

Project: Mustang
Site: Y Section 07
Well: Pioneer Y18-744
Wellbore: Pioneer Y18-744
Design: Plan #1

Northern Region - DJ Basin

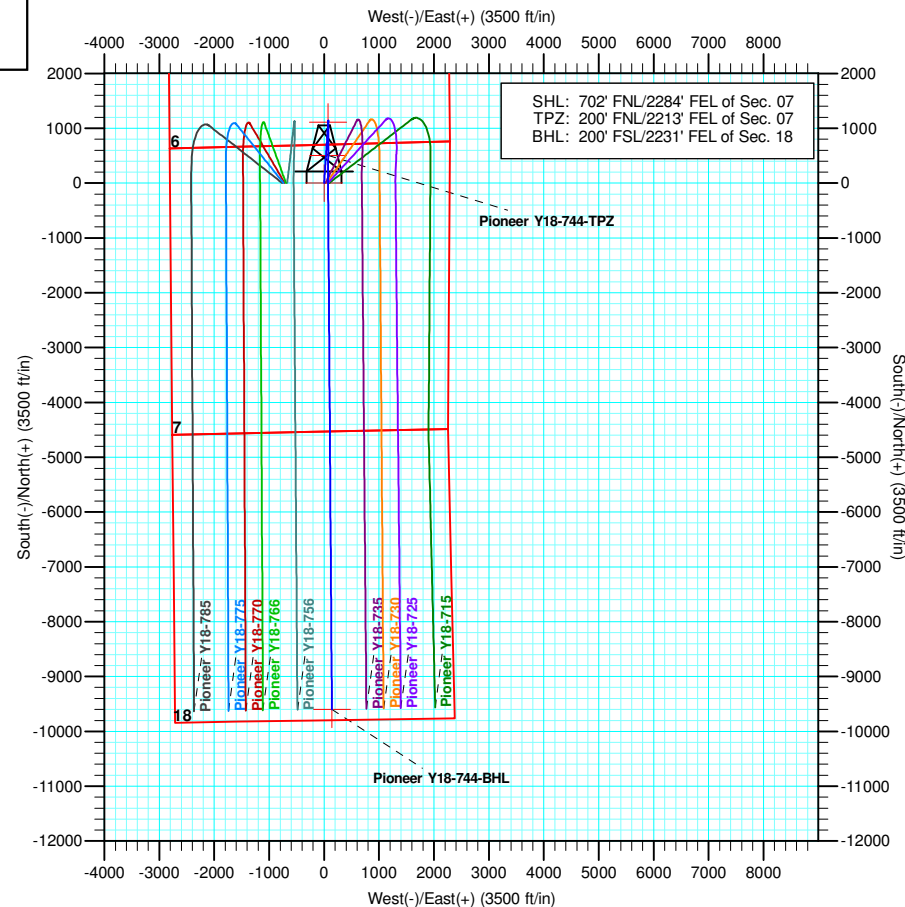
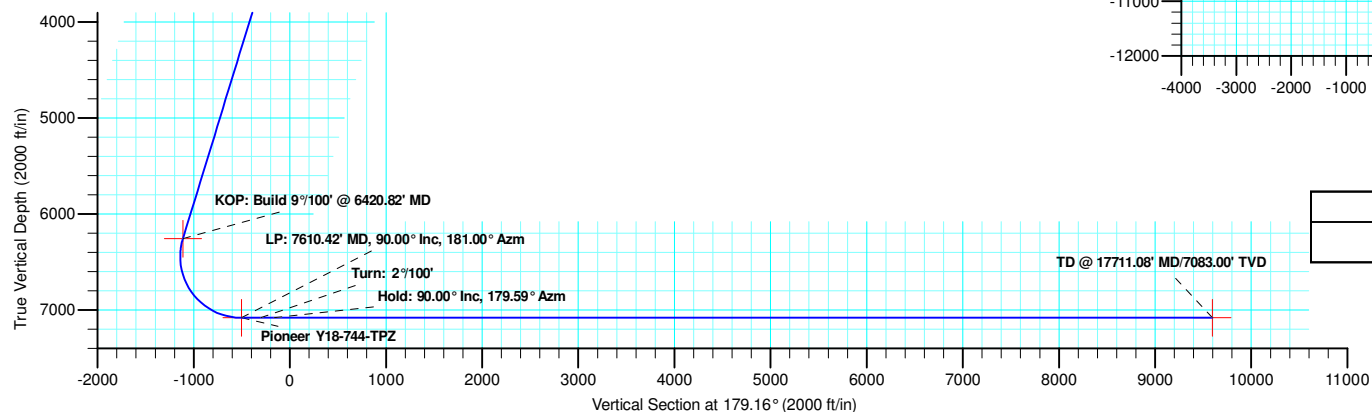
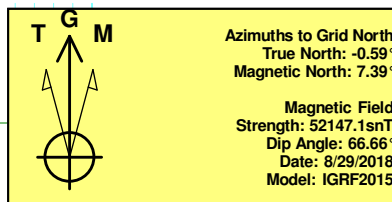
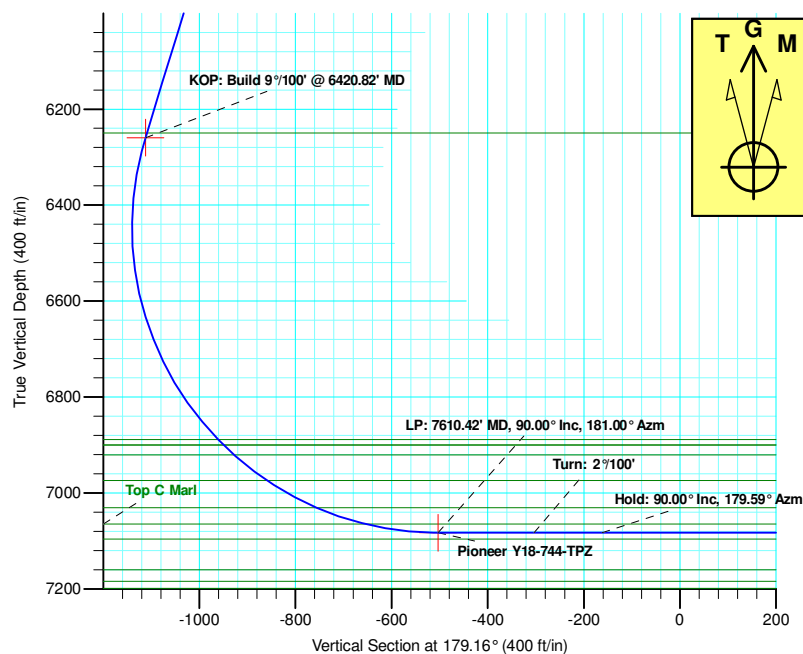
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

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	3054.21	17.08	3.77	3041.61	126.14	8.30	2.00	3.77	-126.00	
4	6420.82	17.08	3.77	6259.66	1113.03	73.25	0.00	0.00	-1111.84	
5	7610.42	90.00	181.00	7083.00	504.32	74.83	9.00	177.11	-503.16	Pioneer Y18-744-TPZ
6	7810.42	90.00	181.00	7083.00	304.35	71.34	0.00	0.00	-303.27	
7	7951.90	90.00	179.59	7083.00	162.87	70.62	1.00	-90.00	-161.81	
8	17711.08	90.00	179.59	7083.00	-9596.06	141.28	0.00	0.00	9597.10	Pioneer Y18-744-BHL

WELL DETAILS: Pioneer Y18-744

+N/-S	+E/-W	Northing	Ground Level: Easting	4885.00 Latitude	Longitude	Slot
0.00	0.00	1301718.03	3253540.37	40.1580510	-104.5928770	



Plan: Plan #1 (Pioneer Y18-744/Pioneer Y18-744)

Created By: Keith Noack Date: 8:29, September 27 2018

Northern Region - DJ Basin

Mustang

Y Section 07

Pioneer Y18-744

Pioneer Y18-744

Plan: Plan #1

Standard Planning Report

26 September, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-744
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4915.00ft
Project:	Mustang	MD Reference:	KB @ 4915.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-744		
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 Y18-744					
Well Position	+N/-S	-46.63 ft	Northing:	1,301,718.03 usft	Latitude:	40.1580510
	+E/-W	2,181.56 ft	Easting:	3,253,540.37 usft	Longitude:	-104.5928770
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,885.00 ft

Wellbore	Pioneer Y18-744				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/29/2018	7.97	66.66	52,147.13401750

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	179.16

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	
3,054.21	17.08	3.77	3,041.61	126.14	8.30	2.00	2.00	0.00	3.77	
6,420.82	17.08	3.77	6,259.66	1,113.03	73.25	0.00	0.00	0.00	0.00	
7,610.42	90.00	181.00	7,083.00	504.32	74.83	9.00	6.13	14.90	177.11	Pioneer Y18-744-TI
7,810.42	90.00	181.00	7,083.00	304.35	71.34	0.00	0.00	0.00	0.00	
7,951.90	90.00	179.59	7,083.00	162.87	70.62	1.00	0.00	-1.00	-90.00	
17,711.08	90.00	179.59	7,083.00	-9,596.06	141.28	0.00	0.00	0.00	0.00	Pioneer Y18-744-BI

