

Project: Wells Ranch  
 Site: A Section 21  
 Well: Rampart A33-770  
 Wellbore: Rampart A33-770  
 Design: APD-Rev 0

# Northern Region - DJ Basin

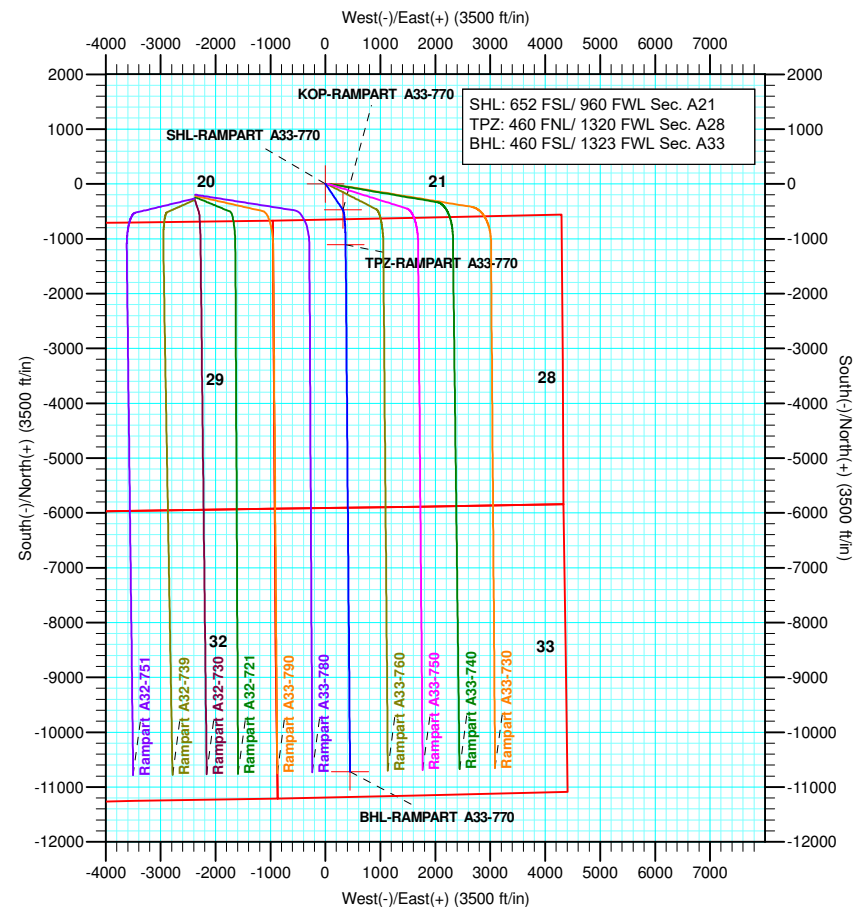
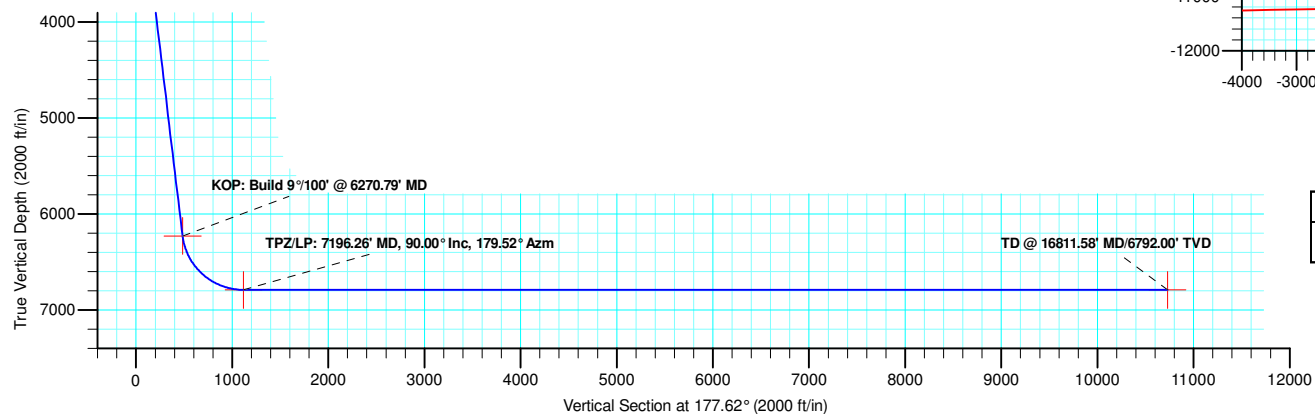
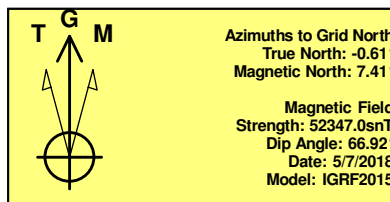
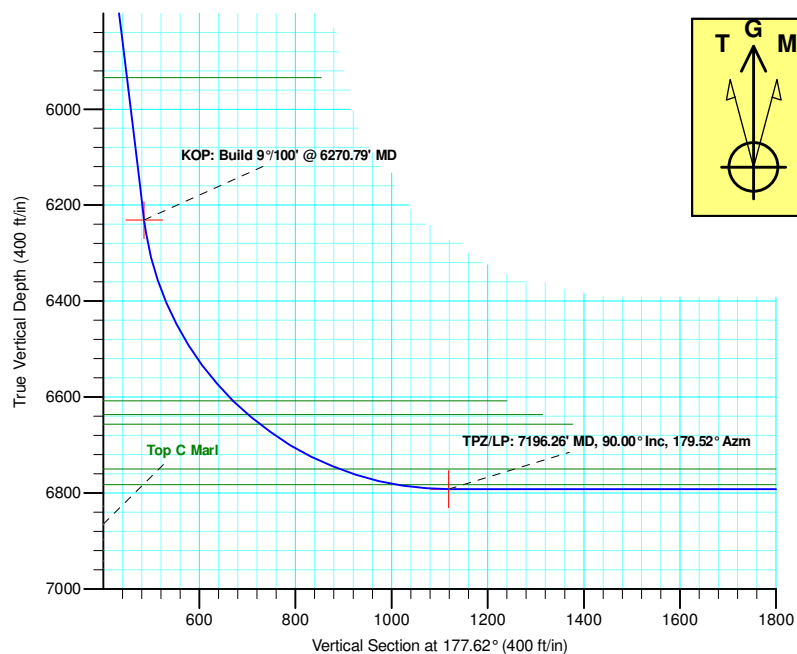
Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Northern Zone  
 System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00
3	2402.05	8.04	146.14	2400.73	-23.39	15.69	2.00	146.14	24.02
4	6270.79	8.04	146.14	6231.43	-472.78	317.21	0.00	0.00	485.57
5	7196.26	90.00	179.52	6792.00	-1104.66	366.05	9.00	33.64	1118.93
6	16811.58	90.00	179.52	6792.00	-10719.64	446.30	0.00	0.00	10728.93

WELL DETAILS: Rampart A33-770

+N/-S	+E/-W	Northing	Ground Level: Easting	4727.00 Latitude	Longitude	Slot
0.00	0.00	1414003.46	3261217.77	40.4660452	-104.5611574	



Plan: APD-Rev 0 (Rampart A33-770/Rampart A33-770)

Created By: Keith Noack Date: 8:55, November 01 2018

# **Northern Region - DJ Basin**

**Wells Ranch**

**A Section 21**

**Rampart A33-770**

**Rampart A33-770**

**Plan: APD-Rev 0**

## **Standard Planning Report**

**01 November, 2018**

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site:</b>	A Section 21	<b>North Reference:</b>	Grid
<b>Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rampart A33-770		
<b>Design:</b>	APD-Rev 0		

<b>Project</b>	Wells Ranch, Weld County Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site	A Section 21				
Site Position:		Northing:	1,414,202.83 usft	Latitude:	40.4665920
From:	Lat/Long	Easting:	3,261,231.91 usft	Longitude:	-104.5610990
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.61 °

Well	Rampart A33-770					
Well Position	+N/-S	-199.37 ft	Northing:	1,414,003.46 usft	Latitude:	40.4660452
	+E/-W	-14.14 ft	Easting:	3,261,217.77 usft	Longitude:	-104.5611574
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,727.00 ft

<b>Wellbore</b>	Rampart A33-770				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	5/7/2018	8.01	66.92	52,347.03472587

<b>Design</b>	APD-Rev 0			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	177.62

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,402.05	8.04	146.14	2,400.73	-23.39	15.69	2.00	2.00	0.00	146.14	
6,270.79	8.04	146.14	6,231.43	-472.78	317.21	0.00	0.00	0.00	0.00	
7,196.26	90.00	179.52	6,792.00	-1,104.66	366.05	9.00	8.86	3.61	33.64	TPZ-RAMPART A3
16,811.58	90.00	179.52	6,792.00	-10,719.64	446.30	0.00	0.00	0.00	0.00	BHL-RAMPART A3

