

Project: Wells Ranch  
Site: A Section 30  
Well: Roth A32-760  
Wellbore: Roth A32-760  
Design: Plan #2

# Northern Region - DJ Basin

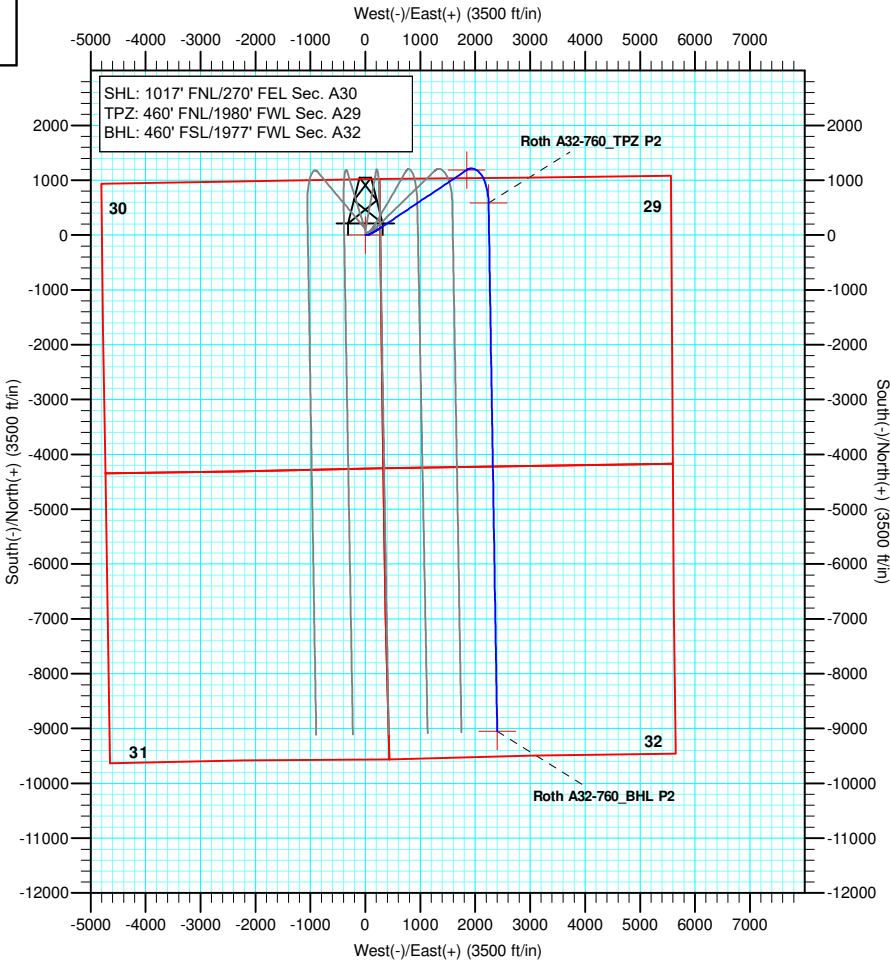
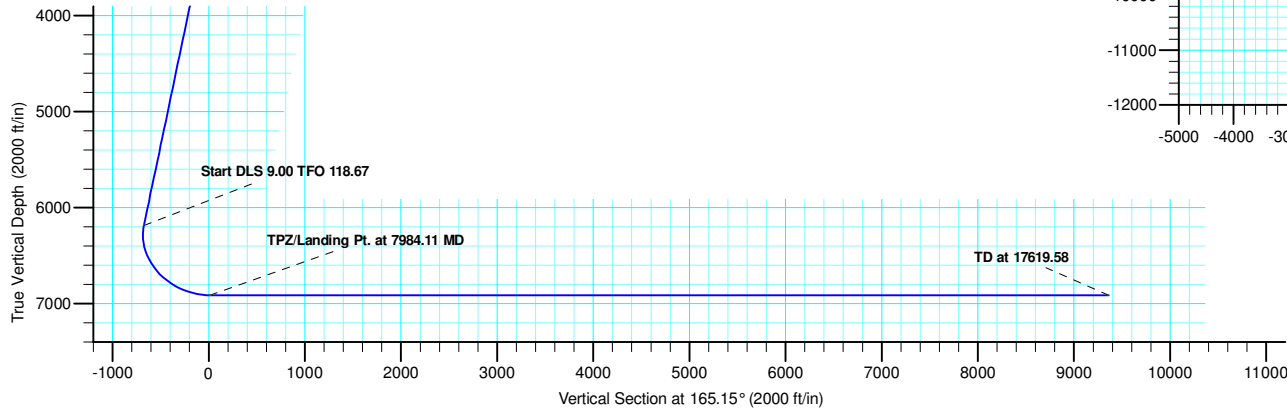
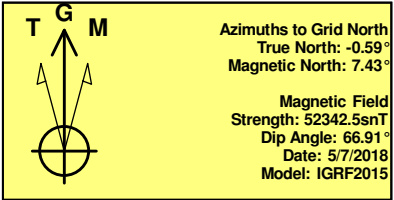
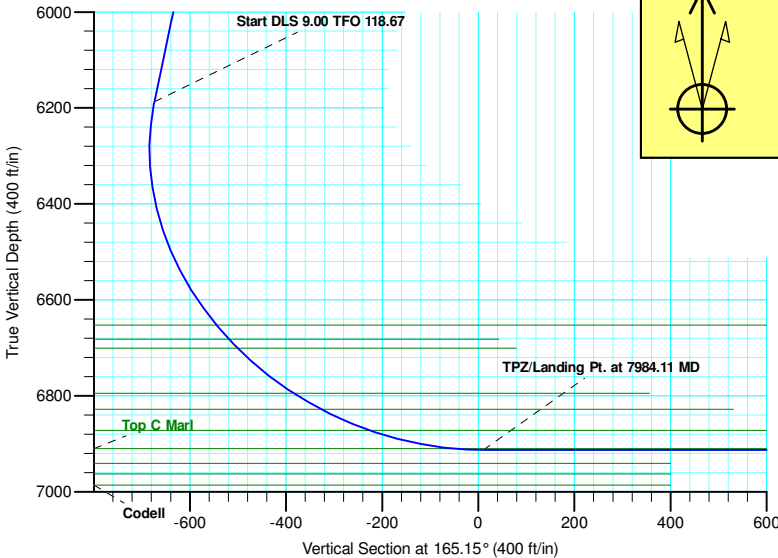
Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone  
System Datum: Mean Sea Level

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	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	
3	2200.00	6.00	90.00	2199.63	0.00	10.46	3.00	90.00	2.68	
4	2400.00	6.00	90.00	2398.54	0.00	31.37	0.00	0.00	8.04	
5	3327.50	32.62	56.07	3267.48	142.35	292.44	3.00	-40.14	-62.66	
6	6794.42	32.62	56.07	6187.43	1185.52	1843.32	0.00	0.00	-673.60	
7	7984.11	90.00	179.07	6913.00	583.36	2242.69	9.00	118.67	10.79	Roth A32-760_TPZ P2
8	17619.58	90.00	179.07	6913.00	-9050.83	2399.33	0.00	0.00	9363.45	Roth A32-760_BHL P2

WELL DETAILS: Roth A32-760

+N/-S	+E/-W	Northing	Ground Level: Easting	4697.00 Latitude	Longitude	Slot
0.00	0.00	1412250.21	3254696.18	40.4614200	-104.5846600	



Plan: Plan #2 (Roth A32-760/Roth A32-760)

Created By: Shelly Peterkin Date: 11:53, May 11 2020

# **Northern Region - DJ Basin**

**Wells Ranch  
A Section 30  
Roth A32-760**

**Roth A32-760**

**Plan: Plan #2**

## **Standard Planning Report**

**11 May, 2020**

# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-760	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-760		
<b>Design:</b>	Plan #2		

<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		

<b>Site</b>	A Section 30			
<b>Site Position:</b>		<b>Northing:</b>	1,408,333.31 usft	<b>Latitude:</b> 40.4507887
<b>From:</b> Map		<b>Easting:</b>	3,250,427.20 usft	<b>Longitude:</b> -104.6001438
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> 0.58 °

<b>Well</b>	Roth A32-760			
<b>Well Position</b>	<b>+N/-S</b>	3,916.90 ft	<b>Northing:</b>	1,412,250.21 usft
	<b>+E/-W</b>	4,268.99 ft	<b>Easting:</b>	3,254,696.18 usft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 40.4614200
				<b>Longitude:</b> -104.5846600
				<b>Ground Level:</b> 4,697.00 ft

<b>Wellbore</b>	Roth A32-760				
<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	8.03	66.91	52,342.46005283

<b>Design</b>	Plan #2			
<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	165.15

<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	
2,200.00	6.00	90.00	2,199.63	0.00	10.46	3.00	3.00	0.00	90.00	
2,400.00	6.00	90.00	2,398.54	0.00	31.37	0.00	0.00	0.00	0.00	
3,327.50	32.62	56.07	3,267.48	142.35	292.44	3.00	2.87	-3.66	-40.14	
6,794.42	32.62	56.07	6,187.43	1,185.52	1,843.32	0.00	0.00	0.00	0.00	
7,984.11	90.00	179.07	6,913.00	583.36	2,242.69	9.00	4.82	10.34	118.67	Roth A32-760_TPZ P.
17,619.58	90.00	179.07	6,913.00	-9,050.83	2,399.33	0.00	0.00	0.00	0.00	Roth A32-760_BHL P.

# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-760	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-760		
<b>Design:</b>	Plan #2		

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
417.00	0.00	0.00	417.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Pierre</b>									
446.00	0.00	0.00	446.00	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
1,463.00	0.00	0.00	1,463.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Upper Pierre Aquifer Base</b>									
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 3.00</b>									
2,100.00	3.00	90.00	2,099.95	0.00	2.62	0.67	3.00	3.00	0.00
2,200.00	6.00	90.00	2,199.63	0.00	10.46	2.68	3.00	3.00	0.00
<b>Start 200.00 hold at 2200.00 MD</b>									
2,300.00	6.00	90.00	2,299.09	0.00	20.92	5.36	0.00	0.00	0.00
2,400.00	6.00	90.00	2,398.54	0.00	31.37	8.04	0.00	0.00	0.00
<b>Start DLS 3.00 TFO -40.14</b>									
2,500.00	8.52	76.83	2,497.74	1.69	43.81	9.59	3.00	2.52	-13.17
2,600.00	11.27	69.83	2,596.24	6.74	60.19	8.90	3.00	2.75	-7.00
2,700.00	14.12	65.59	2,693.79	15.16	80.48	5.97	3.00	2.85	-4.24
2,800.00	17.03	62.76	2,790.11	26.90	104.61	0.80	3.00	2.90	-2.83
2,900.00	19.96	60.74	2,884.94	41.95	132.52	-6.59	3.00	2.93	-2.02
3,000.00	22.90	59.22	2,978.02	60.26	164.13	-16.19	3.00	2.95	-1.52
3,100.00	25.86	58.02	3,069.09	81.77	199.36	-27.96	3.00	2.96	-1.19
3,200.00	28.83	57.06	3,157.90	106.44	238.11	-41.87	3.00	2.97	-0.96
3,300.00	31.81	56.27	3,244.21	134.19	280.27	-57.89	3.00	2.97	-0.80
3,327.50	32.62	56.07	3,267.48	142.35	292.44	-62.66	3.00	2.98	-0.71
<b>Start 3466.92 hold at 3327.50 MD</b>									
3,400.00	32.62	56.07	3,328.54	164.16	324.88	-75.43	0.00	0.00	0.00
3,500.00	32.62	56.07	3,412.76	194.25	369.61	-93.06	0.00	0.00	0.00
3,600.00	32.62	56.07	3,496.99	224.34	414.34	-110.68	0.00	0.00	0.00
3,700.00	32.62	56.07	3,581.21	254.43	459.08	-128.30	0.00	0.00	0.00
3,734.18	32.62	56.07	3,610.00	264.72	474.37	-134.32	0.00	0.00	0.00
<b>Parkman</b>									
3,800.00	32.62	56.07	3,665.43	284.52	503.81	-145.92	0.00	0.00	0.00
3,900.00	32.62	56.07	3,749.66	314.61	548.54	-163.54	0.00	0.00	0.00

# Noble Energy

## Planning Report

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<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-760	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-760		
<b>Design:</b>	Plan #2		

