

Project: Wells Ranch  
Site: A Section 30  
Well: Roth A32-779  
Wellbore: Roth A32-779  
Design: Plan #2

# Northern Region - DJ Basin

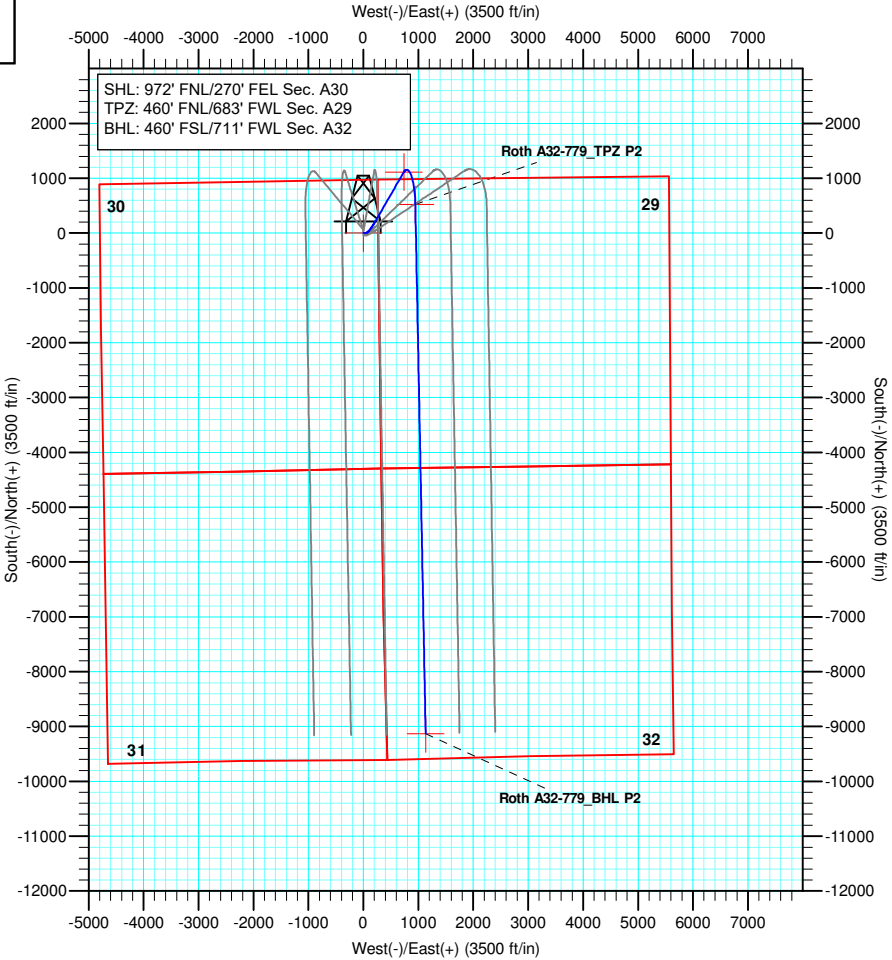
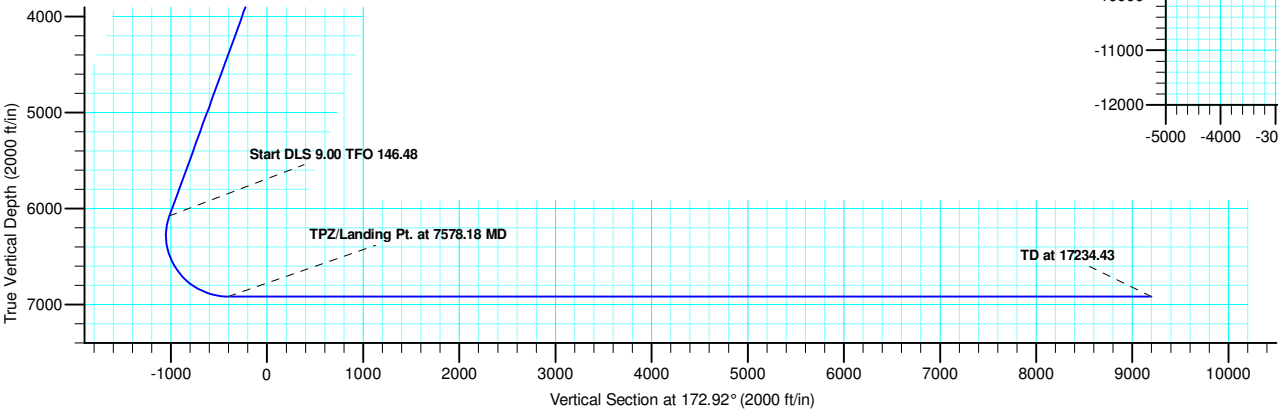
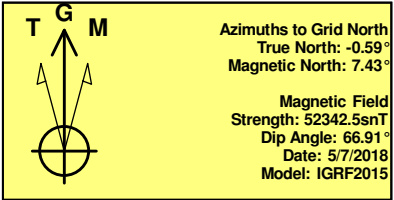
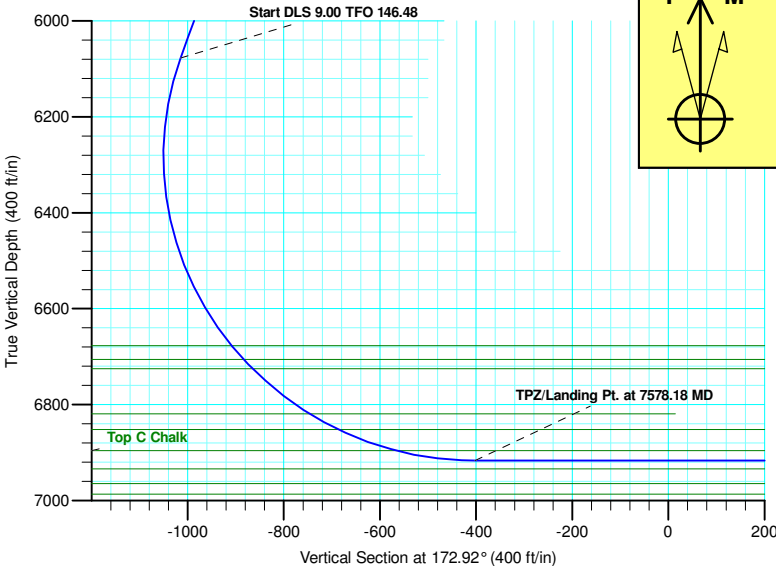
Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone  
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2500.00	6.00	90.00	2499.45	0.00	15.69	2.00	90.00	1.94	
4	2700.00	6.00	90.00	2698.36	0.00	36.60	0.00	0.00	4.51	
5	3803.57	24.49	29.96	3762.47	200.62	210.66	2.00	-72.86	-173.11	
6	6347.17	24.49	29.96	6077.30	1113.94	737.23	0.00	0.00	-1014.54	
7	7578.18	90.00	178.88	6917.00	522.75	946.24	9.00	146.48	-402.08	Roth A32-779_TPZ P2
8	17234.43	90.00	178.88	6917.00	-9131.67	1134.62	0.00	0.00	9201.89	Roth A32-779_BHL P2

WELL DETAILS: Roth A32-779

+N/-S	+E/-W	Northing	Ground Level: Easting	4698.00 Latitude	Longitude	Slot
0.00	0.00	1412297.56	3254695.69	40.4615500	-104.5846600	



Plan: Plan #2 (Roth A32-779/Roth A32-779)

Created By: Shelly Peterkin Date: 11:33, May 11 2020

# **Northern Region - DJ Basin**

**Wells Ranch  
A Section 30  
Roth A32-779**

**Roth A32-779**

**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 A32-779
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-779	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-779		
<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 A32-779			
<b>Well Position</b>	<b>+N/-S</b>	3,964.26 ft	<b>Northing:</b>	1,412,297.56 usft
	<b>+E/-W</b>	4,268.50 ft	<b>Easting:</b>	3,254,695.69 usft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 40.4615500
				<b>Longitude:</b> -104.5846600
				<b>Ground Level:</b> 4,698.00 ft

<b>Wellbore</b>	Roth A32-779				
<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	52,342.51916389

<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	172.92

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	6.00	90.00	2,499.45	0.00	15.69	2.00	2.00	0.00	90.00	
2,700.00	6.00	90.00	2,698.36	0.00	36.60	0.00	0.00	0.00	0.00	
3,803.57	24.49	29.96	3,762.47	200.62	210.66	2.00	1.68	-5.44	-72.86	
6,347.17	24.49	29.96	6,077.30	1,113.94	737.23	0.00	0.00	0.00	0.00	
7,578.18	90.00	178.88	6,917.00	522.75	946.24	9.00	5.32	12.10	146.48	Roth A32-779_TPZ P.
17,234.44	90.00	178.88	6,917.00	-9,131.67	1,134.62	0.00	0.00	0.00	0.00	Roth A32-779_BHL P.

# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-779
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-779	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-779		
<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
441.00	0.00	0.00	441.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Pierre</b>									
447.00	0.00	0.00	447.00	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
1,464.00	0.00	0.00	1,464.00	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
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>									
2,300.00	2.00	90.00	2,299.98	0.00	1.75	0.22	2.00	2.00	0.00
2,400.00	4.00	90.00	2,399.84	0.00	6.98	0.86	2.00	2.00	0.00
2,500.00	6.00	90.00	2,499.45	0.00	15.69	1.94	2.00	2.00	0.00
<b>Start 200.00 hold at 2500.00 MD</b>									
2,600.00	6.00	90.00	2,598.90	0.00	26.15	3.22	0.00	0.00	0.00
2,700.00	6.00	90.00	2,698.36	0.00	36.60	4.51	0.00	0.00	0.00
<b>Start DLS 2.00 TFO -72.86</b>									
2,800.00	6.86	73.79	2,797.73	1.67	47.56	4.21	2.00	0.86	-16.21
2,900.00	8.13	61.88	2,896.88	6.67	59.53	0.72	2.00	1.27	-11.91
3,000.00	9.65	53.42	2,995.68	15.00	72.50	-5.94	2.00	1.52	-8.46
3,100.00	11.32	47.34	3,094.01	26.64	86.45	-15.78	2.00	1.67	-6.08
3,200.00	13.08	42.83	3,191.76	41.59	101.36	-28.77	2.00	1.76	-4.50
3,300.00	14.90	39.40	3,288.79	59.82	117.21	-44.91	2.00	1.82	-3.44
3,400.00	16.76	36.70	3,384.99	81.32	133.99	-64.17	2.00	1.86	-2.70
3,500.00	18.65	34.54	3,480.25	106.05	151.67	-86.54	2.00	1.89	-2.17
3,600.00	20.56	32.76	3,574.46	133.98	170.24	-111.97	2.00	1.91	-1.78
3,663.86	21.78	31.78	3,634.00	153.48	182.54	-129.81	2.00	1.92	-1.53
<b>Parkman</b>									
3,700.00	22.48	31.27	3,667.48	165.09	189.66	-140.45	2.00	1.93	-1.41
3,803.57	24.49	29.96	3,762.47	200.62	210.66	-173.11	2.00	1.94	-1.26
<b>Start 2543.60 hold at 3803.57 MD</b>									
3,900.00	24.49	29.96	3,850.23	235.24	230.63	-205.01	0.00	0.00	0.00
4,000.00	24.49	29.96	3,941.23	271.15	251.33	-238.09	0.00	0.00	0.00

# Noble Energy

## Planning Report

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<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-779	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-779		
<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)
4,100.00	24.49	29.96	4,032.24	307.05	272.03	-271.17	0.00	0.00	0.00
4,200.00	24.49	29.96	4,123.25	342.96	292.73	-304.25	0.00	0.00	0.00
4,251.38	24.49	29.96	4,170.00	361.41	303.37	-321.25	0.00	0.00	0.00
<b>Sussex</b>									
4,300.00	24.49	29.96	4,214.25	378.87	313.43	-337.33	0.00	0.00	0.00
4,400.00	24.49	29.96	4,305.26	414.78	334.13	-370.41	0.00	0.00	0.00
4,500.00	24.49	29.96	4,396.26	450.68	354.83	-403.49	0.00	0.00	0.00
4,600.00	24.49	29.96	4,487.27	486.59	375.54	-436.57	0.00	0.00	0.00
4,700.00	24.49	29.96	4,578.28	522.50	396.24	-469.65	0.00	0.00	0.00
4,800.00	24.49	29.96	4,669.28	558.40	416.94	-502.73	0.00	0.00	0.00
4,900.00	24.49	29.96	4,760.29	594.31	437.64	-535.81	0.00	0.00	0.00
5,000.00	24.49	29.96	4,851.30	630.22	458.34	-568.89	0.00	0.00	0.00
5,100.00	24.49	29.96	4,942.30	666.12	479.04	-601.97	0.00	0.00	0.00
5,116.15	24.49	29.96	4,957.00	671.92	482.39	-607.32	0.00	0.00	0.00
<b>Shannon</b>									
5,200.00	24.49	29.96	5,033.31	702.03	499.75	-635.05	0.00	0.00	0.00
5,300.00	24.49	29.96	5,124.31	737.94	520.45	-668.13	0.00	0.00	0.00
5,400.00	24.49	29.96	5,215.32	773.84	541.15	-701.21	0.00	0.00	0.00
5,500.00	24.49	29.96	5,306.33	809.75	561.85	-734.29	0.00	0.00	0.00
5,600.00	24.49	29.96	5,397.33	845.66	582.55	-767.38	0.00	0.00	0.00
5,700.00	24.49	29.96	5,488.34	881.57	603.25	-800.46	0.00	0.00	0.00
5,800.00	24.49	29.96	5,579.35	917.47	623.96	-833.54	0.00	0.00	0.00
5,900.00	24.49	29.96	5,670.35	953.38	644.66	-866.62	0.00	0.00	0.00
6,000.00	24.49	29.96	5,761.36	989.29	665.36	-899.70	0.00	0.00	0.00
6,100.00	24.49	29.96	5,852.36	1,025.19	686.06	-932.78	0.00	0.00	0.00
6,200.00	24.49	29.96	5,943.37	1,061.10	706.76	-965.86	0.00	0.00	0.00
6,216.08	24.49	29.96	5,958.00	1,066.87	710.09	-971.18	0.00	0.00	0.00
<b>Teepee Buttes</b>									
6,300.00	24.49	29.96	6,034.38	1,097.01	727.46	-998.94	0.00	0.00	0.00
6,347.17	24.49	29.96	6,077.30	1,113.94	737.23	-1,014.54	0.00	0.00	0.00
<b>Start DLS 9.00 TFO 146.48</b>									
6,350.00	24.27	30.31	6,079.88	1,114.95	737.81	-1,015.47	9.00	-7.49	12.09
6,400.00	20.68	37.41	6,126.08	1,130.85	748.37	-1,029.94	9.00	-7.19	14.21
6,450.00	17.49	47.16	6,173.34	1,142.97	759.25	-1,040.64	9.00	-6.39	19.49
6,500.00	14.96	60.55	6,221.37	1,151.26	770.38	-1,047.48	9.00	-5.06	26.78
6,550.00	13.47	77.93	6,269.86	1,155.65	781.70	-1,050.45	9.00	-2.98	34.77
6,600.00	13.37	97.40	6,318.52	1,156.12	793.13	-1,049.51	9.00	-0.19	38.94
6,650.00	14.70	115.22	6,367.04	1,152.68	804.61	-1,044.67	9.00	2.65	35.63
6,700.00	17.12	129.13	6,415.14	1,145.32	816.07	-1,035.96	9.00	4.84	27.82
6,750.00	20.25	139.28	6,462.51	1,134.12	827.43	-1,023.44	9.00	6.25	20.31
6,800.00	23.80	146.67	6,508.87	1,119.12	838.62	-1,007.18	9.00	7.11	14.78
6,850.00	27.62	152.18	6,553.92	1,100.44	849.58	-987.28	9.00	7.63	11.02
6,900.00	31.60	156.42	6,597.38	1,078.17	860.23	-963.87	9.00	7.97	8.48
6,950.00	35.70	159.78	6,639.00	1,052.46	870.52	-937.09	9.00	8.19	6.73
6,998.04	39.71	162.43	6,677.00	1,024.67	880.00	-908.34	9.00	8.34	5.52
<b>Sharon Springs</b>									
7,000.00	39.87	162.53	6,678.51	1,023.47	880.38	-907.10	9.00	8.40	5.03
7,036.67	42.97	164.26	6,706.00	1,000.22	887.30	-883.18	9.00	8.44	4.71
<b>Top A Chalk</b>									
7,050.00	44.10	164.84	6,715.67	991.37	889.75	-874.10	9.00	8.49	4.34
7,063.12	45.22	165.39	6,725.00	982.46	892.11	-864.96	9.00	8.51	4.17
<b>Top A Marl</b>									
7,100.00	48.37	166.82	6,750.25	956.37	898.56	-838.27	9.00	8.54	3.88