# Noble Energy, Inc.

## Planning Report

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<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site:</b>	A Section 21	<b>North Reference:</b>	Grid
<b>Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rampart A33-770		
<b>Design:</b>	APD-Rev 0		

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
445.00	0.00	0.00	445.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Pierre</b>									
496.00	0.00	0.00	496.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Upper Pierre Aquifer Top</b>									
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
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,533.00	0.00	0.00	1,533.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Upper Pierre Aquifer Base</b>									
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Build: 2°/100'</b>									
2,100.00	2.00	146.14	2,099.98	-1.45	0.97	1.49	2.00	2.00	0.00
2,200.00	4.00	146.14	2,199.84	-5.79	3.89	5.95	2.00	2.00	0.00
2,300.00	6.00	146.14	2,299.45	-13.03	8.74	13.38	2.00	2.00	0.00
2,402.05	8.04	146.14	2,400.73	-23.39	15.69	24.02	2.00	2.00	0.00
<b>Hold: 8.04° Inc, 146.14° Azm</b>									
2,500.00	8.04	146.14	2,497.72	-34.77	23.33	35.71	0.00	0.00	0.00
2,600.00	8.04	146.14	2,596.74	-46.38	31.12	47.64	0.00	0.00	0.00
2,700.00	8.04	146.14	2,695.75	-58.00	38.91	59.57	0.00	0.00	0.00
2,800.00	8.04	146.14	2,794.77	-69.61	46.71	71.50	0.00	0.00	0.00
2,900.00	8.04	146.14	2,893.79	-81.23	54.50	83.43	0.00	0.00	0.00
3,000.00	8.04	146.14	2,992.80	-92.85	62.29	95.36	0.00	0.00	0.00
3,100.00	8.04	146.14	3,091.82	-104.46	70.09	107.29	0.00	0.00	0.00
3,200.00	8.04	146.14	3,190.84	-116.08	77.88	119.22	0.00	0.00	0.00
3,300.00	8.04	146.14	3,289.85	-127.69	85.68	131.15	0.00	0.00	0.00
3,400.00	8.04	146.14	3,388.87	-139.31	93.47	143.08	0.00	0.00	0.00
3,500.00	8.04	146.14	3,487.89	-150.93	101.26	155.01	0.00	0.00	0.00
3,600.00	8.04	146.14	3,586.90	-162.54	109.06	166.94	0.00	0.00	0.00
3,647.57	8.04	146.14	3,634.01	-168.07	112.76	172.61	0.00	0.00	0.00
<b>Parkman</b>									
3,700.00	8.04	146.14	3,685.92	-174.16	116.85	178.87	0.00	0.00	0.00
3,800.00	8.04	146.14	3,784.94	-185.77	124.64	190.80	0.00	0.00	0.00
3,900.00	8.04	146.14	3,883.95	-197.39	132.44	202.73	0.00	0.00	0.00
4,000.00	8.04	146.14	3,982.97	-209.01	140.23	214.66	0.00	0.00	0.00
4,100.00	8.04	146.14	4,081.99	-220.62	148.02	226.59	0.00	0.00	0.00
4,170.72	8.04	146.14	4,152.01	-228.84	153.54	235.03	0.00	0.00	0.00

# Noble Energy, Inc.

## Planning Report

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<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site:</b>	A Section 21	<b>North Reference:</b>	Grid
<b>Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rampart A33-770		
<b>Design:</b>	APD-Rev 0		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
<b>Sussex</b>										
4,200.00	8.04	146.14	4,181.00	-232.24	155.82	238.52	0.00	0.00	0.00	
4,300.00	8.04	146.14	4,280.02	-243.85	163.61	250.45	0.00	0.00	0.00	
4,400.00	8.04	146.14	4,379.04	-255.47	171.41	262.38	0.00	0.00	0.00	
4,500.00	8.04	146.14	4,478.05	-267.09	179.20	274.31	0.00	0.00	0.00	
4,600.00	8.04	146.14	4,577.07	-278.70	186.99	286.24	0.00	0.00	0.00	
4,700.00	8.04	146.14	4,676.09	-290.32	194.79	298.17	0.00	0.00	0.00	
4,800.00	8.04	146.14	4,775.11	-301.93	202.58	310.10	0.00	0.00	0.00	
4,900.00	8.04	146.14	4,874.12	-313.55	210.37	322.03	0.00	0.00	0.00	
5,000.00	8.04	146.14	4,973.14	-325.17	218.17	333.96	0.00	0.00	0.00	
5,010.98	8.04	146.14	4,984.01	-326.44	219.02	335.27	0.00	0.00	0.00	
<b>Shannon</b>										
5,100.00	8.04	146.14	5,072.16	-336.78	225.96	345.89	0.00	0.00	0.00	
5,200.00	8.04	146.14	5,171.17	-348.40	233.75	357.82	0.00	0.00	0.00	
5,300.00	8.04	146.14	5,270.19	-360.01	241.55	369.75	0.00	0.00	0.00	
5,400.00	8.04	146.14	5,369.21	-371.63	249.34	381.68	0.00	0.00	0.00	
5,500.00	8.04	146.14	5,468.22	-383.25	257.14	393.61	0.00	0.00	0.00	
5,600.00	8.04	146.14	5,567.24	-394.86	264.93	405.54	0.00	0.00	0.00	
5,700.00	8.04	146.14	5,666.26	-406.48	272.72	417.47	0.00	0.00	0.00	
5,800.00	8.04	146.14	5,765.27	-418.09	280.52	429.40	0.00	0.00	0.00	
5,900.00	8.04	146.14	5,864.29	-429.71	288.31	441.33	0.00	0.00	0.00	
5,970.41	8.04	146.14	5,934.01	-437.89	293.80	449.73	0.00	0.00	0.00	
<b>Teepee Buttes</b>										
6,000.00	8.04	146.14	5,963.31	-441.33	296.10	453.26	0.00	0.00	0.00	
6,100.00	8.04	146.14	6,062.32	-452.94	303.90	465.19	0.00	0.00	0.00	
6,200.00	8.04	146.14	6,161.34	-464.56	311.69	477.12	0.00	0.00	0.00	
6,270.79	8.04	146.14	6,231.43	-472.78	317.21	485.57	0.00	0.00	0.00	
<b>KOP: Build 9°/100' @ 6270.79' MD</b>										
6,300.00	10.33	154.29	6,260.27	-476.84	319.48	489.71	9.00	7.84	27.88	
6,350.00	14.52	162.06	6,309.09	-486.85	323.36	499.88	9.00	8.38	15.54	
6,400.00	18.85	166.36	6,356.98	-500.67	327.20	513.84	9.00	8.66	8.61	
6,450.00	23.24	169.09	6,403.63	-518.21	330.97	531.53	9.00	8.79	5.47	
6,500.00	27.67	171.00	6,448.77	-539.38	334.66	552.83	9.00	8.85	3.80	
6,550.00	32.11	172.41	6,492.10	-564.03	338.23	577.61	9.00	8.89	2.82	
6,600.00	36.57	173.51	6,533.38	-592.01	341.67	605.72	9.00	8.91	2.20	
6,650.00	41.04	174.40	6,572.33	-623.17	344.96	636.98	9.00	8.93	1.78	
6,698.98	45.42	175.13	6,608.01	-656.56	348.01	670.47	9.00	8.94	1.49	
<b>Sharon Springs</b>										
6,700.00	45.51	175.14	6,608.73	-657.29	348.08	671.20	9.00	8.95	1.37	
6,741.77	49.25	175.68	6,637.01	-687.92	350.53	701.91	9.00	8.95	1.29	
<b>Top A Chalk</b>										
6,750.00	49.98	175.78	6,642.34	-694.17	351.00	708.17	9.00	8.95	1.20	
6,773.32	52.07	176.05	6,657.01	-712.26	352.29	726.29	9.00	8.96	1.15	
<b>Top A Marl</b>										
6,800.00	54.46	176.34	6,672.97	-733.59	353.71	747.66	9.00	8.96	1.09	
6,850.00	58.94	176.84	6,700.41	-775.29	356.19	789.44	9.00	8.96	1.00	
6,900.00	63.42	177.29	6,724.51	-819.03	358.42	833.23	9.00	8.96	0.91	
6,950.00	67.91	177.71	6,745.10	-864.53	360.41	878.78	9.00	8.97	0.84	
6,963.40	69.11	177.82	6,750.01	-876.99	360.89	891.25	9.00	8.97	0.81	
<b>Top B Chalk</b>										
7,000.00	72.39	178.11	6,762.08	-911.52	362.12	925.79	9.00	8.97	0.78	
7,050.00	76.88	178.48	6,775.32	-959.70	363.55	973.99	9.00	8.97	0.75	
7,089.00	80.38	178.77	6,783.01	-997.92	364.47	1,012.21	9.00	8.97	0.73	

