC, ES, SF
Lyle V Cooksey Gas Unit 1 (PR) - Wellbore #1 - Gyro Surveys	14,559.71	7,057.54	81.27	-4.56	0.947	Level 1, CC, ES, SF



## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Coordinates are relative to: Pioneer Y18-725  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.59°



## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Pioneer Y18-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	Well @ 4913.00ft
<b>Reference Site:</b>	Y Section 07	<b>MD Reference:</b>	Well @ 4913.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Pioneer Y18-725	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Pioneer Y18-725	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Coordinates are relative to: Pioneer Y18-725

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°

