

Project: Mustang
 Site: Y Section 07
 Well: Pioneer Y18-715
 Wellbore: Pioneer Y18-715
 Design: Plan #1

Northern Region - DJ Basin

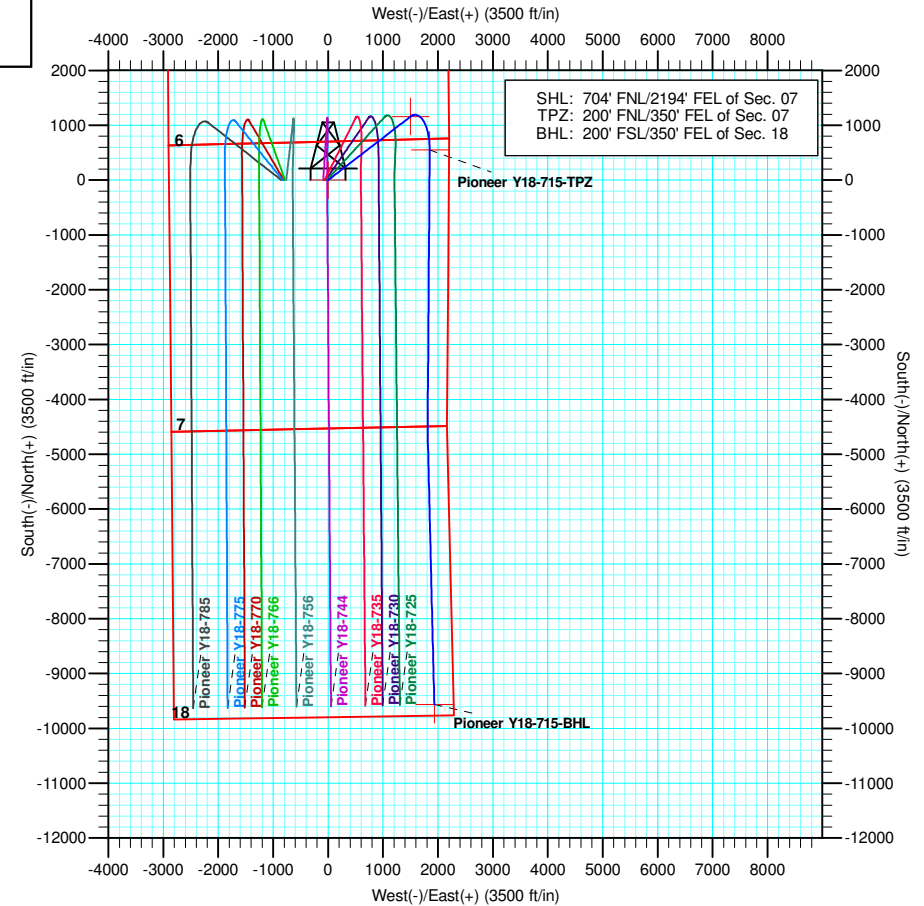
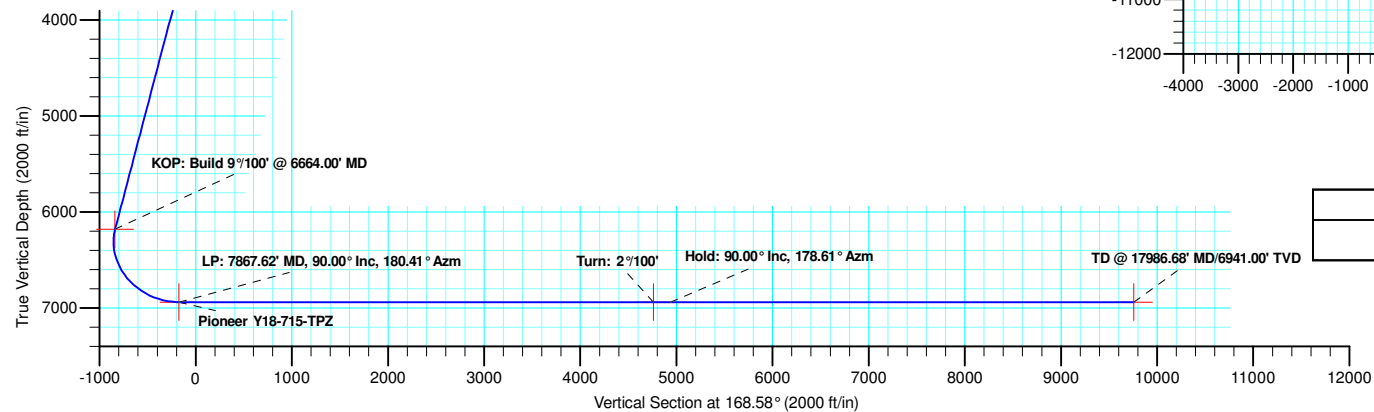
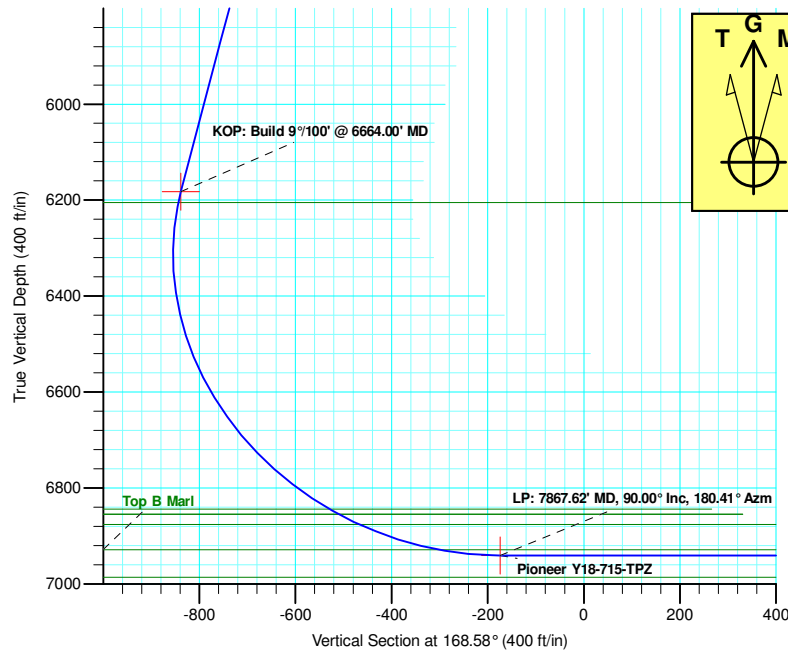
Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level

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	3732.13	30.64	52.32	3660.13	244.50	316.61	2.00	52.32	-176.97	
4	6664.00	30.64	52.32	6182.60	1157.83	1499.33	0.00	0.00	-838.03	
5	7867.62	90.00	180.41	6941.00	550.97	1848.58	9.00	123.99	-174.03	Pioneer Y18-715-TPZ
6	12911.62	90.00	180.41	6941.00	-4492.91	1812.32	0.00	0.00	4762.80	Pioneer Y18-715-Target
7	13091.69	90.00	178.61	6941.00	-4672.96	1813.86	1.00	-90.00	4939.59	
8	17986.68	90.00	178.61	6941.00	-9566.51	1932.50	0.00	0.00	9759.75	Pioneer Y18-715-BHL

WELL DETAILS: Pioneer Y18-715

+N/-S	+E/-W	Northing	Ground Level: Easting	4882.00 Latitude	Longitude	Slot
0.00	0.00	1301717.86	3253630.10	40.1580480	-104.5925560	



Plan: Plan #1 (Pioneer Y18-715/Pioneer Y18-715)

Created By: Shelly C. Peterkin Date: 7:28, September 27 2018

Northern Region - DJ Basin

Mustang

Y Section 07

Pioneer Y18-715

Pioneer Y18-715

Plan: Plan #1

Standard Planning Report

26 September, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-715
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4912.00ft
Project:	Mustang	MD Reference:	Well @ 4912.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-715		
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 Y18-715					
Well Position	+N/-S	-46.81 ft	Northing:	1,301,717.86 usft	Latitude:	40.1580480
	+E/-W	2,271.29 ft	Easting:	3,253,630.10 usft	Longitude:	-104.5925560
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,882.00 ft

Wellbore	Pioneer Y18-715				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/29/2018	7.97	66.66	52,147.16583546

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	168.58

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	
3,732.13	30.64	52.32	3,660.13	244.50	316.61	2.00	2.00	0.00	52.32	
6,664.00	30.64	52.32	6,182.61	1,157.83	1,499.33	0.00	0.00	0.00	0.00	
7,867.62	90.00	180.41	6,941.00	550.97	1,848.58	9.00	4.93	10.64	123.99	Pioneer Y18-715-TI
12,911.62	90.00	180.41	6,941.00	-4,492.91	1,812.32	0.00	0.00	0.00	0.00	Pioneer Y18-715-Ti
13,091.69	90.00	178.61	6,941.00	-4,672.96	1,813.86	1.00	0.00	-1.00	-90.00	
17,986.68	90.00	178.61	6,941.00	-9,566.51	1,932.50	0.00	0.00	0.00	0.00	Pioneer Y18-715-BI