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)
4,000.00	32.62	56.07	3,833.88	344.70	593.28	-181.17	0.00	0.00	0.00
4,100.00	32.62	56.07	3,918.10	374.79	638.01	-198.79	0.00	0.00	0.00
4,200.00	32.62	56.07	4,002.33	404.88	682.75	-216.41	0.00	0.00	0.00
4,300.00	32.62	56.07	4,086.55	434.97	727.48	-234.03	0.00	0.00	0.00
4,370.59	32.62	56.07	4,146.00	456.20	759.05	-246.47	0.00	0.00	0.00
Sussex									
4,400.00	32.62	56.07	4,170.77	465.06	772.21	-251.65	0.00	0.00	0.00
4,500.00	32.62	56.07	4,255.00	495.14	816.95	-269.28	0.00	0.00	0.00
4,600.00	32.62	56.07	4,339.22	525.23	861.68	-286.90	0.00	0.00	0.00
4,700.00	32.62	56.07	4,423.44	555.32	906.41	-304.52	0.00	0.00	0.00
4,800.00	32.62	56.07	4,507.67	585.41	951.15	-322.14	0.00	0.00	0.00
4,900.00	32.62	56.07	4,591.89	615.50	995.88	-339.76	0.00	0.00	0.00
5,000.00	32.62	56.07	4,676.11	645.59	1,040.61	-357.39	0.00	0.00	0.00
5,100.00	32.62	56.07	4,760.34	675.68	1,085.35	-375.01	0.00	0.00	0.00
5,200.00	32.62	56.07	4,844.56	705.77	1,130.08	-392.63	0.00	0.00	0.00
5,300.00	32.62	56.07	4,928.78	735.86	1,174.81	-410.25	0.00	0.00	0.00
5,305.01	32.62	56.07	4,933.00	737.36	1,177.05	-411.13	0.00	0.00	0.00
Shannon									
5,400.00	32.62	56.07	5,013.01	765.95	1,219.55	-427.87	0.00	0.00	0.00
5,500.00	32.62	56.07	5,097.23	796.04	1,264.28	-445.49	0.00	0.00	0.00
5,600.00	32.62	56.07	5,181.45	826.13	1,309.01	-463.12	0.00	0.00	0.00
5,700.00	32.62	56.07	5,265.68	856.22	1,353.75	-480.74	0.00	0.00	0.00
5,800.00	32.62	56.07	5,349.90	886.30	1,398.48	-498.36	0.00	0.00	0.00
5,900.00	32.62	56.07	5,434.12	916.39	1,443.21	-515.98	0.00	0.00	0.00
6,000.00	32.62	56.07	5,518.35	946.48	1,487.95	-533.60	0.00	0.00	0.00
6,100.00	32.62	56.07	5,602.57	976.57	1,532.68	-551.23	0.00	0.00	0.00
6,200.00	32.62	56.07	5,686.79	1,006.66	1,577.41	-568.85	0.00	0.00	0.00
6,300.00	32.62	56.07	5,771.02	1,036.75	1,622.15	-586.47	0.00	0.00	0.00
6,400.00	32.62	56.07	5,855.24	1,066.84	1,666.88	-604.09	0.00	0.00	0.00
6,493.51	32.62	56.07	5,934.00	1,094.98	1,708.71	-620.57	0.00	0.00	0.00
Teepee Buttes									
6,500.00	32.62	56.07	5,939.46	1,096.93	1,711.61	-621.71	0.00	0.00	0.00
6,600.00	32.62	56.07	6,023.69	1,127.02	1,756.35	-639.34	0.00	0.00	0.00
6,700.00	32.62	56.07	6,107.91	1,157.11	1,801.08	-656.96	0.00	0.00	0.00
6,794.42	32.62	56.07	6,187.43	1,185.52	1,843.32	-673.60	0.00	0.00	0.00
Start DLS 9.00 TFO 118.67									
6,800.00	32.39	56.90	6,192.14	1,187.17	1,845.82	-674.56	9.00	-4.27	14.74
6,850.00	30.51	64.74	6,234.81	1,199.91	1,868.52	-681.05	9.00	-3.76	15.69
6,900.00	29.15	73.37	6,278.21	1,208.81	1,891.68	-683.72	9.00	-2.72	17.27
6,950.00	28.38	82.60	6,322.06	1,213.83	1,915.14	-682.56	9.00	-1.53	18.45
7,000.00	28.26	92.09	6,366.10	1,214.93	1,938.77	-677.57	9.00	-0.24	18.98
7,050.00	28.80	101.45	6,410.05	1,212.10	1,962.42	-668.78	9.00	1.07	18.73
7,100.00	29.95	110.33	6,453.64	1,205.37	1,985.93	-656.25	9.00	2.30	17.76
7,150.00	31.65	118.48	6,496.61	1,194.78	2,009.17	-640.05	9.00	3.40	16.29
7,200.00	33.81	125.78	6,538.69	1,180.38	2,032.00	-620.28	9.00	4.33	14.61
7,250.00	36.36	132.24	6,579.61	1,162.28	2,054.27	-597.08	9.00	5.10	12.92
7,300.00	39.21	137.92	6,619.13	1,140.57	2,075.84	-570.57	9.00	5.71	11.37
7,344.59	41.97	142.42	6,653.00	1,118.28	2,094.39	-544.27	9.00	6.17	10.07
Sharon Springs									
7,350.00	42.31	142.93	6,657.01	1,115.40	2,096.59	-540.92	9.00	6.38	9.46
7,384.41	44.56	146.03	6,682.00	1,096.14	2,110.32	-518.79	9.00	6.53	9.01
Top A Chalk									
7,400.00	45.60	147.35	6,693.01	1,086.92	2,116.38	-508.32	9.00	6.70	8.49

# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-760	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-760		
<b>Design:</b>	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,411.50	46.38	148.30	6,701.00	1,079.91	2,120.79	-500.42	9.00	6.78	8.23
Top A Marl									
7,450.00	49.04	151.30	6,726.90	1,055.30	2,135.10	-472.96	9.00	6.92	7.79
7,500.00	52.61	154.84	6,758.49	1,020.74	2,152.62	-435.07	9.00	7.13	7.09
7,550.00	56.27	158.06	6,787.57	983.46	2,168.84	-394.87	9.00	7.32	6.44
7,563.56	57.27	158.89	6,795.00	972.91	2,173.00	-383.61	9.00	7.42	6.08
Top B Chalk									
7,600.00	60.00	161.02	6,813.96	943.68	2,183.66	-352.62	9.00	7.49	5.84
7,629.05	62.20	162.63	6,828.00	919.52	2,191.59	-327.24	9.00	7.57	5.56
Top B Marl									
7,650.00	63.80	163.75	6,837.51	901.65	2,196.98	-308.58	9.00	7.63	5.36
7,700.00	67.65	166.32	6,858.06	857.62	2,208.73	-263.02	9.00	7.69	5.13
7,739.19	70.69	168.23	6,872.00	821.90	2,216.80	-226.42	9.00	7.76	4.88
Top C Chalk									
7,750.00	71.53	168.74	6,875.50	811.88	2,218.84	-216.21	9.00	7.79	4.76
7,800.00	75.45	171.06	6,889.71	764.69	2,227.24	-168.45	9.00	7.83	4.63
7,850.00	79.38	173.29	6,900.60	716.36	2,233.87	-120.03	9.00	7.87	4.47
7,900.00	83.33	175.47	6,908.11	667.18	2,238.70	-71.25	9.00	7.90	4.36
7,918.24	84.78	176.26	6,910.00	649.08	2,240.01	-53.42	9.00	7.92	4.30
Top C Marl									
7,950.00	87.30	177.62	6,912.20	617.45	2,241.70	-22.41	9.00	7.92	4.28
7,984.11	90.00	179.07	6,913.00	583.36	2,242.69	10.79	9.00	7.93	4.26
TPZ/Landing Pt. at 7984.11 MD									
8,000.00	90.00	179.07	6,913.00	567.48	2,242.95	26.21	0.00	0.00	0.00
8,100.00	90.00	179.07	6,913.00	467.49	2,244.57	123.27	0.00	0.00	0.00
8,200.00	90.00	179.07	6,913.00	367.51	2,246.20	220.34	0.00	0.00	0.00
8,300.00	90.00	179.07	6,913.00	267.52	2,247.83	317.40	0.00	0.00	0.00
8,400.00	90.00	179.07	6,913.00	167.53	2,249.45	414.47	0.00	0.00	0.00
8,500.00	90.00	179.07	6,913.00	67.55	2,251.08	511.53	0.00	0.00	0.00
8,600.00	90.00	179.07	6,913.00	-32.44	2,252.70	608.60	0.00	0.00	0.00
8,700.00	90.00	179.07	6,913.00	-132.43	2,254.33	705.66	0.00	0.00	0.00
8,800.00	90.00	179.07	6,913.00	-232.41	2,255.95	802.73	0.00	0.00	0.00
8,900.00	90.00	179.07	6,913.00	-332.40	2,257.58	899.79	0.00	0.00	0.00
9,000.00	90.00	179.07	6,913.00	-432.39	2,259.21	996.86	0.00	0.00	0.00
9,100.00	90.00	179.07	6,913.00	-532.38	2,260.83	1,093.92	0.00	0.00	0.00
9,200.00	90.00	179.07	6,913.00	-632.36	2,262.46	1,190.99	0.00	0.00	0.00
9,300.00	90.00	179.07	6,913.00	-732.35	2,264.08	1,288.05	0.00	0.00	0.00
9,400.00	90.00	179.07	6,913.00	-832.34	2,265.71	1,385.12	0.00	0.00	0.00
9,500.00	90.00	179.07	6,913.00	-932.32	2,267.33	1,482.18	0.00	0.00	0.00
9,600.00	90.00	179.07	6,913.00	-1,032.31	2,268.96	1,579.25	0.00	0.00	0.00
9,700.00	90.00	179.07	6,913.00	-1,132.30	2,270.58	1,676.31	0.00	0.00	0.00
9,800.00	90.00	179.07	6,913.00	-1,232.28	2,272.21	1,773.38	0.00	0.00	0.00
9,900.00	90.00	179.07	6,913.00	-1,332.27	2,273.84	1,870.44	0.00	0.00	0.00
10,000.00	90.00	179.07	6,913.00	-1,432.26	2,275.46	1,967.51	0.00	0.00	0.00
10,100.00	90.00	179.07	6,913.00	-1,532.24	2,277.09	2,064.57	0.00	0.00	0.00
10,200.00	90.00	179.07	6,913.00	-1,632.23	2,278.71	2,161.64	0.00	0.00	0.00
10,300.00	90.00	179.07	6,913.00	-1,732.22	2,280.34	2,258.70	0.00	0.00	0.00
10,400.00	90.00	179.07	6,913.00	-1,832.20	2,281.96	2,355.77	0.00	0.00	0.00
10,500.00	90.00	179.07	6,913.00	-1,932.19	2,283.59	2,452.83	0.00	0.00	0.00
10,600.00	90.00	179.07	6,913.00	-2,032.18	2,285.22	2,549.90	0.00	0.00	0.00
10,700.00	90.00	179.07	6,913.00	-2,132.16	2,286.84	2,646.96	0.00	0.00	0.00
10,800.00	90.00	179.07	6,913.00	-2,232.15	2,288.47	2,744.03	0.00	0.00	0.00
10,900.00	90.00	179.07	6,913.00	-2,332.14	2,290.09	2,841.09	0.00	0.00	0.00

# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-760	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-760		
<b>Design:</b>	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,000.00	90.00	179.07	6,913.00	-2,432.12	2,291.72	2,938.16	0.00	0.00	0.00
11,100.00	90.00	179.07	6,913.00	-2,532.11	2,293.34	3,035.22	0.00	0.00	0.00
11,200.00	90.00	179.07	6,913.00	-2,632.10	2,294.97	3,132.29	0.00	0.00	0.00
11,300.00	90.00	179.07	6,913.00	-2,732.08	2,296.59	3,229.35	0.00	0.00	0.00
11,400.00	90.00	179.07	6,913.00	-2,832.07	2,298.22	3,326.42	0.00	0.00	0.00
11,500.00	90.00	179.07	6,913.00	-2,932.06	2,299.85	3,423.48	0.00	0.00	0.00
11,600.00	90.00	179.07	6,913.00	-3,032.05	2,301.47	3,520.55	0.00	0.00	0.00
11,700.00	90.00	179.07	6,913.00	-3,132.03	2,303.10	3,617.61	0.00	0.00	0.00
11,800.00	90.00	179.07	6,913.00	-3,232.02	2,304.72	3,714.68	0.00	0.00	0.00
11,900.00	90.00	179.07	6,913.00	-3,332.01	2,306.35	3,811.74	0.00	0.00	0.00
12,000.00	90.00	179.07	6,913.00	-3,431.99	2,307.97	3,908.81	0.00	0.00	0.00
12,100.00	90.00	179.07	6,913.00	-3,531.98	2,309.60	4,005.87	0.00	0.00	0.00
12,200.00	90.00	179.07	6,913.00	-3,631.97	2,311.23	4,102.94	0.00	0.00	0.00
12,300.00	90.00	179.07	6,913.00	-3,731.95	2,312.85	4,200.00	0.00	0.00	0.00
12,400.00	90.00	179.07	6,913.00	-3,831.94	2,314.48	4,297.07	0.00	0.00	0.00
12,500.00	90.00	179.07	6,913.00	-3,931.93	2,316.10	4,394.13	0.00	0.00	0.00
12,600.00	90.00	179.07	6,913.00	-4,031.91	2,317.73	4,491.20	0.00	0.00	0.00
12,700.00	90.00	179.07	6,913.00	-4,131.90	2,319.35	4,588.26	0.00	0.00	0.00
12,800.00	90.00	179.07	6,913.00	-4,231.89	2,320.98	4,685.33	0.00	0.00	0.00
12,900.00	90.00	179.07	6,913.00	-4,331.87	2,322.60	4,782.39	0.00	0.00	0.00
13,000.00	90.00	179.07	6,913.00	-4,431.86	2,324.23	4,879.46	0.00	0.00	0.00
13,100.00	90.00	179.07	6,913.00	-4,531.85	2,325.86	4,976.52	0.00	0.00	0.00
13,200.00	90.00	179.07	6,913.00	-4,631.83	2,327.48	5,073.59	0.00	0.00	0.00
13,300.00	90.00	179.07	6,913.00	-4,731.82	2,329.11	5,170.65	0.00	0.00	0.00
13,400.00	90.00	179.07	6,913.00	-4,831.81	2,330.73	5,267.72	0.00	0.00	0.00
13,500.00	90.00	179.07	6,913.00	-4,931.79	2,332.36	5,364.78	0.00	0.00	0.00
13,600.00	90.00	179.07	6,913.00	-5,031.78	2,333.98	5,461.85	0.00	0.00	0.00
13,700.00	90.00	179.07	6,913.00	-5,131.77	2,335.61	5,558.91	0.00	0.00	0.00
13,800.00	90.00	179.07	6,913.00	-5,231.75	2,337.24	5,655.98	0.00	0.00	0.00
13,900.00	90.00	179.07	6,913.00	-5,331.74	2,338.86	5,753.04	0.00	0.00	0.00
14,000.00	90.00	179.07	6,913.00	-5,431.73	2,340.49	5,850.11	0.00	0.00	0.00
14,100.00	90.00	179.07	6,913.00	-5,531.71	2,342.11	5,947.17	0.00	0.00	0.00
14,200.00	90.00	179.07	6,913.00	-5,631.70	2,343.74	6,044.24	0.00	0.00	0.00
14,300.00	90.00	179.07	6,913.00	-5,731.69	2,345.36	6,141.30	0.00	0.00	0.00
14,400.00	90.00	179.07	6,913.00	-5,831.68	2,346.99	6,238.37	0.00	0.00	0.00
14,500.00	90.00	179.07	6,913.00	-5,931.66	2,348.61	6,335.43	0.00	0.00	0.00
14,600.00	90.00	179.07	6,913.00	-6,031.65	2,350.24	6,432.50	0.00	0.00	0.00
14,700.00	90.00	179.07	6,913.00	-6,131.64	2,351.87	6,529.56	0.00	0.00	0.00
14,800.00	90.00	179.07	6,913.00	-6,231.62	2,353.49	6,626.63	0.00	0.00	0.00
14,900.00	90.00	179.07	6,913.00	-6,331.61	2,355.12	6,723.69	0.00	0.00	0.00
15,000.00	90.00	179.07	6,913.00	-6,431.60	2,356.74	6,820.76	0.00	0.00	0.00
15,100.00	90.00	179.07	6,913.00	-6,531.58	2,358.37	6,917.82	0.00	0.00	0.00
15,200.00	90.00	179.07	6,913.00	-6,631.57	2,359.99	7,014.89	0.00	0.00	0.00
15,300.00	90.00	179.07	6,913.00	-6,731.56	2,361.62	7,111.95	0.00	0.00	0.00
15,400.00	90.00	179.07	6,913.00	-6,831.54	2,363.25	7,209.02	0.00	0.00	0.00
15,500.00	90.00	179.07	6,913.00	-6,931.53	2,364.87	7,306.08	0.00	0.00	0.00
15,600.00	90.00	179.07	6,913.00	-7,031.52	2,366.50	7,403.15	0.00	0.00	0.00
15,700.00	90.00	179.07	6,913.00	-7,131.50	2,368.12	7,500.21	0.00	0.00	0.00
15,800.00	90.00	179.07	6,913.00	-7,231.49	2,369.75	7,597.28	0.00	0.00	0.00
15,900.00	90.00	179.07	6,913.00	-7,331.48	2,371.37	7,694.34	0.00	0.00	0.00
16,000.00	90.00	179.07	6,913.00	-7,431.46	2,373.00	7,791.41	0.00	0.00	0.00
16,100.00	90.00	179.07	6,913.00	-7,531.45	2,374.62	7,888.47	0.00	0.00	0.00
16,200.00	90.00	179.07	6,913.00	-7,631.44	2,376.25	7,985.54	0.00	0.00	0.00
16,300.00	90.00	179.07	6,913.00	-7,731.42	2,377.88	8,082.60	0.00	0.00	0.00

# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-760	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-760		
<b>Design:</b>	Plan #2		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
16,400.00	90.00	179.07	6,913.00	-7,831.41	2,379.50	8,179.67	0.00	0.00	0.00	
16,500.00	90.00	179.07	6,913.00	-7,931.40	2,381.13	8,276.73	0.00	0.00	0.00	
16,600.00	90.00	179.07	6,913.00	-8,031.38	2,382.75	8,373.80	0.00	0.00	0.00	
16,700.00	90.00	179.07	6,913.00	-8,131.37	2,384.38	8,470.86	0.00	0.00	0.00	
16,800.00	90.00	179.07	6,913.00	-8,231.36	2,386.00	8,567.93	0.00	0.00	0.00	
16,900.00	90.00	179.07	6,913.00	-8,331.34	2,387.63	8,664.99	0.00	0.00	0.00	
17,000.00	90.00	179.07	6,913.00	-8,431.33	2,389.26	8,762.06	0.00	0.00	0.00	
17,100.00	90.00	179.07	6,913.00	-8,531.32	2,390.88	8,859.12	0.00	0.00	0.00	
17,200.00	90.00	179.07	6,913.00	-8,631.31	2,392.51	8,956.19	0.00	0.00	0.00	
17,300.00	90.00	179.07	6,913.00	-8,731.29	2,394.13	9,053.25	0.00	0.00	0.00	
17,400.00	90.00	179.07	6,913.00	-8,831.28	2,395.76	9,150.32	0.00	0.00	0.00	
17,500.00	90.00	179.07	6,913.00	-8,931.27	2,397.38	9,247.38	0.00	0.00	0.00	
17,600.00	90.00	179.07	6,913.00	-9,031.25	2,399.01	9,344.45	0.00	0.00	0.00	
17,619.58	90.00	179.07	6,913.00	-9,050.83	2,399.33	9,363.45	0.00	0.00	0.00	
TD at 17619.58										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude		Longitude
Roth A32-760_SHL - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	1,412,250.21	3,254,696.18	40.4614200		-104.5846600
Roth A32-760_KOP P2 - plan hits target center - Point	0.00	0.00	6,187.43	1,185.52	1,843.32	1,413,435.72	3,256,539.50	40.4646216		-104.5779916
Roth A32-760_BHL P2 - plan hits target center - Point	0.00	0.00	6,913.00	-9,050.83	2,399.33	1,403,199.40	3,257,095.50	40.4365087		-104.5763766
Roth A32-760_TPZ P2 - plan hits target center - Point	0.00	0.00	6,913.00	583.36	2,242.69	1,412,833.57	3,256,938.87	40.4629574		-104.5765788



# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-760	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-760		
<b>Design:</b>	Plan #2		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
417.00	417.00	Pierre				
446.00	446.00	Upper Pierre Aquifer Top				
1,463.00	1,463.00	Upper Pierre Aquifer Base				
3,734.18	3,610.00	Parkman				
4,370.59	4,146.00	Sussex				
5,305.01	4,933.00	Shannon				
6,493.51	5,934.00	Teepee Buttes				
7,344.59	6,653.00	Sharon Springs				
7,384.41	6,682.00	Top A Chalk				
7,411.50	6,701.00	Top A Marl				
7,563.56	6,795.00	Top B Chalk				
7,629.05	6,828.00	Top B Marl				
7,739.19	6,872.00	Top C Chalk				
7,918.24	6,910.00	Top C Marl				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,000.00	2,000.00	0.00	0.00	Start Build 3.00	
2,200.00	2,199.63	0.00	10.46	Start 200.00 hold at 2200.00 MD	
2,400.00	2,398.54	0.00	31.37	Start DLS 3.00 TFO -40.14	
3,327.50	3,267.48	142.35	292.44	Start 3466.92 hold at 3327.50 MD	
6,794.42	6,187.43	1,185.52	1,843.32	Start DLS 9.00 TFO 118.67	
7,984.11	6,913.00	583.36	2,242.69	TPZ/Landing Pt. at 7984.11 MD	
17,619.58	6,913.00	-9,050.83	2,399.33	TD at 17619.58	

# **Northern Region - DJ Basin**

**Wells Ranch**

**A Section 30**

**Roth A32-760**

**Roth A32-760**

**Plan #2**

## **Anticollision Summary Report**

**11 May, 2020**

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #2		
<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>	5/11/2020		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	2,000.00	Plan #2 (Roth A32-760)	2_Gyro-NS-CT_OWSG	A021Ga: Continuous gyro in casing
2,000.00	17,619.58	Plan #2 (Roth A32-760)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 19						
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	2,000.00	1,946.00	6,278.17	6,232.48	137.383	CC
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	4,500.00	4,201.00	6,290.46	6,193.10	64.609	ES
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	7,350.00	6,603.01	6,696.13	6,537.27	42.151	SF
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	4,342.13	4,050.61	4,526.02	4,499.37	169.866	CC
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	4,500.00	4,202.96	4,526.91	4,499.00	162.217	ES
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	7,250.00	6,559.80	4,899.25	4,849.99	99.445	SF
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,129.93	5,551.74	3,921.49	3,880.59	95.881	CC
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,200.00	5,600.00	3,921.79	3,880.36	94.651	ES
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	7,200.00	6,522.62	4,070.68	4,021.22	82.299	SF
Luppens 05-19 - Original Drilling - Original Drilling - As D	156.31	108.91	5,969.55	5,969.04	10,000.000	CC
Luppens 05-19 - Original Drilling - Original Drilling - As D	2,000.00	1,919.50	5,972.86	5,959.56	449.057	ES
Luppens 05-19 - Original Drilling - Original Drilling - As D	7,450.00	6,811.59	7,233.76	7,184.25	146.103	SF
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	729.46	674.47	4,232.90	4,228.39	938.544	CC
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	2,003.76	1,954.81	4,240.57	4,227.14	315.784	ES
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	7,550.00	6,759.53	5,599.64	5,546.86	106.077	SF
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	2,000.00	1,947.00	3,384.76	3,339.06	74.063	CC, ES
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	7,550.00	6,734.57	5,196.13	5,036.90	32.633	SF
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	532.97	477.31	4,222.64	4,219.39	1,300.864	CC
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	900.00	800.00	4,224.68	4,218.48	681.799	ES
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	7,450.00	6,817.42	5,938.78	5,885.62	111.714	SF
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	100.00	38.77	4,203.92	4,203.73	10,000.000	CC
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	300.00	200.00	4,204.58	4,203.23	3,116.902	ES
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	7,200.00	6,639.94	6,103.52	6,052.12	118.753	SF
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	2,845.17	3,300.00	3,600.26	3,580.18	179.255	CC, ES
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	7,300.00	6,611.02	5,112.54	5,063.60	104.477	SF
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	714.89	660.32	4,187.13	4,182.38	881.935	CC
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	1,400.00	1,326.99	4,189.45	4,177.49	350.523	ES
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	7,100.00	6,550.83	4,989.18	4,933.77	90.030	SF
Roth A19-12 - Original Drilling - Original Drilling - As Drill	1,573.86	1,517.89	4,992.14	4,981.73	479.259	CC
Roth A19-12 - Original Drilling - Original Drilling - As Drill	1,700.00	1,609.38	4,992.60	4,981.43	446.764	ES
Roth A19-12 - Original Drilling - Original Drilling - As Drill	7,500.00	6,851.09	6,487.73	6,438.58	131.987	SF
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	2,000.00	1,940.00	4,667.73	4,622.17	102.452	CC, ES
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	7,600.00	6,753.96	6,494.24	6,334.46	40.644	SF
Roth A31-740 - Roth A31-740 - APD-Rev 0	2,977.51	3,626.34	2,987.46	2,970.79	179.218	CC
Roth A31-740 - Roth A31-740 - APD-Rev 0	3,000.00	3,647.93	2,987.52	2,970.76	178.191	ES
Roth A31-740 - Roth A31-740 - APD-Rev 0	17,619.58	16,950.16	3,983.06	3,811.54	23.223	SF

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

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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 19						
Roth A31-748 - Roth A31-748 - APD-Rev 0	2,670.66	3,116.80	3,097.20	3,082.10	205.083	CC, ES
Roth A31-748 - Roth A31-748 - APD-Rev 0	17,619.58	16,814.79	4,507.42	4,336.60	26.386	SF
Roth A31-760 - Roth A31-760 - APD-Rev 0	2,000.00	1,976.00	3,128.13	3,114.69	232.788	CC, ES
Roth A31-760 - Roth A31-760 - APD-Rev 0	17,619.58	16,861.32	5,033.99	4,862.13	29.290	SF
Roth A31-770 - Roth A31-770 - APD-Rev 0	2,000.00	1,976.00	3,149.47	3,136.03	234.374	CC, ES
Roth A31-770 - Roth A31-770 - APD-Rev 0	17,619.58	16,874.56	5,735.10	5,563.24	33.370	SF
Roth A31-780 - Roth A31-780 - APD-Rev 0	2,000.00	1,976.00	3,170.97	3,157.53	235.972	CC, ES
Roth A31-780 - Roth A31-780 - APD-Rev 0	17,619.58	17,035.85	6,373.65	6,201.62	37.050	SF
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	2,000.00	1,976.00	3,192.30	3,178.86	237.557	CC, ES
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	17,619.58	17,241.29	7,057.74	6,885.49	40.974	SF
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	2,000.00	1,952.00	6,982.51	6,936.70	152.410	CC
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	2,100.00	2,051.95	6,984.09	6,936.09	145.530	ES
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	7,450.00	6,678.90	7,781.89	7,621.78	48.602	SF
Winter 09-19 - Original Drilling - Original Drilling - As Dril	4,766.19	4,412.54	2,640.10	2,610.21	88.323	CC
Winter 09-19 - Original Drilling - Original Drilling - As Dril	4,800.00	4,440.30	2,640.17	2,610.02	87.562	ES
Winter 09-19 - Original Drilling - Original Drilling - As Dril	7,000.00	6,319.59	2,893.85	2,846.49	61.109	SF
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	1,371.36	1,318.41	2,482.60	2,473.59	275.772	CC
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,935.23	2,485.15	2,471.77	185.813	ES
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	7,150.00	6,417.37	4,073.89	4,027.64	88.100	SF
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	2,000.00	1,949.00	2,420.40	2,374.65	52.908	CC
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	2,100.00	2,048.95	2,422.41	2,374.48	50.547	ES
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	4,300.00	4,035.55	2,816.17	2,723.44	30.369	SF
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	231.68	210.84	1,883.39	1,882.24	1,643.380	CC
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	300.00	257.94	1,883.76	1,882.21	1,214.839	ES
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,370.85	3,113.55	3,065.29	64.513	SF
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	0.00	0.00	1,877.28			
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	61.49	1,877.49	1,877.26	8,082.965	ES
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	7,000.00	6,668.84	3,752.42	3,694.57	64.868	SF
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	5,466.07	5,210.90	1,819.38	1,768.05	35.447	CC
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	5,500.00	5,235.54	1,819.51	1,767.98	35.312	ES
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,500.00	6,090.89	1,903.95	1,847.28	33.596	SF
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	75.65	1,877.36	1,877.10	7,302.640	CC
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	200.00	169.86	1,877.62	1,876.72	2,093.940	ES
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	7,000.00	6,652.13	2,847.32	2,774.72	39.218	SF
Winters 10-19 - Original Drilling - Original Drilling - As Dr	240.34	193.34	3,552.88	3,551.76	3,185.892	CC
Winters 10-19 - Original Drilling - Original Drilling - As Dr	500.00	426.17	3,553.75	3,550.91	1,251.573	ES
Winters 10-19 - Original Drilling - Original Drilling - As Dr	7,150.00	6,419.38	4,626.88	4,578.95	96.529	SF