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-744
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4915.00ft
Project:	Mustang	MD Reference:	KB @ 4915.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-744		
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	3.77	2,299.98	1.74	0.11	-1.74	2.00	2.00	0.00
2,400.00	4.00	3.77	2,399.84	6.96	0.46	-6.96	2.00	2.00	0.00
2,500.00	6.00	3.77	2,499.45	15.66	1.03	-15.64	2.00	2.00	0.00
2,600.00	8.00	3.77	2,598.70	27.82	1.83	-27.79	2.00	2.00	0.00
2,700.00	10.00	3.77	2,697.47	43.43	2.86	-43.38	2.00	2.00	0.00
2,800.00	12.00	3.77	2,795.62	62.47	4.11	-62.40	2.00	2.00	0.00
2,900.00	14.00	3.77	2,893.06	84.91	5.59	-84.82	2.00	2.00	0.00
3,000.00	16.00	3.77	2,989.64	110.74	7.29	-110.62	2.00	2.00	0.00
3,054.21	17.08	3.77	3,041.61	126.14	8.30	-126.00	2.00	2.00	0.00
Hold: 17.08° Inc, 3.77° Azm									
3,100.00	17.08	3.77	3,085.38	139.56	9.18	-139.41	0.00	0.00	0.00
3,200.00	17.08	3.77	3,180.97	168.88	11.11	-168.69	0.00	0.00	0.00
3,300.00	17.08	3.77	3,276.55	198.19	13.04	-197.98	0.00	0.00	0.00
3,400.00	17.08	3.77	3,372.14	227.50	14.97	-227.26	0.00	0.00	0.00
3,500.00	17.08	3.77	3,467.73	256.82	16.90	-256.54	0.00	0.00	0.00
3,600.00	17.08	3.77	3,563.32	286.13	18.83	-285.82	0.00	0.00	0.00
3,700.00	17.08	3.77	3,658.90	315.45	20.76	-315.11	0.00	0.00	0.00
3,800.00	17.08	3.77	3,754.49	344.76	22.69	-344.39	0.00	0.00	0.00
3,900.00	17.08	3.77	3,850.08	374.08	24.62	-373.67	0.00	0.00	0.00
4,000.00	17.08	3.77	3,945.66	403.39	26.55	-402.96	0.00	0.00	0.00
4,029.64	17.08	3.77	3,974.00	412.08	27.12	-411.64	0.00	0.00	0.00
Parkman									
4,100.00	17.08	3.77	4,041.25	432.70	28.48	-432.24	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-744
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4915.00ft
Project:	Mustang	MD Reference:	KB @ 4915.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-744		
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	17.08	3.77	4,136.84	462.02	30.40	-461.52	0.00	0.00	0.00
4,300.00	17.08	3.77	4,232.43	491.33	32.33	-490.80	0.00	0.00	0.00
4,400.00	17.08	3.77	4,328.01	520.65	34.26	-520.09	0.00	0.00	0.00
4,500.00	17.08	3.77	4,423.60	549.96	36.19	-549.37	0.00	0.00	0.00
4,600.00	17.08	3.77	4,519.19	579.28	38.12	-578.65	0.00	0.00	0.00
4,622.82	17.08	3.77	4,541.00	585.96	38.56	-585.33	0.00	0.00	0.00
Sussex									
4,700.00	17.08	3.77	4,614.78	608.59	40.05	-607.93	0.00	0.00	0.00
4,800.00	17.08	3.77	4,710.36	637.90	41.98	-637.22	0.00	0.00	0.00
4,900.00	17.08	3.77	4,805.95	667.22	43.91	-666.50	0.00	0.00	0.00
5,000.00	17.08	3.77	4,901.54	696.53	45.84	-695.78	0.00	0.00	0.00
5,100.00	17.08	3.77	4,997.13	725.85	47.77	-725.06	0.00	0.00	0.00
5,200.00	17.08	3.77	5,092.71	755.16	49.70	-754.35	0.00	0.00	0.00
5,300.00	17.08	3.77	5,188.30	784.47	51.62	-783.63	0.00	0.00	0.00
5,400.00	17.08	3.77	5,283.89	813.79	53.55	-812.91	0.00	0.00	0.00
5,439.87	17.08	3.77	5,322.00	825.48	54.32	-824.59	0.00	0.00	0.00
Shannon									
5,500.00	17.08	3.77	5,379.48	843.10	55.48	-842.20	0.00	0.00	0.00
5,600.00	17.08	3.77	5,475.06	872.42	57.41	-871.48	0.00	0.00	0.00
5,700.00	17.08	3.77	5,570.65	901.73	59.34	-900.76	0.00	0.00	0.00
5,800.00	17.08	3.77	5,666.24	931.05	61.27	-930.04	0.00	0.00	0.00
5,900.00	17.08	3.77	5,761.83	960.36	63.20	-959.33	0.00	0.00	0.00
6,000.00	17.08	3.77	5,857.41	989.67	65.13	-988.61	0.00	0.00	0.00
6,100.00	17.08	3.77	5,953.00	1,018.99	67.06	-1,017.89	0.00	0.00	0.00
6,200.00	17.08	3.77	6,048.59	1,048.30	68.99	-1,047.17	0.00	0.00	0.00
6,300.00	17.08	3.77	6,144.18	1,077.62	70.92	-1,076.46	0.00	0.00	0.00
6,400.00	17.08	3.77	6,239.76	1,106.93	72.84	-1,105.74	0.00	0.00	0.00
6,410.71	17.08	3.77	6,250.00	1,110.07	73.05	-1,108.88	0.00	0.00	0.00
Teepee Buttes									
6,420.82	17.08	3.77	6,259.66	1,113.03	73.25	-1,111.84	0.00	0.00	0.00
KOP: Build 9°/100' @ 6420.82' MD									
6,450.00	14.46	4.30	6,287.74	1,120.95	73.80	-1,119.74	9.00	-8.99	1.82
6,500.00	9.97	5.84	6,336.60	1,131.48	74.71	-1,130.26	9.00	-8.98	3.08
6,550.00	5.50	9.85	6,386.13	1,138.16	75.56	-1,136.92	9.00	-8.94	8.03
6,600.00	1.27	43.17	6,436.03	1,140.92	76.35	-1,139.68	9.00	-8.48	66.64
6,650.00	3.66	167.61	6,486.00	1,139.77	77.07	-1,138.51	9.00	4.79	248.87
6,700.00	8.11	175.03	6,535.73	1,134.69	77.72	-1,133.42	9.00	8.89	14.84
6,750.00	12.59	177.19	6,584.90	1,125.73	78.29	-1,124.46	9.00	8.97	4.34
6,800.00	17.08	178.23	6,633.22	1,112.94	78.78	-1,111.66	9.00	8.98	2.08
6,850.00	21.58	178.85	6,680.39	1,096.40	79.19	-1,095.12	9.00	8.99	1.23
6,900.00	26.08	179.26	6,726.12	1,076.21	79.52	-1,074.92	9.00	8.99	0.82
6,950.00	30.57	179.56	6,770.12	1,052.49	79.76	-1,051.21	9.00	9.00	0.60
7,000.00	35.07	179.79	6,812.13	1,025.40	79.91	-1,024.11	9.00	9.00	0.46
7,050.00	39.57	179.97	6,851.88	995.09	79.97	-993.81	9.00	9.00	0.36
7,099.81	44.05	180.12	6,889.00	961.89	79.94	-960.61	9.00	9.00	0.30
Sharon Springs									
7,100.00	44.07	180.12	6,889.13	961.76	79.94	-960.48	9.00	9.00	0.28
7,115.30	45.45	180.16	6,900.00	950.99	79.91	-949.71	9.00	9.00	0.27
Top A Chalk - Top A Marl									
7,146.00	48.21	180.24	6,921.00	928.60	79.83	-927.33	9.00	9.00	0.25
Top B Chalk									
7,150.00	48.57	180.25	6,923.66	925.61	79.82	-924.34	9.00	9.00	0.24
7,200.00	53.07	180.36	6,955.24	886.87	79.61	-885.60	9.00	9.00	0.22