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-715
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4912.00ft
Project:	Mustang	MD Reference:	Well @ 4912.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-715		
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
693.00	0.00	0.00	693.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills - Pierre									
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
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
1,041.00	0.00	0.00	1,041.00	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
1,850.00	0.00	0.00	1,850.00	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	52.32	2,299.98	1.07	1.38	-0.77	2.00	2.00	0.00
2,400.00	4.00	52.32	2,399.84	4.27	5.52	-3.09	2.00	2.00	0.00
2,500.00	6.00	52.32	2,499.45	9.59	12.42	-6.94	2.00	2.00	0.00
2,600.00	8.00	52.32	2,598.70	17.04	22.07	-12.33	2.00	2.00	0.00
2,700.00	10.00	52.32	2,697.47	26.60	34.45	-19.25	2.00	2.00	0.00
2,800.00	12.00	52.32	2,795.62	38.26	49.55	-27.69	2.00	2.00	0.00
2,900.00	14.00	52.32	2,893.06	52.01	67.35	-37.65	2.00	2.00	0.00
3,000.00	16.00	52.32	2,989.64	67.83	87.84	-49.09	2.00	2.00	0.00
3,100.00	18.00	52.32	3,085.27	85.70	110.97	-62.03	2.00	2.00	0.00
3,200.00	20.00	52.32	3,179.82	105.60	136.74	-76.43	2.00	2.00	0.00
3,300.00	22.00	52.32	3,273.17	127.50	165.10	-92.28	2.00	2.00	0.00
3,400.00	24.00	52.32	3,365.21	151.38	196.03	-109.57	2.00	2.00	0.00
3,500.00	26.00	52.32	3,455.84	177.21	229.47	-128.26	2.00	2.00	0.00
3,600.00	28.00	52.32	3,544.94	204.96	265.41	-148.35	2.00	2.00	0.00
3,700.00	30.00	52.32	3,632.39	234.59	303.77	-169.79	2.00	2.00	0.00
3,732.13	30.64	52.32	3,660.13	244.50	316.61	-176.97	2.00	2.00	0.00
Hold: 30.64° Inc, 52.32° Azm									
3,800.00	30.64	52.32	3,718.52	265.64	343.99	-192.27	0.00	0.00	0.00
3,900.00	30.64	52.32	3,804.56	296.79	384.33	-214.82	0.00	0.00	0.00
4,000.00	30.64	52.32	3,890.59	327.95	424.67	-237.37	0.00	0.00	0.00
4,044.64	30.64	52.32	3,929.00	341.85	442.68	-247.43	0.00	0.00	0.00
Parkman									
4,100.00	30.64	52.32	3,976.63	359.10	465.01	-259.91	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4912.00ft
Project:	Mustang	MD Reference:	Well @ 4912.00ft
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Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-715		
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	30.64	52.32	4,062.67	390.25	505.35	-282.46	0.00	0.00	0.00
4,300.00	30.64	52.32	4,148.70	421.40	545.69	-305.01	0.00	0.00	0.00
4,400.00	30.64	52.32	4,234.74	452.55	586.03	-327.56	0.00	0.00	0.00
4,500.00	30.64	52.32	4,320.78	483.71	626.37	-350.10	0.00	0.00	0.00
4,600.00	30.64	52.32	4,406.81	514.86	666.71	-372.65	0.00	0.00	0.00
4,700.00	30.64	52.32	4,492.85	546.01	707.05	-395.20	0.00	0.00	0.00
4,703.66	30.64	52.32	4,496.00	547.15	708.53	-396.02	0.00	0.00	0.00
Sussex									
4,800.00	30.64	52.32	4,578.89	577.16	747.39	-417.75	0.00	0.00	0.00
4,900.00	30.64	52.32	4,664.92	608.31	787.73	-440.29	0.00	0.00	0.00
5,000.00	30.64	52.32	4,750.96	639.47	828.07	-462.84	0.00	0.00	0.00
5,100.00	30.64	52.32	4,836.99	670.62	868.41	-485.39	0.00	0.00	0.00
5,200.00	30.64	52.32	4,923.03	701.77	908.75	-507.94	0.00	0.00	0.00
5,300.00	30.64	52.32	5,009.07	732.92	949.09	-530.48	0.00	0.00	0.00
5,400.00	30.64	52.32	5,095.10	764.07	989.43	-553.03	0.00	0.00	0.00
5,500.00	30.64	52.32	5,181.14	795.22	1,029.77	-575.58	0.00	0.00	0.00
5,600.00	30.64	52.32	5,267.18	826.38	1,070.11	-598.13	0.00	0.00	0.00
5,611.42	30.64	52.32	5,277.00	829.93	1,074.72	-600.70	0.00	0.00	0.00
Shannon									
5,700.00	30.64	52.32	5,353.21	857.53	1,110.45	-620.67	0.00	0.00	0.00
5,800.00	30.64	52.32	5,439.25	888.68	1,150.79	-643.22	0.00	0.00	0.00
5,900.00	30.64	52.32	5,525.29	919.83	1,191.13	-665.77	0.00	0.00	0.00
6,000.00	30.64	52.32	5,611.32	950.98	1,231.47	-688.32	0.00	0.00	0.00
6,100.00	30.64	52.32	5,697.36	982.14	1,271.81	-710.86	0.00	0.00	0.00
6,200.00	30.64	52.32	5,783.39	1,013.29	1,312.15	-733.41	0.00	0.00	0.00
6,300.00	30.64	52.32	5,869.43	1,044.44	1,352.49	-755.96	0.00	0.00	0.00
6,400.00	30.64	52.32	5,955.47	1,075.59	1,392.83	-778.51	0.00	0.00	0.00
6,500.00	30.64	52.32	6,041.50	1,106.74	1,433.17	-801.05	0.00	0.00	0.00
6,600.00	30.64	52.32	6,127.54	1,137.90	1,473.51	-823.60	0.00	0.00	0.00
6,664.00	30.64	52.32	6,182.61	1,157.83	1,499.33	-838.03	0.00	0.00	0.00
KOP: Build 9°/100' @ 6664.00' MD									
6,689.87	29.40	56.26	6,205.00	1,165.39	1,509.82	-843.36	9.00	-4.81	15.21
Teepee Buttes									
6,700.00	28.94	57.88	6,213.85	1,168.07	1,513.97	-845.17	9.00	-4.48	16.01
6,750.00	27.01	66.55	6,258.02	1,179.03	1,534.64	-851.82	9.00	-3.86	17.35
6,800.00	25.68	76.25	6,302.85	1,186.13	1,555.60	-854.62	9.00	-2.66	19.39
6,850.00	25.04	86.66	6,348.05	1,189.32	1,576.70	-853.57	9.00	-1.27	20.82
6,900.00	25.16	97.28	6,393.35	1,188.59	1,597.81	-848.68	9.00	0.22	21.23
6,950.00	26.01	107.53	6,438.47	1,183.94	1,618.82	-839.96	9.00	1.70	20.49
7,000.00	27.53	116.95	6,483.14	1,175.40	1,639.58	-827.47	9.00	3.04	18.83
7,050.00	29.61	125.29	6,527.06	1,163.02	1,659.97	-811.30	9.00	4.17	16.70
7,100.00	32.16	132.54	6,569.98	1,146.88	1,679.87	-791.54	9.00	5.08	14.49
7,150.00	35.05	138.76	6,611.64	1,127.07	1,699.15	-768.31	9.00	5.80	12.45
7,200.00	38.23	144.12	6,651.76	1,103.73	1,717.69	-741.76	9.00	6.35	10.71
7,250.00	41.61	148.74	6,690.11	1,076.99	1,735.38	-712.05	9.00	6.77	9.26
7,300.00	45.15	152.78	6,726.45	1,047.02	1,752.11	-679.36	9.00	7.09	8.08
7,350.00	48.83	156.34	6,760.56	1,014.01	1,767.77	-643.90	9.00	7.34	7.12
7,400.00	52.59	159.52	6,792.22	978.15	1,782.28	-605.88	9.00	7.54	6.36
7,450.00	56.44	162.39	6,821.24	939.67	1,795.53	-565.53	9.00	7.69	5.74
7,493.09	59.80	164.67	6,844.00	904.58	1,805.89	-529.09	9.00	7.81	5.28
Sharon Springs									
7,500.00	60.35	165.02	6,847.45	898.80	1,807.46	-523.11	9.00	7.86	5.06
7,515.56	61.57	165.79	6,855.00	885.63	1,810.89	-509.53	9.00	7.88	4.98

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-715
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4912.00ft
Project:	Mustang	MD Reference:	Well @ 4912.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-715		
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)
Top A Chalk - Top A Marl									
7,550.00	64.30	167.45	6,870.67	855.80	1,817.98	-478.89	9.00	7.92	4.80
7,562.52	65.30	168.03	6,876.00	844.73	1,820.38	-467.56	9.00	7.96	4.65
Top B Chalk									
7,600.00	68.29	169.71	6,890.77	810.94	1,827.03	-433.12	9.00	7.99	4.50
7,650.00	72.31	171.86	6,907.62	764.48	1,834.55	-386.09	9.00	8.04	4.29
7,700.00	76.36	173.91	6,921.12	716.72	1,840.50	-338.10	9.00	8.09	4.10
7,737.55	79.40	175.41	6,929.00	680.17	1,843.91	-301.60	9.00	8.12	3.98
Top B Marl									
7,750.00	80.42	175.90	6,931.18	667.95	1,844.84	-289.43	9.00	8.13	3.92
7,800.00	84.49	177.83	6,937.75	618.47	1,847.55	-240.40	9.00	8.14	3.87
7,850.00	88.56	179.74	6,940.78	568.59	1,848.60	-191.29	9.00	8.15	3.82
7,867.62	90.00	180.41	6,941.00	550.97	1,848.58	-174.03	9.00	8.16	3.80
LP: 7867.62' MD, 90.00° Inc, 180.41° Azm									
7,900.00	90.00	180.41	6,941.00	518.59	1,848.35	-142.33	0.00	0.00	0.00
8,000.00	90.00	180.41	6,941.00	418.59	1,847.63	-44.46	0.00	0.00	0.00
8,100.00	90.00	180.41	6,941.00	318.59	1,846.91	53.42	0.00	0.00	0.00
8,200.00	90.00	180.41	6,941.00	218.60	1,846.19	151.29	0.00	0.00	0.00
8,300.00	90.00	180.41	6,941.00	118.60	1,845.47	249.17	0.00	0.00	0.00
8,400.00	90.00	180.41	6,941.00	18.60	1,844.75	347.04	0.00	0.00	0.00
8,500.00	90.00	180.41	6,941.00	-81.40	1,844.03	444.92	0.00	0.00	0.00
8,600.00	90.00	180.41	6,941.00	-181.39	1,843.32	542.79	0.00	0.00	0.00
8,700.00	90.00	180.41	6,941.00	-281.39	1,842.60	640.67	0.00	0.00	0.00
8,800.00	90.00	180.41	6,941.00	-381.39	1,841.88	738.54	0.00	0.00	0.00
8,900.00	90.00	180.41	6,941.00	-481.39	1,841.16	836.42	0.00	0.00	0.00
9,000.00	90.00	180.41	6,941.00	-581.38	1,840.44	934.29	0.00	0.00	0.00
9,100.00	90.00	180.41	6,941.00	-681.38	1,839.72	1,032.17	0.00	0.00	0.00
9,200.00	90.00	180.41	6,941.00	-781.38	1,839.00	1,130.04	0.00	0.00	0.00
9,300.00	90.00	180.41	6,941.00	-881.38	1,838.28	1,227.92	0.00	0.00	0.00
9,400.00	90.00	180.41	6,941.00	-981.37	1,837.57	1,325.79	0.00	0.00	0.00
9,500.00	90.00	180.41	6,941.00	-1,081.37	1,836.85	1,423.67	0.00	0.00	0.00
9,600.00	90.00	180.41	6,941.00	-1,181.37	1,836.13	1,521.54	0.00	0.00	0.00
9,700.00	90.00	180.41	6,941.00	-1,281.36	1,835.41	1,619.42	0.00	0.00	0.00
9,800.00	90.00	180.41	6,941.00	-1,381.36	1,834.69	1,717.29	0.00	0.00	0.00
9,900.00	90.00	180.41	6,941.00	-1,481.36	1,833.97	1,815.17	0.00	0.00	0.00
10,000.00	90.00	180.41	6,941.00	-1,581.36	1,833.25	1,913.04	0.00	0.00	0.00
10,100.00	90.00	180.41	6,941.00	-1,681.35	1,832.53	2,010.92	0.00	0.00	0.00
10,200.00	90.00	180.41	6,941.00	-1,781.35	1,831.81	2,108.79	0.00	0.00	0.00
10,300.00	90.00	180.41	6,941.00	-1,881.35	1,831.10	2,206.67	0.00	0.00	0.00
10,400.00	90.00	180.41	6,941.00	-1,981.35	1,830.38	2,304.55	0.00	0.00	0.00
10,500.00	90.00	180.41	6,941.00	-2,081.34	1,829.66	2,402.42	0.00	0.00	0.00
10,600.00	90.00	180.41	6,941.00	-2,181.34	1,828.94	2,500.30	0.00	0.00	0.00
10,700.00	90.00	180.41	6,941.00	-2,281.34	1,828.22	2,598.17	0.00	0.00	0.00
10,800.00	90.00	180.41	6,941.00	-2,381.34	1,827.50	2,696.05	0.00	0.00	0.00
10,900.00	90.00	180.41	6,941.00	-2,481.33	1,826.78	2,793.92	0.00	0.00	0.00
11,000.00	90.00	180.41	6,941.00	-2,581.33	1,826.06	2,891.80	0.00	0.00	0.00
11,100.00	90.00	180.41	6,941.00	-2,681.33	1,825.35	2,989.67	0.00	0.00	0.00
11,200.00	90.00	180.41	6,941.00	-2,781.33	1,824.63	3,087.55	0.00	0.00	0.00
11,300.00	90.00	180.41	6,941.00	-2,881.32	1,823.91	3,185.42	0.00	0.00	0.00
11,400.00	90.00	180.41	6,941.00	-2,981.32	1,823.19	3,283.30	0.00	0.00	0.00
11,500.00	90.00	180.41	6,941.00	-3,081.32	1,822.47	3,381.17	0.00	0.00	0.00
11,600.00	90.00	180.41	6,941.00	-3,181.32	1,821.75	3,479.05	0.00	0.00	0.00
11,700.00	90.00	180.41	6,941.00	-3,281.31	1,821.03	3,576.92	0.00	0.00	0.00