# Noble Energy

## Planning Report

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<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4728.00ft
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<b>Wellbore:</b>	Roth A32-779		
<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)
7,150.00	52.67	168.55	6,782.03	918.67	906.77	-799.85	9.00	8.59	3.46
7,200.00	56.98	170.09	6,810.83	878.52	914.33	-759.08	9.00	8.64	3.09
7,215.27	58.31	170.53	6,819.00	865.81	916.50	-746.19	9.00	8.66	2.89
<b>Top B Chalk</b>									
7,250.00	61.32	171.49	6,836.46	836.15	921.18	-716.19	9.00	8.68	2.76
7,283.99	64.28	172.38	6,852.00	806.22	925.42	-685.96	9.00	8.70	2.61
<b>Top B Marl</b>									
7,300.00	65.67	172.78	6,858.77	791.84	927.29	-671.46	9.00	8.71	2.51
7,350.00	70.03	173.98	6,877.62	745.85	932.62	-625.16	9.00	8.72	2.40
7,400.00	74.40	175.12	6,892.88	698.47	937.14	-577.58	9.00	8.74	2.27
7,411.98	75.45	175.38	6,896.00	686.94	938.10	-566.03	9.00	8.74	2.21
<b>Top C Chalk</b>									
7,450.00	78.77	176.21	6,904.48	649.98	940.81	-529.02	9.00	8.75	2.17
7,500.00	83.15	177.26	6,912.33	600.69	943.62	-479.76	9.00	8.75	2.11
7,550.00	87.53	178.30	6,916.39	550.91	945.55	-430.12	9.00	8.76	2.07
7,578.18	90.00	178.88	6,917.00	522.75	946.24	-402.08	9.00	8.76	2.06
<b>TPZ/Landing Pt. at 7578.18 MD</b>									
7,600.00	90.00	178.88	6,917.00	500.93	946.66	-380.38	0.00	0.00	0.00
7,700.00	90.00	178.88	6,917.00	400.95	948.61	-280.92	0.00	0.00	0.00
7,800.00	90.00	178.88	6,917.00	300.97	950.57	-181.47	0.00	0.00	0.00
7,900.00	90.00	178.88	6,917.00	200.99	952.52	-82.01	0.00	0.00	0.00
8,000.00	90.00	178.88	6,917.00	101.01	954.47	17.45	0.00	0.00	0.00
8,100.00	90.00	178.88	6,917.00	1.03	956.42	116.91	0.00	0.00	0.00
8,200.00	90.00	178.88	6,917.00	-98.95	958.37	216.37	0.00	0.00	0.00
8,300.00	90.00	178.88	6,917.00	-198.94	960.32	315.83	0.00	0.00	0.00
8,400.00	90.00	178.88	6,917.00	-298.92	962.27	415.29	0.00	0.00	0.00
8,500.00	90.00	178.88	6,917.00	-398.90	964.22	514.74	0.00	0.00	0.00
8,600.00	90.00	178.88	6,917.00	-498.88	966.17	614.20	0.00	0.00	0.00
8,700.00	90.00	178.88	6,917.00	-598.86	968.12	713.66	0.00	0.00	0.00
8,800.00	90.00	178.88	6,917.00	-698.84	970.07	813.12	0.00	0.00	0.00
8,900.00	90.00	178.88	6,917.00	-798.82	972.02	912.58	0.00	0.00	0.00
9,000.00	90.00	178.88	6,917.00	-898.80	973.98	1,012.04	0.00	0.00	0.00
9,100.00	90.00	178.88	6,917.00	-998.78	975.93	1,111.50	0.00	0.00	0.00
9,200.00	90.00	178.88	6,917.00	-1,098.76	977.88	1,210.95	0.00	0.00	0.00
9,300.00	90.00	178.88	6,917.00	-1,198.75	979.83	1,310.41	0.00	0.00	0.00
9,400.00	90.00	178.88	6,917.00	-1,298.73	981.78	1,409.87	0.00	0.00	0.00
9,500.00	90.00	178.88	6,917.00	-1,398.71	983.73	1,509.33	0.00	0.00	0.00
9,600.00	90.00	178.88	6,917.00	-1,498.69	985.68	1,608.79	0.00	0.00	0.00
9,700.00	90.00	178.88	6,917.00	-1,598.67	987.63	1,708.25	0.00	0.00	0.00
9,800.00	90.00	178.88	6,917.00	-1,698.65	989.58	1,807.71	0.00	0.00	0.00
9,900.00	90.00	178.88	6,917.00	-1,798.63	991.53	1,907.16	0.00	0.00	0.00
10,000.00	90.00	178.88	6,917.00	-1,898.61	993.48	2,006.62	0.00	0.00	0.00
10,100.00	90.00	178.88	6,917.00	-1,998.59	995.43	2,106.08	0.00	0.00	0.00
10,200.00	90.00	178.88	6,917.00	-2,098.57	997.39	2,205.54	0.00	0.00	0.00
10,300.00	90.00	178.88	6,917.00	-2,198.55	999.34	2,305.00	0.00	0.00	0.00
10,400.00	90.00	178.88	6,917.00	-2,298.54	1,001.29	2,404.46	0.00	0.00	0.00
10,500.00	90.00	178.88	6,917.00	-2,398.52	1,003.24	2,503.92	0.00	0.00	0.00
10,600.00	90.00	178.88	6,917.00	-2,498.50	1,005.19	2,603.37	0.00	0.00	0.00
10,700.00	90.00	178.88	6,917.00	-2,598.48	1,007.14	2,702.83	0.00	0.00	0.00
10,800.00	90.00	178.88	6,917.00	-2,698.46	1,009.09	2,802.29	0.00	0.00	0.00
10,900.00	90.00	178.88	6,917.00	-2,798.44	1,011.04	2,901.75	0.00	0.00	0.00
11,000.00	90.00	178.88	6,917.00	-2,898.42	1,012.99	3,001.21	0.00	0.00	0.00
11,100.00	90.00	178.88	6,917.00	-2,998.40	1,014.94	3,100.67	0.00	0.00	0.00

# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-779
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-779	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-779		
<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)	
11,200.00	90.00	178.88	6,917.00	-3,098.38	1,016.89	3,200.13	0.00	0.00	0.00	
11,300.00	90.00	178.88	6,917.00	-3,198.36	1,018.85	3,299.58	0.00	0.00	0.00	
11,400.00	90.00	178.88	6,917.00	-3,298.35	1,020.80	3,399.04	0.00	0.00	0.00	
11,500.00	90.00	178.88	6,917.00	-3,398.33	1,022.75	3,498.50	0.00	0.00	0.00	
11,600.00	90.00	178.88	6,917.00	-3,498.31	1,024.70	3,597.96	0.00	0.00	0.00	
11,700.00	90.00	178.88	6,917.00	-3,598.29	1,026.65	3,697.42	0.00	0.00	0.00	
11,800.00	90.00	178.88	6,917.00	-3,698.27	1,028.60	3,796.88	0.00	0.00	0.00	
11,900.00	90.00	178.88	6,917.00	-3,798.25	1,030.55	3,896.34	0.00	0.00	0.00	
12,000.00	90.00	178.88	6,917.00	-3,898.23	1,032.50	3,995.79	0.00	0.00	0.00	
12,100.00	90.00	178.88	6,917.00	-3,998.21	1,034.45	4,095.25	0.00	0.00	0.00	
12,200.00	90.00	178.88	6,917.00	-4,098.19	1,036.40	4,194.71	0.00	0.00	0.00	
12,300.00	90.00	178.88	6,917.00	-4,198.17	1,038.35	4,294.17	0.00	0.00	0.00	
12,400.00	90.00	178.88	6,917.00	-4,298.16	1,040.30	4,393.63	0.00	0.00	0.00	
12,500.00	90.00	178.88	6,917.00	-4,398.14	1,042.26	4,493.09	0.00	0.00	0.00	
12,600.00	90.00	178.88	6,917.00	-4,498.12	1,044.21	4,592.55	0.00	0.00	0.00	
12,700.00	90.00	178.88	6,917.00	-4,598.10	1,046.16	4,692.00	0.00	0.00	0.00	
12,800.00	90.00	178.88	6,917.00	-4,698.08	1,048.11	4,791.46	0.00	0.00	0.00	
12,900.00	90.00	178.88	6,917.00	-4,798.06	1,050.06	4,890.92	0.00	0.00	0.00	
13,000.00	90.00	178.88	6,917.00	-4,898.04	1,052.01	4,990.38	0.00	0.00	0.00	
13,100.00	90.00	178.88	6,917.00	-4,998.02	1,053.96	5,089.84	0.00	0.00	0.00	
13,200.00	90.00	178.88	6,917.00	-5,098.00	1,055.91	5,189.30	0.00	0.00	0.00	
13,300.00	90.00	178.88	6,917.00	-5,197.98	1,057.86	5,288.76	0.00	0.00	0.00	
13,400.00	90.00	178.88	6,917.00	-5,297.96	1,059.81	5,388.21	0.00	0.00	0.00	
13,500.00	90.00	178.88	6,917.00	-5,397.95	1,061.76	5,487.67	0.00	0.00	0.00	
13,600.00	90.00	178.88	6,917.00	-5,497.93	1,063.71	5,587.13	0.00	0.00	0.00	
13,700.00	90.00	178.88	6,917.00	-5,597.91	1,065.67	5,686.59	0.00	0.00	0.00	
13,800.00	90.00	178.88	6,917.00	-5,697.89	1,067.62	5,786.05	0.00	0.00	0.00	
13,900.00	90.00	178.88	6,917.00	-5,797.87	1,069.57	5,885.51	0.00	0.00	0.00	
14,000.00	90.00	178.88	6,917.00	-5,897.85	1,071.52	5,984.97	0.00	0.00	0.00	
14,100.00	90.00	178.88	6,917.00	-5,997.83	1,073.47	6,084.42	0.00	0.00	0.00	
14,200.00	90.00	178.88	6,917.00	-6,097.81	1,075.42	6,183.88	0.00	0.00	0.00	
14,300.00	90.00	178.88	6,917.00	-6,197.79	1,077.37	6,283.34	0.00	0.00	0.00	
14,400.00	90.00	178.88	6,917.00	-6,297.77	1,079.32	6,382.80	0.00	0.00	0.00	
14,500.00	90.00	178.88	6,917.00	-6,397.76	1,081.27	6,482.26	0.00	0.00	0.00	
14,600.00	90.00	178.88	6,917.00	-6,497.74	1,083.22	6,581.72	0.00	0.00	0.00	
14,700.00	90.00	178.88	6,917.00	-6,597.72	1,085.17	6,681.18	0.00	0.00	0.00	
14,800.00	90.00	178.88	6,917.00	-6,697.70	1,087.12	6,780.63	0.00	0.00	0.00	
14,900.00	90.00	178.88	6,917.00	-6,797.68	1,089.08	6,880.09	0.00	0.00	0.00	
15,000.00	90.00	178.88	6,917.00	-6,897.66	1,091.03	6,979.55	0.00	0.00	0.00	
15,100.00	90.00	178.88	6,917.00	-6,997.64	1,092.98	7,079.01	0.00	0.00	0.00	
15,200.00	90.00	178.88	6,917.00	-7,097.62	1,094.93	7,178.47	0.00	0.00	0.00	
15,300.00	90.00	178.88	6,917.00	-7,197.60	1,096.88	7,277.93	0.00	0.00	0.00	
15,400.00	90.00	178.88	6,917.00	-7,297.58	1,098.83	7,377.39	0.00	0.00	0.00	
15,500.00	90.00	178.88	6,917.00	-7,397.57	1,100.78	7,476.84	0.00	0.00	0.00	
15,600.00	90.00	178.88	6,917.00	-7,497.55	1,102.73	7,576.30	0.00	0.00	0.00	
15,700.00	90.00	178.88	6,917.00	-7,597.53	1,104.68	7,675.76	0.00	0.00	0.00	
15,800.00	90.00	178.88	6,917.00	-7,697.51	1,106.63	7,775.22	0.00	0.00	0.00	
15,900.00	90.00	178.88	6,917.00	-7,797.49	1,108.58	7,874.68	0.00	0.00	0.00	
16,000.00	90.00	178.88	6,917.00	-7,897.47	1,110.54	7,974.14	0.00	0.00	0.00	
16,100.00	90.00	178.88	6,917.00	-7,997.45	1,112.49	8,073.60	0.00	0.00	0.00	
16,200.00	90.00	178.88	6,917.00	-8,097.43	1,114.44	8,173.05	0.00	0.00	0.00	
16,300.00	90.00	178.88	6,917.00	-8,197.41	1,116.39	8,272.51	0.00	0.00	0.00	
16,400.00	90.00	178.88	6,917.00	-8,297.39	1,118.34	8,371.97	0.00	0.00	0.00	
16,500.00	90.00	178.88	6,917.00	-8,397.37	1,120.29	8,471.43	0.00	0.00	0.00	

# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-779
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-779	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-779		
<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)
16,600.00	90.00	178.88	6,917.00	-8,497.36	1,122.24	8,570.89	0.00	0.00	0.00
16,700.00	90.00	178.88	6,917.00	-8,597.34	1,124.19	8,670.35	0.00	0.00	0.00
16,800.00	90.00	178.88	6,917.00	-8,697.32	1,126.14	8,769.81	0.00	0.00	0.00
16,900.00	90.00	178.88	6,917.00	-8,797.30	1,128.09	8,869.26	0.00	0.00	0.00
17,000.00	90.00	178.88	6,917.00	-8,897.28	1,130.04	8,968.72	0.00	0.00	0.00
17,100.00	90.00	178.88	6,917.00	-8,997.26	1,131.99	9,068.18	0.00	0.00	0.00
17,200.00	90.00	178.88	6,917.00	-9,097.24	1,133.95	9,167.64	0.00	0.00	0.00
17,234.44	90.00	178.88	6,917.00	-9,131.67	1,134.62	9,201.89	0.00	0.00	0.00
TD at 17234.43									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Roth A32-779_SHL - plan hits target center - Point	0.00	0.01	0.00	0.00	0.00	1,412,297.56	3,254,695.69	40.4615500	-104.5846600
Roth A32-779_KOP P2 - plan hits target center - Point	0.00	0.00	6,077.30	1,113.94	737.23	1,413,411.51	3,255,432.92	40.4645867	-104.5819692
Roth A32-779_TPZ P2 - plan hits target center - Point	0.00	0.00	6,917.00	522.75	946.24	1,412,820.31	3,255,641.93	40.4629580	-104.5812401
Roth A32-779_BHL P2 - plan hits target center - Point	0.00	0.01	6,917.00	-9,131.67	1,134.62	1,403,165.91	3,255,830.31	40.4364529	-104.5809228