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-744
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4915.00ft
Project:	Mustang	MD Reference:	KB @ 4915.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-744		
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)
7,232.33	55.98	180.43	6,974.00	860.54	79.43	-859.28	9.00	9.00	0.20
Top B Marl									
7,250.00	57.57	180.46	6,983.68	845.76	79.32	-844.50	9.00	9.00	0.19
7,300.00	62.07	180.55	7,008.82	802.55	78.94	-801.31	9.00	9.00	0.18
7,350.00	66.57	180.63	7,030.48	757.51	78.47	-756.27	9.00	9.00	0.16
7,351.31	66.68	180.63	7,031.00	756.31	78.46	-755.07	9.00	9.00	0.16
Top C Chalk									
7,400.00	71.06	180.71	7,048.55	710.90	77.93	-709.68	9.00	9.00	0.15
7,450.00	75.56	180.78	7,062.90	663.03	77.30	-661.82	9.00	9.00	0.15
7,458.66	76.34	180.79	7,065.00	654.62	77.19	-653.42	9.00	9.00	0.14
Top C Marl									
7,500.00	80.06	180.85	7,073.45	614.17	76.61	-612.97	9.00	9.00	0.14
7,550.00	84.56	180.92	7,080.14	564.64	75.84	-563.46	9.00	9.00	0.14
7,600.00	89.06	180.99	7,082.91	514.73	75.01	-513.57	9.00	9.00	0.13
7,610.42	90.00	181.00	7,083.00	504.32	74.83	-503.16	9.00	9.00	0.13
LP: 7610.42' MD, 90.00° Inc, 181.00° Azm									
7,700.00	90.00	181.00	7,083.00	414.75	73.27	-413.63	0.00	0.00	0.00
7,800.00	90.00	181.00	7,083.00	314.77	71.52	-313.68	0.00	0.00	0.00
7,810.42	90.00	181.00	7,083.00	304.35	71.34	-303.27	0.00	0.00	0.00
Turn: 2°/100'									
7,900.00	90.00	180.10	7,083.00	214.77	70.48	-213.71	1.00	0.00	-1.00
7,951.90	90.00	179.59	7,083.00	162.87	70.62	-161.81	1.00	0.00	-1.00
Hold: 90.00° Inc, 179.59° Azm									
8,000.00	90.00	179.59	7,083.00	114.77	70.97	-113.72	0.00	0.00	0.00
8,100.00	90.00	179.59	7,083.00	14.78	71.69	-13.72	0.00	0.00	0.00
8,200.00	90.00	179.59	7,083.00	-85.22	72.41	86.28	0.00	0.00	0.00
8,300.00	90.00	179.59	7,083.00	-185.22	73.14	186.28	0.00	0.00	0.00
8,400.00	90.00	179.59	7,083.00	-285.22	73.86	286.27	0.00	0.00	0.00
8,500.00	90.00	179.59	7,083.00	-385.21	74.59	386.27	0.00	0.00	0.00
8,600.00	90.00	179.59	7,083.00	-485.21	75.31	486.27	0.00	0.00	0.00
8,700.00	90.00	179.59	7,083.00	-585.21	76.03	586.26	0.00	0.00	0.00
8,800.00	90.00	179.59	7,083.00	-685.21	76.76	686.26	0.00	0.00	0.00
8,900.00	90.00	179.59	7,083.00	-785.20	77.48	786.26	0.00	0.00	0.00
9,000.00	90.00	179.59	7,083.00	-885.20	78.21	886.26	0.00	0.00	0.00
9,100.00	90.00	179.59	7,083.00	-985.20	78.93	986.25	0.00	0.00	0.00
9,200.00	90.00	179.59	7,083.00	-1,085.20	79.65	1,086.25	0.00	0.00	0.00
9,300.00	90.00	179.59	7,083.00	-1,185.19	80.38	1,186.25	0.00	0.00	0.00
9,400.00	90.00	179.59	7,083.00	-1,285.19	81.10	1,286.24	0.00	0.00	0.00
9,500.00	90.00	179.59	7,083.00	-1,385.19	81.83	1,386.24	0.00	0.00	0.00
9,600.00	90.00	179.59	7,083.00	-1,485.18	82.55	1,486.24	0.00	0.00	0.00
9,700.00	90.00	179.59	7,083.00	-1,585.18	83.27	1,586.24	0.00	0.00	0.00
9,800.00	90.00	179.59	7,083.00	-1,685.18	84.00	1,686.23	0.00	0.00	0.00
9,900.00	90.00	179.59	7,083.00	-1,785.18	84.72	1,786.23	0.00	0.00	0.00
10,000.00	90.00	179.59	7,083.00	-1,885.17	85.45	1,886.23	0.00	0.00	0.00
10,100.00	90.00	179.59	7,083.00	-1,985.17	86.17	1,986.23	0.00	0.00	0.00
10,200.00	90.00	179.59	7,083.00	-2,085.17	86.89	2,086.22	0.00	0.00	0.00
10,300.00	90.00	179.59	7,083.00	-2,185.17	87.62	2,186.22	0.00	0.00	0.00
10,400.00	90.00	179.59	7,083.00	-2,285.16	88.34	2,286.22	0.00	0.00	0.00
10,500.00	90.00	179.59	7,083.00	-2,385.16	89.07	2,386.21	0.00	0.00	0.00
10,600.00	90.00	179.59	7,083.00	-2,485.16	89.79	2,486.21	0.00	0.00	0.00
10,700.00	90.00	179.59	7,083.00	-2,585.16	90.51	2,586.21	0.00	0.00	0.00
10,800.00	90.00	179.59	7,083.00	-2,685.15	91.24	2,686.21	0.00	0.00	0.00
10,900.00	90.00	179.59	7,083.00	-2,785.15	91.96	2,786.20	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-744
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4915.00ft
Project:	Mustang	MD Reference:	KB @ 4915.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-744		
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)	
11,000.00	90.00	179.59	7,083.00	-2,885.15	92.69	2,886.20	0.00	0.00	0.00	
11,100.00	90.00	179.59	7,083.00	-2,985.15	93.41	2,986.20	0.00	0.00	0.00	
11,200.00	90.00	179.59	7,083.00	-3,085.14	94.14	3,086.19	0.00	0.00	0.00	
11,300.00	90.00	179.59	7,083.00	-3,185.14	94.86	3,186.19	0.00	0.00	0.00	
11,400.00	90.00	179.59	7,083.00	-3,285.14	95.58	3,286.19	0.00	0.00	0.00	
11,500.00	90.00	179.59	7,083.00	-3,385.13	96.31	3,386.19	0.00	0.00	0.00	
11,600.00	90.00	179.59	7,083.00	-3,485.13	97.03	3,486.18	0.00	0.00	0.00	
11,700.00	90.00	179.59	7,083.00	-3,585.13	97.76	3,586.18	0.00	0.00	0.00	
11,800.00	90.00	179.59	7,083.00	-3,685.13	98.48	3,686.18	0.00	0.00	0.00	
11,900.00	90.00	179.59	7,083.00	-3,785.12	99.20	3,786.17	0.00	0.00	0.00	
12,000.00	90.00	179.59	7,083.00	-3,885.12	99.93	3,886.17	0.00	0.00	0.00	
12,100.00	90.00	179.59	7,083.00	-3,985.12	100.65	3,986.17	0.00	0.00	0.00	
12,200.00	90.00	179.59	7,083.00	-4,085.12	101.38	4,086.17	0.00	0.00	0.00	
12,300.00	90.00	179.59	7,083.00	-4,185.11	102.10	4,186.16	0.00	0.00	0.00	
12,400.00	90.00	179.59	7,083.00	-4,285.11	102.82	4,286.16	0.00	0.00	0.00	
12,500.00	90.00	179.59	7,083.00	-4,385.11	103.55	4,386.16	0.00	0.00	0.00	
12,600.00	90.00	179.59	7,083.00	-4,485.11	104.27	4,486.16	0.00	0.00	0.00	
12,700.00	90.00	179.59	7,083.00	-4,585.10	105.00	4,586.15	0.00	0.00	0.00	
12,800.00	90.00	179.59	7,083.00	-4,685.10	105.72	4,686.15	0.00	0.00	0.00	
12,900.00	90.00	179.59	7,083.00	-4,785.10	106.44	4,786.15	0.00	0.00	0.00	
13,000.00	90.00	179.59	7,083.00	-4,885.10	107.17	4,886.14	0.00	0.00	0.00	
13,100.00	90.00	179.59	7,083.00	-4,985.09	107.89	4,986.14	0.00	0.00	0.00	
13,200.00	90.00	179.59	7,083.00	-5,085.09	108.62	5,086.14	0.00	0.00	0.00	
13,300.00	90.00	179.59	7,083.00	-5,185.09	109.34	5,186.14	0.00	0.00	0.00	
13,400.00	90.00	179.59	7,083.00	-5,285.09	110.06	5,286.13	0.00	0.00	0.00	
13,500.00	90.00	179.59	7,083.00	-5,385.08	110.79	5,386.13	0.00	0.00	0.00	
13,600.00	90.00	179.59	7,083.00	-5,485.08	111.51	5,486.13	0.00	0.00	0.00	
13,700.00	90.00	179.59	7,083.00	-5,585.08	112.24	5,586.12	0.00	0.00	0.00	
13,800.00	90.00	179.59	7,083.00	-5,685.07	112.96	5,686.12	0.00	0.00	0.00	
13,900.00	90.00	179.59	7,083.00	-5,785.07	113.68	5,786.12	0.00	0.00	0.00	
14,000.00	90.00	179.59	7,083.00	-5,885.07	114.41	5,886.12	0.00	0.00	0.00	
14,100.00	90.00	179.59	7,083.00	-5,985.07	115.13	5,986.11	0.00	0.00	0.00	
14,200.00	90.00	179.59	7,083.00	-6,085.06	115.86	6,086.11	0.00	0.00	0.00	
14,300.00	90.00	179.59	7,083.00	-6,185.06	116.58	6,186.11	0.00	0.00	0.00	
14,400.00	90.00	179.59	7,083.00	-6,285.06	117.30	6,286.10	0.00	0.00	0.00	
14,500.00	90.00	179.59	7,083.00	-6,385.06	118.03	6,386.10	0.00	0.00	0.00	
14,600.00	90.00	179.59	7,083.00	-6,485.05	118.75	6,486.10	0.00	0.00	0.00	
14,700.00	90.00	179.59	7,083.00	-6,585.05	119.48	6,586.10	0.00	0.00	0.00	
14,800.00	90.00	179.59	7,083.00	-6,685.05	120.20	6,686.09	0.00	0.00	0.00	
14,900.00	90.00	179.59	7,083.00	-6,785.05	120.92	6,786.09	0.00	0.00	0.00	
15,000.00	90.00	179.59	7,083.00	-6,885.04	121.65	6,886.09	0.00	0.00	0.00	
15,100.00	90.00	179.59	7,083.00	-6,985.04	122.37	6,986.09	0.00	0.00	0.00	
15,200.00	90.00	179.59	7,083.00	-7,085.04	123.10	7,086.08	0.00	0.00	0.00	
15,300.00	90.00	179.59	7,083.00	-7,185.04	123.82	7,186.08	0.00	0.00	0.00	
15,400.00	90.00	179.59	7,083.00	-7,285.03	124.55	7,286.08	0.00	0.00	0.00	
15,500.00	90.00	179.59	7,083.00	-7,385.03	125.27	7,386.07	0.00	0.00	0.00	
15,600.00	90.00	179.59	7,083.00	-7,485.03	125.99	7,486.07	0.00	0.00	0.00	
15,700.00	90.00	179.59	7,083.00	-7,585.02	126.72	7,586.07	0.00	0.00	0.00	
15,800.00	90.00	179.59	7,083.00	-7,685.02	127.44	7,686.07	0.00	0.00	0.00	
15,900.00	90.00	179.59	7,083.00	-7,785.02	128.17	7,786.06	0.00	0.00	0.00	
16,000.00	90.00	179.59	7,083.00	-7,885.02	128.89	7,886.06	0.00	0.00	0.00	
16,100.00	90.00	179.59	7,083.00	-7,985.01	129.61	7,986.06	0.00	0.00	0.00	
16,200.00	90.00	179.59	7,083.00	-8,085.01	130.34	8,086.05	0.00	0.00	0.00	
16,300.00	90.00	179.59	7,083.00	-8,185.01	131.06	8,186.05	0.00	0.00	0.00	