Noble Energy, Inc.
Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-715
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4912.00ft
Project:	Mustang	MD Reference:	Well @ 4912.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-715		
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)
11,800.00	90.00	180.41	6,941.00	-3,381.31	1,820.31	3,674.80	0.00	0.00	0.00
11,900.00	90.00	180.41	6,941.00	-3,481.31	1,819.60	3,772.67	0.00	0.00	0.00
12,000.00	90.00	180.41	6,941.00	-3,581.31	1,818.88	3,870.55	0.00	0.00	0.00
12,100.00	90.00	180.41	6,941.00	-3,681.30	1,818.16	3,968.42	0.00	0.00	0.00
12,200.00	90.00	180.41	6,941.00	-3,781.30	1,817.44	4,066.30	0.00	0.00	0.00
12,300.00	90.00	180.41	6,941.00	-3,881.30	1,816.72	4,164.17	0.00	0.00	0.00
12,400.00	90.00	180.41	6,941.00	-3,981.30	1,816.00	4,262.05	0.00	0.00	0.00
12,500.00	90.00	180.41	6,941.00	-4,081.29	1,815.28	4,359.92	0.00	0.00	0.00
12,600.00	90.00	180.41	6,941.00	-4,181.29	1,814.56	4,457.80	0.00	0.00	0.00
12,700.00	90.00	180.41	6,941.00	-4,281.29	1,813.85	4,555.67	0.00	0.00	0.00
12,800.00	90.00	180.41	6,941.00	-4,381.28	1,813.13	4,653.55	0.00	0.00	0.00
12,900.00	90.00	180.41	6,941.00	-4,481.28	1,812.41	4,751.43	0.00	0.00	0.00
12,911.62	90.00	180.41	6,941.00	-4,492.91	1,812.32	4,762.80	0.00	0.00	0.00
Turn: 2°/100'									
13,000.00	90.00	179.53	6,941.00	-4,581.28	1,812.37	4,849.44	1.00	0.00	-1.00
13,091.69	90.00	178.61	6,941.00	-4,672.96	1,813.86	4,939.59	1.00	0.00	-1.00
Hold: 90.00° Inc, 178.61° Azm									
13,100.00	90.00	178.61	6,941.00	-4,681.27	1,814.06	4,947.78	0.00	0.00	0.00
13,200.00	90.00	178.61	6,941.00	-4,781.24	1,816.48	5,046.25	0.00	0.00	0.00
13,300.00	90.00	178.61	6,941.00	-4,881.21	1,818.91	5,144.72	0.00	0.00	0.00
13,400.00	90.00	178.61	6,941.00	-4,981.18	1,821.33	5,243.19	0.00	0.00	0.00
13,500.00	90.00	178.61	6,941.00	-5,081.15	1,823.76	5,341.66	0.00	0.00	0.00
13,600.00	90.00	178.61	6,941.00	-5,181.12	1,826.18	5,440.13	0.00	0.00	0.00
13,700.00	90.00	178.61	6,941.00	-5,281.09	1,828.60	5,538.60	0.00	0.00	0.00
13,800.00	90.00	178.61	6,941.00	-5,381.06	1,831.03	5,637.07	0.00	0.00	0.00
13,900.00	90.00	178.61	6,941.00	-5,481.03	1,833.45	5,735.55	0.00	0.00	0.00
14,000.00	90.00	178.61	6,941.00	-5,581.00	1,835.87	5,834.02	0.00	0.00	0.00
14,100.00	90.00	178.61	6,941.00	-5,680.97	1,838.30	5,932.49	0.00	0.00	0.00
14,200.00	90.00	178.61	6,941.00	-5,780.94	1,840.72	6,030.96	0.00	0.00	0.00
14,300.00	90.00	178.61	6,941.00	-5,880.91	1,843.15	6,129.43	0.00	0.00	0.00
14,400.00	90.00	178.61	6,941.00	-5,980.88	1,845.57	6,227.90	0.00	0.00	0.00
14,500.00	90.00	178.61	6,941.00	-6,080.85	1,847.99	6,326.37	0.00	0.00	0.00
14,600.00	90.00	178.61	6,941.00	-6,180.82	1,850.42	6,424.84	0.00	0.00	0.00
14,700.00	90.00	178.61	6,941.00	-6,280.80	1,852.84	6,523.32	0.00	0.00	0.00
14,800.00	90.00	178.61	6,941.00	-6,380.77	1,855.26	6,621.79	0.00	0.00	0.00
14,900.00	90.00	178.61	6,941.00	-6,480.74	1,857.69	6,720.26	0.00	0.00	0.00
15,000.00	90.00	178.61	6,941.00	-6,580.71	1,860.11	6,818.73	0.00	0.00	0.00
15,100.00	90.00	178.61	6,941.00	-6,680.68	1,862.54	6,917.20	0.00	0.00	0.00
15,200.00	90.00	178.61	6,941.00	-6,780.65	1,864.96	7,015.67	0.00	0.00	0.00
15,300.00	90.00	178.61	6,941.00	-6,880.62	1,867.38	7,114.14	0.00	0.00	0.00
15,400.00	90.00	178.61	6,941.00	-6,980.59	1,869.81	7,212.61	0.00	0.00	0.00
15,500.00	90.00	178.61	6,941.00	-7,080.56	1,872.23	7,311.08	0.00	0.00	0.00
15,600.00	90.00	178.61	6,941.00	-7,180.53	1,874.65	7,409.56	0.00	0.00	0.00
15,700.00	90.00	178.61	6,941.00	-7,280.50	1,877.08	7,508.03	0.00	0.00	0.00
15,800.00	90.00	178.61	6,941.00	-7,380.47	1,879.50	7,606.50	0.00	0.00	0.00
15,900.00	90.00	178.61	6,941.00	-7,480.44	1,881.93	7,704.97	0.00	0.00	0.00
16,000.00	90.00	178.61	6,941.00	-7,580.41	1,884.35	7,803.44	0.00	0.00	0.00
16,100.00	90.00	178.61	6,941.00	-7,680.38	1,886.77	7,901.91	0.00	0.00	0.00
16,200.00	90.00	178.61	6,941.00	-7,780.36	1,889.20	8,000.38	0.00	0.00	0.00
16,300.00	90.00	178.61	6,941.00	-7,880.33	1,891.62	8,098.85	0.00	0.00	0.00
16,400.00	90.00	178.61	6,941.00	-7,980.30	1,894.04	8,197.33	0.00	0.00	0.00
16,500.00	90.00	178.61	6,941.00	-8,080.27	1,896.47	8,295.80	0.00	0.00	0.00
16,600.00	90.00	178.61	6,941.00	-8,180.24	1,898.89	8,394.27	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-715
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4912.00ft
Project:	Mustang	MD Reference:	Well @ 4912.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-715		
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)
16,700.00	90.00	178.61	6,941.00	-8,280.21	1,901.32	8,492.74	0.00	0.00	0.00
16,800.00	90.00	178.61	6,941.00	-8,380.18	1,903.74	8,591.21	0.00	0.00	0.00
16,900.00	90.00	178.61	6,941.00	-8,480.15	1,906.16	8,689.68	0.00	0.00	0.00
17,000.00	90.00	178.61	6,941.00	-8,580.12	1,908.59	8,788.15	0.00	0.00	0.00
17,100.00	90.00	178.61	6,941.00	-8,680.09	1,911.01	8,886.62	0.00	0.00	0.00
17,200.00	90.00	178.61	6,941.00	-8,780.06	1,913.43	8,985.09	0.00	0.00	0.00
17,300.00	90.00	178.61	6,941.00	-8,880.03	1,915.86	9,083.57	0.00	0.00	0.00
17,400.00	90.00	178.61	6,941.00	-8,980.00	1,918.28	9,182.04	0.00	0.00	0.00
17,500.00	90.00	178.61	6,941.00	-9,079.97	1,920.70	9,280.51	0.00	0.00	0.00
17,600.00	90.00	178.61	6,941.00	-9,179.94	1,923.13	9,378.98	0.00	0.00	0.00
17,700.00	90.00	178.61	6,941.00	-9,279.91	1,925.55	9,477.45	0.00	0.00	0.00
17,800.00	90.00	178.61	6,941.00	-9,379.89	1,927.98	9,575.92	0.00	0.00	0.00
17,900.00	90.00	178.61	6,941.00	-9,479.86	1,930.40	9,674.39	0.00	0.00	0.00
17,986.68	90.00	178.61	6,941.00	-9,566.51	1,932.50	9,759.75	0.00	0.00	0.00
TD @ 17986.68' MD/6941.00' 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 Y18-715-SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,301,717.86	3,253,630.10	40.1580480	-104.5925560
Pioneer Y18-715-KOF - plan hits target center - Point	0.00	0.00	6,182.60	1,157.83	1,499.33	1,302,875.69	3,255,129.42	40.1611840	-104.5871494
Pioneer Y18-715-TPZ - plan hits target center - Point	0.00	0.00	6,941.00	550.97	1,848.58	1,302,268.83	3,255,478.68	40.1595083	-104.5859222
Pioneer Y18-715-BHL - plan hits target center - Point	0.00	0.00	6,941.00	-9,566.51	1,932.50	1,292,151.37	3,255,562.60	40.1317336	-104.5859951
Pioneer Y18-715-Tarç - plan hits target center - Point	0.00	0.00	6,941.00	-4,492.91	1,812.32	1,297,224.96	3,255,442.42	40.1456640	-104.5862379