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
441.00	441.00	Pierre				
447.00	447.00	Upper Pierre Aquifer Top				
1,464.00	1,464.00	Upper Pierre Aquifer Base				
3,663.86	3,634.00	Parkman				
4,251.38	4,170.00	Sussex				
5,116.15	4,957.00	Shannon				
6,216.08	5,958.00	Teepee Buttes				
6,998.04	6,677.00	Sharon Springs				
7,036.67	6,706.00	Top A Chalk				
7,063.12	6,725.00	Top A Marl				
7,215.27	6,819.00	Top B Chalk				
7,283.99	6,852.00	Top B Marl				
7,411.98	6,896.00	Top C Chalk				



# Noble Energy

## Planning Report

<b>Database:</b>	EDMP	<b>Local Co-ordinate Reference:</b>	Well Roth A32-779
<b>Company:</b>	Northern Region - DJ Basin	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Project:</b>	Wells Ranch	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site:</b>	A Section 30	<b>North Reference:</b>	Grid
<b>Well:</b>	Roth A32-779	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Roth A32-779		
<b>Design:</b>	Plan #2		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,200.00	2,200.00	0.00	0.00	Start Build 2.00
2,500.00	2,499.45	0.00	15.69	Start 200.00 hold at 2500.00 MD
2,700.00	2,698.36	0.00	36.60	Start DLS 2.00 TFO -72.86
3,803.57	3,762.47	200.62	210.66	Start 2543.60 hold at 3803.57 MD
6,347.17	6,077.30	1,113.94	737.23	Start DLS 9.00 TFO 146.48
7,578.18	6,917.00	522.75	946.24	TPZ/Landing Pt. at 7578.18 MD
17,234.44	6,917.00	-9,131.67	1,134.62	TD at 17234.43

# **Northern Region - DJ Basin**

**Wells Ranch**

**A Section 30**

**Roth A32-779**

**Roth A32-779**

**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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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 A32-779)	2_Gyro-NS-CT_OWSG	A021Ga: Continuous gyro in casing
2,000.00	17,234.44	Plan #2 (Roth A32-779)	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 -	6,461.94	6,129.75	5,707.41	5,565.50	40.218	CC, ES
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	7,000.00	6,623.51	5,876.92	5,723.95	38.419	SF
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,460.89	6,119.99	3,956.62	3,916.08	97.613	CC, ES
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,900.00	6,566.42	4,071.31	4,028.14	94.303	SF
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,494.77	6,076.80	3,385.59	3,345.17	83.748	CC
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,500.00	6,081.22	3,385.61	3,345.15	83.676	ES
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,800.00	6,491.80	3,447.65	3,405.02	80.876	SF
Luppens 05-19 - Original Drilling - Original Drilling - As D	159.30	110.78	5,937.01	5,936.49	10,000.000	CC
Luppens 05-19 - Original Drilling - Original Drilling - As D	6,351.25	6,089.86	5,943.74	5,903.72	148.520	ES
Luppens 05-19 - Original Drilling - Original Drilling - As D	7,100.00	7,100.00	6,156.00	6,110.72	135.968	SF
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	5,139.90	4,864.03	4,194.68	4,163.84	136.015	CC
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	5,600.00	5,346.48	4,197.02	4,162.69	122.256	ES
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	7,200.00	6,781.46	4,468.58	4,420.42	92.788	SF
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	2,200.00	2,146.00	3,362.47	3,312.59	67.416	CC
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	2,300.00	2,245.98	3,364.02	3,312.11	64.802	ES
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	7,200.00	6,756.83	3,961.21	3,805.44	25.429	SF
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	525.83	469.13	4,190.03	4,186.85	1,315.886	CC
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	900.00	800.00	4,192.42	4,186.22	676.647	ES
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	7,150.00	6,879.57	4,778.02	4,728.61	96.693	SF
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	100.00	37.87	4,171.02	4,170.83	10,000.000	CC
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	300.00	200.00	4,171.67	4,170.32	3,092.635	ES
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,950.00	6,764.73	5,113.52	5,067.44	110.952	SF
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	3,900.00	3,722.94	3,515.86	3,492.20	148.622	CC, ES
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	6,900.00	6,604.73	3,941.30	3,897.10	89.182	SF
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,396.98	6,209.00	3,945.74	3,897.02	80.994	CC
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,400.00	6,211.15	3,945.74	3,897.01	80.966	ES
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,750.00	6,543.79	4,006.64	3,956.01	79.133	SF
Roth A19-12 - Original Drilling - Original Drilling - As Drill	1,575.15	1,518.17	4,963.71	4,953.29	476.287	CC
Roth A19-12 - Original Drilling - Original Drilling - As Drill	1,700.00	1,608.87	4,964.16	4,952.99	444.295	ES
Roth A19-12 - Original Drilling - Original Drilling - As Drill	7,150.00	6,857.69	5,330.23	5,285.77	119.901	SF
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	2,200.00	2,139.00	4,647.40	4,597.67	93.443	CC
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	2,300.00	2,238.98	4,648.99	4,597.22	89.799	ES
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	7,300.00	6,797.77	5,278.84	5,122.20	33.701	SF
Roth A31-740 - Roth A31-740 - APD-Rev 0	6,189.51	6,603.91	2,589.79	2,552.54	69.532	CC
Roth A31-740 - Roth A31-740 - APD-Rev 0	17,234.44	16,956.79	2,717.78	2,546.10	15.830	ES, SF
Roth A31-748 - Roth A31-748 - APD-Rev 0	4,975.93	5,262.45	2,918.68	2,891.59	107.713	CC