# Noble Energy, Inc.

## Planning Report

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<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	Well @ 4757.00ft
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<b>Wellbore:</b>	Rampart A33-770		
<b>Design:</b>	APD-Rev 0		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
<b>Top B Marl</b>									
7,100.00	81.36	178.85	6,784.76	-1,008.77	364.69	1,023.07	9.00	8.97	0.72
7,150.00	85.85	179.20	6,790.33	-1,058.44	365.54	1,072.73	9.00	8.97	0.71
7,196.26	90.00	179.52	6,792.00	-1,104.66	366.05	1,118.93	9.00	8.97	0.70
<b>TPZ/LP: 7196.26' MD, 90.00° Inc, 179.52° Azm</b>									
7,200.00	90.00	179.52	6,792.00	-1,108.40	366.09	1,122.67	0.00	0.00	0.00
7,300.00	90.00	179.52	6,792.00	-1,208.40	366.92	1,222.61	0.00	0.00	0.00
7,400.00	90.00	179.52	6,792.00	-1,308.39	367.75	1,322.56	0.00	0.00	0.00
7,500.00	90.00	179.52	6,792.00	-1,408.39	368.59	1,422.50	0.00	0.00	0.00
7,600.00	90.00	179.52	6,792.00	-1,508.39	369.42	1,522.45	0.00	0.00	0.00
7,700.00	90.00	179.52	6,792.00	-1,608.38	370.26	1,622.39	0.00	0.00	0.00
7,800.00	90.00	179.52	6,792.00	-1,708.38	371.09	1,722.34	0.00	0.00	0.00
7,900.00	90.00	179.52	6,792.00	-1,808.38	371.93	1,822.28	0.00	0.00	0.00
8,000.00	90.00	179.52	6,792.00	-1,908.37	372.76	1,922.23	0.00	0.00	0.00
8,100.00	90.00	179.52	6,792.00	-2,008.37	373.60	2,022.17	0.00	0.00	0.00
8,200.00	90.00	179.52	6,792.00	-2,108.36	374.43	2,122.12	0.00	0.00	0.00
8,300.00	90.00	179.52	6,792.00	-2,208.36	375.27	2,222.06	0.00	0.00	0.00
8,400.00	90.00	179.52	6,792.00	-2,308.36	376.10	2,322.00	0.00	0.00	0.00
8,500.00	90.00	179.52	6,792.00	-2,408.35	376.93	2,421.95	0.00	0.00	0.00
8,600.00	90.00	179.52	6,792.00	-2,508.35	377.77	2,521.89	0.00	0.00	0.00
8,700.00	90.00	179.52	6,792.00	-2,608.35	378.60	2,621.84	0.00	0.00	0.00
8,800.00	90.00	179.52	6,792.00	-2,708.34	379.44	2,721.78	0.00	0.00	0.00
8,900.00	90.00	179.52	6,792.00	-2,808.34	380.27	2,821.73	0.00	0.00	0.00
9,000.00	90.00	179.52	6,792.00	-2,908.34	381.11	2,921.67	0.00	0.00	0.00
9,100.00	90.00	179.52	6,792.00	-3,008.33	381.94	3,021.62	0.00	0.00	0.00
9,200.00	90.00	179.52	6,792.00	-3,108.33	382.78	3,121.56	0.00	0.00	0.00
9,300.00	90.00	179.52	6,792.00	-3,208.33	383.61	3,221.51	0.00	0.00	0.00
9,400.00	90.00	179.52	6,792.00	-3,308.32	384.45	3,321.45	0.00	0.00	0.00
9,500.00	90.00	179.52	6,792.00	-3,408.32	385.28	3,421.40	0.00	0.00	0.00
9,600.00	90.00	179.52	6,792.00	-3,508.32	386.11	3,521.34	0.00	0.00	0.00
9,700.00	90.00	179.52	6,792.00	-3,608.31	386.95	3,621.29	0.00	0.00	0.00
9,800.00	90.00	179.52	6,792.00	-3,708.31	387.78	3,721.23	0.00	0.00	0.00
9,900.00	90.00	179.52	6,792.00	-3,808.31	388.62	3,821.17	0.00	0.00	0.00
10,000.00	90.00	179.52	6,792.00	-3,908.30	389.45	3,921.12	0.00	0.00	0.00
10,100.00	90.00	179.52	6,792.00	-4,008.30	390.29	4,021.06	0.00	0.00	0.00
10,200.00	90.00	179.52	6,792.00	-4,108.30	391.12	4,121.01	0.00	0.00	0.00
10,300.00	90.00	179.52	6,792.00	-4,208.29	391.96	4,220.95	0.00	0.00	0.00
10,400.00	90.00	179.52	6,792.00	-4,308.29	392.79	4,320.90	0.00	0.00	0.00
10,500.00	90.00	179.52	6,792.00	-4,408.28	393.62	4,420.84	0.00	0.00	0.00
10,600.00	90.00	179.52	6,792.00	-4,508.28	394.46	4,520.79	0.00	0.00	0.00
10,700.00	90.00	179.52	6,792.00	-4,608.28	395.29	4,620.73	0.00	0.00	0.00
10,800.00	90.00	179.52	6,792.00	-4,708.27	396.13	4,720.68	0.00	0.00	0.00
10,900.00	90.00	179.52	6,792.00	-4,808.27	396.96	4,820.62	0.00	0.00	0.00
11,000.00	90.00	179.52	6,792.00	-4,908.27	397.80	4,920.57	0.00	0.00	0.00
11,100.00	90.00	179.52	6,792.00	-5,008.26	398.63	5,020.51	0.00	0.00	0.00
11,200.00	90.00	179.52	6,792.00	-5,108.26	399.47	5,120.46	0.00	0.00	0.00
11,300.00	90.00	179.52	6,792.00	-5,208.26	400.30	5,220.40	0.00	0.00	0.00
11,400.00	90.00	179.52	6,792.00	-5,308.25	401.14	5,320.35	0.00	0.00	0.00
11,500.00	90.00	179.52	6,792.00	-5,408.25	401.97	5,420.29	0.00	0.00	0.00
11,600.00	90.00	179.52	6,792.00	-5,508.25	402.80	5,520.23	0.00	0.00	0.00
11,700.00	90.00	179.52	6,792.00	-5,608.24	403.64	5,620.18	0.00	0.00	0.00
11,800.00	90.00	179.52	6,792.00	-5,708.24	404.47	5,720.12	0.00	0.00	0.00
11,900.00	90.00	179.52	6,792.00	-5,808.24	405.31	5,820.07	0.00	0.00	0.00
12,000.00	90.00	179.52	6,792.00	-5,908.23	406.14	5,920.01	0.00	0.00	0.00

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site:</b>	A Section 21	<b>North Reference:</b>	Grid
<b>Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rampart A33-770		
<b>Design:</b>	APD-Rev 0		