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-744
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4915.00ft
Project:	Mustang	MD Reference:	KB @ 4915.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-744		
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)
16,400.00	90.00	179.59	7,083.00	-8,285.01	131.79	8,286.05	0.00	0.00	0.00
16,500.00	90.00	179.59	7,083.00	-8,385.00	132.51	8,386.05	0.00	0.00	0.00
16,600.00	90.00	179.59	7,083.00	-8,485.00	133.23	8,486.04	0.00	0.00	0.00
16,700.00	90.00	179.59	7,083.00	-8,585.00	133.96	8,586.04	0.00	0.00	0.00
16,800.00	90.00	179.59	7,083.00	-8,685.00	134.68	8,686.04	0.00	0.00	0.00
16,900.00	90.00	179.59	7,083.00	-8,784.99	135.41	8,786.03	0.00	0.00	0.00
17,000.00	90.00	179.59	7,083.00	-8,884.99	136.13	8,886.03	0.00	0.00	0.00
17,100.00	90.00	179.59	7,083.00	-8,984.99	136.85	8,986.03	0.00	0.00	0.00
17,200.00	90.00	179.59	7,083.00	-9,084.99	137.58	9,086.03	0.00	0.00	0.00
17,300.00	90.00	179.59	7,083.00	-9,184.98	138.30	9,186.02	0.00	0.00	0.00
17,400.00	90.00	179.59	7,083.00	-9,284.98	139.03	9,286.02	0.00	0.00	0.00
17,500.00	90.00	179.59	7,083.00	-9,384.98	139.75	9,386.02	0.00	0.00	0.00
17,600.00	90.00	179.59	7,083.00	-9,484.98	140.47	9,486.02	0.00	0.00	0.00
17,700.00	90.00	179.59	7,083.00	-9,584.97	141.20	9,586.01	0.00	0.00	0.00
17,711.08	90.00	179.59	7,083.00	-9,596.06	141.28	9,597.10	0.00	0.00	0.00
TD @ 17711.08' MD/7083.00' TVD									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Pioneer Y18-744-SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,301,718.03	3,253,540.37	40.1580510	-104.5928770
Pioneer Y18-744-KOF - plan hits target center - Point	0.00	0.00	6,259.66	1,113.03	73.25	1,302,831.07	3,253,613.62	40.1611042	-104.5925742
Pioneer Y18-744-BHL - plan hits target center - Point	0.00	0.00	7,083.00	-9,596.06	141.28	1,292,122.00	3,253,681.65	40.1317060	-104.5927228
Pioneer Y18-744-TPZ - plan hits target center - Point	0.00	0.00	7,083.00	504.32	74.83	1,302,222.35	3,253,615.20	40.1594333	-104.5925908

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-744
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4915.00ft
Project:	Mustang	MD Reference:	KB @ 4915.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-744		
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				
4,029.64	3,974.00	Parkman				
4,622.82	4,541.00	Sussex				
5,439.87	5,322.00	Shannon				
6,410.71	6,250.00	Teepee Buttes				
7,099.81	6,889.00	Sharon Springs				
7,115.30	6,900.00	Top A Chalk				
7,115.30	6,900.00	Top A Marl				
7,146.00	6,921.00	Top B Chalk				
7,232.33	6,974.00	Top B Marl				
7,351.31	7,031.00	Top C Chalk				
7,458.66	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'	
3,054.21	3,041.61	126.14	8.30	Hold: 17.08° Inc, 3.77° Azm	
6,420.82	6,259.66	1,113.03	73.25	KOP: Build 9°/100' @ 6420.82' MD	
7,610.42	7,083.00	504.32	74.83	LP: 7610.42' MD, 90.00° Inc, 181.00° Azm	
7,810.42	7,083.00	304.35	71.34	Turn: 2°/100'	
7,951.90	7,083.00	162.87	70.62	Hold: 90.00° Inc, 179.59° Azm	
17,711.08	7,083.00	-9,596.06	141.28	TD @ 17711.08' MD/7083.00' TVD	

Northern Region - DJ Basin

Mustang

Y Section 07

Pioneer Y18-744

Pioneer Y18-744

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 Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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	17,711.08	Plan #1 (Pioneer Y18-744)	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 - /	6,668.72	11,360.01	5,575.77	5,509.76	84.467	CC, ES
Dechant D31-77HN - Original Drilling - Original Drilling - /	6,800.00	11,360.01	5,590.18	5,523.79	84.205	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 Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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 Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
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Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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	6,593.81	6,212.15	6,076.93	6,031.36	133.364	CC
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	6,600.00	6,217.77	6,076.95	6,031.35	133.244	ES
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	7,100.00	6,977.58	6,251.09	6,202.09	127.565	SF
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	6,605.36	6,395.39	7,565.01	7,514.24	148.992	CC, ES
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,900.00	7,648.42	7,595.61	144.822	SF
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	104.00	0.00	8,103.74	8,103.60	10,000.000	CC
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	400.00	254.28	8,104.72	8,102.83	4,273.348	ES
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	6,850.00	3,870.99	8,585.92	8,544.42	206.879	SF
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	6,573.20	6,164.88	6,269.07	6,221.40	131.520	CC, ES
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	7,050.00	7,148.89	6,403.77	6,352.43	124.710	SF
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	6,440.84	4,048.17	9,045.23	9,006.87	235.776	CC, ES
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	7,050.00	6,816.96	9,231.20	9,182.01	187.661	SF
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	6,606.49	6,391.78	7,609.00	7,560.93	158.307	CC, ES
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	7,000.00	6,929.45	7,723.24	7,672.85	153.271	SF
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	6,613.43	6,426.24	8,049.72	8,014.08	225.843	CC, ES
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	7,200.00	7,200.00	8,289.82	8,251.91	218.661	SF
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	6,606.07	6,422.72	4,994.85	4,944.87	99.948	CC, ES
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	6,900.00	6,900.00	5,058.98	5,006.90	97.146	SF
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	6,620.46	6,547.88	4,872.43	4,824.03	100.684	CC, ES
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	6,900.00	6,921.95	4,929.36	4,879.18	98.233	SF
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	6,609.06	6,335.56	5,790.34	5,744.32	125.811	CC, ES
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,641.47	5,880.40	5,832.56	122.916	SF
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	6,603.25	6,263.98	5,697.46	5,651.68	124.437	CC, ES
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,640.86	5,785.60	5,737.77	120.956	SF
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	6,619.57	6,436.70	6,940.94	6,894.62	149.838	CC, ES
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	7,000.00	6,788.72	7,050.46	7,002.14	145.921	SF
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	6,599.45	6,216.43	6,510.73	6,465.09	142.662	CC
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	6,600.00	6,216.97	6,510.73	6,465.08	142.650	ES
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	7,100.00	7,142.43	6,675.56	6,625.70	133.889	SF
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	6,600.05	6,233.71	7,015.87	6,969.50	151.310	CC, ES
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	7,050.00	6,647.22	7,166.96	7,117.70	145.481	SF
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	6,592.72	6,181.55	7,261.07	7,215.58	159.620	CC
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	6,600.00	6,192.41	7,261.11	7,215.56	159.406	ES
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	7,150.00	6,929.22	7,463.66	7,414.72	152.498	SF
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	6,610.33	6,338.36	6,991.43	6,840.63	46.362	CC, ES
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	7,100.00	6,781.13	7,170.64	7,010.13	44.673	SF
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	6,617.83	6,479.20	8,900.92	8,854.44	191.500	CC, ES
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	7,000.00	6,843.24	9,008.25	8,959.75	185.706	SF
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys	6,599.61	6,182.69	9,786.57	9,741.05	215.008	CC
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys	6,600.00	6,183.31	9,786.57	9,741.05	214.992	ES
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys	7,100.00	6,961.40	9,960.43	9,911.44	203.325	SF
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	6,609.09	6,338.13	8,048.47	7,897.67	53.374	CC, ES
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	7,150.00	6,816.66	8,262.69	8,101.45	51.243	SF
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	6,624.58	6,557.92	8,298.04	8,251.34	177.692	CC, ES
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	6,950.00	6,969.73	8,377.60	8,328.87	171.929	SF
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	6,600.67	6,159.49	9,578.69	9,533.29	210.970	CC, ES
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	7,050.00	6,458.26	9,732.38	9,685.04	205.584	SF
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	6,613.21	6,371.14	8,236.67	8,190.56	178.634	CC, ES
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,950.00	8,324.85	8,276.04	170.535	SF
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	6,646.97	6,819.36	8,174.93	8,127.39	171.980	CC
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	6,650.00	6,821.88	8,174.94	8,127.38	171.913	ES
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	7,000.00	7,137.13	8,269.95	8,220.92	168.686	SF
River Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	6,610.56	6,365.06	5,259.45	5,213.33	114.038	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 Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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 Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	6,900.00	6,575.97	5,324.74	5,277.18	111.949	SF
River Red D 31-4 (PA) - Wellbore #1 - Gyro Surveys	6,578.60	5,875.73	9,984.94	9,906.36	127.073	CC
River Red D 31-4 (PA) - Wellbore #1 - Gyro Surveys	6,600.00	5,897.02	9,985.28	9,906.05	126.023	ES
River Red D 31-4 (PA) - Wellbore #1 - Gyro Surveys	6,700.00	5,996.08	9,995.99	9,913.75	121.545	SF
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	6,611.10	6,333.13	8,829.63	8,678.92	58.590	CC, ES
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	7,150.00	6,809.66	9,043.88	8,882.78	56.136	SF
D Section 32						
HP D32-21D - Wellbore #1 - MWD Surveys	6,632.37	6,714.87	9,019.65	8,967.99	174.593	CC, ES
HP D32-21D - Wellbore #1 - MWD Surveys	7,150.00	7,216.31	9,191.26	9,137.41	170.690	SF
HP D32-23D - Wellbore #1 - MWD Surveys	6,606.74	6,323.12	8,881.02	8,831.55	179.503	CC, ES
HP D32-23D - Wellbore #1 - MWD Surveys	7,150.00	6,822.51	9,045.28	8,993.17	173.582	SF
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	4,637.99	2,300.56	9,612.39	9,588.59	403.731	CC
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	4,700.00	2,333.00	9,612.60	9,588.39	397.008	ES
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	7,000.00	7,000.00	9,878.10	9,818.39	165.423	SF
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	6,608.02	6,531.15	7,935.76	7,879.18	140.263	CC, ES
HP Farms D32-24D - Wellbore #1 - MWD Surveys	7,000.00	7,004.63	8,026.88	7,968.32	137.074	SF
Norris 14-32 - Wellbore #1 - Projection Survey	6,615.00	6,363.03	5,999.04	5,919.44	75.364	CC, ES
Norris 14-32 - Wellbore #1 - Projection Survey	7,050.00	6,763.88	6,127.98	6,044.03	72.993	SF
Norris A Unit 2 - Wellbore #1 - As-Drilled	6,607.99	6,320.36	6,934.83	6,888.80	150.663	CC, ES
Norris A Unit 2 - Wellbore #1 - As-Drilled	6,900.00	6,500.00	6,994.11	6,946.72	147.581	SF
Norris D32-1 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-10 - Wellbore #1 - Gyro Surveys	6,613.89	6,303.93	8,702.76	8,656.78	189.267	CC, ES
Norris D32-10 - Wellbore #1 - Gyro Surveys	7,050.00	6,548.59	8,820.24	8,772.47	184.633	SF
Norris D32-15 - Wellbore #1 - Gyro Surveys	6,579.32	5,969.26	7,728.54	7,683.75	172.557	CC, ES
Norris D32-15 - Wellbore #1 - Gyro Surveys	7,150.00	6,610.00	7,902.39	7,854.27	164.236	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	6,590.20	6,000.00	9,703.88	9,659.00	216.223	CC, ES
Norris D32-2J - Wellbore #1 - Gyro Surveys	7,200.00	6,944.18	9,957.07	9,908.03	203.043	SF
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	6,612.99	6,344.02	9,879.78	9,728.85	65.458	CC, ES
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	7,000.00	6,707.13	9,989.88	9,830.89	62.835	SF
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,603.14	6,211.41	8,610.70	8,565.10	188.853	CC, ES
Norris D32-5 - Wellbore #1 - Gyro Surveys	7,000.00	6,749.17	8,720.03	8,671.80	180.796	SF
Norris D32-6 - Wellbore #1 - Gyro Surveys	6,633.00	6,626.15	9,081.47	9,034.46	193.164	CC, ES
Norris D32-6 - Wellbore #1 - Gyro Surveys	7,050.00	6,851.00	9,204.86	9,156.19	189.137	SF
Norris D32-7 - Wellbore #1 - Gyro Surveys	6,642.05	6,700.00	9,800.38	9,753.12	207.372	CC, ES
Norris D32-7 - Wellbore #1 - Gyro Surveys	6,950.00	7,000.00	9,858.62	9,809.63	201.249	SF
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	6,619.54	6,348.10	9,679.91	9,633.75	209.688	CC, ES
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	7,150.00	6,760.05	9,832.53	9,783.93	202.290	SF