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

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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						
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	7,637.42	6,812.01	2,817.96	2,770.68	59.591	CC, ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	7,750.00	6,850.82	2,825.16	2,777.62	59.418	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	7,268.22	6,621.77	2,297.75	2,251.39	49.561	CC, ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	7,450.00	6,781.04	2,320.81	2,273.31	48.860	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,556.01	6,763.89	1,511.62	1,352.80	9.518	CC, ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,650.00	6,810.51	1,517.72	1,357.83	9.492	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	7,355.11	6,581.26	3,602.51	3,556.16	77.725	CC, ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	7,600.00	6,691.71	3,639.56	3,592.05	76.615	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	3,514.57	3,369.08	1,895.17	1,874.36	91.080	CC, ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	7,300.00	6,621.60	2,777.13	2,723.81	52.084	SF
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	17,616.97	16,906.69	2,532.70	2,360.43	14.702	CC
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	17,619.58	16,906.69	2,532.70	2,360.39	14.699	ES, SF
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,615.69	16,799.14	1,964.44	1,792.38	11.417	CC
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,619.58	16,790.15	1,964.46	1,792.37	11.415	ES, SF
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	7,987.89	7,258.47	1,328.70	1,283.79	29.589	CC
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	17,619.58	16,880.93	1,339.28	1,167.09	7.778	ES, SF
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,615.67	16,954.33	637.59	464.46	3.683	CC, ES
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,619.58	16,949.50	637.64	464.46	3.682	SF
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	7,359.57	5,348.19	3,619.75	3,578.07	86.830	CC
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	7,400.00	5,382.77	3,619.90	3,577.94	86.266	ES
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	17,619.58	17,316.90	3,882.96	3,709.72	22.414	SF
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	7,657.12	6,057.17	3,237.85	3,193.78	73.470	CC
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	17,619.58	17,008.18	3,249.03	3,075.87	18.763	ES, SF
Simmons 42-20D - Original Drilling - Original Drilling - As	7,239.64	6,620.14	4,343.55	4,297.01	93.322	CC, ES
Simmons 42-20D - Original Drilling - Original Drilling - As	7,550.00	6,856.60	4,407.79	4,359.43	91.149	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	7,151.47	6,487.55	538.65	492.14	11.581	CC, ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	7,200.00	6,525.65	541.11	494.03	11.492	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	7,028.31	6,413.48	1,670.13	1,622.79	35.280	CC, ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	7,200.00	6,613.77	1,692.59	1,643.84	34.723	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,863.42	6,194.56	2,177.64	2,130.58	46.277	CC, ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	7,100.00	6,424.10	2,221.02	2,172.04	45.345	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	5,884.91	5,391.75	851.00	811.95	21.791	CC
Stump A20-13 - Original Drilling - Original Drilling - As Dr	5,900.00	5,404.82	851.04	811.87	21.726	ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,300.00	5,734.59	880.50	838.39	20.914	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	231.15	210.93	1,877.95	1,876.80	1,640.652	CC
Winter 20-19 - Original Drilling - Original Drilling - As Dril	300.00	258.84	1,878.29	1,876.74	1,208.662	ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,950.00	6,374.95	3,051.60	3,003.18	63.020	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	0.00	0.00	1,873.76			
Winter 24-19 - Original Drilling - Original Drilling - As Dril	100.00	61.74	1,873.97	1,873.74	8,048.636	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	7,050.00	6,708.15	3,608.40	3,549.88	61.653	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	5,430.33	5,177.59	1,697.29	1,645.46	32.751	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,100.00	5,738.18	1,737.06	1,682.36	31.755	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	100.00	77.23	1,868.69	1,868.43	7,189.757	CC
Winter 40-19 - Original Drilling - Original Drilling - As Dril	200.00	172.11	1,868.84	1,867.94	2,065.521	ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,950.00	6,611.38	2,611.04	2,532.50	33.244	SF

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

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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 D	7,558.04	6,805.48	5,996.96	5,949.83	127.238	CC, ES
Culbreath 23-21 - Original Drilling - Original Drilling - As D	7,800.00	6,912.89	6,026.49	5,978.69	126.064	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,619.41	6,814.45	6,955.68	6,795.76	43.494	CC, ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,850.00	6,891.60	6,981.23	6,819.53	43.175	SF
Harper A21-618 - Harper A21-618 OH - As-Drilled	7,686.23	6,350.00	4,330.09	4,288.26	103.514	CC, ES
Harper A21-618 - Harper A21-618 OH - As-Drilled	7,900.00	6,350.00	4,349.22	4,307.06	103.145	SF
Harper A21-626 - Harper A21-626 OH - As-Drilled	7,573.33	6,243.00	4,449.29	4,408.11	108.045	CC, ES
Harper A21-626 - Harper A21-626 OH - As-Drilled	7,850.00	6,289.24	4,480.59	4,438.73	107.055	SF
Harper A21-631 - Harper A21-631 OH - As-Drilled	7,505.53	6,244.00	4,551.80	4,510.32	109.728	CC, ES
Harper A21-631 - Harper A21-631 OH - As-Drilled	7,800.00	6,244.00	4,591.48	4,549.24	108.708	SF
Harper A21-637 - Harper A21-637 OH - As-Drilled	7,461.20	6,337.00	4,674.16	4,632.06	111.018	CC, ES
Harper A21-637 - Harper A21-637 OH - As-Drilled	10,500.00	10,500.00	6,350.16	6,282.68	94.110	SF
Harper A21-643 - Harper A21-643 OH - As-Drilled	7,371.27	6,248.00	4,707.28	4,666.54	115.550	CC, ES
Harper A21-643 - Harper A21-643 OH - As-Drilled	7,700.00	6,248.00	4,765.39	4,723.60	114.026	SF
Harper A21-649 - Harper A21-649 OH - As-Drilled	7,338.09	6,250.00	4,868.90	4,828.17	119.521	CC, ES
Harper A21-649 - Harper A21-649 OH - As-Drilled	7,700.00	6,297.80	4,939.90	4,897.84	117.438	SF
Harper A21-656 - Harper A21-656 OH - As-Drilled	7,308.04	6,251.00	5,008.14	4,967.07	121.959	CC, ES
Harper A21-656 - Harper A21-656 OH - As-Drilled	10,600.00	10,600.00	7,188.27	7,121.24	107.243	SF
Harper A21-664 - Harper A21-664 OH - As-Drilled	7,268.07	6,275.58	5,237.60	5,195.63	124.796	CC
Harper A21-664 - Harper A21-664 OH - As-Drilled	7,350.00	7,350.00	5,241.31	5,194.92	112.991	ES
Harper A21-664 - Harper A21-664 OH - As-Drilled	8,200.00	8,200.00	5,662.66	5,610.26	108.085	SF
Harper A21-669 - Harper A21-669 OH - As-Drilled	7,245.01	6,212.48	5,371.76	5,329.44	126.953	CC
Harper A21-669 - Harper A21-669 OH - As-Drilled	7,250.00	6,213.33	5,371.77	5,329.43	126.875	ES
Harper A21-669 - Harper A21-669 OH - As-Drilled	8,800.00	8,800.00	6,255.90	6,198.06	108.165	SF
Harper A21-674 - Harper A21-674 OH - As-Drilled	7,184.16	5,777.19	5,543.72	5,502.13	133.308	CC, ES
Harper A21-674 - Harper A21-674 OH - As-Drilled	7,600.00	5,903.74	5,640.67	5,597.00	129.153	SF
Harper A21-681 - Harper A21-681 OH - As-Drilled	7,081.56	4,925.84	5,794.23	5,755.43	149.336	CC
Harper A21-681 - Harper A21-681 OH - As-Drilled	7,100.00	7,100.00	5,794.43	5,746.24	120.253	ES
Harper A21-681 - Harper A21-681 OH - As-Drilled	10,400.00	10,400.00	7,852.43	7,777.94	105.415	SF
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	7,294.07	11,479.76	341.63	262.31	4.307	CC
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	7,300.00	11,477.41	341.70	261.95	4.285	ES
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	7,350.00	11,458.20	347.81	264.88	4.194	SF
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	7,244.62	11,679.38	873.92	792.66	10.755	CC
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	7,250.00	11,676.64	873.95	792.56	10.738	ES
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	7,350.00	11,627.03	887.36	803.81	10.620	SF
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	7,109.16	12,086.47	1,579.53	1,489.04	17.455	CC, ES
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	7,200.00	12,038.72	1,587.93	1,496.64	17.393	SF
Kona A19-646 - Original Drilling - Original Drilling - As Dr	7,075.31	11,992.54	2,306.89	2,217.23	25.727	CC, ES
Kona A19-646 - Original Drilling - Original Drilling - As Dr	7,150.00	11,966.78	2,312.24	2,222.13	25.658	SF
Kona A19-662 - Original Drilling - Original Drilling - As Dr	7,070.90	11,810.00	3,305.32	3,218.17	37.929	CC, ES
Kona A19-662 - Original Drilling - Original Drilling - As Dr	7,200.00	11,810.00	3,320.79	3,232.54	37.631	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,900.00	12,211.97	3,959.54	3,869.00	43.733	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	7,048.48	11,982.49	3,941.12	3,851.84	44.145	CC
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	7,050.00	11,981.68	3,941.12	3,851.84	44.143	ES
Kona A19-685 - Original Drilling - Original Drilling - As Dr	7,027.14	13,230.00	4,694.81	4,612.87	57.296	CC, ES
Kona A19-685 - Original Drilling - Original Drilling - As Dr	7,200.00	13,177.39	4,720.51	4,637.78	57.059	SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	7,352.36	6,685.75	5,049.12	4,892.04	32.142	CC, ES
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	7,650.00	6,864.51	5,102.16	4,940.75	31.608	SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,339.99	6,692.58	7,118.07	6,960.84	45.272	CC
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,350.00	6,700.01	7,118.13	6,960.72	45.221	ES
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,700.00	6,901.06	7,193.98	7,031.70	44.331	SF
McKee 22-21 - Original Drilling - Original Drilling - As Dril	7,418.85	6,701.68	6,292.25	6,245.56	134.763	CC, ES
McKee 22-21 - Original Drilling - Original Drilling - As Dril	7,800.00	6,937.00	6,371.25	6,323.06	132.191	SF

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

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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						
McKee 31-21 - Original Drilling - Original Drilling - As Dril	7,391.36	7,080.19	8,181.84	8,134.21	171.769	CC, ES
McKee 31-21 - Original Drilling - Original Drilling - As Dril	7,600.00	7,211.93	8,207.54	8,158.99	169.062	SF
McKee 32-21 - Original Drilling - Original Drilling - As Dril	7,480.12	6,766.43	7,406.10	7,359.18	157.818	CC, ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	7,850.00	6,932.48	7,476.44	7,428.34	155.412	SF
McKee 41-21 - Original Drilling - Original Drilling - As Dril	7,407.91	6,549.44	9,241.79	9,195.55	199.873	CC, ES
McKee 41-21 - Original Drilling - Original Drilling - As Dril	7,850.00	6,715.35	9,343.69	9,295.95	195.738	SF
McKee 42-21 - Original Drilling - Original Drilling - As Dril	7,554.46	6,854.24	8,582.38	8,535.16	181.724	CC, ES
McKee 42-21 - Original Drilling - Original Drilling - As Dril	10,500.00	7,021.72	9,950.44	9,892.94	173.041	SF
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	6,861.25	3,500.00	5,873.12	5,840.83	181.896	CC, ES
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	17,619.58	17,720.27	7,211.73	7,036.61	41.183	SF
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	7,033.57	3,792.59	5,849.78	5,815.65	171.390	CC
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	7,100.00	3,858.94	5,850.00	5,815.36	168.864	ES
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	17,619.58	17,515.21	6,563.94	6,389.53	37.634	SF
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	7,633.76	5,064.73	5,656.39	5,615.66	138.879	CC
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	7,650.00	5,074.56	5,656.44	5,615.63	138.627	ES
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	17,619.58	17,093.98	5,893.69	5,719.48	33.832	SF
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	7,779.61	5,920.07	5,256.49	5,213.78	123.088	CC
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	17,619.58	16,956.23	5,258.16	5,084.37	30.256	ES, SF
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,609.42	16,811.58	4,571.84	4,397.70	26.254	CC
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,619.58	16,811.58	4,571.85	4,397.60	26.238	ES, SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,638.00	6,815.13	8,257.18	8,097.21	51.619	CC
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,650.00	6,820.51	8,257.24	8,097.16	51.581	ES
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,850.00	6,883.60	8,278.15	8,116.62	51.249	SF
Wells Trust 13-21 - Original Drilling - Original Drilling - As	7,500.65	6,734.58	4,365.04	4,318.16	93.105	CC, ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	7,750.00	6,852.13	4,398.70	4,350.99	92.192	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	7,717.51	6,849.41	3,899.78	3,852.25	82.058	CC, ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	7,900.00	6,910.04	3,916.90	3,869.04	81.854	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	7,731.83	6,801.19	4,758.50	4,711.01	100.202	CC, ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	7,850.00	6,831.89	4,765.26	4,717.61	99.993	SF



# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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 28						
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	7,984.11	6,878.00	6,508.06	6,346.39	40.256	SF
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	8,045.84	6,878.00	6,507.76	6,346.12	40.259	CC, ES
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	9,698.41	6,787.93	7,967.86	7,917.52	158.285	CC
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	9,700.00	6,787.94	7,967.86	7,917.51	158.262	ES
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	14,900.00	6,829.74	9,515.33	9,433.57	116.387	SF
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,849.32	6,873.00	5,230.08	5,059.25	30.615	CC
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,900.00	6,873.00	5,230.33	5,059.13	30.551	ES
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	12,000.00	6,873.00	5,355.17	5,175.80	29.856	SF
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	7,978.98	6,847.40	4,216.45	4,168.49	87.910	CC, ES
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	10,100.00	6,872.47	4,726.88	4,671.59	85.489	SF
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	9,550.67	6,846.97	4,042.68	3,991.69	79.289	CC, ES
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,926.97	4,444.88	4,382.72	71.508	SF
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,869.39	6,808.56	3,996.57	3,939.16	69.606	CC
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,900.00	6,808.11	3,996.69	3,939.04	69.328	ES
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	12,500.00	6,815.55	4,316.35	4,247.18	62.401	SF
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	12,218.12	6,792.25	3,970.13	3,904.31	60.322	CC, ES
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	13,600.00	6,842.87	4,203.50	4,126.79	54.799	SF
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	8,317.51	6,708.81	5,299.35	5,251.50	110.740	CC, ES
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	11,500.00	6,744.82	6,181.44	6,118.84	98.739	SF
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	9,429.39	6,608.16	5,338.25	5,287.92	106.056	CC, ES
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	12,400.00	6,774.05	6,107.31	6,039.23	89.702	SF
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	12,249.61	6,845.09	5,264.87	5,199.18	80.148	CC
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	12,300.00	6,844.94	5,265.11	5,198.99	79.631	ES
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	14,500.00	6,838.06	5,725.65	5,643.33	69.560	SF
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	11,363.73	6,711.28	4,781.53	4,721.23	79.289	CC
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,711.95	4,781.67	4,721.08	78.914	ES
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	13,400.00	6,746.75	5,196.92	5,121.78	69.169	SF
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	12,219.39	6,820.20	7,739.11	7,673.32	117.640	CC
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	12,300.00	6,820.80	7,739.53	7,673.10	116.505	ES
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	16,300.00	6,749.68	8,748.96	8,655.08	93.194	SF
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,606.14	6,846.00	7,409.62	7,234.72	42.367	CC
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,700.00	6,846.00	7,410.21	7,234.61	42.199	ES
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	13,800.00	6,846.00	7,727.58	7,536.18	40.375	SF
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	11,572.44	6,803.14	7,419.26	7,357.81	120.725	CC
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,803.54	7,419.31	7,357.65	120.318	ES
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	15,600.00	6,751.28	8,441.81	8,352.95	95.002	SF
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	10,386.45	5,961.82	6,151.80	6,097.93	114.188	CC, ES
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	14,000.00	6,200.00	7,125.83	7,047.96	91.511	SF
Webster 09-28 (PR) - Original Drilling - Original Drilling -	10,808.48	6,861.00	7,703.18	7,532.82	45.217	CC
Webster 09-28 (PR) - Original Drilling - Original Drilling -	10,900.00	6,861.00	7,703.72	7,532.75	45.058	ES
Webster 09-28 (PR) - Original Drilling - Original Drilling -	13,200.00	6,861.00	8,065.88	7,878.43	43.030	SF
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	12,137.84	6,801.41	6,402.50	6,337.50	98.515	CC
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	12,200.00	6,801.60	6,402.80	6,337.30	97.758	ES
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	15,200.00	6,811.11	7,097.09	7,010.35	81.822	SF
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,768.70	6,823.56	7,719.19	7,662.68	136.597	CC
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,800.00	6,823.44	7,719.25	7,662.53	136.103	ES
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	15,300.00	6,806.22	8,950.88	8,864.64	103.796	SF

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



# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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	2,791.99	2,725.45	2,613.65	2,551.67	42.166	CC
Amos 1 (DA) - Wellbore #1 - No Surveys	2,900.00	2,827.94	2,614.59	2,550.38	40.723	ES
Amos 1 (DA) - Wellbore #1 - No Surveys	4,400.00	4,113.77	2,815.20	2,720.11	29.605	SF
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	8,023.90	6,880.53	27.66	-19.04	0.592	Level 1, CC, ES, SF
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,567.80	6,870.00	43.58	-120.96	0.265	Level 1, CC, ES, SF
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	9,378.13	6,878.29	1,234.46	1,184.52	24.716	CC, ES, SF
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	9,527.69	6,862.92	1,238.15	1,187.52	24.455	CC, ES
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	9,800.00	6,862.62	1,267.75	1,214.99	24.031	SF
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	8,178.76	6,872.44	1,554.67	1,506.68	32.392	CC, ES, SF
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	8,250.11	6,854.84	2,836.96	2,789.02	59.174	CC, ES
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	9,000.00	6,851.87	2,934.39	2,884.48	58.786	SF
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,600.00	6,869.54	243.44	191.99	4.732	SF
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,622.60	6,869.43	242.39	191.28	4.743	CC, ES
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,918.77	6,708.79	1,352.48	1,287.43	20.794	CC, ES
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,200.00	6,717.16	1,381.16	1,312.54	20.128	SF
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	12,171.54	6,895.71	2,866.82	2,801.88	44.145	CC
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	12,200.00	6,896.87	2,866.96	2,801.75	43.963	ES
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	13,000.00	6,929.31	2,983.94	2,912.08	41.525	SF
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,925.34	6,847.81	1,307.70	1,250.10	22.705	CC, ES
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	11,200.00	6,844.91	1,336.23	1,275.67	22.065	SF
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	11,010.39	6,807.00	2,691.06	2,632.78	46.177	CC, ES
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	11,900.00	6,792.66	2,834.26	2,768.74	43.261	SF
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,925.61	6,895.62	1,272.04	1,208.67	20.073	CC, ES
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,200.00	6,868.99	1,301.02	1,234.20	19.471	SF
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	12,084.06	6,852.61	1,349.53	1,284.81	20.851	CC, ES, SF
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,831.68	6,868.77	1,416.63	1,359.80	24.930	CC, ES, SF
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	12,258.56	6,861.57	137.66	72.36	2.108	CC, ES, SF
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,857.30	488.62	426.78	7.902	ES, SF
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,611.01	6,857.09	488.49	426.78	7.916	CC
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	11,163.79	6,853.44	202.93	143.99	3.443	CC, ES
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	11,200.00	6,853.16	206.14	145.80	3.416	SF

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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 30						
Blehm 30-01 (PR) - Wellbore #1 - Gyro Surveys	12,215.01	6,881.96	3,950.36	3,884.39	59.878	CC, ES
Blehm 30-01 (PR) - Wellbore #1 - Gyro Surveys	13,000.00	6,927.94	4,027.34	3,958.17	58.228	SF
Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys	12,113.44	6,844.88	2,661.23	2,596.29	40.976	CC, ES
Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys	12,400.00	6,840.03	2,676.61	2,610.92	40.747	SF
Fairmeadows 03-30 - Original Drilling - Original Drilling -						Out of range
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	2,011.08	1,961.36	3,714.40	3,700.93	275.790	CC, ES
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	12,200.00	6,932.91	5,508.30	5,445.92	88.291	SF
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	2,018.55	1,967.33	4,580.32	4,566.80	338.743	CC, ES
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	17,200.00	17,200.00	7,217.37	7,105.33	64.414	SF
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	100.00	21.57	4,674.63	4,674.46	10,000.000	CC
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,900.80	4,681.50	4,668.26	353.662	ES
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	13,500.00	6,802.51	6,331.72	6,262.34	91.265	SF
J&L Farms 32-30 - Original Drilling - Original Drilling - As						Out of range
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	100.00	26.28	3,000.94	3,000.77	10,000.000	CC
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	1,000.00	915.76	3,006.75	3,000.46	477.366	ES
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	7,950.00	6,893.70	5,222.18	5,172.23	104.556	SF
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	2,000.00	1,944.00	1,781.59	1,735.96	39.040	CC, ES
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	4,300.00	4,030.55	2,500.80	2,408.64	27.135	SF
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	100.00	34.51	4,288.80	4,288.62	10,000.000	CC
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,913.40	4,295.86	4,282.59	323.677	ES
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	10,800.00	6,671.71	7,079.51	7,027.30	135.608	SF
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	2,000.00	1,943.00	4,266.33	4,220.71	93.529	CC, ES
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	4,300.00	4,029.55	4,950.23	4,857.99	53.667	SF
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	2,004.08	1,944.45	3,452.47	3,439.08	257.922	CC, ES
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	10,700.00	6,810.00	5,984.17	5,931.22	113.002	SF
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	100.00	38.22	4,245.73	4,245.54	10,000.000	CC
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	2,000.00	1,912.56	4,251.05	4,237.78	320.347	ES
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	12,100.00	6,792.53	6,815.22	6,755.20	113.548	SF
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	2,105.45	2,203.98	3,197.45	3,182.88	219.373	CC, ES
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	11,300.00	6,841.15	5,280.00	5,223.59	93.596	SF
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	2,004.78	1,971.91	541.24	527.76	40.146	CC, ES
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	2,800.00	2,752.60	622.69	605.78	36.828	SF
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	2,015.47	1,977.47	1,612.29	1,598.77	119.290	CC, ES
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	8,800.00	6,961.14	3,905.56	3,856.93	80.314	SF
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	1,400.62	1,337.64	4,835.61	4,826.44	527.387	CC
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	2,008.62	1,964.71	4,835.88	4,822.41	359.096	ES
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	13,300.00	6,902.56	6,934.68	6,867.02	102.484	SF
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	2,000.00	1,930.00	5,696.57	5,651.20	125.561	CC
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	2,100.00	2,029.95	5,698.47	5,650.93	119.852	ES
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	13,500.00	6,843.00	6,547.76	6,362.11	35.270	SF
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	2,000.00	1,944.00	1,781.59	1,735.96	39.040	CC, ES
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	4,300.00	4,030.55	2,500.80	2,408.64	27.135	SF
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	311.75	247.76	1,978.61	1,977.05	1,273.004	CC
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,932.45	1,981.13	1,967.79	148.562	ES
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	10,300.00	6,744.87	4,098.68	4,046.96	79.257	SF
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	927.69	868.71	956.66	950.77	162.596	CC
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	2,000.00	1,937.79	958.36	944.99	71.658	ES
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	9,700.00	6,812.19	2,614.53	2,564.03	51.783	SF
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	100.00	55.11	1,131.15	1,130.93	5,070.437	CC
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,950.32	1,136.56	1,123.15	84.790	ES
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	9,100.00	6,875.47	3,347.81	3,298.85	68.366	SF
Roth A31-720 - Roth A31-720 - Plan #2	2,000.00	2,001.00	91.08	77.50	6.711	CC
Roth A31-720 - Roth A31-720 - Plan #2	2,100.00	2,100.95	91.14	77.22	6.545	ES, SF

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

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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 30						
Roth A31-730 - Roth A31-730 - Plan #2	2,000.00	2,001.00	112.93	99.36	8.320	CC, ES
Roth A31-730 - Roth A31-730 - Plan #2	2,100.00	2,097.87	114.35	100.44	8.217	SF
Roth A32-770 - Roth A32-770 - Plan #2	2,000.00	2,001.00	25.50	11.93	1.879	CC
Roth A32-770 - Roth A32-770 - Plan #2	2,100.00	2,100.96	25.66	11.74	1.843	ES, SF
Roth A32-779 - Roth A32-779 - Plan #2	2,000.00	2,001.00	47.36	33.79	3.490	CC
Roth A32-779 - Roth A32-779 - Plan #2	2,100.00	2,100.95	47.46	33.53	3.408	ES, SF
Roth A32-790 - Roth A32-790 - Plan #2	2,000.00	2,001.00	69.22	55.65	5.100	CC
Roth A32-790 - Roth A32-790 - Plan #2	2,100.00	2,100.95	69.29	55.37	4.976	ES, SF
Sander #1 (PA) - Original Drilling - Original Drilling - As D	2,000.00	1,935.00	5,490.66	5,445.20	120.758	CC
Sander #1 (PA) - Original Drilling - Original Drilling - As D	2,100.00	2,034.95	5,492.61	5,444.97	115.282	ES
Sander #1 (PA) - Original Drilling - Original Drilling - As D	13,200.00	6,848.00	6,486.43	6,302.69	35.302	SF
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	100.00	29.29	3,004.94	3,004.77	10,000.000	CC
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	2,019.14	1,967.32	3,014.16	3,000.64	222.881	ES
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,821.09	4,131.45	4,071.14	68.502	SF
Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys	11,173.54	6,911.29	2,610.21	2,550.73	43.883	CC, ES
Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys	11,400.00	6,901.11	2,620.00	2,560.02	43.681	SF
Wolfe 02-30G - Original Drilling - Original Drilling - As Dri						Out of range
A Section 31						
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	15,600.00	10,932.00	2,726.41	2,599.53	21.489	SF
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,798.91	10,932.00	2,448.65	2,350.01	24.824	CC, ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,634.61	6,882.19	6,471.04	6,395.02	85.120	CC
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,700.00	6,880.21	6,471.37	6,394.97	84.700	ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	15,600.00	6,937.40	6,762.66	6,677.25	79.175	SF
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	16,323.94	6,987.00	3,896.77	3,799.61	40.108	CC, ES
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	16,800.00	6,987.00	3,925.74	3,826.72	39.648	SF
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	16,250.22	6,811.98	2,947.35	2,851.84	30.859	CC, ES
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	16,500.00	6,807.80	2,957.91	2,861.64	30.726	SF
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	17,445.70	6,931.70	4,173.64	4,067.97	39.494	CC, ES
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	17,619.58	6,934.99	4,177.26	4,070.72	39.208	SF
Marcy 1-31X (PA) - Original Hole - Original Hole	13,517.72	6,933.70	2,677.38	2,600.08	34.636	CC, ES
Marcy 1-31X (PA) - Original Hole - Original Hole	13,700.00	6,939.39	2,683.57	2,605.85	34.529	SF
Marcy 1-31X (PA) - Surface Gyros - Gyros	13,512.84	6,800.00	2,680.50	2,604.27	35.166	CC, ES
Marcy 1-31X (PA) - Surface Gyros - Gyros	13,700.00	6,800.00	2,687.02	2,610.39	35.063	SF
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,714.11	6,813.70	5,684.17	5,600.55	67.973	CC, ES
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	16,000.00	6,804.63	5,827.80	5,738.19	65.037	SF
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	14,855.17	6,839.25	2,815.96	2,725.30	31.062	CC, ES
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	15,100.00	6,834.16	2,826.58	2,735.24	30.946	SF
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,839.24	6,850.94	5,241.72	5,157.62	62.329	CC, ES
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	15,900.00	6,849.95	5,347.98	5,259.05	60.138	SF
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	13,441.87	6,855.75	4,009.20	3,934.89	53.955	CC, ES
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	14,100.00	6,865.40	4,062.85	3,985.87	52.783	SF
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	13,393.81	6,856.30	5,388.35	5,314.66	73.122	CC
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	13,400.00	6,856.35	5,388.35	5,314.63	73.089	ES
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,866.31	5,544.39	5,464.81	69.667	SF