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)
12,100.00	90.00	179.52	6,792.00	-6,008.23	406.98	6,019.96	0.00	0.00	0.00
12,200.00	90.00	179.52	6,792.00	-6,108.23	407.81	6,119.90	0.00	0.00	0.00
12,300.00	90.00	179.52	6,792.00	-6,208.22	408.65	6,219.85	0.00	0.00	0.00
12,400.00	90.00	179.52	6,792.00	-6,308.22	409.48	6,319.79	0.00	0.00	0.00
12,500.00	90.00	179.52	6,792.00	-6,408.22	410.32	6,419.74	0.00	0.00	0.00
12,600.00	90.00	179.52	6,792.00	-6,508.21	411.15	6,519.68	0.00	0.00	0.00
12,700.00	90.00	179.52	6,792.00	-6,608.21	411.98	6,619.63	0.00	0.00	0.00
12,800.00	90.00	179.52	6,792.00	-6,708.20	412.82	6,719.57	0.00	0.00	0.00
12,900.00	90.00	179.52	6,792.00	-6,808.20	413.65	6,819.52	0.00	0.00	0.00
13,000.00	90.00	179.52	6,792.00	-6,908.20	414.49	6,919.46	0.00	0.00	0.00
13,100.00	90.00	179.52	6,792.00	-7,008.19	415.32	7,019.40	0.00	0.00	0.00
13,200.00	90.00	179.52	6,792.00	-7,108.19	416.16	7,119.35	0.00	0.00	0.00
13,300.00	90.00	179.52	6,792.00	-7,208.19	416.99	7,219.29	0.00	0.00	0.00
13,400.00	90.00	179.52	6,792.00	-7,308.18	417.83	7,319.24	0.00	0.00	0.00
13,500.00	90.00	179.52	6,792.00	-7,408.18	418.66	7,419.18	0.00	0.00	0.00
13,600.00	90.00	179.52	6,792.00	-7,508.18	419.49	7,519.13	0.00	0.00	0.00
13,700.00	90.00	179.52	6,792.00	-7,608.17	420.33	7,619.07	0.00	0.00	0.00
13,800.00	90.00	179.52	6,792.00	-7,708.17	421.16	7,719.02	0.00	0.00	0.00
13,900.00	90.00	179.52	6,792.00	-7,808.17	422.00	7,818.96	0.00	0.00	0.00
14,000.00	90.00	179.52	6,792.00	-7,908.16	422.83	7,918.91	0.00	0.00	0.00
14,100.00	90.00	179.52	6,792.00	-8,008.16	423.67	8,018.85	0.00	0.00	0.00
14,200.00	90.00	179.52	6,792.00	-8,108.16	424.50	8,118.80	0.00	0.00	0.00
14,300.00	90.00	179.52	6,792.00	-8,208.15	425.34	8,218.74	0.00	0.00	0.00
14,400.00	90.00	179.52	6,792.00	-8,308.15	426.17	8,318.69	0.00	0.00	0.00
14,500.00	90.00	179.52	6,792.00	-8,408.15	427.01	8,418.63	0.00	0.00	0.00
14,600.00	90.00	179.52	6,792.00	-8,508.14	427.84	8,518.58	0.00	0.00	0.00
14,700.00	90.00	179.52	6,792.00	-8,608.14	428.67	8,618.52	0.00	0.00	0.00
14,800.00	90.00	179.52	6,792.00	-8,708.14	429.51	8,718.46	0.00	0.00	0.00
14,900.00	90.00	179.52	6,792.00	-8,808.13	430.34	8,818.41	0.00	0.00	0.00
15,000.00	90.00	179.52	6,792.00	-8,908.13	431.18	8,918.35	0.00	0.00	0.00
15,100.00	90.00	179.52	6,792.00	-9,008.12	432.01	9,018.30	0.00	0.00	0.00
15,200.00	90.00	179.52	6,792.00	-9,108.12	432.85	9,118.24	0.00	0.00	0.00
15,300.00	90.00	179.52	6,792.00	-9,208.12	433.68	9,218.19	0.00	0.00	0.00
15,400.00	90.00	179.52	6,792.00	-9,308.11	434.52	9,318.13	0.00	0.00	0.00
15,500.00	90.00	179.52	6,792.00	-9,408.11	435.35	9,418.08	0.00	0.00	0.00
15,600.00	90.00	179.52	6,792.00	-9,508.11	436.19	9,518.02	0.00	0.00	0.00
15,700.00	90.00	179.52	6,792.00	-9,608.10	437.02	9,617.97	0.00	0.00	0.00
15,800.00	90.00	179.52	6,792.00	-9,708.10	437.85	9,717.91	0.00	0.00	0.00
15,900.00	90.00	179.52	6,792.00	-9,808.10	438.69	9,817.86	0.00	0.00	0.00
16,000.00	90.00	179.52	6,792.00	-9,908.09	439.52	9,917.80	0.00	0.00	0.00
16,100.00	90.00	179.52	6,792.00	-10,008.09	440.36	10,017.75	0.00	0.00	0.00
16,200.00	90.00	179.52	6,792.00	-10,108.09	441.19	10,117.69	0.00	0.00	0.00
16,300.00	90.00	179.52	6,792.00	-10,208.08	442.03	10,217.63	0.00	0.00	0.00
16,400.00	90.00	179.52	6,792.00	-10,308.08	442.86	10,317.58	0.00	0.00	0.00
16,500.00	90.00	179.52	6,792.00	-10,408.08	443.70	10,417.52	0.00	0.00	0.00
16,600.00	90.00	179.52	6,792.00	-10,508.07	444.53	10,517.47	0.00	0.00	0.00
16,700.00	90.00	179.52	6,792.00	-10,608.07	445.36	10,617.41	0.00	0.00	0.00
16,800.00	90.00	179.52	6,792.00	-10,708.07	446.20	10,717.36	0.00	0.00	0.00
16,811.58	90.00	179.52	6,792.00	-10,719.64	446.30	10,728.93	0.00	0.00	0.00
TD @ 16811.58' MD/6792.00' TVD									

# Noble Energy, Inc.

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site:</b>	A Section 21	<b>North Reference:</b>	Grid
<b>Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Rampart A33-770		
<b>Design:</b>	APD-Rev 0		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
SHL-RAMPART A33- - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,414,003.46	3,261,217.77	40.4660452	-104.5611574
KOP-RAMPART A33- - plan hits target center - Point	0.00	0.00	6,231.43	-472.78	317.21	1,413,530.68	3,261,534.98	40.4647383	-104.5600354
BHL-RAMPART A33- - plan hits target center - Point	0.00	0.00	6,792.00	-10,719.64	446.30	1,403,283.84	3,261,664.07	40.4366087	-104.5599619
TPZ-RAMPART A33- - plan hits target center - Point	0.00	0.00	6,792.00	-1,104.66	366.05	1,412,898.80	3,261,583.83	40.4630025	-104.5598839

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
445.00	445.00	Pierre				
496.00	496.00	Upper Pierre Aquifer Top				
1,533.00	1,533.00	Upper Pierre Aquifer Base				
3,647.57	3,634.01	Parkman				
4,170.72	4,152.01	Sussex				
5,010.98	4,984.01	Shannon				
5,970.41	5,934.01	Teepee Buttes				
6,698.98	6,608.01	Sharon Springs				
6,741.77	6,637.01	Top A Chalk				
6,773.32	6,657.01	Top A Marl				
6,963.40	6,750.01	Top B Chalk				
7,089.00	6,783.01	Top B Marl				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	Comment	
2,000.00	2,000.00	0.00	0.00	Build: 2°/100'	
2,402.05	2,400.73	-23.39	15.69	Hold: 8.04° Inc, 146.14° Azm	
6,270.79	6,231.43	-472.78	317.21	KOP: Build 9°/100' @ 6270.79' MD	
7,196.26	6,792.00	-1,104.66	366.05	TPZ/LP: 7196.26' MD, 90.00° Inc, 179.52° Azm	
16,811.58	6,792.00	-10,719.64	446.30	TD @ 16811.58' MD/6792.00' TVD	



# **Northern Region - DJ Basin**

**Wells Ranch**

**A Section 21**

**Rampart A33-770**

**Rampart A33-770**

**APD-Rev 0**

## **Anticollision Summary Report**

**01 November, 2018**

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	APD-Rev 0		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00 ft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	10/31/2018		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	2,000.00	APD-Rev 0 (Rampart A33-770)	2_Gyro-NS-CT_OWSG	A021Ga: Continuous gyro in casing
2,000.00	16,811.58	APD-Rev 0 (Rampart A33-770)	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
A Section 20						
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	646.92	599.96	1,634.21	1,630.25	412.612	CC
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	800.00	740.58	1,634.64	1,629.66	327.868	ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	6,750.00	6,610.55	2,093.65	2,051.74	49.963	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	529.89	492.89	3,074.88	3,071.71	969.450	CC
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	2,000.00	1,956.47	3,080.81	3,067.38	229.471	ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,850.00	6,727.63	3,730.08	3,687.50	87.608	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	2,000.00	1,943.00	2,953.26	2,907.65	64.744	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	2,100.00	2,042.98	2,954.13	2,906.33	61.813	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,000.00	6,705.08	3,379.05	3,224.93	21.925	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	336.96	309.02	2,084.25	2,082.39	1,122.444	CC
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	1,700.00	1,662.96	2,085.76	2,074.40	183.700	ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,500.00	6,430.40	2,679.64	2,639.48	66.724	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	360.76	304.76	7,154.57	7,152.65	3,721.363	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	2,000.00	1,932.04	7,156.17	7,142.84	536.986	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	10,900.00	6,821.58	8,978.31	8,910.39	132.189	SF
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	7,196.93	7,268.33	2,009.55	1,967.74	48.061	CC
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	16,811.58	16,876.75	2,039.08	1,859.08	11.328	ES, SF
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	2,000.00	1,979.00	2,391.46	2,378.02	177.981	CC, ES
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	16,811.58	16,771.23	2,609.33	2,430.30	14.575	SF
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	2,000.00	1,979.00	2,388.84	2,375.41	177.789	CC, ES
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	16,811.58	16,875.80	3,233.07	3,053.40	17.995	SF
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	2,000.00	1,979.00	2,386.40	2,372.96	177.609	CC, ES
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	16,811.58	16,929.96	3,947.49	3,767.97	21.989	SF
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	7,196.26	7,708.91	666.07	619.58	14.325	CC
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	16,811.58	17,304.69	692.88	510.06	3.790	ES, SF
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	7,211.28	7,389.92	1,320.01	1,276.62	30.424	CC
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	16,811.58	16,987.97	1,322.83	1,142.41	7.332	ES, SF
Simmons 42-20D - Original Drilling - Original Drilling - As	1,705.56	1,709.26	3,081.42	3,070.13	272.863	CC
Simmons 42-20D - Original Drilling - Original Drilling - As	2,000.00	1,982.16	3,082.59	3,069.29	231.771	ES
Simmons 42-20D - Original Drilling - Original Drilling - As	6,600.00	6,581.24	3,813.55	3,771.86	91.476	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	1,304.87	1,249.90	4,287.36	4,278.84	502.866	CC
Snider 1-20EG - Original Drilling - Original Drilling - As D	2,038.94	2,017.15	4,287.65	4,273.96	313.109	ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	8,200.00	6,662.28	5,074.64	5,027.29	107.164	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	202.31	155.31	4,617.33	4,616.48	5,423.547	CC
Stump A20-11 - Original Drilling - Original Drilling - As Dr	2,053.24	2,070.21	4,620.21	4,606.31	332.241	ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	7,100.00	6,972.47	5,226.19	5,181.77	117.658	SF