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

Noble Energy, Inc.

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Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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	6,614.60	6,480.45	9,375.48	9,329.00	201.685	CC, ES
Dechant 07-36 - Original Drilling - Original Drilling - As D	7,150.00	6,959.33	9,551.55	9,502.44	194.491	SF
Dechant 13N-1HZ - Production Hole - Production Hole -	7,009.51	11,468.00	7,490.14	7,375.75	65.482	CC, ES
Dechant 13N-1HZ - Production Hole - Production Hole -	7,350.00	11,468.00	7,499.25	7,384.27	65.218	SF
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	9,143.85	9,143.73	10,000.000	CC
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	200.00	50.57	9,144.22	9,143.65	10,000.000	ES
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	5,900.00	600.00	9,974.93	9,953.04	455.723	SF
Dechant 14C-1HZ - Production Hole - Production Hole -	7,137.45	11,731.00	6,287.35	6,203.53	75.009	CC, ES
Dechant 14C-1HZ - Production Hole - Production Hole -	7,200.00	11,731.00	6,287.77	6,203.92	74.987	SF
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	9,077.89	9,077.77	10,000.000	CC
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	700.00	604.29	9,080.94	9,076.72	2,152.451	ES
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	6,100.00	610.00	9,980.60	9,958.08	443.314	SF
Dechant 15-36 - Original Drilling - Original Drilling - As D	6,607.27	6,405.35	7,440.70	7,389.81	146.200	CC
Dechant 15-36 - Original Drilling - Original Drilling - As D	6,650.00	6,448.06	7,441.72	7,389.57	142.696	ES
Dechant 15-36 - Original Drilling - Original Drilling - As D	7,450.00	7,026.97	7,789.58	7,721.22	113.950	SF
Dechant 24-36 - Original Drilling - Original Drilling - As D	6,598.43	6,371.71	8,716.16	8,666.51	175.569	CC
Dechant 24-36 - Original Drilling - Original Drilling - As D	6,600.00	6,372.95	8,716.16	8,666.50	175.537	ES
Dechant 24-36 - Original Drilling - Original Drilling - As D	7,450.00	7,450.00	9,135.90	9,081.80	168.884	SF
Dechant 35N-E1HZ - Production Hole - Production Hole	7,008.21	11,619.00	6,490.61	6,374.47	55.886	CC, ES
Dechant 35N-E1HZ - Production Hole - Production Hole	7,150.00	11,619.00	6,492.38	6,376.14	55.852	SF
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	100.00	12.15	9,099.81	9,099.67	10,000.000	CC
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	700.00	612.00	9,100.61	9,096.37	2,146.313	ES
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	6,100.00	612.00	9,996.99	9,974.47	443.855	SF
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	7,029.13	11,494.00	6,955.78	6,841.00	60.603	CC
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	7,050.00	11,494.00	6,955.82	6,841.00	60.583	ES
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	7,250.00	11,494.00	6,959.96	6,844.92	60.503	SF
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	7,050.00	11,651.36	5,801.84	5,685.22	49.751	SF
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	7,056.67	11,651.36	5,801.83	5,685.22	49.752	CC, ES
Dechant 37N-E1HZ - Production Hole - Production Hole	6,900.00	11,723.00	3,973.87	3,857.81	34.241	SF
Dechant 37N-E1HZ - Production Hole - Production Hole	7,000.00	11,723.00	3,972.19	3,856.30	34.275	ES
Dechant 37N-E1HZ - Production Hole - Production Hole	7,009.63	11,723.00	3,972.17	3,856.31	34.283	CC
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	735.99	648.00	8,185.58	8,181.08	1,819.764	CC, ES
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	6,650.00	648.00	9,391.65	9,367.84	394.345	SF
Dechant 37N-W1HZ - Production Hole - Production Hole	7,050.00	12,384.00	4,545.27	4,425.23	37.866	SF
Dechant 37N-W1HZ - Production Hole - Production Hole	7,059.59	12,384.00	4,545.25	4,425.22	37.867	CC, ES
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	414.77	326.77	8,156.95	8,154.73	3,670.785	CC
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	800.00	655.00	8,157.46	8,152.71	1,718.554	ES
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	6,650.00	655.00	9,364.70	9,340.88	393.292	SF
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	7,185.50	16,665.00	4,966.71	4,831.73	36.795	CC, ES
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	7,200.00	16,665.00	4,966.74	4,831.76	36.794	SF
Dechant State 16C-1HZ - Original Drilling - Original Drillir	7,164.15	16,839.03	3,833.35	3,632.25	19.062	CC, ES
Dechant State 16C-1HZ - Original Drilling - Original Drillir	7,200.00	16,839.03	3,833.58	3,632.42	19.058	SF
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	7,018.91	16,365.55	5,407.04	5,274.62	40.833	CC
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	7,050.00	16,378.09	5,407.16	5,274.55	40.775	ES
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	7,300.00	16,510.02	5,414.60	5,280.34	40.327	SF
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,657.90	11,466.00	6,611.25	6,547.74	104.096	CC, ES
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,850.00	11,466.00	6,636.53	6,572.44	103.548	SF
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,668.31	11,490.00	6,953.75	6,889.75	108.651	CC, ES
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,800.00	11,490.00	6,965.09	6,900.82	108.374	SF
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	7,094.60	16,675.00	3,226.86	3,090.31	23.632	CC, ES
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	7,100.00	16,675.00	3,226.87	3,090.31	23.631	SF
Dechant State H36-11D - Original Drilling - Original Drillir	6,592.08	6,241.71	9,140.96	9,095.30	200.190	CC
Dechant State H36-11D - Original Drilling - Original Drillir	6,600.00	6,249.10	9,141.00	9,095.28	199.958	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 Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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 State H36-11D - Original Drilling - Original Drillir	7,100.00	6,672.04	9,279.13	9,230.93	192.491	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	6,601.18	6,400.00	9,247.13	9,189.10	159.338	CC, ES
Dechant State H36-21D - Dechant State H36-21D Gyros	7,000.00	6,817.70	9,340.64	9,280.74	155.943	SF
Dechant State H36-21D - Dechant State H36-21D OH - /	6,601.18	6,413.00	9,247.13	9,189.10	159.338	CC, ES
Dechant State H36-21D - Dechant State H36-21D OH - /	7,000.00	6,830.70	9,340.64	9,280.74	155.943	SF
Dechant State H36-24 - Original Drilling - Original Drilling	6,593.93	6,430.60	8,289.33	8,238.50	163.067	CC
Dechant State H36-24 - Original Drilling - Original Drilling	6,600.00	6,436.42	8,289.35	8,238.48	162.944	ES
Dechant State H36-24 - Original Drilling - Original Drilling	7,050.00	6,911.80	8,399.44	8,346.05	157.314	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 -	219.58	129.58	9,908.17	9,907.34	10,000.000	CC
Dechant State H36-33 - Dechant State H36-33D Gyros -	300.00	166.39	9,908.35	9,907.10	7,928.573	ES
Dechant State H36-33 - Dechant State H36-33D Gyros -	4,000.00	1,600.00	9,997.11	9,976.95	495.871	SF
Dechant State H36-33 - Dechant State H36-33D OH - As	219.58	142.58	9,908.15	9,907.31	10,000.000	CC
Dechant State H36-33 - Dechant State H36-33D OH - As	300.00	179.39	9,908.32	9,907.07	7,927.887	ES
Dechant State H36-33 - Dechant State H36-33D OH - As	4,000.00	1,613.00	9,997.09	9,976.93	495.866	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	6,605.02	6,335.05	9,576.14	9,425.41	63.530	CC, ES
HSR Dechant/State 07-36 (PA) - Original Drilling - Origin	7,200.00	6,849.24	9,801.18	9,639.18	60.501	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	6,650.00	6,912.69	9,346.44	9,298.22	193.848	ES
Spike State GWS H36-13 - Original Drilling - Original Dri	6,653.46	6,653.46	9,346.38	9,299.25	198.333	CC
Spike State GWS H36-13 - Original Drilling - Original Dri	7,300.00	7,238.65	9,522.34	9,470.49	183.639	SF
Spike State GWS H36-14 - Original Drilling - Original Dri	6,581.12	6,187.22	8,003.39	7,957.93	176.073	CC, ES
Spike State GWS H36-14 - Original Drilling - Original Dri	7,250.00	7,250.00	8,212.70	8,162.30	162.969	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 -	6,604.41	6,400.01	9,149.99	9,103.77	197.979	CC, ES
Spike State H36-11J - Original Drilling - Original Drilling -	7,150.00	6,774.50	9,296.12	9,247.50	191.205	SF
Spike State H36-12 - Original Drilling - Original Drilling - /						Out of range