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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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 19						
Roth A31-748 - Roth A31-748 - APD-Rev 0	5,100.00	5,374.57	2,919.17	2,891.23	104.489	ES
Roth A31-748 - Roth A31-748 - APD-Rev 0	17,234.44	16,841.10	3,242.44	3,071.14	18.929	SF
Roth A31-760 - Roth A31-760 - APD-Rev 0	2,200.00	2,175.00	3,106.35	3,092.44	223.361	CC, ES
Roth A31-760 - Roth A31-760 - APD-Rev 0	17,234.44	16,861.60	3,768.57	3,596.53	21.906	SF
Roth A31-770 - Roth A31-770 - APD-Rev 0	2,000.00	1,975.00	3,127.59	3,114.16	232.817	CC, ES
Roth A31-770 - Roth A31-770 - APD-Rev 0	17,234.44	16,888.76	4,469.74	4,297.52	25.953	SF
Roth A31-780 - Roth A31-780 - APD-Rev 0	2,000.00	1,975.00	3,149.00	3,135.56	234.409	CC, ES
Roth A31-780 - Roth A31-780 - APD-Rev 0	17,234.44	17,042.23	5,108.18	4,935.88	29.647	SF
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	2,000.00	1,975.00	3,170.24	3,156.80	235.988	CC, ES
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	17,234.44	17,255.84	5,792.34	5,619.71	33.554	SF
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,423.66	6,099.33	6,619.60	6,478.42	46.887	CC
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,450.00	6,124.34	6,619.98	6,478.20	46.691	ES
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	7,100.00	6,701.25	6,848.19	6,693.56	44.289	SF
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,464.53	6,140.01	2,048.09	2,007.47	50.430	CC, ES
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,700.00	6,367.68	2,083.86	2,041.73	49.459	SF
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	1,362.60	1,308.64	2,451.30	2,442.37	274.286	CC
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,932.95	2,454.11	2,440.74	183.612	ES
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	7,000.00	6,617.36	2,974.55	2,931.06	68.399	SF
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	2,200.00	2,148.00	2,389.94	2,340.02	47.873	CC
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	2,300.00	2,247.98	2,391.30	2,339.34	46.024	ES
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	4,100.00	3,980.24	2,442.80	2,352.86	27.159	SF
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	232.69	210.84	1,839.13	1,837.98	1,599.828	CC
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	300.00	257.58	1,839.49	1,837.94	1,187.254	ES
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,650.00	6,410.63	2,135.37	2,092.15	49.405	SF
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	0.00	0.00	1,832.98			
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	61.01	1,833.17	1,832.94	7,921.364	ES
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	6,700.00	6,711.37	2,983.97	2,935.11	61.068	SF
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,518.31	6,377.60	1,192.05	1,137.16	21.714	CC, ES
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,600.00	6,449.94	1,197.07	1,141.71	21.624	SF
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	74.83	1,832.85	1,832.60	7,169.867	CC
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	200.00	169.25	1,833.10	1,832.21	2,049.194	ES
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	6,700.00	6,702.67	2,342.59	2,284.10	40.052	SF
Winters 10-19 - Original Drilling - Original Drilling - As Dr	241.05	193.05	3,513.48	3,512.36	3,146.390	CC
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,374.46	6,009.65	3,545.80	3,505.74	88.519	ES
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,800.00	6,440.65	3,630.77	3,587.94	84.765	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	7,163.12	6,771.31	4,056.65	4,012.73	92.359	CC, ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	7,400.00	6,863.51	4,074.62	4,030.23	91.778	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,832.16	6,567.32	3,255.51	3,213.01	76.597	CC, ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	7,150.00	6,889.73	3,301.97	3,258.07	75.205	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,138.51	6,746.99	2,729.97	2,574.61	17.572	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,150.00	6,754.03	2,730.02	2,574.51	17.555	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,350.00	6,849.62	2,746.27	2,588.73	17.432	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,851.15	6,480.51	4,662.00	4,619.61	109.971	CC, ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	7,450.00	7,450.00	4,805.71	4,759.26	103.459	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,201.90	5,933.48	1,512.78	1,473.37	38.384	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,300.00	6,022.86	1,513.32	1,472.57	37.136	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,850.00	6,543.57	1,616.34	1,568.45	33.748	SF
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	17,231.27	16,906.69	3,798.08	3,626.01	22.073	CC
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	17,234.44	16,906.69	3,798.08	3,625.98	22.069	ES, SF
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,228.41	16,790.15	3,228.46	3,057.14	18.845	CC
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,234.44	16,790.15	3,228.46	3,057.09	18.839	ES, SF
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	17,226.01	16,884.03	2,603.95	2,432.31	15.171	CC, ES
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	17,234.44	16,877.36	2,603.98	2,432.32	15.170	SF
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,221.38	16,949.50	1,892.94	1,721.67	11.053	CC
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,234.44	16,949.50	1,892.98	1,721.64	11.048	ES, SF
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	4,370.47	2,974.19	4,337.27	4,318.70	233.541	CC
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	4,400.00	3,000.00	4,337.39	4,318.67	231.712	ES
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	17,234.44	17,316.90	5,148.49	4,975.31	29.730	SF
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	4,812.11	3,476.87	4,321.58	4,300.19	202.035	CC
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	5,000.00	3,646.31	4,322.34	4,299.78	191.516	ES
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	17,234.44	17,008.18	4,514.05	4,341.27	26.126	SF
Simmons 42-20D - Original Drilling - Original Drilling - As	6,758.03	6,502.24	5,220.14	5,178.07	124.060	CC, ES
Simmons 42-20D - Original Drilling - Original Drilling - As	7,150.00	6,844.93	5,297.69	5,253.90	120.991	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,938.21	6,631.72	1,491.94	1,448.96	34.716	CC, ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	7,050.00	6,707.00	1,498.15	1,454.76	34.523	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,698.85	6,414.57	2,116.48	2,074.89	50.886	CC
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,700.00	6,416.06	2,116.48	2,074.88	50.877	ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,900.00	6,642.42	2,140.04	2,097.36	50.137	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,592.50	6,262.84	2,047.26	2,006.22	49.877	CC
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,600.00	6,269.71	2,047.31	2,006.21	49.819	ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,800.00	6,516.10	2,079.54	2,037.20	49.116	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,640.59	6,335.77	456.34	415.06	11.054	CC, ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,700.00	6,392.93	459.19	417.53	11.024	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	232.15	210.91	1,833.75	1,832.60	1,597.242	CC
Winter 20-19 - Original Drilling - Original Drilling - As Dril	300.00	258.48	1,834.09	1,832.53	1,181.175	ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,650.00	6,413.13	2,085.41	2,042.06	48.106	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	0.00	0.00	1,829.45			
Winter 24-19 - Original Drilling - Original Drilling - As Dril	100.00	61.27	1,829.64	1,829.40	7,886.555	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,700.00	6,712.48	2,867.82	2,818.72	58.410	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,517.68	6,374.82	1,069.41	1,013.50	19.127	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,600.00	6,448.40	1,074.50	1,018.18	19.076	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	100.00	76.36	1,824.22	1,823.96	7,060.376	CC
Winter 40-19 - Original Drilling - Original Drilling - As Dril	200.00	171.46	1,824.36	1,823.46	2,021.504	ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,700.00	6,706.29	2,172.45	2,109.34	34.425	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	7,009.60	6,700.10	7,186.26	7,142.81	165.387	CC, ES
Culbreath 23-21 - Original Drilling - Original Drilling - As D	10,800.00	6,960.44	8,910.00	8,854.56	160.710	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,067.34	6,717.96	8,173.92	8,019.24	52.845	CC
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,100.00	6,740.25	8,174.22	8,019.07	52.683	ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,450.00	6,894.48	8,216.36	8,057.87	51.842	SF
Harper A21-618 - Harper A21-618 OH - As-Drilled	7,136.58	6,298.68	5,580.76	5,543.29	148.937	CC, ES
Harper A21-618 - Harper A21-618 OH - As-Drilled	10,500.00	6,350.00	6,794.14	6,745.73	140.353	SF
Harper A21-626 - Harper A21-626 OH - As-Drilled	7,012.87	6,243.00	5,666.30	5,629.35	153.368	CC, ES
Harper A21-626 - Harper A21-626 OH - As-Drilled	10,200.00	6,243.00	6,901.98	6,855.48	148.433	SF
Harper A21-631 - Harper A21-631 OH - As-Drilled	6,915.21	6,207.16	5,739.88	5,702.77	154.668	CC, ES
Harper A21-631 - Harper A21-631 OH - As-Drilled	9,800.00	6,187.59	6,873.64	6,828.53	152.387	SF
Harper A21-637 - Harper A21-637 OH - As-Drilled	6,908.39	6,337.00	5,836.93	5,798.94	153.636	CC, ES