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

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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 20						
Stump A20-12 - Original Drilling - Original Drilling - As Dr	2,012.37	1,982.73	5,650.69	5,637.16	417.612	CC, ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	7,150.00	6,943.94	6,333.90	6,289.48	142.574	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	2,085.81	2,120.47	5,569.06	5,554.93	393.994	CC
Stump A20-13 - Original Drilling - Original Drilling - As Dr	2,100.00	2,136.18	5,569.08	5,554.87	391.773	ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	10,100.00	6,830.51	7,098.27	7,041.83	125.783	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	352.99	300.00	7,206.38	7,204.50	3,826.604	CC
Winter 20-19 - Original Drilling - Original Drilling - As Dril	400.00	324.85	7,206.45	7,204.31	3,365.360	ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	10,900.00	6,745.56	9,539.09	9,477.92	155.940	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	100.00	41.13	7,191.36	7,191.16	10,000.000	CC
Winter 24-19 - Original Drilling - Original Drilling - As Dril	500.00	388.68	7,192.69	7,189.84	2,525.694	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	7,100.00	7,013.97	8,149.38	8,092.18	142.494	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	3,514.36	4,151.09	6,437.10	6,407.45	217.098	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	10,400.00	6,850.13	8,142.37	8,073.96	119.017	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	4,179.65	5,125.86	6,634.98	6,576.41	113.281	CC
Winter 40-19 - Original Drilling - Original Drilling - As Dril	4,300.00	5,200.00	6,635.50	6,575.86	111.249	ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	7,150.00	7,068.63	7,027.46	6,952.18	93.352	SF

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 21						
Culbreath 23-21 - Original Drilling - Original Drilling - As I	1,295.79	1,270.84	1,831.29	1,822.71	213.367	CC
Culbreath 23-21 - Original Drilling - Original Drilling - As I	1,900.00	1,862.83	1,834.73	1,821.98	143.820	ES
Culbreath 23-21 - Original Drilling - Original Drilling - As I	6,500.00	6,428.76	2,156.35	2,116.05	53.519	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	3,518.28	3,466.99	2,629.73	2,551.54	33.633	CC
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	6,270.79	6,192.43	2,657.76	2,516.64	18.833	ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	6,600.00	6,494.38	2,721.73	2,573.35	18.343	SF
Harper A21-618 - Original Drilling - APD - Rev 1	2,000.00	2,000.00	209.99	196.27	15.308	CC
Harper A21-618 - Original Drilling - APD - Rev 1	2,100.00	2,106.79	210.07	195.82	14.740	ES
Harper A21-618 - Original Drilling - APD - Rev 1	6,600.00	6,883.90	564.69	524.00	13.880	SF
Harper A21-626 - Original Drilling - APD - Rev 1	2,000.00	2,000.00	231.84	218.12	16.900	CC, ES
Harper A21-626 - Original Drilling - APD - Rev 1	2,200.00	2,200.16	238.56	223.92	16.302	SF
Harper A21-631 - Original Drilling - APD - Rev 1	2,000.00	2,000.00	252.93	239.22	18.437	CC, ES
Harper A21-631 - Original Drilling - APD - Rev 1	2,200.00	2,199.84	259.60	244.96	17.741	SF
Harper A21-637 - Original Drilling - APD - Rev 1	2,000.00	2,000.00	275.14	261.42	20.055	CC, ES
Harper A21-637 - Original Drilling - APD - Rev 1	2,100.00	2,091.31	278.35	264.13	19.575	SF
Harper A21-643 - Original Drilling - APD - Rev 1	1,911.24	1,925.24	1,601.18	1,588.04	121.836	CC
Harper A21-643 - Original Drilling - APD - Rev 1	2,000.00	2,013.62	1,601.18	1,587.41	116.289	ES
Harper A21-643 - Original Drilling - APD - Rev 1	6,500.00	7,167.39	2,186.28	2,143.88	51.557	SF
Harper A21-649 - Original Drilling - APD - Rev 1	2,000.00	2,015.00	1,623.18	1,609.40	117.835	CC, ES
Harper A21-649 - Original Drilling - APD - Rev 1	6,550.00	7,278.43	2,574.30	2,531.23	59.767	SF
Harper A21-656 - Original Drilling - APD - Rev 1	2,000.00	2,015.00	1,648.19	1,634.41	119.650	CC, ES
Harper A21-656 - Original Drilling - APD - Rev 1	6,800.00	7,257.99	3,056.82	3,012.59	69.113	SF
Harper A21-664 - Original Drilling - APD - Rev 2	2,000.00	2,015.00	1,670.19	1,656.42	121.248	CC, ES
Harper A21-664 - Original Drilling - APD - Rev 2	6,400.00	5,525.06	3,112.91	3,076.73	86.023	SF
Harper A21-669 - Original Drilling - APD - Rev 1	2,000.00	2,016.00	1,691.18	1,677.40	122.739	CC, ES
Harper A21-669 - Original Drilling - APD - Rev 1	6,300.00	5,205.30	3,280.66	3,246.34	95.593	SF
Harper A21-674 - Original Drilling - APD - Rev 1	2,000.00	2,016.00	1,713.18	1,699.40	124.336	CC, ES
Harper A21-674 - Original Drilling - APD - Rev 1	6,400.00	5,074.02	3,527.25	3,493.26	103.786	SF
Harper A21-681 - Original Drilling - APD - Rev 1	1,909.84	1,926.84	1,738.20	1,725.05	132.254	CC
Harper A21-681 - Original Drilling - APD - Rev 1	2,000.00	2,000.00	1,738.28	1,724.56	126.690	ES
Harper A21-681 - Original Drilling - APD - Rev 1	6,400.00	4,789.75	3,741.73	3,709.21	115.064	SF
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drill	1,887.64	1,883.97	204.53	192.84	17.496	CC
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drill	2,009.05	2,005.77	204.64	192.34	16.641	ES
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drill	6,350.00	6,384.54	294.40	259.83	8.516	SF
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drill	100.00	95.97	238.34	238.07	900.586	CC
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drill	2,000.00	1,993.32	246.54	233.97	19.608	ES
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drill	2,100.00	2,090.32	249.61	236.84	19.547	SF
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drill	0.00	0.00	282.78			
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drill	2,100.00	2,092.22	300.80	288.73	24.926	SF
Kona A19-646 - Original Drilling - Original Drilling - As Dr	2,021.51	2,046.16	1,618.77	1,605.31	120.188	CC, ES
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,500.00	6,356.66	2,263.96	2,229.07	64.877	SF
Kona A19-662 - Original Drilling - Original Drilling - As Dr	2,024.38	2,053.02	1,716.20	1,702.71	127.184	CC, ES
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,400.00	5,791.32	3,017.43	2,984.58	91.852	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Drill	1,985.81	2,002.89	1,738.92	1,725.54	129.987	CC
Kona A19-670 - Kona A19-670 - Original Drilling - As Drill	2,000.00	2,009.72	1,738.95	1,725.52	129.500	ES
Kona A19-670 - Kona A19-670 - Original Drilling - As Drill	6,350.00	5,512.60	3,366.95	3,334.44	103.572	SF
Kona A19-685 - Original Drilling - Original Drilling - As Dr	2,002.52	2,019.80	1,691.34	1,677.85	125.432	CC, ES
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,400.00	6,400.00	3,503.02	3,468.14	100.443	SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	2,000.00	1,997.00	2,419.73	2,373.01	51.788	CC
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	2,100.00	2,096.98	2,421.32	2,372.42	49.514	ES
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,500.00	6,445.77	3,015.32	2,868.58	20.548	SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	2,000.00	2,013.00	3,932.82	3,885.78	83.602	CC
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	2,100.00	2,112.98	3,933.91	3,884.69	79.926	ES