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 Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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	6,608.85	6,306.45	5,464.21	5,418.25	118.902	CC, ES
Olsen Red Y05-02D - Olsen Red Y05-02D - Olsen Red Y05-02D	7,250.00	7,250.00	5,683.68	5,633.40	113.049	SF
Olsen Y5-05JI - Olsen Y5-05JI - Olsen Y5-05JI - As Drille	6,619.01	6,370.04	4,050.09	4,014.83	114.882	CC, ES
Olsen Y5-05JI - Olsen Y5-05JI - Olsen Y5-05JI - As Drille	6,950.00	6,685.12	4,112.77	4,076.20	112.452	SF
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	6,627.11	6,430.13	6,229.50	6,149.23	77.602	CC
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	6,650.00	6,453.00	6,229.70	6,149.16	77.343	ES
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	7,200.00	6,922.24	6,352.05	6,266.38	74.145	SF
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	6,630.90	6,450.93	7,406.81	7,326.33	92.040	CC
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	6,650.00	6,470.00	7,406.93	7,326.23	91.783	ES
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	7,300.00	6,992.82	7,547.32	7,460.93	87.362	SF
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	6,645.97	6,470.98	6,991.70	6,911.00	86.634	CC
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	6,650.00	6,475.00	6,991.70	6,910.95	86.583	ES
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	7,400.00	7,037.55	7,105.79	7,018.90	81.774	SF
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins US	6,661.63	6,451.87	6,300.89	6,254.23	135.022	CC
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins US	6,700.00	6,487.00	6,301.06	6,254.16	134.351	ES
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins US	7,400.00	6,951.94	6,369.71	6,320.08	128.328	SF
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	2,299.02	2,229.17	5,471.21	5,455.45	347.108	CC
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	2,500.00	2,300.00	5,471.65	5,454.93	327.313	ES
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	17,711.08	17,681.91	7,177.78	6,998.67	40.075	SF
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	2,300.00	2,229.21	5,449.35	5,433.59	345.641	CC
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	2,500.00	2,300.00	5,449.77	5,433.05	326.002	ES
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	17,711.08	17,649.38	6,519.19	6,340.23	36.429	SF
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	2,336.39	2,241.11	5,427.30	5,411.36	340.555	CC
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	2,500.00	2,300.00	5,427.67	5,410.95	324.671	ES
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	17,711.08	17,273.75	5,863.96	5,686.43	33.030	SF
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	5,031.55	4,670.72	5,254.32	5,219.81	152.246	CC
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	5,100.00	4,700.00	5,254.39	5,219.52	150.690	ES
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	17,711.08	17,587.51	5,534.34	5,356.25	31.076	SF
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	7,001.65	6,851.81	5,151.22	5,102.23	105.141	CC
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	17,711.08	17,446.55	5,207.44	5,029.66	29.292	ES, SF
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	2,452.56	2,300.00	3,687.24	3,670.69	222.801	CC
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	2,700.00	2,400.00	3,687.91	3,670.17	207.939	ES
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	17,711.08	17,471.02	4,554.71	4,375.78	25.454	SF
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	7,735.52	3,325.29	3,583.00	3,558.29	144.997	CC, ES
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	17,711.08	17,506.58	3,894.27	3,715.98	21.842	SF
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	7,251.25	7,064.62	3,212.86	3,163.33	64.867	CC
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	17,711.08	17,357.35	3,243.33	3,065.78	18.267	ES, SF
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	7,424.48	7,395.66	2,886.19	2,835.38	56.797	CC
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	17,711.08	17,616.46	2,909.71	2,731.50	16.327	ES, SF
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	7,424.86	7,357.95	2,561.37	2,510.45	50.302	CC
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	17,700.00	17,564.41	2,581.42	2,403.23	14.487	ES
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	17,711.08	17,564.41	2,581.49	2,403.24	14.482	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 Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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 06						
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,597.00	6,326.91	1,615.42	1,569.32	35.038	CC
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,600.00	6,329.97	1,615.43	1,569.31	35.023	ES
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,750.00	6,473.84	1,633.51	1,586.46	34.719	SF
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	6,584.68	6,383.95	1,971.75	1,925.61	42.731	CC
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	6,600.00	6,398.37	1,971.80	1,925.56	42.636	ES
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	7,000.00	6,798.91	2,007.80	1,959.20	41.311	SF
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	6,622.15	6,425.79	4,067.12	4,020.83	87.864	CC, ES
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	6,950.00	6,716.51	4,148.01	4,099.97	86.358	SF
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	6,615.29	6,414.55	3,863.54	3,817.31	83.565	CC, ES
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	6,900.00	6,659.89	3,917.13	3,869.34	81.959	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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	2,023.05	2,008.83	2,163.33	2,149.46	155.938	CC, ES
Harkis 11-7 (PA) - Wellbore #1 - Gyro Surveys	8,200.00	7,111.02	2,241.24	2,190.58	44.243	SF
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	8,854.84	7,079.90	1,849.13	1,797.22	35.621	CC, ES
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	9,100.00	7,079.78	1,865.31	1,812.66	35.433	SF
HP Farms Y 7-15J1 (PR) - Wellbore #1 - No Surveys	12,088.61	7,079.00	42.68	-143.69	0.229	Level 1, CC, ES, SF
HP Y07-09 (PR) - Wellbore #1 - No Surveys	10,739.66	7,028.00	1,612.43	1,435.63	9.120	CC, ES
HP Y07-09 (PR) - Wellbore #1 - No Surveys	10,800.00	7,028.00	1,613.56	1,436.41	9.109	SF
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,589.19	7,284.85	103.43	41.31	1.665	CC
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,600.00	7,284.92	103.99	39.99	1.625	ES, SF
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	8,062.68	7,033.00	245.85	79.35	1.477	Level 3, CC, ES, SF
Perkins USX Y 7-17 (SI) - Wellbore #1 - Gyro Surveys	8,671.59	7,058.53	948.29	896.83	18.428	CC, ES
Perkins USX Y 7-17 (SI) - Wellbore #1 - Gyro Surveys	8,700.00	7,058.37	948.71	897.18	18.410	SF
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	9,570.61	7,055.00	909.64	738.34	5.310	CC, ES
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	9,600.00	7,055.00	910.12	738.70	5.309	SF
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,200.00	2,195.00	209.92	194.63	13.730	CC, ES
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,500.00	2,474.31	223.05	205.78	12.918	SF
Pioneer D31-725 - Pioneer D31-725 - Plan #1	2,200.00	2,196.00	187.28	171.99	12.246	CC, ES
Pioneer D31-725 - Pioneer D31-725 - Plan #1	2,500.00	2,477.88	200.14	182.86	11.579	SF
Pioneer D31-735 - Pioneer D31-735 - Plan #1	2,200.00	2,196.00	164.92	149.63	10.784	CC, ES
Pioneer D31-735 - Pioneer D31-735 - Plan #1	2,500.00	2,482.40	175.77	158.45	10.145	SF
Pioneer D31-744 - Pioneer D31-744 - Plan #1	7,306.54	7,294.17	59.11	8.31	1.164	Level 2, CC, ES, SF
Pioneer D31-756 - Pioneer D31-756 - Plan #1	7,133.09	7,407.44	676.65	625.92	13.338	CC, ES, SF
Pioneer D31-761 - Pioneer D31-761 - Plan #1	2,200.00	2,201.00	837.72	822.41	54.716	CC
Pioneer D31-761 - Pioneer D31-761 - Plan #1	2,500.00	2,500.45	838.89	821.44	48.070	ES
Pioneer D31-761 - Pioneer D31-761 - Plan #1	7,500.00	7,229.14	1,001.48	950.57	19.673	SF
Pioneer D31-775 - Pioneer D31-775 - Plan #1	2,200.00	2,202.00	860.08	844.77	56.164	CC, ES
Pioneer D31-775 - Pioneer D31-775 - Plan #1	7,200.00	7,439.20	1,921.54	1,870.16	37.397	SF
Pioneer D31-785 - Pioneer D31-785 - Plan #1	2,200.00	2,202.00	881.33	866.02	57.551	CC, ES
Pioneer D31-785 - Pioneer D31-785 - Plan #1	3,000.00	2,800.00	975.89	956.01	49.110	SF
Pioneer USX Y07-08D (PR) - Wellbore #1 - As Drilled	9,470.03	7,205.88	1,549.23	1,488.17	25.374	CC, ES
Pioneer USX Y07-08D (PR) - Wellbore #1 - As Drilled	9,600.00	7,208.54	1,554.67	1,493.07	25.240	SF
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,278.28	7,464.62	235.67	147.86	2.684	CC
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,300.00	7,464.70	236.67	144.81	2.577	ES
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,400.00	7,465.02	265.25	161.86	2.566	SF
Pioneer Y18-715 - Pioneer Y18-715 - Plan #1	2,200.00	2,197.00	89.73	74.43	5.866	CC, ES
Pioneer Y18-715 - Pioneer Y18-715 - Plan #1	2,400.00	2,392.10	94.55	77.87	5.668	SF
Pioneer Y18-725 - Pioneer Y18-725 - Plan #1	2,200.00	2,198.00	67.37	52.07	4.403	CC, ES
Pioneer Y18-725 - Pioneer Y18-725 - Plan #1	2,300.00	2,296.46	68.37	52.36	4.272	SF
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	2,200.00	2,199.00	45.00	29.70	2.941	CC, ES
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	2,300.00	2,298.12	45.85	29.84	2.864	SF
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,200.00	2,200.00	22.36	7.06	1.461	Level 3, CC
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,300.00	2,299.65	23.03	7.01	1.438	Level 3, ES, SF
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	6,571.61	6,582.12	614.70	566.73	12.813	CC
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	17,711.08	17,599.88	634.96	461.82	3.667	ES, SF
Pioneer Y18-766 - Pioneer Y18-766 - Plan #1	2,200.00	2,199.00	695.17	679.87	45.427	CC
Pioneer Y18-766 - Pioneer Y18-766 - Plan #1	2,300.00	2,291.48	695.82	679.83	43.515	ES
Pioneer Y18-766 - Pioneer Y18-766 - Plan #1	17,711.08	17,688.86	1,254.11	1,080.45	7.222	SF
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	2,200.00	2,199.00	717.53	702.23	46.888	CC, ES
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	17,711.08	17,800.06	1,569.31	1,395.82	9.045	SF
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	2,200.00	2,200.00	738.77	723.47	48.265	CC, ES
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	17,711.08	17,680.77	1,884.00	1,710.00	10.827	SF
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	2,200.00	2,200.00	762.53	747.23	49.817	CC, ES
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	17,711.08	17,890.53	2,508.40	2,334.49	14.424	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 Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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						
UPRC 7-10Q (PR) - Wellbore #1 - No Surveys	11,322.00	7,038.00	582.70	402.16	3.228	CC, ES, SF
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	11,340.34	7,103.45	1,820.09	1,755.55	28.204	CC, ES
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	11,600.00	7,101.40	1,838.51	1,772.62	27.900	SF
Y Section 08						
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	11,653.64	7,039.00	3,148.81	2,966.13	17.237	CC, ES
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	12,000.00	7,039.00	3,167.81	2,982.99	17.140	SF
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	11,484.21	7,186.55	5,875.99	5,810.47	89.686	CC
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	11,500.00	7,186.89	5,876.01	5,810.39	89.548	ES
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	13,800.00	7,237.14	6,315.66	6,237.03	80.321	SF
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	8,404.91	6,989.02	6,517.27	6,466.63	128.705	CC, ES
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	11,900.00	6,993.93	7,395.30	7,330.68	114.442	SF
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	8,367.43	7,001.26	3,092.45	3,041.86	61.134	CC, ES
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	8,900.00	7,006.65	3,137.96	3,086.07	60.472	SF
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	8,107.68	6,978.14	5,340.81	5,290.73	106.652	CC, ES
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	10,400.00	6,971.04	5,811.96	5,754.63	101.369	SF
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	7,786.31	6,961.99	4,259.39	4,209.64	85.610	CC, ES
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	9,000.00	6,968.00	4,402.28	4,350.26	84.626	SF
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	9,350.16	7,020.81	2,725.45	2,671.83	50.828	CC, ES
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	9,900.00	7,027.19	2,780.35	2,724.46	49.744	SF
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	9,435.16	7,080.00	6,797.48	6,626.25	39.699	CC, ES
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	10,800.00	7,080.00	6,933.14	6,755.28	38.981	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