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Pioneer Y18-715
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4912.00ft
Project:	Mustang	MD Reference:	Well @ 4912.00ft
Site:	Y Section 07	North Reference:	Grid
Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pioneer Y18-715		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
693.00	693.00	Fox Hills				
693.00	693.00	Pierre				
1,041.00	1,041.00	Upper Pierre Aquifer Top				
1,850.00	1,850.00	Upper Pierre Aquifer Base				
4,044.64	3,929.00	Parkman				
4,703.66	4,496.00	Sussex				
5,611.42	5,277.00	Shannon				
6,689.87	6,205.00	Teepee Buttes				
7,493.09	6,844.00	Sharon Springs				
7,515.56	6,855.00	Top A Chalk				
7,515.56	6,855.00	Top A Marl				
7,562.52	6,876.00	Top B Chalk				
7,737.55	6,929.00	Top B 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'	
3,732.13	3,660.13	244.50	316.61	Hold: 30.64° Inc, 52.32° Azm	
6,664.00	6,182.61	1,157.83	1,499.33	KOP: Build 9°/100' @ 6664.00' MD	
7,867.62	6,941.00	550.97	1,848.58	LP: 7867.62' MD, 90.00° Inc, 180.41° Azm	
12,911.62	6,941.00	-4,492.91	1,812.32	Turn: 2°/100'	
13,091.69	6,941.00	-4,672.96	1,813.86	Hold: 90.00° Inc, 178.61° Azm	
17,986.68	6,941.00	-9,566.51	1,932.50	TD @ 17986.68' MD/6941.00' TVD	

Northern Region - DJ Basin

Mustang

Y Section 07

Pioneer Y18-715

Pioneer Y18-715

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 Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	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	17,986.26	Plan #1 (Pioneer Y18-715)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis	