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

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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	15,994.62	6,905.70	1,390.19	1,295.85	14.736	CC, ES
Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys	16,000.00	6,905.39	1,390.20	1,295.86	14.736	SF
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	17,375.16	6,863.07	1,291.10	1,186.19	12.307	CC, ES, SF
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	16,211.56	6,810.66	1,277.72	1,182.40	13.405	CC, ES
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	16,400.00	6,809.81	1,291.54	1,193.81	13.215	SF
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,446.33	6,807.03	2,641.20	2,536.68	25.271	CC
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,500.00	6,807.20	2,641.75	2,536.59	25.123	ES
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,619.58	6,807.58	2,646.88	2,540.42	24.864	SF
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,469.39	6,847.09	1,309.04	1,234.69	17.606	CC
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,500.00	6,846.61	1,309.40	1,234.59	17.505	ES
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,700.00	6,843.45	1,329.19	1,251.95	17.208	SF
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,806.28	6,833.07	1,289.77	1,205.56	15.315	CC, ES
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	15,000.00	6,832.57	1,304.24	1,217.53	15.042	SF
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	15,091.51	6,860.53	1,081.09	994.22	12.445	CC, ES, SF
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,964.38	6,836.43	161.25	75.44	1.879	CC, ES, SF
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	13,520.22	6,847.51	2,604.90	2,530.11	34.828	CC, ES
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	14,200.00	6,842.81	2,692.13	2,611.10	33.224	SF
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,742.00	6,810.11	2,587.64	2,503.66	30.814	CC
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,800.00	6,810.21	2,588.29	2,503.65	30.580	ES
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	15,300.00	6,811.04	2,647.12	2,557.84	29.649	SF
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	14,044.52	6,831.96	2,183.66	2,105.16	27.816	CC, ES
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	14,500.00	6,817.17	2,230.61	2,147.47	26.830	SF
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	14,068.47	6,848.45	396.60	317.63	5.022	CC, ES, SF
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	13,273.04	6,852.49	88.58	16.17	1.223	Level 3, CC, ES, SF
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	13,272.91	6,851.00	1,244.68	1,058.26	6.677	CC, ES, SF
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,987.91	6,822.52	208.15	114.61	2.225	CC
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	16,000.00	6,822.57	208.50	114.34	2.214	ES, SF
Webster 14-32 (TA) - Wellbore #1 - Gyro Surveys	17,619.58	6,809.24	39.42	-47.71	0.452	Level 1, CC, ES, SF
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,379.86	6,809.57	1,383.17	1,278.73	13.245	CC
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,400.00	6,809.68	1,383.31	1,278.57	13.206	ES
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,600.00	6,810.75	1,400.57	1,293.56	13.088	SF
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	16,047.35	6,858.71	2,603.57	2,510.18	27.877	CC
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	16,100.00	6,859.39	2,604.10	2,510.10	27.702	ES
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	16,600.00	6,865.80	2,661.57	2,563.05	27.016	SF

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

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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						
B Section 05						
Ehrlich 1 (TA) - Wellbore #1 - Gyro Surveys	17,619.58	6,802.82	1,790.12	1,696.63	19.147	CC, ES, SF
Ehrlich 5E-323 (PR) - Wellbore #1 - Permitted-PDC	17,619.58	6,570.51	1,645.00	1,543.21	16.161	CC, ES, SF
Ehrlich 5E-423 (DG) - Wellbore #1 - Permitted-PDC	17,619.58	6,650.00	1,889.34	1,784.65	18.046	CC, ES, SF
Ehrlich 5J-203 (PR) - Wellbore #1 - Permitted-PDC	17,619.58	6,500.00	968.06	881.69	11.208	CC, ES, SF
Ehrlich 5J-223 (PR) - Wellbore #1 - Permitted-PDC	17,619.58	6,537.13	761.58	687.55	10.287	CC, ES, SF
Ehrlich 5J-243 (PR) - Wellbore #1 - Permitted-PDC	17,619.58	6,500.00	1,346.38	1,249.50	13.898	CC, ES, SF
Ehrlich 5J-303 (PR) - Wellbore #1 - Permitted-PDC	17,619.58	6,531.16	1,123.95	1,030.16	11.984	CC, ES, SF
Ehrlich 5J-323 (PR) - Wellbore #1 - Permitted-PDC	17,619.58	6,550.00	799.78	720.32	10.065	CC, ES, SF
Ehrlich 5M-243 (PR) - Wellbore #1 - Permitted-PDC	17,619.58	6,720.10	808.57	722.68	9.414	CC, ES, SF
Ehrlich 5M-343 (PR) - Wellbore #1 - Permitted-PDC	17,619.58	6,650.00	699.82	626.47	9.541	CC, ES, SF
Mininger Pfeif 41-5 (SI) - Wellbore #1 - Gyro Surveys	17,619.58	6,798.43	2,869.32	2,774.33	30.206	CC, ES, SF
Noffsinger 21-5 (TA) - Wellbore #1 - Gyro Surveys	17,619.58	6,815.26	1,099.48	1,044.85	20.127	CC, ES, SF
Noffsinger 31-5 (TA) - Wellbore #1 - Gyro Surveys	17,619.58	6,786.07	1,612.51	1,527.75	19.025	CC, ES, SF
Snowmass 10N (DG) - Wellbore #1 - Permitted-PDC	17,619.58	7,700.08	2,881.73	2,808.87	39.549	CC, ES, SF
Snowmass 1C (DG) - Wellbore #1 - Permitted-PDC	17,619.58	6,650.00	865.66	782.67	10.431	CC, ES, SF
Snowmass 2N (DG) - Wellbore #1 - Permitted-PDC	17,619.58	6,624.11	1,119.84	1,044.62	14.887	CC, ES, SF
Snowmass 3N (DG) - Wellbore #1 - Permitted-PDC	17,619.58	6,939.41	1,156.24	1,089.36	17.288	CC, ES, SF
Snowmass 4N (DG) - Wellbore #1 - Permitted-PDC	17,619.58	7,261.17	1,356.29	1,286.77	19.511	CC, ES, SF
Snowmass 5N (DG) - Wellbore #1 - Permitted-PDC	17,619.58	7,050.00	1,621.16	1,554.76	24.416	CC, ES, SF
Snowmass 6N (DG) - Wellbore #1 - Permitted-PDC	17,619.58	7,410.03	1,874.36	1,803.49	26.446	CC, ES, SF
Snowmass 7N (DG) - Wellbore #1 - Permitted-PDC	17,619.58	7,200.00	2,123.55	2,056.22	31.541	CC, ES, SF
Snowmass 8N (DG) - Wellbore #1 - Permitted-PDC	17,619.58	7,540.41	2,318.23	2,246.52	32.328	CC, ES, SF
Snowmass 9N (DG) - Wellbore #1 - Permitted-PDC	17,619.58	7,321.31	2,550.63	2,482.35	37.355	CC, ES, SF
B Section 06						
Webster B6-1 (SI) - Wellbore #1 - Gyro Surveys	17,619.58	6,836.71	3,235.94	3,130.40	30.659	CC, ES, SF
Webster B6-2 (SI) - Wellbore #1 - Gyro Surveys	17,619.58	6,749.44	3,956.07	3,849.78	37.221	CC, ES, SF
B Section 07						
Dunn 7I-201 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,804.00	6,807.70	6,550.22	26.439	CC, ES, SF
Dunn 7I-221 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,773.00	6,408.45	6,150.27	24.822	CC, ES, SF
Dunn 7I-321 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,853.00	6,641.96	6,383.93	25.741	CC, ES, SF
Dunn 7L-201 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,789.00	5,804.31	5,546.55	22.518	CC, ES, SF
Dunn 7L-221 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,878.00	5,331.09	5,074.66	20.790	CC, ES, SF
Dunn 7L-301 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,840.00	5,594.51	5,337.08	21.732	CC, ES, SF
Dunn 7L-341 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,843.00	6,081.84	5,823.89	23.578	CC, ES, SF
Dunn 7Q-221 (PR) - Wellbore #1 - MWD Surveys	17,619.58	17,087.00	4,252.37	3,998.79	16.770	CC, ES, SF
Dunn 7Q-241 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,925.00	4,762.81	4,507.90	18.684	CC, ES, SF
Dunn 7Q-301 (PR) - Wellbore #1 - MWD Surveys	17,619.58	17,027.00	4,526.22	4,271.33	17.757	CC, ES, SF
Dunn 7Q-341 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,864.00	5,007.58	4,751.92	19.586	CC, ES, SF
J Klein 7Q-321 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,410.00	4,078.27	3,827.23	16.246	CC, ES, SF
J Klein 7T-121 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,284.00	2,919.04	2,684.37	12.439	CC, ES, SF
J Klein 7T-201 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,391.00	3,163.79	2,921.41	13.053	CC, ES, SF
J Klein 7T-241 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,310.00	3,664.98	3,417.19	14.791	CC, ES, SF
J Klein 7T-301 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,448.00	3,421.39	3,175.44	13.911	CC, ES, SF
J Klein 7Y-201 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,568.00	2,152.25	1,932.73	9.804	CC, ES, SF
J Klein 7Y-241 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,503.00	2,586.23	2,353.91	11.132	CC, ES, SF
J Klein 7Y-341 (PR) - Wellbore #1 - MWD Surveys	17,619.58	16,596.00	2,372.42	2,144.56	10.412	CC, ES, SF



# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

### Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
E Section 24						
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	1,656.21	1,622.14	9,866.38	9,855.34	893.109	CC
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	1,800.00	1,700.00	9,866.83	9,855.00	834.700	ES
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	3,000.00	3,147.08	9,997.82	9,979.20	536.931	SF
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	2,015.50	2,040.89	8,324.36	8,310.62	605.753	CC, ES
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	6,700.00	6,099.83	9,970.77	9,918.81	191.904	SF
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	100.00	41.62	7,847.42	7,847.22	10,000.000	CC
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	2,000.00	1,916.65	7,852.47	7,839.17	590.508	ES
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	7,500.00	6,682.36	8,873.59	8,824.13	179.400	SF
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	2,036.32	2,093.73	6,945.90	6,931.94	497.350	CC, ES
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	7,300.00	6,831.15	8,128.10	8,078.74	164.671	SF
Courtney E24-02 - Original Drilling - As Drilled	2,019.80	2,046.86	8,840.34	8,826.57	641.828	CC, ES
Courtney E24-02 - Original Drilling - As Drilled	7,300.00	6,507.57	9,977.03	9,928.73	206.581	SF
Courtney E24-07 - Original Drilling - As Drilled	511.19	463.20	8,024.80	8,021.80	2,671.254	CC
Courtney E24-07 - Original Drilling - As Drilled	2,002.95	1,965.51	8,027.78	8,014.33	596.518	ES
Courtney E24-07 - Original Drilling - As Drilled	7,450.00	6,842.71	9,443.02	9,393.76	191.702	SF
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	0.00	0.00	9,553.78			
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	2,000.00	1,956.42	9,560.52	9,547.10	712.096	ES
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	3,700.00	3,297.96	9,987.20	9,966.26	476.977	SF
Herman E24-05 - Wellbore #1 - Wellbore #1- As Drilled						Out of range
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	2,096.12	2,318.19	6,084.69	6,069.77	407.991	CC
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	2,100.00	2,321.31	6,084.69	6,069.76	407.509	ES
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	7,300.00	6,531.42	7,591.78	7,544.49	160.542	SF
Jessie 1 (DA) - Wellbore #1 - No Surveys	2,000.00	1,947.01	5,643.72	5,598.03	123.504	CC, ES
Jessie 1 (DA) - Wellbore #1 - No Surveys	4,300.00	4,033.56	6,260.44	6,168.00	67.721	SF
Mackinaw A19-79HNA - Original Drilling - Original Drilling	4,475.56	11,144.00	5,959.91	5,876.36	71.332	CC
Mackinaw A19-79HNA - Original Drilling - Original Drilling	4,500.00	11,144.00	5,959.96	5,876.16	71.119	ES
Mackinaw A19-79HNA - Original Drilling - Original Drilling	6,700.00	11,144.00	6,361.50	6,259.78	62.540	SF
Mackinaw A19-79HNC - Original Drilling - Original Drilling	4,570.54	11,451.00	6,208.38	6,123.39	73.047	CC
Mackinaw A19-79HNC - Original Drilling - Original Drilling	4,600.00	11,451.00	6,208.45	6,123.17	72.795	ES
Mackinaw A19-79HNC - Original Drilling - Original Drilling	6,850.00	11,451.00	6,614.00	6,510.76	64.064	SF
Miller #33-24 - Original Drilling - As Drilled	2,000.00	1,950.01	7,228.29	7,182.53	157.963	CC, ES
Miller #33-24 - Original Drilling - As Drilled	7,700.00	6,808.07	9,085.81	8,924.78	56.424	SF
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	219.77	172.78	6,788.57	6,787.60	7,000.156	CC
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	2,003.00	1,966.46	6,790.25	6,776.79	504.686	ES
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	11,400.00	6,500.00	9,954.75	9,901.53	187.034	SF
Storis E24-72-1HN - Original Drilling - Original Drilling - A	4,364.34	11,309.00	6,407.90	6,323.84	76.223	CC
Storis E24-72-1HN - Original Drilling - Original Drilling - A	4,400.00	11,309.00	6,408.00	6,323.59	75.915	ES
Storis E24-72-1HN - Original Drilling - Original Drilling - A	6,794.42	11,309.00	6,853.21	6,750.46	66.696	SF
Storis E24-73-1HNA - Original Drilling - Original Drilling - A	3,717.80	11,685.00	7,179.90	7,089.73	79.631	CC
Storis E24-73-1HNA - Original Drilling - Original Drilling - A	3,800.00	11,685.00	7,180.37	7,089.51	79.027	ES
Storis E24-73-1HNA - Original Drilling - Original Drilling - A	6,400.00	11,685.00	7,664.54	7,555.31	70.173	SF
Storis E24-73-1HNC - Original Drilling - Original Drilling - A	3,925.94	11,464.00	7,118.79	7,029.42	79.661	CC
Storis E24-73-1HNC - Original Drilling - Original Drilling - A	4,000.00	11,464.00	7,119.17	7,029.15	79.087	ES
Storis E24-73-1HNC - Original Drilling - Original Drilling - A	6,600.00	11,464.00	7,604.45	7,495.69	69.915	SF
Storis E24-73HC - Original Drilling - Original Drilling - As	4,008.88	11,368.00	7,494.49	7,410.22	88.933	CC
Storis E24-73HC - Original Drilling - Original Drilling - As	4,100.00	11,368.00	7,495.04	7,410.02	88.157	ES
Storis E24-73HC - Original Drilling - Original Drilling - As	6,850.00	11,368.00	8,015.31	7,911.68	77.347	SF
Storis E24-73HN - Original Drilling - Original Drilling	3,767.14	11,262.00	7,605.33	7,521.77	91.018	CC
Storis E24-73HN - Original Drilling - Original Drilling	3,800.00	11,262.00	7,605.40	7,521.59	90.743	ES
Storis E24-73HN - Original Drilling - Original Drilling	6,794.42	11,262.00	8,185.68	8,082.35	79.215	SF
Storis E24-75-1HC - Original Drilling - Original Drilling - A	3,420.79	11,784.00	8,370.66	8,279.36	91.680	CC
Storis E24-75-1HC - Original Drilling - Original Drilling - A	3,500.00	11,784.00	8,371.03	8,279.17	91.129	ES
Storis E24-75-1HC - Original Drilling - Original Drilling - A	6,200.00	11,784.00	8,819.97	8,710.59	80.633	SF

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

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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						
E Section 24						
Storis E24-75-1HN - Original Drilling - Original Drilling - A	3,304.90	11,684.00	8,410.14	8,359.97	167.617	CC, ES
Storis E24-75-1HN - Original Drilling - Original Drilling - A	7,050.00	11,684.00	9,239.21	9,171.66	136.776	SF
Storis E24-75HN - Original Drilling - Original Drilling - As	650.82	624.84	8,526.13	8,522.37	2,267.461	CC
Storis E24-75HN - Original Drilling - Original Drilling - As	1,111.98	1,086.00	8,526.65	8,520.49	1,383.025	ES
Storis E24-75HN - Original Drilling - Original Drilling - As	7,400.00	11,585.09	9,581.18	9,512.92	140.358	SF
Storis E24-76-1HN - Original Drilling - Original Drilling - A	3,260.88	7,067.00	8,790.35	8,758.27	274.007	CC, ES
Storis E24-76-1HN - Original Drilling - Original Drilling - A	7,100.00	7,324.00	9,635.96	9,587.48	198.747	SF
Storis E24-77-1HN - Original Drilling - Original Drilling - A	2,627.08	4,316.00	8,738.90	8,717.69	412.151	CC, ES
Storis E24-77-1HN - Original Drilling - Original Drilling - A	6,200.00	5,797.37	9,974.25	9,935.51	257.471	SF
Storis E24-78-1HN - Original Drilling - Original Drilling - A	2,175.88	3,027.20	9,193.02	9,177.37	587.218	CC, ES
Storis E24-78-1HN - Original Drilling - Original Drilling - A	4,700.00	4,602.00	9,991.84	9,964.26	362.343	SF
Storis E24-79-1HN - Original Drilling - Original Drilling - A	0.00	0.00	9,255.29			
Storis E24-79-1HN - Original Drilling - Original Drilling - A	900.00	817.00	9,259.84	9,254.84	1,853.855	ES
Storis E24-79-1HN - Original Drilling - Original Drilling - A	3,900.00	2,224.00	9,971.54	9,955.92	638.463	SF
Storis E24-79HN - Original Drilling - Original Drilling - As	985.12	942.85	9,276.22	9,271.11	1,816.577	CC
Storis E24-79HN - Original Drilling - Original Drilling - As	1,000.00	947.56	9,276.26	9,271.09	1,794.522	ES
Storis E24-79HN - Original Drilling - Original Drilling - As	3,800.00	1,906.47	9,971.78	9,957.28	687.773	SF
Wake E24-77HN - Original Drilling - Original Drilling	3,181.22	11,040.02	9,794.57	9,711.90	118.488	CC
Wake E24-77HN - Original Drilling - Original Drilling	3,200.00	11,040.02	9,794.65	9,711.88	118.343	ES
Wake E24-77HN - Original Drilling - Original Drilling	4,700.00	11,040.02	9,987.31	9,895.27	108.511	SF

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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						
E Section 25						
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	374.24	325.25	9,362.88	9,360.84	4,581.181	CC
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,929.47	9,366.61	9,353.28	702.957	ES
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	4,000.00	3,719.78	9,968.36	9,945.01	427.023	SF
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	2,016.77	2,053.26	9,455.43	9,441.65	686.237	CC, ES
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	3,700.00	3,370.77	9,952.78	9,931.68	471.494	SF
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys						Out of range
LDS E25-33D - Original Drilling - Original Drilling - As Dri	100.00	43.44	9,971.13	9,970.93	10,000.000	CC
LDS E25-33D - Original Drilling - Original Drilling - As Dri	1,000.00	1,000.00	9,975.24	9,968.63	1,509.603	ES
LDS E25-33D - Original Drilling - Original Drilling - As Dri	1,800.00	1,300.00	9,996.89	9,986.17	933.324	SF
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	1,078.00	1,008.03	6,670.97	6,664.08	968.179	CC
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	1,700.00	1,583.85	6,672.84	6,661.77	602.747	ES
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	15,500.00	6,724.63	8,466.27	8,385.22	104.448	SF
Little Will #10 - Original Drilling - Original Drilling - As Dri	100.00	39.48	5,323.16	5,322.97	10,000.000	CC
Little Will #10 - Original Drilling - Original Drilling - As Dri	2,000.00	1,956.92	5,330.70	5,317.28	397.307	ES
Little Will #10 - Original Drilling - Original Drilling - As Dri	12,500.00	6,631.39	8,755.81	8,697.29	149.623	SF
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	2,016.51	2,013.74	7,128.30	7,114.65	521.938	CC, ES
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	15,000.00	6,774.91	9,959.10	9,882.60	130.190	SF
Little Will #3 (PA) - Original Drilling - No Surveys	2,000.00	1,943.00	5,560.40	5,514.79	121.897	CC, ES
Little Will #3 (PA) - Original Drilling - No Surveys	11,100.00	6,856.00	7,875.24	7,705.10	46.288	SF
Little Will #4 - Original Drilling - Original Drilling - As Drille	1,807.53	1,758.55	6,229.33	6,217.27	516.546	CC
Little Will #4 - Original Drilling - Original Drilling - As Drille	2,000.20	1,951.86	6,229.48	6,216.08	464.769	ES
Little Will #4 - Original Drilling - Original Drilling - As Drille	13,700.00	6,500.00	9,974.53	9,910.69	156.236	SF
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	2,022.19	2,025.33	7,608.11	7,594.41	555.451	CC, ES
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	16,300.00	6,920.84	9,877.85	9,791.90	114.918	SF
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	1,047.00	1,007.55	9,866.30	9,859.55	1,461.333	CC
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	1,200.00	1,117.56	9,866.62	9,858.93	1,282.763	ES
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	2,700.00	2,330.40	9,996.24	9,979.12	583.788	SF
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	100.00	40.43	9,847.42	9,847.22	10,000.000	CC
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	400.00	293.45	9,849.01	9,846.99	4,866.157	ES
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	2,800.00	2,536.21	9,981.40	9,965.20	616.389	SF
Meisner 02-25EG (PA) - Original Drilling - No Surveys	2,000.00	1,963.00	8,140.17	8,094.16	176.903	CC, ES
Meisner 02-25EG (PA) - Original Drilling - No Surveys	6,500.00	5,902.46	9,997.62	9,859.19	72.222	SF
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	1,236.31	1,162.34	8,837.85	8,829.87	1,107.481	CC
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,869.57	8,841.23	8,826.33	593.522	ES
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	4,800.00	4,369.66	9,967.14	9,925.06	236.839	SF
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	210.58	146.58	8,386.62	8,385.77	9,916.189	CC
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	400.00	277.23	8,387.20	8,385.23	4,271.262	ES
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	5,700.00	5,139.78	9,966.65	9,932.12	288.632	SF
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	2,000.00	1,948.00	9,768.98	9,723.26	213.685	CC, ES
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	3,100.00	3,017.09	9,983.04	9,914.68	146.034	SF
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	100.00	36.42	9,516.65	9,516.46	10,000.000	CC
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,919.45	9,521.87	9,508.58	716.165	ES
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	3,600.00	3,562.44	9,976.59	9,955.09	463.962	SF
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	100.00	34.55	9,767.42	9,767.24	10,000.000	CC
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,900.00	9,771.09	9,757.87	739.080	ES
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	3,100.00	3,028.88	9,992.59	9,974.15	542.086	SF

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



# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

### Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
E Section 26						
Bear E26-650 - Bear E26-650 - Plan #1	3,361.16	17,966.68	6,870.02	6,800.77	99.210	CC, ES
Bear E26-650 - Bear E26-650 - Plan #1	16,700.00	17,966.68	9,966.29	9,827.30	71.707	SF
Bear E26-660 - Bear E26-660 - Plan #1	3,499.04	17,652.10	6,690.16	6,629.23	109.802	CC, ES
Bear E26-660 - Bear E26-660 - Plan #1	16,000.00	17,652.10	9,938.06	9,802.34	73.226	SF
Bear E26-670 - Bear E26-670 - Plan #1	3,755.68	17,547.99	6,639.35	6,584.43	120.886	CC, ES
Bear E26-670 - Bear E26-670 - Plan #1	15,400.00	17,547.99	9,974.86	9,841.09	74.566	SF
Bear E26-680 - Bear E26-680 - Plan #1	3,898.60	17,404.52	6,581.22	6,530.00	128.478	CC, ES
Bear E26-680 - Bear E26-680 - Plan #1	14,700.00	17,404.52	9,946.51	9,815.67	76.021	SF
Bear E26-690 - Bear E26-690 - Plan #1	4,100.00	17,453.70	6,635.37	6,583.07	126.871	ES
Bear E26-690 - Bear E26-690 - Plan #1	4,134.18	17,453.70	6,635.28	6,583.14	127.253	CC
Bear E26-690 - Bear E26-690 - Plan #1	14,100.00	17,453.70	9,983.51	9,854.27	77.249	SF
Bear E28-653 - Bear E28-653 - Plan #1						Out of range
Healy E34-69HN - Original Drilling - Original Drilling						Out of range
Howard 06-26EG (SI) - Wellbore #1 - Gyro Surveys						Out of range
Howard 11-26EG (SI) - Wellbore #1 - Gyro Surveys						Out of range
Howard 14-26EG - Original Drilling - No Surveys						Out of range
Howard E26-1 (TA) - Wellbore #1 - Gyro Surveys						Out of range
Howard E26-17 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Lyster 04-26EG - Wellbore #1 - Wellbore #1- As Drilled						Out of range
Lyster 9-26EG (PA) - Wellbore #1 - Gyro Surveys						Out of range
Lyster E26-10 - Original Drilling - No Surveys						Out of range
Lyster E26-10X (SI) - Wellbore #1 - Gyro Surveys						Out of range
Lyster E26-15 - Original Drilling - Original Drilling - As Dri						Out of range
Lyster E26-22DX - Sidetrack 01 - MWD Surveys						Out of range
Lyster E26-22DX - Wellbore #1 - MWD Surveys						Out of range
Lyster E26-23 (SI) - Wellbore #1 - Gyro Surveys						Out of range
NGL C4 (SI) - Wellbore #1 - Gyro Surveys						Out of range
NGL C4A (IJ) - Wellbore #1 - MWD Surveys						Out of range
Resolute E25-63-1HN - Original Drilling - Original Drilling	3,225.05	11,387.00	7,529.60	7,464.33	115.349	CC, ES
Resolute E25-63-1HN - Original Drilling - Original Drilling	17,600.00	11,387.00	9,522.63	9,378.45	66.046	SF
Resolute E25-63HC - Original Drilling - Original Drilling -	3,257.95	11,166.00	7,428.06	7,369.65	127.188	CC, ES
Resolute E25-63HC - Original Drilling - Original Drilling -	17,100.00	11,166.00	9,414.16	9,274.75	67.525	SF
Resolute E25-63HN - Original Drilling - Original Drilling -	3,218.86	11,151.00	7,423.41	7,361.42	119.759	CC, ES
Resolute E25-63HN - Original Drilling - Original Drilling -	17,400.00	11,151.00	9,506.13	9,364.33	67.041	SF
Resolute State E25-62-1HN - Original Drilling - Original D	12,516.21	11,410.00	7,589.18	7,517.94	106.530	CC, ES
Resolute State E25-62-1HN - Original Drilling - Original D	17,619.58	11,410.00	9,145.49	9,010.52	67.761	SF
RSW Farms 02-26EG (PA) - Original Drilling - No Survey						Out of range
RSW Farms 13-26EG (PA) - Original Drilling - No Survey						Out of range
Ryan 01-26EG (PA) - Wellbore #1 - Gyro Surveys						Out of range
Ryan 03-26EG (PA) - Original Drilling - No Surveys						Out of range
Steadfast E27-62-1HN - Original Drilling - Original Drilling						Out of range
Steadfast E27-63-1HN - Original Drilling - Original Drilling						Out of range
Tipton 07-26EG (PA) - Original Drilling - No Surveys						Out of range
Tipton 10-26EG (SI) - Wellbore #1 - Gyro Surveys						Out of range
Tipton E26-14 (PA) - Original Drilling - No Surveys						Out of range
Titpon E26-13 - Wellbore #1 - Wellbore #1- As Drilled						Out of range