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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 Drill						Out of range
Hullabaloo State Y21-726 - Original Drilling - Original Drill						Out of range
Hullabaloo State Y21-736 - Original Drilling - Original Drill						Out of range
Hullabaloo State Y21-746 - Original Drilling - Original Drill						Out of range
Hullabaloo State Y21-756 - Original Drilling - Original Drill	12,798.08	6,803.00	9,728.08	9,660.26	143.446	CC
Hullabaloo State Y21-756 - Original Drilling - Original Drill	16,400.00	10,396.00	9,728.45	9,617.61	87.775	ES
Hullabaloo State Y21-756 - Original Drilling - Original Drill	17,711.08	12,147.83	9,770.39	9,636.61	73.035	SF
Hullabaloo State Y21-763 - Original Drilling - Original Drill	13,231.37	7,654.00	9,236.88	9,163.71	126.249	CC
Hullabaloo State Y21-763 - Original Drilling - Original Drill	13,500.00	13,500.00	9,240.15	9,151.49	104.221	ES
Hullabaloo State Y21-763 - Original Drilling - Original Drill	17,711.08	11,850.00	9,360.36	9,230.35	71.999	SF
Hullabaloo State Y21-769 - Original Drilling - Original Drill	12,504.77	6,658.76	8,816.69	8,750.81	133.838	CC, ES
Hullabaloo State Y21-769 - Original Drilling - Original Drill	17,711.08	11,616.00	8,920.78	8,791.80	69.165	SF
Hullabaloo State Y21-775 - Original Drilling - Original Drill	13,077.74	7,230.01	8,425.06	8,354.65	119.661	CC
Hullabaloo State Y21-775 - Original Drilling - Original Drill	17,200.00	17,200.00	8,495.34	8,329.05	51.088	ES, SF
Hullabaloo State Y21-781 - Original Drilling - Original Drill	13,151.39	7,411.67	8,013.73	7,942.19	112.015	CC
Hullabaloo State Y21-781 - Original Drilling - Original Drill	13,500.00	7,741.00	8,014.94	7,940.28	107.364	ES
Hullabaloo State Y21-781 - Original Drilling - Original Drill	17,711.08	11,805.00	8,106.15	7,975.77	62.173	SF
Hullabaloo State Y21-787 - Original Drilling - Original Drill	12,995.36	7,216.42	7,580.11	7,509.84	107.865	CC
Hullabaloo State Y21-787 - Original Drilling - Original Drill	13,400.00	13,400.00	7,587.92	7,505.67	92.254	ES
Hullabaloo State Y21-787 - Original Drilling - Original Drill	17,711.08	12,252.00	7,673.91	7,539.83	57.234	SF
State 01 - Original Drilling - Original Drilling - As Drilled						Out of range
State 21 (PA) - Original Drilling - Original Drilling - As Drilled	16,534.66	7,095.00	8,676.10	8,456.55	39.518	CC
State 21 (PA) - Original Drilling - Original Drilling - As Drilled	16,600.00	7,095.00	8,676.35	8,456.29	39.428	ES
State 21 (PA) - Original Drilling - Original Drilling - As Drilled	17,711.08	7,095.00	8,755.50	8,527.42	38.389	SF
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,492.49	7,079.33	8,178.71	8,091.84	94.145	CC
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,600.00	7,077.06	8,179.42	8,091.76	93.305	ES
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	17,600.00	7,013.65	8,748.93	8,643.41	82.914	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 Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	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 17						
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	16,875.37	7,043.00	5,870.00	5,648.84	26.542	CC
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	16,900.00	7,043.00	5,870.05	5,648.70	26.519	ES
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,711.08	7,043.00	5,929.19	5,702.23	26.124	SF
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,143.11	7,043.00	3,161.33	2,961.03	15.783	CC, ES
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,400.00	7,043.00	3,171.75	2,969.68	15.696	SF
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,149.62	7,038.00	4,233.71	4,040.77	21.942	CC
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,200.00	7,038.00	4,234.01	4,040.70	21.903	ES
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,700.00	7,038.00	4,269.34	4,072.74	21.716	SF
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	13,053.28	7,112.73	3,050.77	2,974.62	40.064	CC, ES
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	13,600.00	7,104.56	3,099.36	3,019.94	39.024	SF
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	14,581.74	6,919.01	4,366.75	4,279.99	50.330	CC
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	14,600.00	6,918.70	4,366.78	4,279.89	50.251	ES
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	15,600.00	6,899.78	4,483.88	4,390.88	48.218	SF
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,357.02	6,986.20	4,087.86	3,979.53	37.736	CC
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,400.00	6,986.16	4,088.08	3,979.42	37.621	ES
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,711.08	6,985.83	4,103.16	3,992.30	37.013	SF
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,127.90	7,008.19	5,903.90	5,820.28	70.606	CC
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,200.00	7,009.14	5,904.34	5,820.18	70.162	ES
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	16,000.00	7,032.92	6,193.56	6,098.60	65.224	SF
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,115.06	7,046.16	6,921.47	6,845.06	90.588	CC
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,200.00	7,043.19	6,921.99	6,844.99	89.890	ES
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	15,800.00	6,970.02	7,423.46	7,331.27	80.524	SF
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	15,826.36	6,911.54	3,306.47	3,210.31	34.385	CC, ES
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	16,400.00	6,910.38	3,355.86	3,256.16	33.660	SF
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	16,883.47	7,055.00	3,320.03	3,098.56	14.991	CC
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	16,900.00	7,055.00	3,320.07	3,098.48	14.983	ES
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,200.00	7,055.00	3,335.08	3,111.45	14.913	SF
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	13,067.98	7,051.59	5,257.96	5,181.90	69.124	CC
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	13,100.00	7,051.97	5,258.06	5,181.76	68.916	ES
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	7,069.62	5,505.39	5,419.54	64.125	SF
Y Section 18						
ADA Harkins Unit A1 (PA) - Wellbore #1 - Gyro Surveys	13,973.04	7,077.64	1,690.77	1,608.07	20.445	CC, ES
ADA Harkins Unit A1 (PA) - Wellbore #1 - Gyro Surveys	14,100.00	7,077.93	1,695.53	1,612.02	20.305	SF
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surveys	16,442.30	7,146.31	1,866.45	1,764.73	18.349	CC, ES
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surveys	16,600.00	7,145.20	1,873.10	1,770.43	18.243	SF
HSR Harkis 15-18 (PR) - Wellbore #1 - No Surveys	16,633.43	7,093.00	760.32	540.05	3.452	CC, ES, SF
Lyle V Cooksey Gas Unit 1 (PR) - Wellbore #1 - Gyro Surveys	14,363.03	7,062.61	1,163.45	1,077.88	13.596	CC, ES
Lyle V Cooksey Gas Unit 1 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	7,061.76	1,164.04	1,078.21	13.562	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 4915.00ft