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 30						
Adams D30-27D - Adams D30-27D - Adams D30-27D - /						Out of range
Adams D30-29D - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Adams D30-30D - Adams D30-30D Gyros - Gyros						Out of range
Adams D30-30D - Adams D30-30D OH - As Drilled						Out of range
Adams D30-31D - Adams D30-31D Gyros - Gyros						Out of range
Adams D30-31D - Adams D30-31D OH - As-drilled						Out of range
Corbin D30-23D - Corbin D30-23D - Corbin D30-23D - A						Out of range
Corbin Red D30-04J - Corbin Red D30-04J - Corbin Red						Out of range
Corbin Red D30-09 - Corbin Red D30-09 - Corbin Red D						Out of range
Corbin Red D30-15 - Corbin Red D30-15 - Corbin Red D						Out of range
Corbin Red D30-16 - Corbin Red D30-16 - Corbin Red D						Out of range
Dechant D30-17D - Dechant D30-17D - Dechant D30-17						Out of range
Dechant D30-20D - Dechant D30-20D - Dechant D30-20						Out of range
Dechant D30-24D - Dechant D30-24D - Dechant D30-24						Out of range
Dechant D30-25D - Dechant D30-25D - Dechant D30-25						Out of range
Dechant D31-27D - Dechant D31-27D - Dechant D31-27						Out of range
Dechant D31-28D - Dechant D31-28D - Dechant D31-28						Out of range
Dechant D31-29D - Dechant D31-29D - Dechant D31-29						Out of range
Dechant D31-77HN - Original Drilling - Original Drilling - /	6,786.49	11,360.01	6,174.97	6,090.56	73.158	CC, ES
Dechant D31-77HN - Original Drilling - Original Drilling - /	7,050.00	11,360.01	6,226.50	6,140.02	72.001	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 Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	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 Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 31						
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	6,700.48	6,055.62	6,692.97	6,644.67	138.579	CC, ES
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	7,350.00	7,350.00	6,960.62	6,905.81	126.994	SF
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	6,830.28	6,300.00	7,538.64	7,486.07	143.411	CC, ES
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	7,250.00	6,851.32	7,668.96	7,613.58	138.481	SF
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	101.02	0.00	8,101.85	8,101.72	10,000.000	CC
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	400.00	256.45	8,102.85	8,100.95	4,255.158	ES
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	5,600.00	5,600.00	8,352.26	8,307.18	185.292	SF
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	6,771.90	6,141.79	6,505.98	6,455.69	129.372	CC, ES
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	7,600.00	7,600.00	6,944.87	6,888.18	122.505	SF
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	100.00	0.00	9,141.71	9,141.59	10,000.000	CC
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	200.00	61.59	9,141.94	9,141.34	10,000.000	ES
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	7,300.00	6,652.80	9,877.32	9,824.15	185.800	SF
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	6,795.05	6,795.05	7,793.95	7,741.68	149.115	CC
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	6,800.00	6,800.00	7,793.97	7,741.66	149.003	ES
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	7,300.00	6,835.87	7,977.97	7,924.11	148.124	SF
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	6,725.90	6,191.79	8,637.58	8,599.02	224.052	CC, ES
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	7,150.00	7,150.00	8,759.56	8,717.58	208.623	SF
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	6,825.04	6,355.26	4,931.73	4,880.36	96.006	CC, ES
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	7,250.00	6,789.40	5,068.83	5,014.76	93.751	SF
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	6,772.82	6,407.37	5,189.56	5,136.54	97.872	CC, ES
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	7,200.00	6,815.45	5,321.70	5,265.77	95.150	SF
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	6,808.75	6,300.00	5,908.82	5,859.40	119.565	CC, ES
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	7,200.00	6,572.78	6,026.26	5,974.43	116.286	SF
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	6,841.82	6,186.39	5,525.45	5,476.51	112.906	CC
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	6,850.00	6,192.84	5,525.51	5,476.51	112.763	ES
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	7,200.00	6,542.16	5,624.19	5,572.72	109.281	SF
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	6,858.07	6,322.19	6,785.60	6,736.27	137.547	CC, ES
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	7,300.00	6,722.34	6,933.04	6,880.88	132.907	SF
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	6,815.35	6,160.07	6,534.09	6,485.15	133.529	CC, ES
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	7,350.00	7,057.92	6,733.86	6,680.18	125.454	SF
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	6,766.33	6,089.75	7,325.06	7,275.90	148.983	CC, ES
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	7,300.00	6,543.58	7,527.84	7,474.70	141.659	SF
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	6,701.01	6,000.00	7,882.12	7,833.97	163.702	CC, ES
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	7,050.00	7,050.00	7,967.06	7,913.83	149.662	SF
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	6,807.11	6,204.26	7,108.74	6,957.09	46.876	CC, ES
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	7,300.00	6,621.45	7,288.30	7,126.69	45.100	SF
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	6,767.96	6,296.52	9,317.44	9,268.04	188.627	CC, ES
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	7,300.00	6,796.58	9,514.03	9,461.19	180.073	SF
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys						Out of range
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	6,780.04	6,180.89	8,342.16	8,190.97	55.178	CC
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	6,800.00	6,198.85	8,342.46	8,190.82	55.014	ES
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	7,350.00	6,656.56	8,572.48	8,410.03	52.770	SF
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	6,789.13	6,342.44	8,605.69	8,556.15	173.736	CC
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	6,800.00	6,357.87	8,605.77	8,556.14	173.373	ES
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	7,050.00	7,050.00	8,654.86	8,601.84	163.218	SF
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	6,849.49	6,065.01	9,429.74	9,381.28	194.600	CC
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	6,850.00	6,065.33	9,429.74	9,381.28	194.586	ES
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	7,350.00	6,360.49	9,621.22	9,570.12	188.286	SF
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	6,827.33	6,276.55	8,286.52	8,237.24	168.140	CC
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	6,850.00	6,850.00	8,286.89	8,235.49	161.243	ES
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	7,350.00	6,834.84	8,489.88	8,437.10	160.835	SF
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	6,886.52	6,687.33	8,025.97	7,975.50	159.011	CC, ES
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	7,250.00	6,946.02	8,129.43	8,076.83	154.543	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 Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	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						
River Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	6,739.75	6,200.00	5,720.96	5,671.96	116.751	CC, ES
River Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	7,150.00	6,488.03	5,841.52	5,789.96	113.281	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	6,841.26	6,229.13	8,782.12	8,630.04	57.749	CC
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	6,850.00	6,237.05	8,782.18	8,629.90	57.674	ES
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	7,400.00	6,681.22	9,013.06	8,850.30	55.377	SF
D Section 32						
HP D32-21D - Wellbore #1 - MWD Surveys	6,991.35	6,710.70	8,217.22	8,163.48	152.913	CC
HP D32-21D - Wellbore #1 - MWD Surveys	7,000.00	6,720.23	8,217.27	8,163.48	152.748	ES
HP D32-21D - Wellbore #1 - MWD Surveys	7,400.00	7,044.52	8,339.39	8,283.63	149.561	SF
HP D32-23D - Wellbore #1 - MWD Surveys	7,031.98	6,411.14	7,825.48	7,773.19	149.652	CC, ES
HP D32-23D - Wellbore #1 - MWD Surveys	7,450.00	6,739.75	7,943.46	7,888.97	145.782	SF
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	6,842.34	4,050.00	8,709.77	8,665.67	197.471	CC, ES
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	7,350.00	4,402.69	8,873.84	8,826.24	186.444	SF
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	6,946.88	6,445.21	9,685.01	9,635.73	196.519	CC
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	6,950.00	6,449.11	9,685.02	9,635.71	196.415	ES
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	7,400.00	6,836.77	9,836.39	9,784.42	189.287	SF
HP Farms D32-18D - Wellbore #1 - MWD Surveys	6,963.47	6,571.19	9,382.88	9,323.33	157.561	CC, ES
HP Farms D32-18D - Wellbore #1 - MWD Surveys	7,150.00	7,150.00	9,409.50	9,347.68	152.192	SF
HP Farms D32-24D - Wellbore #1 - MWD Surveys	6,995.80	6,578.91	7,008.56	6,947.90	115.538	CC
HP Farms D32-24D - Wellbore #1 - MWD Surveys	7,000.00	6,583.06	7,008.58	6,947.89	115.486	ES
HP Farms D32-24D - Wellbore #1 - MWD Surveys	7,150.00	7,150.00	7,025.37	6,962.95	112.551	SF
Norris 14-32 - Wellbore #1 - Projection Survey	6,921.09	6,327.42	5,415.15	5,332.84	65.788	CC, ES
Norris 14-32 - Wellbore #1 - Projection Survey	7,300.00	6,641.45	5,525.54	5,439.21	64.005	SF
Norris A Unit 2 - Wellbore #1 - As-Drilled	6,938.56	6,317.92	6,271.60	6,222.68	128.201	CC, ES
Norris A Unit 2 - Wellbore #1 - As-Drilled	7,300.00	6,527.28	6,372.71	6,321.77	125.116	SF
Norris D32-1 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-10 - Wellbore #1 - Gyro Surveys	7,010.81	6,369.96	7,749.72	7,701.01	159.079	CC, ES
Norris D32-10 - Wellbore #1 - Gyro Surveys	7,400.00	6,546.95	7,858.72	7,808.14	155.384	SF
Norris D32-15 - Wellbore #1 - Gyro Surveys	7,007.26	6,000.00	6,644.29	6,596.75	139.775	CC, ES
Norris D32-15 - Wellbore #1 - Gyro Surveys	7,350.00	7,350.00	6,722.47	6,669.29	126.414	SF
Norris D32-1J - Wellbore #1 - Gyro Surveys	6,989.98	6,116.28	9,822.86	9,774.94	204.964	CC
Norris D32-1J - Wellbore #1 - Gyro Surveys	7,000.00	6,132.14	9,822.93	9,774.91	204.576	ES
Norris D32-1J - Wellbore #1 - Gyro Surveys	7,450.00	6,498.79	9,969.27	9,918.73	197.251	SF
Norris D32-2 - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-2J - Wellbore #1 - Gyro Surveys	6,899.61	5,944.70	9,193.29	9,145.51	192.395	CC
Norris D32-2J - Wellbore #1 - Gyro Surveys	6,900.00	5,944.86	9,193.29	9,145.51	192.385	ES
Norris D32-2J - Wellbore #1 - Gyro Surveys	7,500.00	7,500.00	9,455.83	9,401.15	172.949	SF
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	6,898.57	6,290.06	9,507.68	9,354.65	62.130	CC
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	6,900.00	6,291.35	9,507.68	9,354.62	62.117	ES
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	7,450.00	6,719.24	9,733.38	9,570.20	59.651	SF
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,898.60	6,200.00	8,178.07	8,129.37	167.924	CC
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,900.00	6,200.00	8,178.08	8,129.37	167.900	ES
Norris D32-5 - Wellbore #1 - Gyro Surveys	7,350.00	6,695.04	8,331.06	8,279.28	160.902	SF
Norris D32-6 - Wellbore #1 - Gyro Surveys	6,960.60	6,600.00	8,442.90	8,393.17	169.783	CC, ES
Norris D32-6 - Wellbore #1 - Gyro Surveys	7,350.00	6,757.65	8,560.19	8,508.58	165.865	SF
Norris D32-7 - Wellbore #1 - Gyro Surveys	7,026.94	7,000.00	8,969.17	8,918.57	177.260	CC, ES
Norris D32-7 - Wellbore #1 - Gyro Surveys	7,350.00	7,000.00	9,049.92	8,998.11	174.658	SF
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	7,059.79	6,400.00	8,560.93	8,512.24	175.827	CC, ES
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	7,500.00	6,710.80	8,687.57	8,636.66	170.652	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 Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
H Section 36						
Dechant 07-36 - Original Drilling - Original Drilling - As D						Out of range
Dechant 13N-1HZ - Production Hole - Production Hole -	3,775.03	11,468.00	8,556.69	8,461.37	89.767	CC
Dechant 13N-1HZ - Production Hole - Production Hole -	3,800.00	11,468.00	8,556.72	8,461.21	89.586	ES
Dechant 13N-1HZ - Production Hole - Production Hole -	6,800.00	11,468.00	9,076.90	8,961.96	78.969	SF
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	9,210.97	9,210.85	10,000.000	CC
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	200.00	51.82	9,211.35	9,210.78	10,000.000	ES
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	4,300.00	600.00	9,989.43	9,972.85	602.701	SF
Dechant 14C-1HZ - Production Hole - Production Hole -	4,385.67	11,731.00	7,510.37	7,438.51	104.508	CC
Dechant 14C-1HZ - Production Hole - Production Hole -	4,400.00	11,731.00	7,510.39	7,438.43	104.378	ES
Dechant 14C-1HZ - Production Hole - Production Hole -	6,850.00	11,731.00	7,906.08	7,820.92	92.840	SF
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	9,144.61	9,144.49	10,000.000	CC
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	700.00	608.68	9,147.68	9,143.44	2,160.411	ES
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	4,400.00	610.00	9,961.80	9,944.84	587.232	SF
Dechant 15-36 - Original Drilling - Original Drilling - As D	100.00	0.00	8,222.92	8,222.79	10,000.000	CC
Dechant 15-36 - Original Drilling - Original Drilling - As D	200.00	70.14	8,223.20	8,222.59	10,000.000	ES
Dechant 15-36 - Original Drilling - Original Drilling - As D	7,700.00	6,898.24	9,085.37	9,016.74	132.375	SF
Dechant 24-36 - Original Drilling - Original Drilling - As D	6,238.62	5,782.92	9,558.13	9,510.44	200.436	CC
Dechant 24-36 - Original Drilling - Original Drilling - As D	6,400.00	5,911.91	9,558.58	9,509.79	195.917	ES
Dechant 24-36 - Original Drilling - Original Drilling - As D	7,350.00	6,682.83	9,846.80	9,792.47	181.258	SF
Dechant 35N-E1HZ - Production Hole - Production Hole	4,129.97	11,619.00	7,623.66	7,524.84	77.143	CC
Dechant 35N-E1HZ - Production Hole - Production Hole	4,200.00	11,619.00	7,623.98	7,524.56	76.682	ES
Dechant 35N-E1HZ - Production Hole - Production Hole	6,700.00	11,619.00	8,045.30	7,928.59	68.931	SF
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	100.00	14.73	9,166.66	9,166.51	10,000.000	CC
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	700.00	612.00	9,167.46	9,163.22	2,162.086	ES
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	4,400.00	612.00	9,980.37	9,963.40	588.177	SF
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	3,991.61	11,494.00	8,069.05	7,972.24	83.348	CC
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	4,100.00	11,494.00	8,069.78	7,972.09	82.603	ES
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	6,750.00	11,494.00	8,528.03	8,412.71	73.946	SF
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	4,423.75	11,651.36	7,002.57	6,901.83	69.513	CC
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	4,500.00	11,651.36	7,002.99	6,901.55	69.037	ES
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	6,700.00	11,651.36	7,363.33	7,245.77	62.632	SF
Dechant 37N-E1HZ - Production Hole - Production Hole	5,088.87	11,723.00	5,298.18	5,194.16	50.935	CC
Dechant 37N-E1HZ - Production Hole - Production Hole	5,100.00	11,723.00	5,298.19	5,194.05	50.877	ES
Dechant 37N-E1HZ - Production Hole - Production Hole	6,664.00	11,723.00	5,527.36	5,410.07	47.124	SF
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	732.99	648.00	8,245.29	8,240.81	1,837.439	CC, ES
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	6,300.00	648.00	9,966.65	9,942.94	420.257	SF
Dechant 37N-W1HZ - Production Hole - Production Hole	4,926.48	12,384.00	5,851.34	5,744.39	54.710	CC
Dechant 37N-W1HZ - Production Hole - Production Hole	5,000.00	12,384.00	5,851.80	5,744.11	54.339	ES
Dechant 37N-W1HZ - Production Hole - Production Hole	6,664.00	12,384.00	6,103.86	5,983.07	50.533	SF
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	410.21	325.21	8,216.62	8,214.42	3,734.225	CC
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	800.00	655.00	8,217.15	8,212.40	1,731.130	ES
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As C	6,400.00	655.00	9,995.00	9,970.96	415.675	SF
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	4,984.40	16,665.00	6,327.97	6,204.62	51.301	CC
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	5,000.00	16,665.00	6,327.99	6,204.51	51.246	ES
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	6,664.00	16,665.00	6,547.08	6,411.86	48.418	SF
Dechant State 16C-1HZ - Original Drilling - Original Drilling	5,365.18	16,839.03	5,261.97	5,078.64	28.702	CC
Dechant State 16C-1HZ - Original Drilling - Original Drilling	5,400.00	16,839.03	5,262.09	5,078.21	28.617	ES
Dechant State 16C-1HZ - Original Drilling - Original Drilling	6,400.00	16,823.87	5,362.74	5,166.06	27.267	SF
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	4,660.87	16,517.00	6,674.38	6,553.80	55.353	CC
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	4,700.00	16,517.00	6,674.49	6,553.59	55.206	ES
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	5,900.00	16,367.79	6,785.99	6,657.72	52.907	SF
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,669.53	11,466.00	7,633.85	7,562.61	107.149	CC, ES
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	7,000.00	11,466.00	7,700.36	7,627.10	105.098	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 Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
H Section 36						
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,586.44	11,490.00	8,037.79	7,966.84	113.276	CC
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,664.00	11,490.00	8,038.17	7,966.70	112.466	ES
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	7,000.00	11,490.00	8,106.87	8,033.69	110.781	SF
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	5,475.71	16,675.00	4,654.67	4,527.77	36.678	CC
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	5,500.00	16,675.00	4,654.74	4,527.58	36.607	ES
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	6,300.00	16,675.09	4,727.10	4,592.89	35.223	SF
Dechant State H36-11D - Original Drilling - Original Drilling						Out of range
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						Out of range
Dechant State H36-21D - Dechant State H36-21D OH - /						Out of range
Dechant State H36-24 - Original Drilling - Original Drilling	4,986.78	5,492.01	9,259.04	9,216.32	216.692	CC
Dechant State H36-24 - Original Drilling - Original Drilling	5,000.00	5,492.01	9,259.05	9,216.27	216.405	ES
Dechant State H36-24 - Original Drilling - Original Drilling	7,200.00	6,798.01	9,579.28	9,523.43	171.495	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 -	216.45	129.45	9,969.67	9,968.85	10,000.000	CC
Dechant State H36-33 - Dechant State H36-33D Gyros -	300.00	167.52	9,969.86	9,968.61	7,952.618	ES
Dechant State H36-33 - Dechant State H36-33D Gyros -	1,500.00	949.60	9,999.98	9,991.65	1,201.005	SF
Dechant State H36-33 - Dechant State H36-33D OH - As	216.45	142.45	9,969.65	9,968.83	10,000.000	CC
Dechant State H36-33 - Dechant State H36-33D OH - As	300.00	180.52	9,969.84	9,968.59	7,951.931	ES
Dechant State H36-33 - Dechant State H36-33D OH - As	1,500.00	962.60	9,999.95	9,991.63	1,200.999	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	10.10	9,997.37	9,997.23	10,000.000	CC
Spike State GWS H36-13 - Original Drilling - Original Dri	700.00	548.98	9,998.52	9,994.50	2,486.436	ES
Spike State GWS H36-13 - Original Drilling - Original Dri	800.00	600.00	9,999.40	9,994.84	2,193.793	SF
Spike State GWS H36-14 - Original Drilling - Original Dri	100.00	15.60	8,799.61	8,799.45	10,000.000	CC
Spike State GWS H36-14 - Original Drilling - Original Dri	2,200.00	2,080.80	8,800.87	8,786.13	596.839	ES
Spike State GWS H36-14 - Original Drilling - Original Dri	7,200.00	6,477.54	9,403.02	9,352.07	184.566	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 -	1,374.85	1,288.86	9,937.99	9,928.96	1,100.363	CC
Spike State H36-11J - Original Drilling - Original Drilling -	2,200.00	2,047.79	9,941.97	9,927.34	679.640	ES
Spike State H36-11J - Original Drilling - Original Drilling -	3,700.00	3,675.64	9,998.87	9,973.14	388.601	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