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

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
A Section 21						
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	6,600.00	6,546.38	4,424.02	4,274.82	29.653	SF
McKee 22-21 - Original Drilling - Original Drilling - As Dril	0.00	0.00	2,662.60			
McKee 22-21 - Original Drilling - Original Drilling - As Dril	1,600.00	1,572.53	2,671.28	2,660.57	249.269	ES
McKee 22-21 - Original Drilling - Original Drilling - As Dril	6,550.00	6,495.48	3,184.40	3,143.72	78.276	SF
McKee 31-21 - Original Drilling - Original Drilling - As Dril	2,098.03	2,175.15	4,722.30	4,707.89	327.673	CC
McKee 31-21 - Original Drilling - Original Drilling - As Dril	2,100.00	2,177.05	4,722.30	4,707.88	327.443	ES
McKee 31-21 - Original Drilling - Original Drilling - As Dril	6,750.00	6,901.34	5,184.63	5,141.79	121.030	SF
McKee 32-21 - Original Drilling - Original Drilling - As Dril	0.00	0.00	3,370.52			
McKee 32-21 - Original Drilling - Original Drilling - As Dril	1,200.00	1,157.58	3,373.26	3,365.34	426.104	ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	6,650.00	6,557.98	3,739.08	3,697.72	90.393	SF
McKee 41-21 - Original Drilling - Original Drilling - As Dril	1,350.22	1,333.82	5,414.57	5,405.52	598.083	CC
McKee 41-21 - Original Drilling - Original Drilling - As Dril	2,100.00	2,130.89	5,415.83	5,401.56	379.431	ES
McKee 41-21 - Original Drilling - Original Drilling - As Dril	6,800.00	6,527.30	5,769.66	5,727.93	138.272	SF
McKee 42-21 - Original Drilling - Original Drilling - As Dril	4,777.15	4,771.76	4,377.53	4,348.66	151.636	CC
McKee 42-21 - Original Drilling - Original Drilling - As Dril	4,900.00	4,864.63	4,377.90	4,348.32	148.012	ES
McKee 42-21 - Original Drilling - Original Drilling - As Dril	6,850.00	6,716.96	4,572.19	4,529.46	106.997	SF
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	2,000.00	1,999.00	90.09	76.59	6.671	CC, ES
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	2,100.00	2,096.01	90.77	76.93	6.555	SF
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	2,000.00	2,000.00	67.45	53.94	4.993	CC, ES
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	2,100.00	2,097.72	68.17	54.32	4.922	SF
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	2,000.00	2,000.00	44.99	31.48	3.330	CC, ES
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	2,100.00	2,098.51	45.68	31.82	3.297	SF
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	2,000.00	1,999.00	22.54	9.03	1.669	CC, ES
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	2,100.00	2,098.31	23.09	9.24	1.667	SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	6,276.42	6,190.00	3,837.19	3,696.06	27.190	CC
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	6,300.00	6,213.27	3,837.42	3,695.75	27.086	ES
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	6,800.00	6,625.97	3,951.54	3,799.71	26.026	SF
Wells Trust 13-21 - Original Drilling - Original Drilling - As	2,022.66	2,006.95	1,205.08	1,191.42	88.221	CC, ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	6,400.00	6,348.11	1,762.42	1,722.93	44.636	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	2,040.63	2,001.02	515.74	502.10	37.810	CC, ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	6,300.00	6,212.24	928.65	889.89	23.958	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	3,606.30	3,542.60	298.46	277.20	14.039	CC, ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	4,600.00	4,519.79	339.83	312.47	12.419	SF

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

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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	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
A Section 28						
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	9,010.99	6,727.00	3,311.08	3,145.69	20.020	CC, ES
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	9,400.00	6,727.00	3,333.86	3,165.76	19.833	SF
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	8,873.10	6,682.41	3,334.55	3,282.10	63.577	CC
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	8,900.00	6,682.63	3,334.66	3,282.02	63.353	ES
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	9,900.00	6,690.59	3,489.08	3,430.16	59.211	SF
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,046.46	6,722.00	607.24	434.78	3.521	CC, ES, SF
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	7,165.93	6,751.21	430.85	386.60	9.737	CC, ES, SF
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	8,752.84	6,740.91	591.69	539.11	11.253	CC, ES, SF
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,075.52	6,731.48	628.12	566.52	10.197	CC, ES
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,100.00	6,731.77	628.59	566.92	10.192	SF
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,422.60	6,709.34	643.62	572.08	8.997	CC, ES, SF
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	7,514.26	6,713.78	654.02	608.44	14.350	CC, ES
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	7,600.00	6,714.66	659.62	613.57	14.325	SF
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	8,629.88	6,688.40	702.62	650.97	13.603	CC, ES
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	8,700.00	6,692.16	706.10	653.92	13.531	SF
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,446.89	6,698.85	652.95	581.41	9.127	CC, ES
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,500.00	6,698.69	655.11	583.09	9.097	SF
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	10,564.45	6,712.23	160.30	95.17	2.461	CC, ES, SF
Wardlaw 16-28 - Original Drilling - Original Drilling - As D	11,437.74	6,700.00	3,105.38	2,923.01	17.029	CC, ES
Wardlaw 16-28 - Original Drilling - Original Drilling - As D	11,800.00	6,700.00	3,126.43	2,941.30	16.887	SF
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	11,397.74	6,682.06	3,126.05	3,054.81	43.885	CC
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,682.03	3,126.05	3,054.80	43.873	ES
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	12,100.00	6,673.59	3,203.95	3,127.90	42.132	SF
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	10,786.01	6,695.00	2,792.69	2,615.34	15.747	CC
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	10,800.00	6,695.00	2,792.73	2,615.26	15.737	ES
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,100.00	6,695.00	2,810.29	2,630.55	15.635	SF
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	10,753.59	6,679.58	2,801.23	2,734.86	42.209	CC, ES
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,674.40	2,874.84	2,804.08	40.628	SF
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	9,637.43	6,227.89	1,595.22	1,539.19	28.470	CC, ES
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	13,400.00	7,561.22	3,877.30	3,699.41	21.796	SF
Webster 09-28 - Original Drilling - Original Drilling - As D	9,986.05	6,710.00	3,079.93	2,908.15	17.929	CC
Webster 09-28 - Original Drilling - Original Drilling - As D	10,000.00	6,710.00	3,079.96	2,908.07	17.918	ES
Webster 09-28 - Original Drilling - Original Drilling - As D	10,400.00	6,710.00	3,107.63	2,932.81	17.776	SF
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,325.61	6,680.24	1,788.68	1,717.98	25.302	CC, ES
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,679.61	1,809.60	1,736.93	24.900	SF
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	9,946.66	6,692.45	3,094.91	3,034.40	51.148	CC, ES
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,800.00	6,689.47	3,210.40	3,144.26	48.539	SF

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



# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 29						
Amos 1 (DA) - Wellbore #1 - No Surveys	10,099.95	3,800.00	6,327.25	6,224.04	61.303	CC
Amos 1 (DA) - Wellbore #1 - No Surveys	10,100.00	3,800.00	6,327.25	6,224.04	61.303	ES
Amos 1 (DA) - Wellbore #1 - No Surveys	12,200.00	3,800.00	6,666.65	6,550.38	57.333	SF
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	212.71	149.72	4,441.70	4,440.84	5,144.579	CC
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	900.00	811.82	4,444.79	4,439.21	796.658	ES
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	9,300.00	6,699.96	5,096.54	5,043.84	96.725	SF
Andy 29-1 (PA) - Wellbore #1 - No Surveys	8,806.02	6,719.00	4,589.24	4,425.34	28.001	CC, ES
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,500.00	6,719.00	4,641.42	4,473.44	27.631	SF
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	8,627.10	6,742.90	5,869.23	5,817.74	113.997	CC, ES
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	11,300.00	6,730.31	6,449.19	6,383.19	97.701	SF
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	8,756.54	6,728.57	3,395.13	3,342.60	64.635	CC, ES
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	9,700.00	6,729.02	3,523.78	3,466.33	61.338	SF
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	1,791.23	1,725.29	3,048.05	3,036.16	256.353	CC
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	2,000.00	1,913.82	3,048.76	3,035.49	229.668	ES
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	8,200.00	6,738.14	3,190.27	3,141.77	65.780	SF
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	7,466.74	6,747.22	1,807.56	1,762.06	39.722	CC, ES
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	7,700.00	6,745.97	1,822.55	1,776.15	39.276	SF
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	8,863.84	6,713.98	4,874.89	4,821.72	91.700	CC
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	8,900.00	6,713.79	4,875.02	4,821.64	91.327	ES
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	10,700.00	6,704.37	5,209.21	5,146.09	82.525	SF
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,117.17	7,025.14	3,253.57	3,183.06	46.148	CC, ES
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,800.00	6,961.58	3,323.84	3,249.62	44.782	SF
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,379.22	6,680.08	1,742.77	1,671.72	24.532	CC
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,680.60	1,742.89	1,671.72	24.489	ES
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,685.64	1,756.68	1,684.56	24.356	SF
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,154.84	6,724.64	3,315.15	3,253.00	53.345	CC, ES
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,900.00	6,716.99	3,397.85	3,331.60	51.284	SF
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	10,228.14	6,755.85	1,932.66	1,869.83	30.761	CC, ES
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	10,500.00	6,754.30	1,951.68	1,887.48	30.400	SF
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,179.45	6,585.75	3,333.48	3,264.30	48.184	CC
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,200.00	6,584.63	3,333.55	3,264.23	48.092	ES
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,800.00	6,553.72	3,390.57	3,317.99	46.717	SF
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,334.68	6,705.69	5,962.26	5,891.45	84.195	CC
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,705.05	5,962.62	5,891.34	83.651	ES
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	13,400.00	6,689.06	6,309.81	6,226.93	76.130	SF
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,080.86	6,722.00	6,039.68	5,978.10	98.085	CC
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,100.00	6,722.08	6,039.71	5,978.00	97.878	ES
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	12,500.00	6,732.55	6,506.14	6,430.60	86.136	SF
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,511.23	6,556.11	4,463.04	4,391.51	62.391	CC, ES
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	12,700.00	6,510.81	4,618.39	4,540.24	59.096	SF
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	10,856.27	10,856.27	5,105.06	5,023.40	62.514	CC
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	10,900.00	10,900.00	5,105.25	5,023.13	62.169	ES
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,000.00	11,000.00	5,107.08	5,023.93	61.417	SF
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,401.64	6,699.34	4,417.24	4,353.40	69.187	CC, ES
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	6,695.43	4,604.10	4,532.87	64.638	SF