Offset Depths are relative to Offset Datum

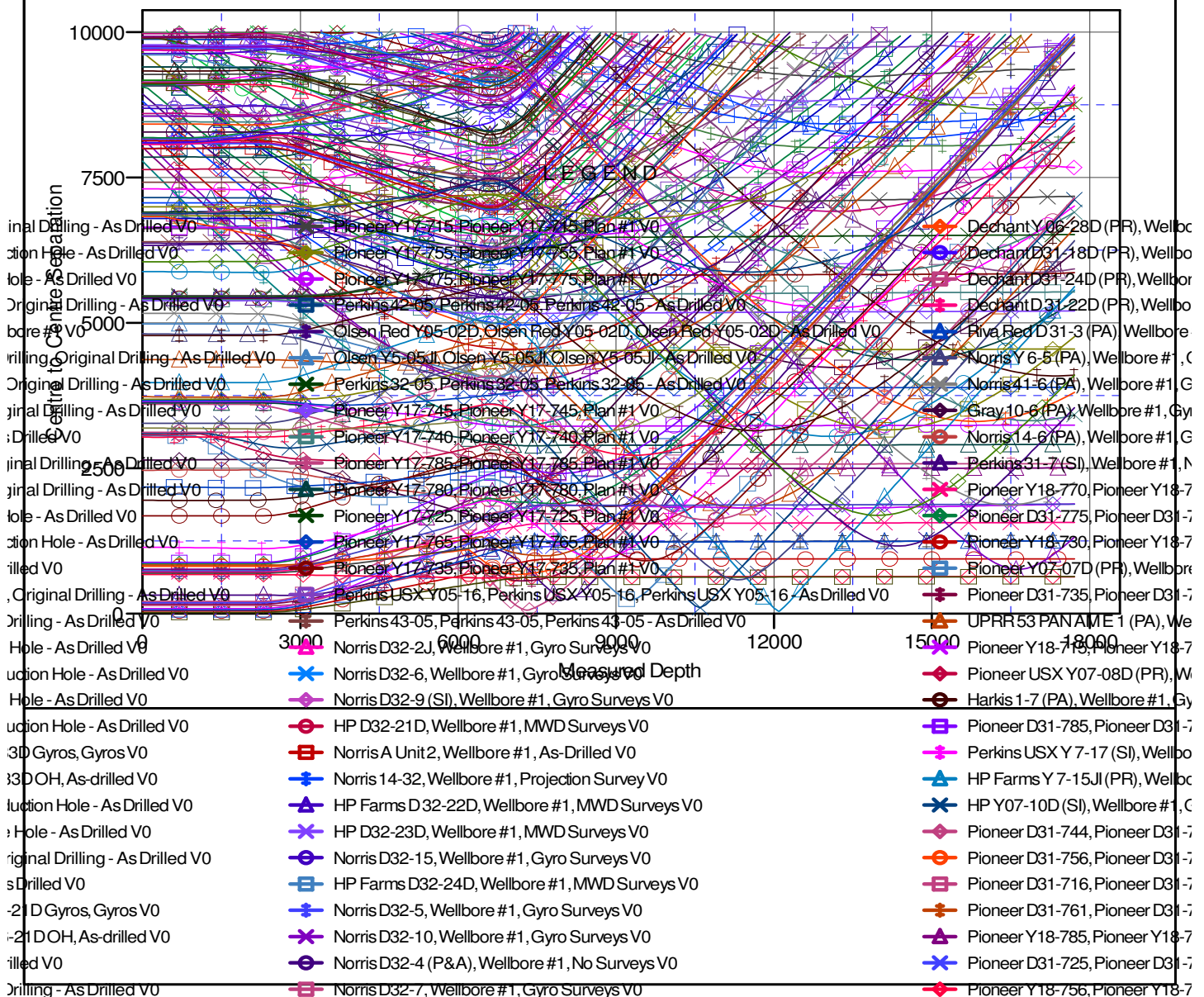
Central Meridian is -105.5000000

Coordinates are relative to: Pioneer Y18-744

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°

Ladder Plot



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

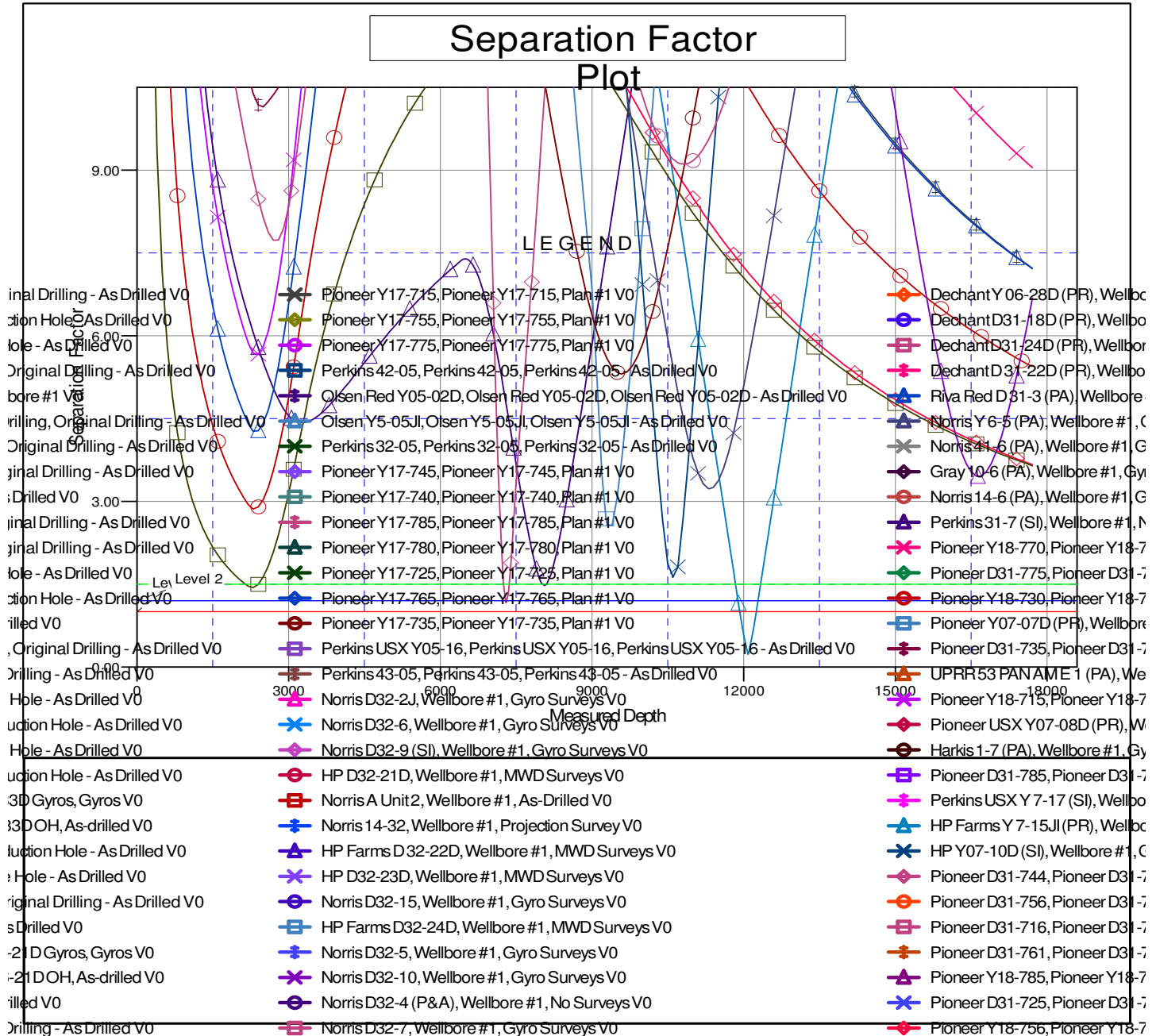
Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-744
Project:	Mustang	TVD Reference:	KB @ 4915.00ft
Reference Site:	Y Section 07	MD Reference:	KB @ 4915.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-744	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-744	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 4915.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Pioneer Y18-744
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.59°



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