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	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	7,006.51	6,395.88	4,450.02	4,401.23	91.199	CC, ES
Olsen Red Y05-02D - Olsen Red Y05-02D - Olsen Red Y05-02D	7,300.00	6,622.89	4,512.68	4,462.11	89.224	SF
Olsen Y5-05J1 - Olsen Y5-05J1 - Olsen Y5-05J1 - As Drille	6,969.89	6,374.31	3,121.58	3,083.60	82.194	CC, ES
Olsen Y5-05J1 - Olsen Y5-05J1 - Olsen Y5-05J1 - As Drille	7,200.00	6,569.76	3,162.49	3,123.30	80.686	SF
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	7,173.83	6,600.97	4,802.95	4,718.99	57.207	CC, ES
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	7,500.00	6,817.45	4,866.50	4,779.91	56.196	SF
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	7,250.83	6,677.74	5,881.64	5,796.92	69.424	CC, ES
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	7,550.00	6,857.67	5,930.03	5,843.18	68.279	SF
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	7,404.21	6,786.77	5,320.20	5,234.23	61.891	CC, ES
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	7,650.00	6,899.62	5,349.35	5,262.12	61.326	SF
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins US	7,537.87	6,815.95	4,546.91	4,496.24	89.723	CC, ES
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins US	7,700.00	6,857.39	4,559.13	4,508.18	89.486	SF
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	7,042.58	4,661.46	4,796.15	4,752.70	110.403	CC
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	7,150.00	4,761.04	4,796.54	4,752.32	108.482	ES
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	17,986.68	17,702.82	5,294.05	5,114.77	29.530	SF
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	7,533.33	5,782.13	4,434.88	4,385.62	90.034	CC, ES
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	17,986.68	17,649.38	4,637.92	4,459.43	25.984	SF
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	7,841.28	7,286.18	3,945.72	3,893.40	75.427	CC
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	17,986.68	17,316.68	3,980.50	3,802.38	22.347	ES, SF
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	7,610.98	6,476.97	3,612.46	3,561.78	71.285	CC
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	17,986.68	17,587.51	3,656.15	3,478.77	20.612	ES, SF
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	7,840.54	7,314.04	3,296.42	3,244.43	63.403	CC
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	17,986.68	17,446.55	3,325.13	3,147.52	18.721	ES, SF
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	7,478.00	6,279.61	2,615.45	2,564.45	51.287	CC
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	17,986.68	17,471.02	2,669.67	2,490.59	14.908	ES, SF
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	7,836.58	7,357.51	1,999.51	1,947.62	38.533	CC
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	17,986.68	17,517.07	2,013.83	1,836.28	11.342	ES, SF
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	7,845.75	7,238.97	1,350.26	1,298.24	25.956	CC
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	17,986.68	17,357.35	1,357.44	1,179.34	7.622	ES, SF
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	7,849.90	7,486.97	1,041.38	990.57	20.498	CC
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	17,986.68	17,616.46	1,044.84	868.71	5.932	ES, SF
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	17,986.68	17,569.25	707.26	530.23	3.995	CC, ES, SF
Y Section 06						
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,611.97	6,057.07	1,979.55	1,931.64	41.325	CC
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,664.00	6,102.68	1,979.71	1,931.40	40.975	ES
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,850.00	6,247.64	2,005.44	1,955.78	40.381	SF
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	100.00	44.32	2,533.51	2,533.30	10,000.000	CC
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	2,400.00	2,374.62	2,541.20	2,524.72	154.182	ES
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	7,100.00	6,574.80	3,625.08	3,575.11	72.540	SF
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	6,847.51	6,296.17	3,834.50	3,785.22	77.807	CC
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	6,850.00	6,299.18	3,834.50	3,785.20	77.773	ES
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	7,350.00	7,350.00	4,023.80	3,969.29	73.819	SF
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	5,558.40	5,281.47	4,786.68	4,746.88	120.269	CC
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	5,800.00	5,511.31	4,787.85	4,746.09	114.634	ES
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	7,050.00	6,502.31	4,938.34	4,887.35	96.851	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 Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	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	2,021.21	2,009.58	2,253.05	2,239.18	162.452	CC, ES
Harkis 11-7 (PA) - Wellbore #1 - Gyro Surveys	8,900.00	6,910.40	4,127.47	4,075.47	79.373	SF
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	1,145.14	1,150.15	2,031.24	2,023.52	263.156	CC
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	1,900.00	1,893.59	2,033.88	2,020.86	156.288	ES
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	9,800.00	6,926.23	3,748.78	3,694.44	68.976	SF
HP Farms Y 7-15JL (PR) - Wellbore #1 - No Surveys	12,404.62	6,940.00	1,762.49	1,578.32	9.570	CC, ES, SF
HP Y07-09 (PR) - Wellbore #1 - No Surveys	11,033.16	6,889.00	212.37	37.58	1.215	Level 3, CC, ES, SF
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,200.00	7,154.07	1,862.44	1,791.66	26.316	SF
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,900.00	7,156.16	1,724.20	1,661.61	27.547	ES
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,904.15	7,156.17	1,724.19	1,661.62	27.555	CC
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	3,312.00	3,237.29	96.29	19.93	1.261	Level 3, CC, ES, SF
Perkins USX Y 7-17 (SI) - Wellbore #1 - Gyro Surveys	8,975.98	6,899.85	904.90	852.64	17.313	CC, ES, SF
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	2,200.00	2,175.00	1,725.96	1,674.81	33.741	CC
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	2,300.00	2,274.98	1,727.60	1,674.09	32.287	ES
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	10,000.00	6,916.00	2,752.84	2,582.77	16.187	SF
Pioneer D31-716 - Pioneer D31-716 - Plan #1	7,741.14	7,411.12	72.89	16.16	1.285	Level 3, CC, ES, SF
Pioneer D31-725 - Pioneer D31-725 - Plan #1	2,200.00	2,199.00	97.55	82.25	6.374	CC
Pioneer D31-725 - Pioneer D31-725 - Plan #1	2,400.00	2,392.75	98.39	81.73	5.906	ES
Pioneer D31-725 - Pioneer D31-725 - Plan #1	3,400.00	3,370.89	126.29	102.68	5.349	SF
Pioneer D31-735 - Pioneer D31-735 - Plan #1	3,127.49	3,115.21	48.02	26.20	2.200	CC, ES, SF
Pioneer D31-744 - Pioneer D31-744 - Plan #1	2,689.37	2,685.99	31.98	13.20	1.703	CC
Pioneer D31-744 - Pioneer D31-744 - Plan #1	2,700.00	2,703.53	32.03	13.16	1.697	ES, SF
Pioneer D31-756 - Pioneer D31-756 - Plan #1	2,200.00	2,204.00	904.79	889.47	59.055	CC, ES
Pioneer D31-756 - Pioneer D31-756 - Plan #1	6,900.00	7,647.51	2,339.12	2,286.50	44.450	SF
Pioneer D31-761 - Pioneer D31-761 - Plan #1	2,200.00	2,204.00	927.45	912.13	60.534	CC, ES
Pioneer D31-761 - Pioneer D31-761 - Plan #1	3,300.00	3,277.17	1,099.89	1,076.88	47.817	SF
Pioneer D31-775 - Pioneer D31-775 - Plan #1	2,200.00	2,205.00	949.81	934.49	61.979	CC, ES
Pioneer D31-775 - Pioneer D31-775 - Plan #1	2,800.00	2,646.53	1,045.06	1,026.28	55.653	SF
Pioneer D31-785 - Pioneer D31-785 - Plan #1	2,200.00	2,205.00	971.06	955.73	63.366	CC, ES
Pioneer D31-785 - Pioneer D31-785 - Plan #1	2,800.00	2,641.10	1,066.93	1,048.18	56.908	SF
Pioneer USX Y07-08D (PR) - Wellbore #1 - As Drilled	9,762.30	7,081.04	295.04	232.96	4.753	CC, ES, SF
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,100.00	7,315.45	1,682.74	1,583.69	16.989	SF
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,591.42	7,315.62	1,609.38	1,521.09	18.227	CC, ES
Pioneer Y18-725 - Pioneer Y18-725 - Plan #1	2,205.88	2,206.92	22.36	7.01	1.457	Level 3, CC
Pioneer Y18-725 - Pioneer Y18-725 - Plan #1	2,400.00	2,402.05	23.14	6.42	1.384	Level 3, ES, SF
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	2,205.13	2,207.19	44.73	29.37	2.914	CC
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	2,300.00	2,302.90	45.07	29.05	2.813	ES
Pioneer Y18-730 - Pioneer Y18-730 - Plan #1	2,400.00	2,403.76	46.22	29.49	2.763	SF
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,204.03	2,207.11	67.36	52.02	4.390	CC
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,300.00	2,304.09	67.91	51.88	4.236	ES
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,400.00	2,405.11	69.66	52.93	4.163	SF
Pioneer Y18-744 - Pioneer Y18-744 - Plan #1	2,200.26	2,203.27	89.73	74.41	5.857	CC, ES
Pioneer Y18-744 - Pioneer Y18-744 - Plan #1	2,400.00	2,403.23	94.83	78.09	5.666	SF
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	2,200.17	2,201.21	762.26	746.94	49.783	CC, ES
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	17,986.68	17,584.34	2,508.46	2,334.89	14.453	SF
Pioneer Y18-766 - Pioneer Y18-766 - Plan #1	2,200.00	2,202.00	784.90	769.59	51.254	CC, ES
Pioneer Y18-766 - Pioneer Y18-766 - Plan #1	17,986.68	17,669.70	3,137.71	2,963.88	18.051	SF
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	2,200.00	2,202.00	807.26	791.94	52.714	CC, ES
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	17,986.68	17,780.37	3,455.21	3,281.21	19.857	SF
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	2,200.00	2,203.00	828.50	813.19	54.089	CC, ES
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	17,986.68	17,660.53	3,762.30	3,588.89	21.697	SF
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	2,200.00	2,203.00	852.26	836.95	55.640	CC, ES
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	17,986.68	17,871.60	4,390.36	4,216.82	25.300	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 Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Y Section 07						
UPRC 7-10Q (PR) - Wellbore #1 - No Surveys	11,630.29	6,899.00	1,233.59	1,055.13	6.912	CC, ES, SF
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	11,684.43	6,959.69	3,635.51	3,570.60	56.009	CC
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	11,700.00	6,959.56	3,635.54	3,570.57	55.953	ES
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	12,300.00	6,954.85	3,687.25	3,620.04	54.856	SF
Y Section 08						
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	11,924.88	6,900.00	1,337.04	1,156.74	7.416	CC, ES
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	12,000.00	6,900.00	1,339.15	1,158.03	7.394	SF
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	11,712.07	7,002.73	4,065.28	4,000.36	62.612	CC, ES
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	13,200.00	7,035.60	4,323.02	4,247.89	57.537	SF
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	8,627.31	6,870.28	4,656.87	4,605.11	89.962	CC, ES
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	10,800.00	6,886.53	5,138.76	5,077.93	84.481	SF
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	8,638.46	6,879.14	1,232.21	1,180.44	23.802	CC, ES
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	8,700.00	6,880.05	1,233.75	1,181.82	23.757	SF
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	8,348.07	6,868.86	3,476.64	3,425.29	67.715	CC, ES
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	9,300.00	6,862.70	3,604.60	3,550.65	66.813	SF
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	8,146.15	6,862.62	2,392.82	2,341.62	46.726	CC, ES
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	8,200.00	6,863.20	2,393.43	2,342.20	46.718	SF
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	9,626.51	6,887.71	879.20	824.72	16.139	CC, ES
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	9,700.00	6,887.71	882.27	827.22	16.027	SF
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	9,653.99	6,941.00	4,953.32	4,783.96	29.248	CC, ES
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	10,500.00	6,941.00	5,025.04	4,851.29	28.921	SF
Y Section 09						
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,110.91	6,700.01	9,054.87	8,987.70	134.813	CC
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,200.00	6,700.01	9,055.30	8,987.50	133.546	ES
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled	16,500.00	6,780.65	9,962.52	9,865.81	103.021	SF
Perkins USX Y09-23 - Original Drilling - Original Drilling -	11,528.01	7,099.83	9,651.06	9,586.54	149.576	CC
Perkins USX Y09-23 - Original Drilling - Original Drilling -	11,600.00	7,100.00	9,651.33	9,586.33	148.475	ES
Perkins USX Y09-23 - Original Drilling - Original Drilling -	14,200.00	7,105.73	9,977.68	9,894.49	119.942	SF