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

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

### Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
E Section 36						
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	14,105.62	11,279.00	7,601.23	7,514.10	87.237	CC
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	14,200.00	11,279.00	7,601.82	7,513.46	86.034	ES
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	17,619.58	11,279.00	8,374.17	8,236.77	60.949	SF
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	16,088.01	7,095.59	6,486.50	6,381.58	61.825	CC
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	16,100.00	7,095.40	6,486.51	6,381.51	61.774	ES
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	17,619.58	7,070.62	6,664.81	6,551.06	58.593	SF
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,387.38	7,046.94	6,467.22	6,361.04	60.904	CC
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,400.00	7,046.88	6,467.24	6,360.97	60.859	ES
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,619.58	7,045.90	6,471.39	6,363.80	60.149	SF
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	16,101.76	7,467.83	5,277.12	5,168.56	48.609	CC
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	16,200.00	7,466.38	5,278.04	5,168.53	48.199	ES
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	17,500.00	7,446.06	5,459.16	5,339.55	45.642	SF
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,454.44	7,288.37	5,243.00	5,133.50	47.878	CC
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,500.00	7,288.42	5,243.20	5,133.43	47.764	ES
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,619.58	7,288.56	5,245.60	5,135.15	47.490	SF
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys						Out of range
LDS F 01-27 (SI) - Wellbore #1 - Gyro Surveys	17,619.58	6,895.11	8,367.47	8,261.10	78.661	CC, ES, SF
LDS F 01-28D (SI) - Wellbore #1 - Gyro Surveys	17,619.58	7,049.78	9,637.53	9,530.20	89.798	CC, ES, SF
LDS F 01-29 (SI) - Wellbore #1 - Inc Only Surveys						Out of range
LDS F 01-30D (TA) - Wellbore #1 - MWD Surveys						Out of range
Mansfield E36-65HN - Original Drilling - Original Drilling						Out of range
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	15,429.66	11,178.00	7,595.54	7,502.70	81.813	CC
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	15,500.00	11,178.00	7,595.87	7,502.56	81.407	ES
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	17,619.58	11,178.00	7,904.94	7,786.95	66.997	SF
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	100.00	14.65	9,474.05	9,473.91	10,000.000	CC
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	500.00	346.65	9,475.58	9,473.02	3,701.816	ES
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	3,700.00	3,900.00	9,989.33	9,966.32	434.197	SF
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,507.77	6,802.83	9,105.50	9,000.20	86.471	CC
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,600.00	6,804.15	9,105.97	9,000.05	85.970	ES
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,619.58	6,804.43	9,106.19	9,000.14	85.867	SF
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled						Out of range
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled						Out of range
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	2,011.62	1,968.76	7,294.84	7,281.33	539.926	CC, ES
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	16,200.00	7,076.00	8,307.12	8,218.77	94.023	SF
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	16,188.46	6,829.00	9,015.31	8,807.32	43.345	CC
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	16,200.00	6,829.00	9,015.31	8,807.25	43.329	ES
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	17,619.58	6,829.00	9,128.19	8,911.62	42.148	SF
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys						Out of range
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Sinjin E36-13 (TA) - Wellbore #1 - Gyro Surveys						Out of range
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys						Out of range
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,507.77	6,802.83	9,105.50	9,010.64	95.986	CC
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,600.00	6,804.15	9,105.97	9,010.49	95.372	ES
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,619.58	6,804.43	9,106.19	9,010.58	95.245	SF
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,596.91	6,829.80	7,764.95	7,659.29	73.487	CC
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,619.58	6,830.00	7,764.98	7,659.17	73.386	ES, SF
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	2,005.89	1,950.24	8,542.86	8,529.44	636.417	CC, ES
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	17,200.00	6,996.79	9,971.01	9,876.32	105.309	SF
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys						Out of range
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys						Out of range
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,996.32	6,832.00	9,034.63	8,835.76	45.431	CC
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	15,100.00	6,832.00	9,035.22	8,835.69	45.283	ES

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

**Noble Energy**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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						
E Section 36						
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	17,000.00	6,832.00	9,254.15	9,043.74	43.982	SF
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,987.77	6,800.00	7,556.00	7,470.32	88.192	CC
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	15,000.00	6,800.00	7,556.01	7,470.25	88.114	ES
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	17,400.00	6,821.63	7,931.67	7,833.95	81.161	SF
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	16,333.31	6,836.00	7,741.35	7,532.09	36.994	CC
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	16,400.00	6,836.00	7,741.64	7,531.96	36.921	ES
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	17,619.58	6,836.00	7,847.49	7,630.94	36.239	SF
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys						Out of range
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Trex E35-618 - Trex E35-618 - Plan #1	17,258.98	6,850.00	6,945.49	6,838.96	65.199	CC
Trex E35-618 - Trex E35-618 - Plan #1	17,300.00	6,850.00	6,945.61	6,838.83	65.049	ES
Trex E35-618 - Trex E35-618 - Plan #1	17,619.58	6,900.00	6,954.30	6,845.26	63.780	SF
Trex E35-628 - Trex E35-628 - Plan #1	16,734.29	6,600.00	7,099.50	6,999.78	71.196	CC
Trex E35-628 - Trex E35-628 - Plan #1	16,800.00	6,600.00	7,099.80	6,999.68	70.912	ES
Trex E35-628 - Trex E35-628 - Plan #1	17,619.58	6,650.00	7,153.67	7,048.62	68.099	SF
Trex E35-638 - Trex E35-638 - Plan #1	16,110.44	6,400.00	6,911.63	6,819.12	74.715	CC, ES
Trex E35-638 - Trex E35-638 - Plan #1	17,619.58	6,400.00	7,074.47	6,974.22	70.569	SF
Trex E35-659 - Trex E35-659 - Plan #1	14,896.90	6,250.00	6,913.26	6,831.59	84.654	CC
Trex E35-659 - Trex E35-659 - Plan #1	14,900.00	6,250.00	6,913.26	6,831.57	84.634	ES
Trex E35-659 - Trex E35-659 - Plan #1	17,000.00	6,250.00	7,226.07	7,133.81	78.321	SF
Trex E35-671 - Trex E35-671 - Plan #1	14,078.04	6,500.00	6,901.37	6,823.93	89.115	CC
Trex E35-671 - Trex E35-671 - Plan #1	14,100.00	6,500.00	6,901.41	6,823.83	88.961	ES
Trex E35-671 - Trex E35-671 - Plan #1	16,300.00	6,450.00	7,247.19	7,158.72	81.914	SF
Trex E35-682 - Trex E35-682 - Plan #1	13,541.23	6,600.00	6,906.04	6,831.41	92.533	CC
Trex E35-682 - Trex E35-682 - Plan #1	13,600.00	6,600.00	6,906.29	6,831.30	92.092	ES
Trex E35-682 - Trex E35-682 - Plan #1	15,900.00	6,550.00	7,294.03	7,207.62	84.416	SF

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-760
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4727.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4727.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-760	<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>	Roth A32-760	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #2	<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						
F Section 01						
BJB 1 (PA) - Wellbore #1 - Gyro Surveys	17,619.58	6,826.27	9,135.89	9,029.32	85.729	CC, ES, SF
BJB 3(PA) - Wellbore #1 - No Surveys	17,619.58	6,814.00	9,437.59	9,295.25	66.306	CC, ES, SF
BJB 4 - Wellbore #1 - Gyro Surveys	17,619.58	6,716.11	8,181.09	8,047.13	61.073	CC, ES, SF
BJB 5 - Wellbore #1 - Gyro Surveys	17,619.58	6,947.45	8,475.94	8,369.01	79.270	CC, ES, SF
BJB 6I - Wellbore #1 - As Drilled	17,619.58	6,895.39	9,824.26	9,714.59	89.582	CC, ES, SF
CDOT F 1-10(SI) - Wellbore #1 - Inc Only Surveys	17,619.58	6,810.23	9,836.78	9,621.65	45.726	CC, ES, SF
DPG Bird Farm 1-14H5(SI) - Wellbore #1 - Gyro Surveys						Out of range
DPG Bird Farm 1-15H5(SI) - Wellbore #1 - No Surveys						Out of range
DPG Bird Farm 1-16H5 - Wellbore #1 - Gyro Surveys	17,619.58	7,031.00	9,236.08	9,133.87	90.366	CC, ES, SF
DPG F 1-13(SI) - Wellbore #1 - Inc Only Surveys						Out of range
DPG F 12-28(SI) - Wellbore #1 - Inc Only Surveys						Out of range
DPG F 12-29(AL) - Wellbore #1 - No Surveys						Out of range
DPG F 1-23(SI) - Wellbore #1 - No Surveys	17,619.58	6,788.00	9,590.91	9,451.82	68.955	CC, ES, SF
DPG F 1-24(SI) - Wellbore #1 - Inc Only Surveys						Out of range
DPG F 1-25(SI) - Wellbore #1 - Inc Only Surveys						Out of range
DPG F 1-33(SI) - Wellbore #1 - As Drilled						Out of range
Gatewood 11-1 - Wellbore #1 - Gyro Surveys						Out of range
Gatewood 3-1 - Wellbore #1 - Gyro Surveys						Out of range
Gatewood 4-1(SI) - Wellbore #1 - Gyro Surveys						Out of range
Gatewood 5(SI) - Wellbore #1 - No Surveys						Out of range
Gatewood 6-1 - Wellbore #1 - Gyro Surveys						Out of range
Gatewood F 1-12(SI) - Wellbore #1 - Inc Only Surveys						Out of range
LDS 1U-234 - Wellbore #1 - As Drilled	17,619.58	6,174.00	7,230.69	7,127.73	70.227	CC, ES, SF
LDS 1U-304 - Wellbore #1 - As Drilled	17,619.58	6,077.00	7,190.28	7,087.66	70.073	CC, ES, SF
LDS 1V-204 - Wellbore #1 - As Drilled	17,619.58	6,192.00	7,416.19	7,308.09	68.607	CC, ES, SF
LDS 1V-214 - Wellbore #1 - Permitted-PDC	17,619.58	6,150.00	7,298.44	7,193.85	69.782	CC, ES, SF
LDS 1V-234 - Wellbore #1 - MWD Surveys	17,619.58	6,057.00	7,533.24	7,431.43	73.991	CC, ES, SF
LDS 1V-304 - Wellbore #1 - As Drilled	17,619.58	6,193.00	7,335.23	7,229.16	69.155	CC, ES, SF
LDS 1V-314 - Wellbore #1 - As Drilled	17,619.58	6,171.00	7,258.78	7,155.10	70.010	CC, ES, SF
LDS 1V-334 - Wellbore #1 - As Drilled	17,619.58	6,147.00	7,461.94	7,358.87	72.395	CC, ES, SF
LDS 1W-234 - Wellbore #1 - As Drilled	17,619.58	6,057.00	7,522.65	7,420.80	73.860	CC, ES, SF
LDS 1W-314 - Wellbore #1 - As Drilled	17,619.58	6,076.00	7,599.84	7,498.33	74.871	CC, ES, SF
LDS 1W-414 - Wellbore #1 - As Drilled	17,619.58	6,146.00	7,699.49	7,598.01	75.870	CC, ES, SF
LDS F 1-5(AL) - Wellbore #1 - No Surveys						Out of range
Noffsinger 1 (PA) - Wellbore #1 - No Surveys	17,619.58	6,820.00	7,809.20	7,589.31	35.514	CC, ES, SF
Weld County 1-9H5 - Wellbore #1 - No Surveys	17,619.58	6,789.00	8,763.72	8,623.89	62.671	CC, ES, SF