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

# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 32						
Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys	15,243.30	6,863.64	5,974.60	5,872.42	58.471	CC
Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys	15,300.00	6,866.62	5,974.86	5,872.25	58.223	ES
Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys	16,700.00	6,942.96	6,149.08	6,037.95	55.332	SF
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,624.32	6,833.59	5,864.51	5,751.38	51.841	CC
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,700.00	6,831.98	5,865.00	5,751.31	51.587	ES
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,811.58	6,829.62	5,867.50	5,753.00	51.245	SF
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,440.26	6,705.53	3,304.13	3,200.97	32.029	CC, ES
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,900.00	6,703.31	3,335.96	3,230.21	31.546	SF
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	16,663.32	6,672.17	1,929.90	1,817.03	17.099	CC, ES
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	16,800.00	6,672.66	1,934.73	1,821.16	17.035	SF
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	12,700.49	6,657.55	3,291.56	3,210.39	40.552	CC, ES
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,300.00	6,649.19	3,345.70	3,261.22	39.604	SF
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,035.19	6,680.53	3,301.00	3,209.19	35.955	CC, ES
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,500.00	6,677.56	3,333.57	3,239.07	35.276	SF
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,336.94	6,802.03	5,672.28	5,577.61	59.917	CC
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	6,803.65	5,672.63	5,577.49	59.624	ES
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	15,800.00	6,839.71	5,857.81	5,754.44	56.672	SF
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,201.28	6,730.77	4,430.45	4,337.13	47.478	CC, ES
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	15,100.00	6,733.80	4,520.68	4,422.10	45.855	SF
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	12,738.80	6,684.22	1,996.32	1,914.73	24.468	CC, ES
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,683.96	2,002.82	1,920.34	24.283	SF
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	13,960.17	6,671.65	2,004.31	1,913.13	21.983	CC, ES
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,100.00	6,671.27	2,009.18	1,917.23	21.850	SF
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,270.10	6,682.60	2,413.85	2,328.36	28.235	CC
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,300.00	6,681.82	2,414.03	2,328.35	28.172	ES
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,500.00	6,676.62	2,424.76	2,337.99	27.943	SF
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,307.68	6,678.85	4,993.07	4,906.99	58.006	CC, ES
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	14,500.00	6,695.90	5,133.42	5,040.18	55.057	SF
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,504.76	12,504.76	4,513.12	4,412.97	45.064	CC
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,600.00	12,600.00	4,514.12	4,412.95	44.618	ES, SF
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,521.20	6,700.00	5,848.15	5,657.43	30.663	CC
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,600.00	6,700.00	5,848.68	5,657.38	30.574	ES
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	13,500.00	6,700.00	5,929.49	5,732.29	30.068	SF
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,223.94	6,718.92	4,375.03	4,273.58	43.125	CC, ES
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	16,000.00	6,725.19	4,443.32	4,337.26	41.893	SF
Webster 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,811.58	6,636.46	4,594.36	4,482.14	40.941	CC, ES, SF
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	16,606.68	6,659.51	3,188.20	3,075.86	28.380	CC, ES
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	16,811.58	6,660.02	3,194.78	3,081.13	28.111	SF
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,262.40	6,633.26	1,975.05	1,873.67	19.482	CC, ES
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,400.00	6,634.87	1,979.83	1,877.71	19.387	SF

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



# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	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
A Section 33						
Achziger 11-33 (PR) - Wellbore #1 - Gyro Surveys	15,185.72	6,664.58	871.35	770.34	8.626	CC
Achziger 11-33 (PR) - Wellbore #1 - Gyro Surveys	15,200.00	6,664.74	871.47	770.31	8.614	ES, SF
Achziger 14-33 (PA) - Wellbore #1 - No Surveys	16,800.55	6,660.00	639.34	415.32	2.854	CC
Achziger 14-33 (PA) - Wellbore #1 - No Surveys	16,811.58	6,660.00	639.44	415.29	2.853	ES, SF
Briggs 15-33 (SI) - Wellbore #1 - Gyro Surveys	16,594.89	6,581.28	1,947.71	1,835.67	17.383	CC
Briggs 15-33 (SI) - Wellbore #1 - Gyro Surveys	16,600.00	6,581.30	1,947.72	1,835.63	17.376	ES
Briggs 15-33 (SI) - Wellbore #1 - Gyro Surveys	16,800.00	6,582.09	1,958.48	1,844.98	17.254	SF
Ehrlich 19-33 (PR) - Wellbore #1 - Gyro Survey	16,020.59	6,667.59	150.55	42.88	1.398	Level 3, CC, ES, SF
French 09-33 - Original Drilling - Original Drilling - As Dril	15,269.39	6,727.40	3,307.81	3,206.04	32.505	CC
French 09-33 - Original Drilling - Original Drilling - As Dril	15,300.00	6,726.95	3,307.95	3,205.92	32.421	ES
French 09-33 - Original Drilling - Original Drilling - As Dril	15,800.00	6,719.65	3,350.09	3,244.59	31.757	SF
Hammerbeck 16-33 - Original Drilling - Original Drilling -	16,684.59	6,744.26	3,367.73	3,254.55	29.755	CC
Hammerbeck 16-33 - Original Drilling - Original Drilling -	16,700.00	6,744.36	3,367.77	3,254.45	29.719	ES
Hammerbeck 16-33 - Original Drilling - Original Drilling -	16,811.58	6,745.06	3,370.12	3,255.87	29.497	SF
Hammerbeck 20-33 - Wellbore #1 - Gyro Surveys	15,960.02	6,716.85	2,603.77	2,496.53	24.280	CC
Hammerbeck 20-33 - Wellbore #1 - Gyro Surveys	16,000.00	6,716.37	2,604.08	2,496.49	24.203	ES
Hammerbeck 20-33 - Wellbore #1 - Gyro Surveys	16,300.00	6,712.72	2,625.87	2,516.21	23.945	SF
Noffsinger 11-33 (PR) - Wellbore #1 - Gyro Surveys	12,526.34	6,686.31	772.52	692.59	9.665	CC, ES, SF
Noffsinger 12-33 (PR) - Wellbore #1 - Gyro Surveys	14,257.34	6,711.82	580.57	486.86	6.196	CC, ES, SF
Noffsinger 21-33 (PA) - Wellbore #1 - No Surveys	12,499.93	6,700.00	653.19	462.88	3.432	CC
Noffsinger 21-33 (PA) - Wellbore #1 - No Surveys	12,500.00	6,700.00	653.19	462.88	3.432	ES, SF
Noffsinger 22-33 (PR) - Wellbore #1 - Gyro Surveys	12,470.97	6,373.09	2,194.16	2,115.63	27.939	CC
Noffsinger 22-33 (PR) - Wellbore #1 - Gyro Surveys	12,500.00	6,372.10	2,194.36	2,115.57	27.852	ES
Noffsinger 22-33 (PR) - Wellbore #1 - Gyro Surveys	12,800.00	6,361.55	2,218.66	2,137.79	27.433	SF
Noffsinger 31-33 (PR) - Wellbore #1 - Gyro Surveys						Out of range
Noffsinger 32-33 (PR) - Wellbore #1 - Gyro Surveys	14,275.50	6,595.28	1,853.31	1,759.77	19.812	CC
Noffsinger 32-33 (PR) - Wellbore #1 - Gyro Surveys	14,300.00	6,596.12	1,853.47	1,759.70	19.766	ES
Noffsinger 32-33 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,602.72	1,866.85	1,771.67	19.614	SF
Sitzman 12-33 (PR) - Wellbore #1 - Gyro Surveys	15,340.01	6,674.40	715.18	612.93	6.994	CC, ES, SF
Sitzman 13-33 (SI) - Wellbore #1 - Gyro Surveys	16,811.58	6,664.19	715.03	601.29	6.286	CC, ES, SF
Sughrue 41-33 - Original Drilling - Original Drilling - As I	12,501.79	6,873.82	3,358.31	3,278.09	41.866	CC, ES
Sughrue 41-33 - Original Drilling - Original Drilling - As I	13,200.00	6,840.74	3,429.96	3,344.91	40.330	SF
Webster 10-33 (PA) - Wellbore #1 - Gyro Surveys	15,239.26	6,610.03	2,004.98	1,903.87	19.830	CC, ES
Webster 10-33 (PA) - Wellbore #1 - Gyro Surveys	15,500.00	6,606.88	2,021.86	1,918.95	19.646	SF