Harper A21-637 - Harper A21-637 OH - As-Drilled	10,500.00	10,500.00	7,532.98	7,469.74	119.115	SF
Harper A21-643 - Harper A21-643 OH - As-Drilled	6,815.25	6,154.00	5,806.09	5,769.65	159.317	CC, ES
Harper A21-643 - Harper A21-643 OH - As-Drilled	7,100.00	6,248.00	5,835.31	5,798.11	156.860	SF
Harper A21-649 - Harper A21-649 OH - As-Drilled	6,807.30	6,250.00	5,937.71	5,901.02	161.844	CC, ES
Harper A21-649 - Harper A21-649 OH - As-Drilled	7,100.00	6,250.00	5,973.35	5,936.11	160.396	SF
Harper A21-656 - Harper A21-656 OH - As-Drilled	6,774.53	6,198.46	6,043.92	6,007.14	164.332	CC, ES
Harper A21-656 - Harper A21-656 OH - As-Drilled	10,700.00	10,700.00	8,352.51	8,289.55	132.663	SF
Harper A21-664 - Harper A21-664 OH - As-Drilled	6,755.85	6,755.85	6,228.95	6,189.36	157.329	CC, ES
Harper A21-664 - Harper A21-664 OH - As-Drilled	10,500.00	10,500.00	8,499.03	8,435.08	132.915	SF
Harper A21-669 - Harper A21-669 OH - As-Drilled	6,732.33	6,250.00	6,342.07	6,303.91	166.223	CC, ES
Harper A21-669 - Harper A21-669 OH - As-Drilled	12,100.00	12,100.00	9,861.99	9,786.05	129.857	SF
Harper A21-674 - Harper A21-674 OH - As-Drilled	6,651.65	5,756.97	6,486.54	6,449.65	175.837	CC, ES
Harper A21-674 - Harper A21-674 OH - As-Drilled	7,550.00	7,550.00	6,804.18	6,758.13	147.787	SF
Harper A21-681 - Harper A21-681 OH - As-Drilled	6,491.18	4,703.65	6,698.79	6,666.04	204.516	CC
Harper A21-681 - Harper A21-681 OH - As-Drilled	6,500.00	4,709.42	6,698.82	6,666.01	204.163	ES
Harper A21-681 - Harper A21-681 OH - As-Drilled	10,400.00	10,400.00	8,889.55	8,821.84	131.303	SF
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,915.52	12,739.21	346.30	259.59	3.994	CC
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,950.00	12,735.71	348.90	259.48	3.902	ES, SF
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,872.13	12,789.28	906.38	819.26	10.404	CC, ES
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,950.00	12,752.87	914.00	825.30	10.305	SF
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,726.69	13,288.68	1,574.70	1,476.64	16.059	CC, ES
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,800.00	13,282.74	1,580.57	1,481.50	15.954	SF
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,707.15	12,967.36	2,264.60	2,169.78	23.882	CC, ES
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,800.00	12,947.00	2,273.15	2,177.74	23.825	SF
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,690.79	12,726.64	3,325.46	3,233.47	36.150	CC, ES
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,800.00	12,718.02	3,336.54	3,243.85	35.995	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,646.47	13,244.07	3,980.36	3,882.45	40.653	CC
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,650.00	13,243.50	3,980.37	3,882.44	40.645	ES
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,700.00	13,228.00	3,982.97	3,884.86	40.599	SF
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,644.48	14,176.00	4,698.85	4,613.77	55.225	CC
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,650.00	14,176.00	4,698.88	4,613.76	55.203	ES
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,800.00	14,176.00	4,720.26	4,634.35	54.942	SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,833.76	6,565.45	6,077.53	5,926.41	40.217	CC
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,850.00	6,579.92	6,077.64	5,926.20	40.132	ES
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	7,300.00	6,884.77	6,169.70	6,011.65	39.038	SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	6,808.11	6,558.27	8,118.36	7,967.46	53.800	CC
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	6,850.00	6,595.92	8,119.14	7,967.41	53.508	ES
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,300.00	6,900.77	8,224.75	8,066.41	51.943	SF
McKee 22-21 - Original Drilling - Original Drilling - As Dril	6,869.16	6,544.36	7,382.99	7,340.33	173.083	CC, ES
McKee 22-21 - Original Drilling - Original Drilling - As Dril	7,350.00	6,918.42	7,469.63	7,425.18	168.078	SF
McKee 31-21 - Original Drilling - Original Drilling - As Dril	6,862.53	6,983.22	9,211.71	9,167.74	209.506	CC, 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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	7,150.00	7,206.46	9,248.57	9,203.47	205.082	SF
McKee 32-21 - Original Drilling - Original Drilling - As Dril	6,913.33	6,582.42	8,540.45	8,497.55	199.077	CC, ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	10,000.00	6,972.17	9,944.32	9,892.26	191.014	SF
McKee 41-21 - Original Drilling - Original Drilling - As Dril						Out of range
McKee 42-21 - Original Drilling - Original Drilling - As Dril	6,985.54	6,714.67	9,762.11	9,718.68	224.759	CC, ES
McKee 42-21 - Original Drilling - Original Drilling - As Dril	7,450.00	6,973.46	9,829.85	9,785.13	219.808	SF
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	4,831.08	2,861.39	6,682.61	6,662.51	332.578	CC, ES
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	17,234.44	17,720.27	8,477.23	8,302.22	48.440	SF
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	4,827.35	2,863.94	6,661.19	6,641.11	331.678	CC, ES
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	17,234.44	17,515.21	7,829.55	7,655.11	44.884	SF
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	4,848.09	2,900.00	6,632.99	6,612.77	327.928	CC, ES
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	17,234.44	17,093.98	7,159.07	6,985.05	41.138	SF
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	6,858.00	5,261.12	6,498.11	6,463.22	186.260	CC
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	17,234.44	16,956.23	6,523.63	6,349.95	37.561	ES, SF
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,230.34	16,811.58	5,836.99	5,663.05	33.556	CC
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,234.44	16,811.58	5,836.99	5,663.01	33.549	ES, SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,078.80	6,717.91	9,481.74	9,327.04	61.293	CC
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,100.00	6,732.25	9,481.86	9,326.86	61.172	ES
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,500.00	6,894.33	9,531.33	9,372.82	60.128	SF
Wells Trust 13-21 - Original Drilling - Original Drilling - As	6,970.77	6,631.02	5,528.91	5,485.75	128.103	CC, ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	7,200.00	6,826.31	5,546.69	5,502.59	125.795	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	7,231.90	6,813.72	5,160.43	5,116.29	116.918	CC, ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	7,500.00	6,908.27	5,181.34	5,136.74	116.163	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	7,230.14	6,741.60	6,021.96	5,978.02	137.048	CC, ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	10,500.00	6,823.53	7,195.51	7,141.02	132.053	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	7,673.12	6,881.00	7,804.48	7,646.14	49.288	CC, ES
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	9,800.00	6,881.00	8,089.10	7,923.24	48.772	SF
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	9,330.36	6,778.44	9,259.16	9,211.14	192.816	CC
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	9,400.00	6,779.00	9,259.42	9,211.04	191.389	ES
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	13,100.00	6,808.85	9,997.07	9,925.50	139.685	SF
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,472.42	6,876.00	6,517.69	6,348.30	38.478	CC
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,500.00	6,876.00	6,517.75	6,348.17	38.436	ES
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	12,100.00	6,876.00	6,717.83	6,537.28	37.207	SF
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	7,582.87	6,831.02	5,513.36	5,468.92	124.060	CC, ES
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	10,900.00	6,873.50	6,434.19	6,376.98	112.461	SF
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	9,169.57	6,838.76	5,334.49	5,286.01	110.046	CC
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	9,200.00	6,840.02	5,334.58	5,285.95	109.698	ES
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,952.51	5,946.69	5,883.35	93.883	SF
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,488.15	6,830.92	5,283.93	5,228.24	94.887	CC
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,500.00	6,830.74	5,283.94	5,228.17	94.747	ES
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	12,800.00	6,803.41	5,767.44	5,697.11	82.004	SF
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,836.62	6,775.95	5,253.20	5,188.49	81.185	CC
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,900.00	6,778.07	5,253.58	5,188.37	80.559	ES
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	13,900.00	6,853.73	5,643.48	5,564.91	71.827	SF
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	7,940.59	6,679.93	6,594.59	6,550.33	148.969	CC, ES
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	12,300.00	6,714.35	7,905.19	7,840.60	122.376	SF
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	9,050.60	6,560.40	6,629.06	6,581.84	140.402	CC
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	9,100.00	6,562.18	6,629.24	6,581.79	139.698	ES
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	13,100.00	6,781.82	7,765.68	7,695.34	110.401	SF
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,872.82	6,846.71	6,547.92	6,483.09	101.009	CC
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,900.00	6,846.62	6,547.98	6,482.94	100.682	ES
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	14,800.00	6,837.56	7,172.42	7,088.46	85.427	SF
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	10,984.55	6,672.61	6,066.88	6,008.30	103.575	CC