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

Noble Energy, Inc.
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	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	17,104.97	10,925.67	9,835.81	9,718.95	84.170	CC
Hullabaloo State Y21-726 - Original Drilling - Original Drill	17,200.00	10,971.00	9,836.58	9,718.64	83.399	ES
Hullabaloo State Y21-726 - Original Drilling - Original Drill	17,986.68	12,326.25	9,859.56	9,726.07	73.859	SF
Hullabaloo State Y21-736 - Original Drilling - Original Drill	16,150.11	9,833.00	9,193.83	9,092.96	91.145	CC
Hullabaloo State Y21-736 - Original Drilling - Original Drill	17,986.68	17,986.68	9,194.56	9,017.58	51.953	ES, SF
Hullabaloo State Y21-746 - Original Drilling - Original Drill	16,500.00	16,500.00	8,553.39	8,403.12	56.918	SF
Hullabaloo State Y21-746 - Original Drilling - Original Drill	17,530.94	11,257.38	8,521.78	8,398.09	68.898	CC
Hullabaloo State Y21-746 - Original Drilling - Original Drill	17,800.00	11,432.84	8,523.28	8,396.25	67.097	ES
Hullabaloo State Y21-756 - Original Drilling - Original Drill	16,754.08	10,396.00	7,867.42	7,755.79	70.475	CC
Hullabaloo State Y21-756 - Original Drilling - Original Drill	17,600.00	17,600.00	7,898.12	7,727.63	46.325	ES, SF
Hullabaloo State Y21-763 - Original Drilling - Original Drill	14,024.90	8,031.00	7,428.75	7,350.93	95.451	CC
Hullabaloo State Y21-763 - Original Drilling - Original Drill	17,900.00	11,850.00	7,479.58	7,350.22	57.822	ES
Hullabaloo State Y21-763 - Original Drilling - Original Drill	17,986.68	11,850.00	7,480.79	7,350.73	57.516	SF
Hullabaloo State Y21-769 - Original Drilling - Original Drill	12,688.97	6,644.34	7,011.66	6,945.45	105.896	CC
Hullabaloo State Y21-769 - Original Drilling - Original Drill	16,401.70	16,401.70	7,026.55	6,878.59	47.489	ES, SF
Hullabaloo State Y21-775 - Original Drilling - Original Drill	17,500.00	17,500.00	6,620.42	6,451.76	39.252	ES, SF
Hullabaloo State Y21-775 - Original Drilling - Original Drill	17,864.19	11,616.00	6,615.40	6,486.70	51.403	CC
Hullabaloo State Y21-781 - Original Drilling - Original Drill	16,300.00	10,167.73	6,196.06	6,090.29	58.584	CC
Hullabaloo State Y21-781 - Original Drilling - Original Drill	16,400.00	10,198.00	6,196.57	6,089.78	58.025	ES
Hullabaloo State Y21-781 - Original Drilling - Original Drill	17,986.68	11,829.23	6,224.21	6,093.58	47.647	SF
Hullabaloo State Y21-787 - Original Drilling - Original Drill	13,433.37	7,268.00	5,775.22	5,703.12	80.104	CC
Hullabaloo State Y21-787 - Original Drilling - Original Drill	17,986.68	12,252.00	5,793.42	5,659.76	43.343	ES, SF
State 01 - Original Drilling - Original Drilling - As Drilled	14,352.34	6,839.70	9,600.36	9,512.22	108.928	CC
State 01 - Original Drilling - Original Drilling - As Drilled	14,400.00	6,840.02	9,600.47	9,511.95	108.453	ES
State 01 - Original Drilling - Original Drilling - As Drilled	17,100.00	6,858.71	9,985.80	9,877.22	91.971	SF
State 21 (PA) - Original Drilling - Original Drilling - As Drilled	16,941.68	6,956.00	6,813.74	6,595.86	31.274	CC
State 21 (PA) - Original Drilling - Original Drilling - As Drilled	17,000.00	6,956.00	6,813.98	6,595.60	31.201	ES
State 21 (PA) - Original Drilling - Original Drilling - As Drilled	17,986.68	6,956.00	6,893.40	6,667.10	30.461	SF
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,894.22	6,941.62	6,351.09	6,263.83	72.786	CC
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,900.00	6,941.51	6,351.09	6,263.79	72.744	ES
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	17,100.00	6,902.50	6,723.11	6,620.37	65.440	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Y Section 17						
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,234.64	6,904.00	4,002.25	3,783.14	18.266	CC
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,300.00	6,904.00	4,002.78	3,783.06	18.217	ES
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,800.00	6,904.00	4,041.98	3,818.12	18.056	SF
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,456.73	6,904.00	1,340.41	1,142.37	6.768	CC, ES
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,500.00	6,904.00	1,341.11	1,142.55	6.754	SF
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,481.61	6,899.00	2,429.53	2,238.61	12.726	CC
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,500.00	6,899.00	2,429.60	2,238.50	12.714	ES
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,700.00	6,899.00	2,439.32	2,246.40	12.644	SF
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	13,369.36	6,938.34	1,251.56	1,175.73	16.505	CC, ES
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	13,500.00	6,934.88	1,258.36	1,181.09	16.285	SF
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	14,916.53	6,832.60	2,534.82	2,447.30	28.962	CC, ES
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	15,400.00	6,829.46	2,580.52	2,488.92	28.173	SF
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,686.30	6,889.07	2,210.03	2,101.35	20.336	CC
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,700.00	6,889.00	2,210.07	2,101.24	20.307	ES
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,986.68	6,887.48	2,230.35	2,118.95	20.021	SF
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,486.41	6,892.23	4,082.19	3,998.06	48.518	CC
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,500.00	6,892.42	4,082.22	3,997.96	48.448	ES
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	15,600.00	6,908.25	4,231.32	4,138.90	45.783	SF
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,496.61	6,902.14	5,117.37	5,040.34	66.440	CC
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,500.00	6,902.10	5,117.37	5,040.32	66.415	ES
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	15,200.00	6,886.01	5,393.39	5,304.30	60.542	SF
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	16,142.53	6,832.04	1,453.55	1,356.83	15.028	CC, ES
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	16,300.00	6,830.62	1,462.05	1,363.65	14.858	SF
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,199.39	6,916.00	1,452.50	1,233.43	6.630	CC
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,200.00	6,916.00	1,452.50	1,233.43	6.630	ES
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,300.00	6,916.00	1,455.98	1,235.77	6.612	SF
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	13,415.52	6,911.31	3,455.30	3,378.90	45.226	CC, ES
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	14,300.00	6,924.00	3,566.69	3,483.60	42.928	SF
Y Section 18						
ADA Harkins Unit A1 (PA) - Wellbore #1 - Gyro Surveys	14,205.76	6,866.73	3,503.10	3,421.68	43.024	CC, ES
ADA Harkins Unit A1 (PA) - Wellbore #1 - Gyro Surveys	14,700.00	6,863.45	3,537.79	3,454.19	42.317	SF
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surveys	16,672.01	7,039.47	3,726.28	3,625.04	36.806	CC
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surveys	16,700.00	7,039.15	3,726.39	3,624.99	36.751	ES
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surveys	17,100.00	7,034.60	3,750.78	3,647.58	36.348	SF
HSR Harkis 15-18 (PR) - Wellbore #1 - No Surveys	16,905.88	6,954.00	1,102.58	885.02	5.068	CC, ES, SF
Lyle V Cooksey Gas Unit 1 (PR) - Wellbore #1 - Gyro Surveys	14,645.40	6,939.12	662.26	576.66	7.737	CC, ES, SF