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

# Noble Energy, Inc.

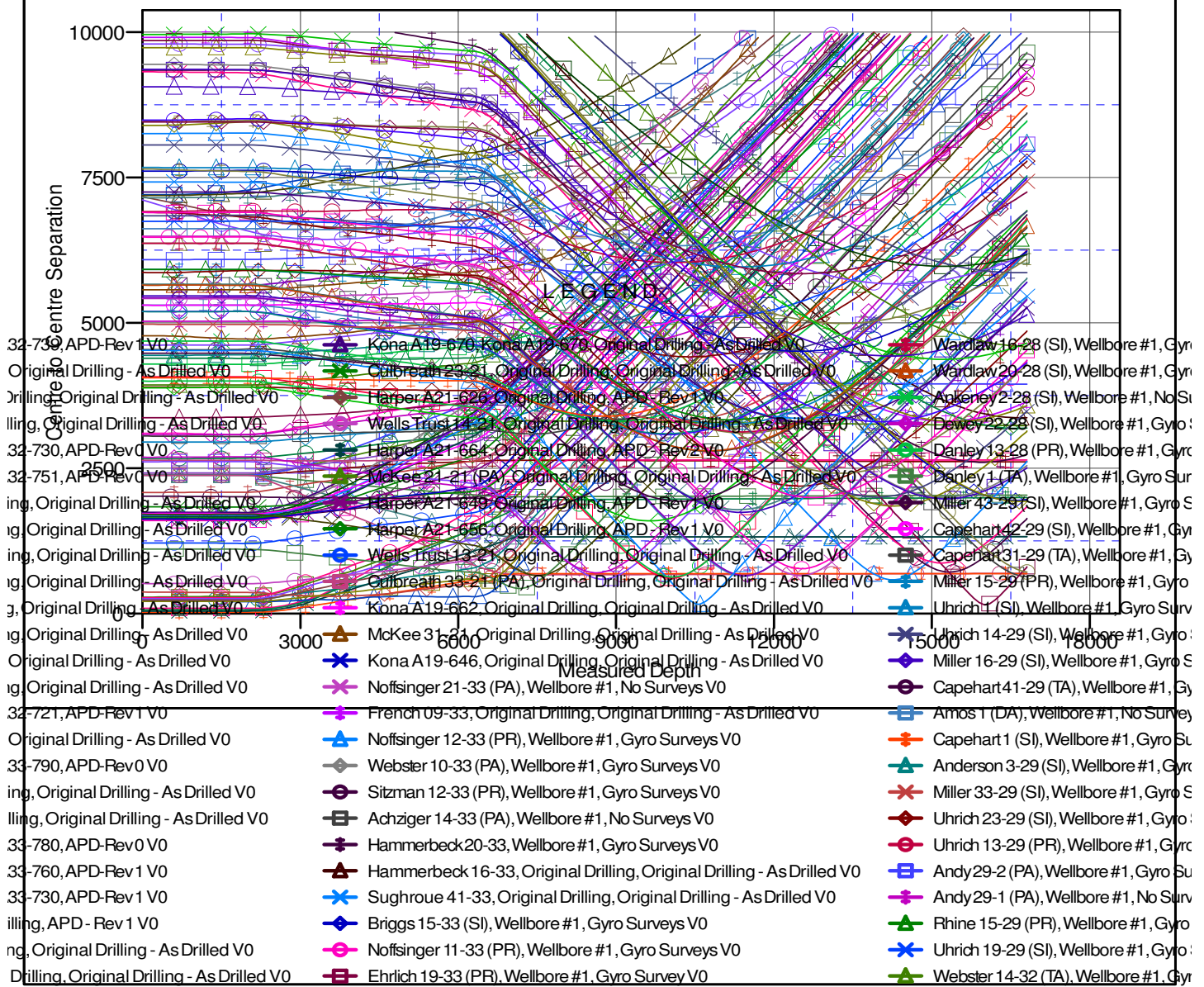
## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to Well @ 4757.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: Rampart A33-770  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.61°

### Ladder Plot



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

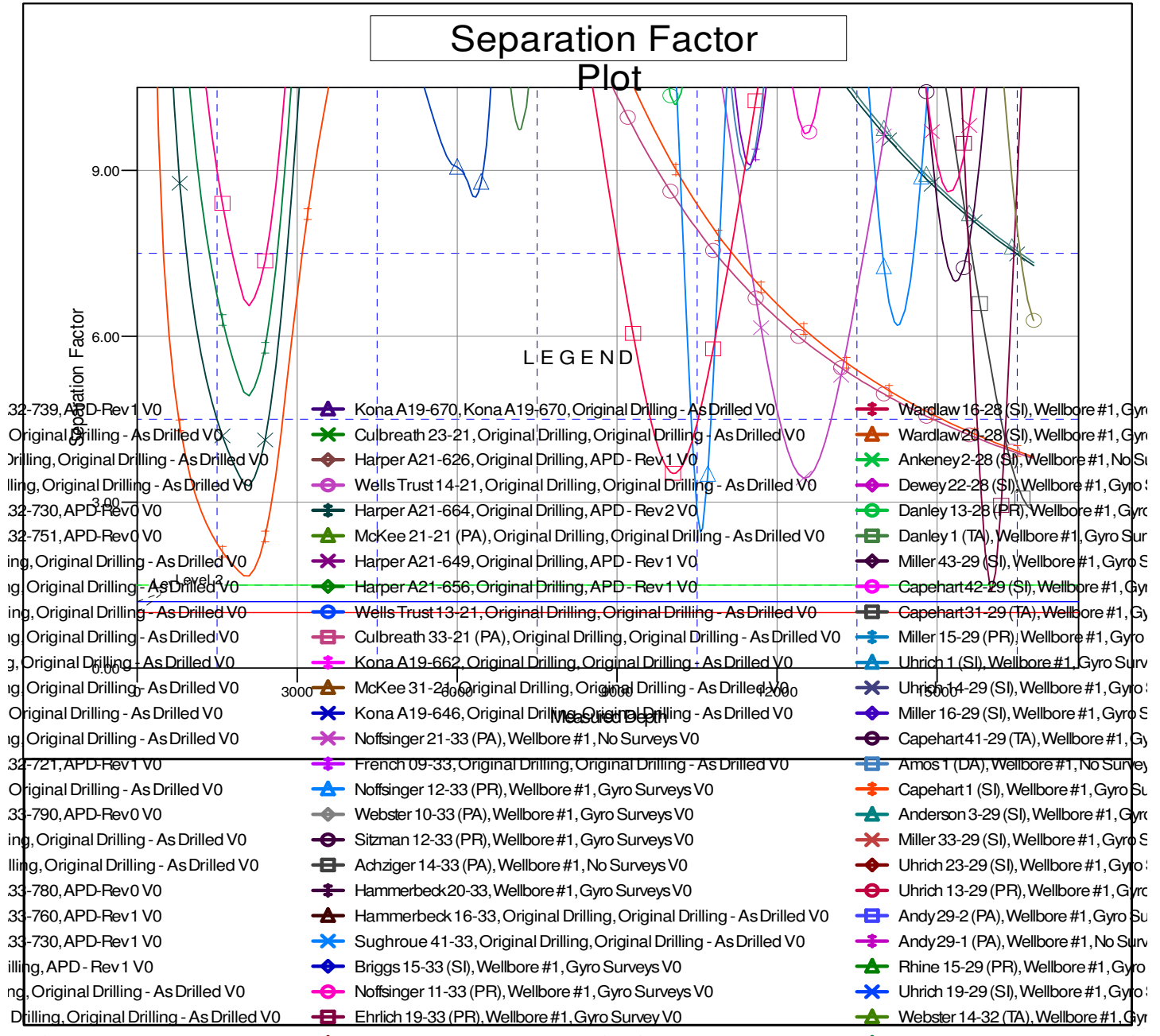
# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Rampart A33-770
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4757.00ft
<b>Reference Site:</b>	A Section 21	<b>MD Reference:</b>	Well @ 4757.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Rampart A33-770	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Rampart A33-770	<b>Database:</b>	EDMP
<b>Reference Design:</b>	APD-Rev 0	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to Well @ 4757.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: Rampart A33-770  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
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