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

Noble Energy, Inc.

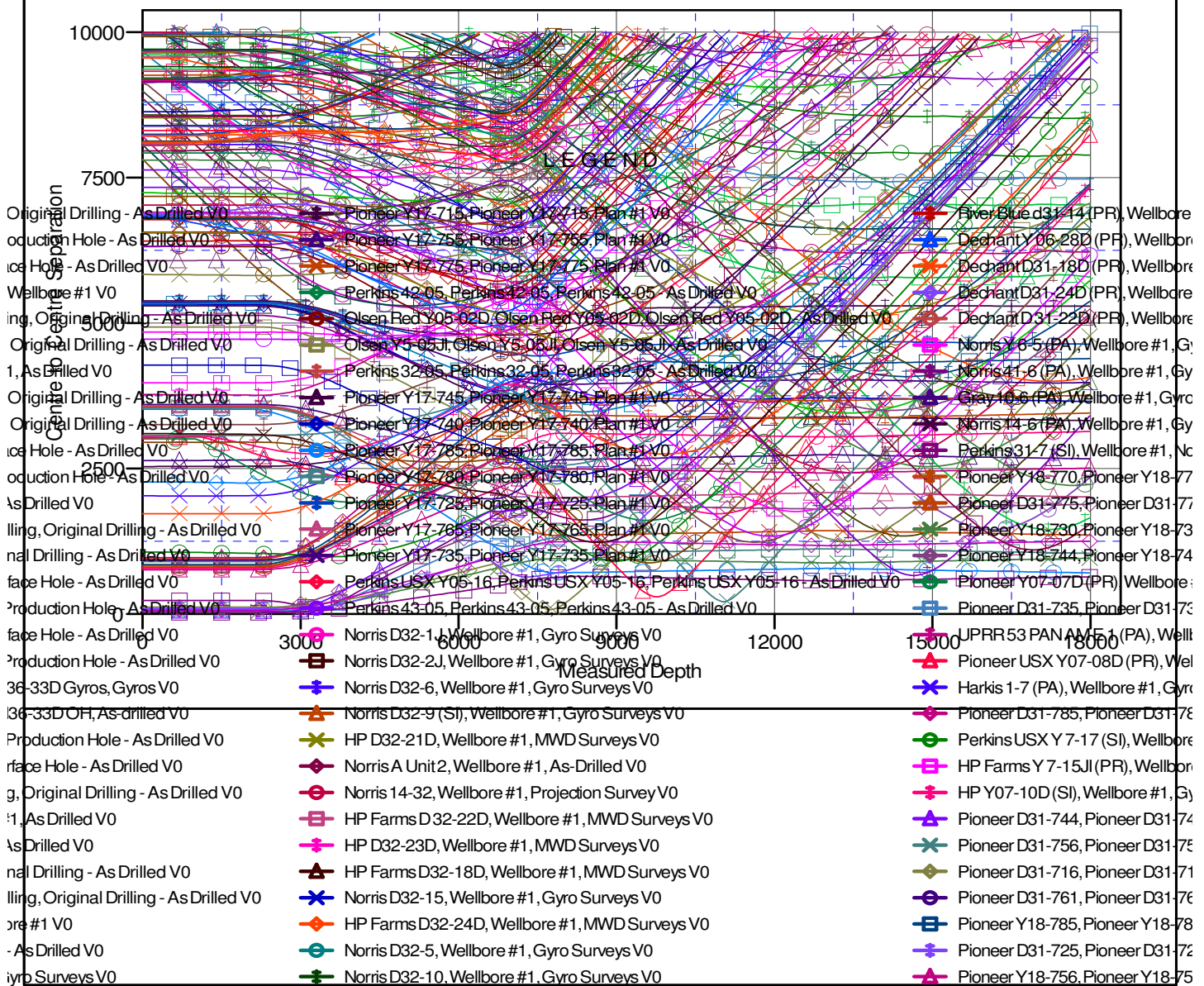
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4912.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Pioneer Y18-715
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

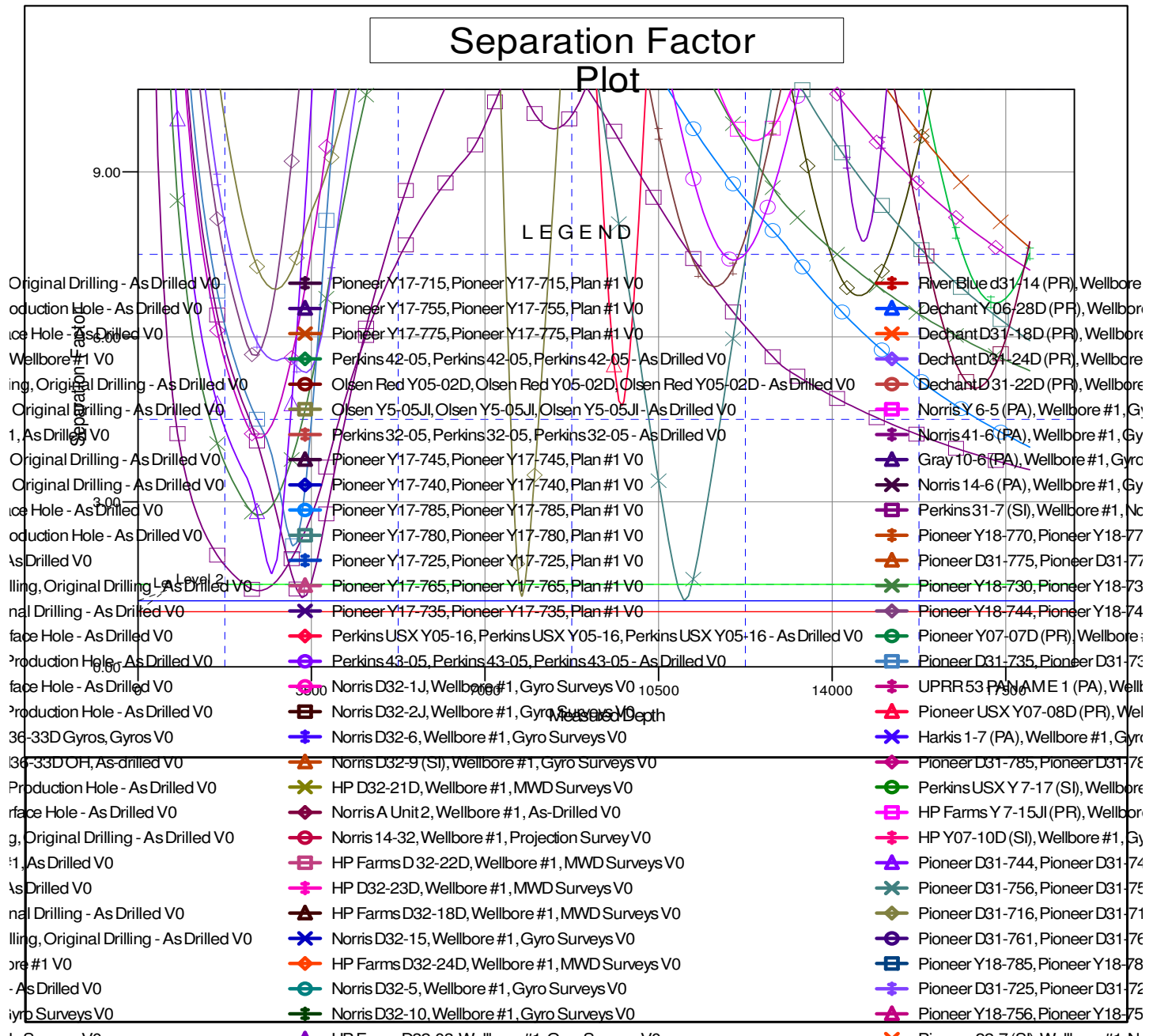
Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Pioneer Y18-715
Project:	Mustang	TVD Reference:	Well @ 4912.00ft
Reference Site:	Y Section 07	MD Reference:	Well @ 4912.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Pioneer Y18-715	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Pioneer Y18-715	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4912.00ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.5000000

Coordinates are relative to: Pioneer Y18-715
 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