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	11,000.00	6,672.96	6,066.90	6,008.21	103.374	ES
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	13,800.00	6,727.22	6,688.07	6,611.29	87.106	SF
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	11,850.68	6,776.80	9,022.23	8,957.47	139.313	CC
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	11,900.00	6,776.46	9,022.36	8,957.23	138.514	ES
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	16,100.00	6,740.91	9,972.76	9,879.89	107.377	SF
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,236.33	6,849.00	8,694.75	8,520.87	50.005	CC
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,300.00	6,849.00	8,694.98	8,520.64	49.873	ES
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	13,900.00	6,849.00	9,093.61	8,900.94	47.196	SF
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	11,202.75	6,809.26	8,704.49	8,644.19	144.332	CC
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	11,300.00	6,810.67	8,705.04	8,644.01	142.650	ES
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	16,100.00	6,739.24	9,987.38	9,896.40	109.770	SF
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	10,006.25	5,900.00	7,429.98	7,379.67	147.703	CC
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	10,100.00	5,900.00	7,430.57	7,379.66	145.950	ES
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	14,800.00	6,200.00	8,831.74	8,751.73	110.386	SF
Webster 09-28 (PR) - Original Drilling - Original Drilling -	10,439.63	6,864.00	8,990.91	8,821.96	53.219	CC
Webster 09-28 (PR) - Original Drilling - Original Drilling -	10,500.00	6,864.00	8,991.11	8,821.76	53.094	ES
Webster 09-28 (PR) - Original Drilling - Original Drilling -	13,400.00	6,864.00	9,465.74	9,276.61	50.049	SF
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,764.73	6,795.01	7,685.89	7,621.85	120.015	CC
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,795.12	7,685.97	7,621.66	119.513	ES
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	15,600.00	6,807.25	8,589.65	8,500.92	96.810	SF
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,399.92	6,820.12	9,007.04	8,952.09	163.915	CC
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,500.00	6,819.74	9,007.60	8,951.98	161.958	ES
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,803.74	9,980.84	9,897.98	120.451	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	2,895.05	2,833.98	2,658.65	2,594.39	41.372	CC
Amos 1 (DA) - Wellbore #1 - No Surveys	3,000.00	2,937.68	2,660.07	2,593.58	40.003	ES
Amos 1 (DA) - Wellbore #1 - No Surveys	4,300.00	4,156.25	2,898.20	2,804.09	30.796	SF
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	7,629.91	6,891.39	1,269.12	1,225.75	29.258	CC, ES, SF
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,174.05	6,873.00	1,335.38	1,173.22	8.235	CC, ES
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,200.00	6,873.00	1,335.64	1,173.30	8.228	SF
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	8,980.22	6,876.88	57.96	10.64	1.225	Level 3, CC, ES, SF
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	9,137.81	6,867.65	2,530.08	2,481.87	52.487	CC, ES
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	9,800.00	6,866.91	2,615.30	2,563.39	50.389	SF
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	7,789.93	6,870.54	2,850.99	2,806.34	63.853	CC, ES
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	8,300.00	6,867.58	2,896.25	2,850.58	63.412	SF
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	7,865.48	6,846.21	4,133.01	4,088.42	92.684	CC, ES
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	9,700.00	6,838.98	4,521.86	4,470.63	88.269	SF
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,227.90	6,870.60	1,049.24	1,000.55	21.547	CC, ES
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,400.00	6,869.74	1,063.26	1,013.41	21.328	SF
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,539.03	6,590.50	2,630.54	2,568.00	42.067	CC, ES
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,200.00	6,548.10	2,711.94	2,644.55	40.243	SF
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,787.94	6,919.93	4,149.92	4,085.76	64.678	CC
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,920.42	4,149.94	4,085.68	64.582	ES
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	13,100.00	6,973.07	4,352.07	4,279.04	59.594	SF
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,535.72	6,844.77	2,595.08	2,539.08	46.345	CC, ES
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	11,200.00	6,837.77	2,678.74	2,618.15	44.216	SF
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	10,625.66	6,767.51	3,977.92	3,921.42	70.399	CC, ES
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	12,000.00	6,751.71	4,208.62	4,143.05	64.178	SF
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,531.05	6,944.89	2,555.21	2,492.39	40.674	CC, ES
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,100.00	6,889.60	2,617.21	2,550.25	39.088	SF
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,685.76	6,852.61	67.08	5.02	1.081	Level 2, CC, ES, SF
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,433.17	6,869.12	128.92	73.78	2.338	CC, ES, SF
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,861.65	6,926.58	1,419.06	1,353.91	21.781	CC, ES
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	12,100.00	6,913.94	1,438.89	1,371.80	21.449	SF
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,215.44	6,861.04	796.66	736.19	13.173	CC, ES
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,300.00	6,859.40	801.14	739.79	13.059	SF
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,770.52	6,856.17	1,489.54	1,432.04	25.904	CC, ES
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	11,000.00	6,854.41	1,507.12	1,447.77	25.396	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	11,807.62	6,871.09	2,667.19	2,602.43	41.186	CC, ES
Blehm 30-01 (PR) - Wellbore #1 - Gyro Surveys	12,200.00	6,894.09	2,695.80	2,629.11	40.423	SF
Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys	11,710.83	6,847.18	1,377.70	1,313.84	21.575	CC, ES
Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys	11,800.00	6,845.67	1,380.58	1,316.44	21.524	SF
Fairmeadows 03-30 - Original Drilling - Original Drilling -						Out of range
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	2,217.93	2,168.58	3,741.46	3,727.08	260.242	CC, ES
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	11,300.00	6,917.46	4,135.59	4,076.29	69.742	SF
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	11,667.87	6,752.24	3,802.01	3,738.88	60.222	CC
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	6,752.65	3,802.15	3,738.82	60.038	ES
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	12,600.00	6,765.57	3,914.59	3,846.66	57.629	SF
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	11,022.91	6,818.75	4,700.27	4,641.19	79.559	CC, ES
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	12,500.00	6,814.72	4,926.89	4,860.28	73.962	SF
J&L Farms 32-30 - Original Drilling - Original Drilling - As						Out of range
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	100.00	25.67	2,996.13	2,995.96	10,000.000	CC
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	2,243.31	2,224.70	3,007.73	2,993.15	206.410	ES
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	7,578.18	6,887.80	3,925.48	3,878.99	84.437	SF
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	2,200.00	2,143.00	1,775.39	1,725.58	35.643	CC
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	2,300.00	2,242.98	1,777.13	1,725.28	34.277	ES
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	4,200.00	4,066.25	2,063.43	1,971.49	22.444	SF
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	100.00	33.75	4,284.03	4,283.85	10,000.000	CC
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,912.41	4,291.16	4,277.89	323.404	ES
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	9,900.00	6,700.00	5,697.23	5,648.14	116.054	SF
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	2,200.00	2,142.00	4,259.04	4,209.25	85.539	CC
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	2,300.00	2,241.98	4,260.77	4,208.95	82.213	ES
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	4,200.00	4,065.25	4,517.59	4,425.67	49.144	SF
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	2,204.98	2,143.01	3,456.83	3,442.57	242.266	CC, ES
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	9,800.00	6,821.90	4,601.34	4,551.81	92.897	SF
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	100.00	37.30	4,258.98	4,258.79	10,000.000	CC
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	2,000.00	1,911.78	4,264.22	4,250.95	321.406	ES
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	11,100.00	6,811.89	5,399.44	5,342.54	94.897	SF
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	2,375.54	2,491.03	3,203.22	3,187.49	203.579	CC
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	2,400.00	2,517.55	3,203.31	3,187.46	202.148	ES
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	10,400.00	6,848.18	3,903.91	3,850.71	73.375	SF
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	2,038.96	2,003.98	515.55	501.90	37.762	CC
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	2,100.00	2,063.68	515.63	501.66	36.913	ES
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	3,700.00	3,619.90	654.02	632.39	30.225	SF
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	2,222.28	2,182.77	1,603.75	1,589.34	111.296	CC, ES
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	8,200.00	6,931.15	2,597.71	2,552.71	57.721	SF
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	2,222.91	2,192.73	4,857.41	4,842.95	336.085	CC, ES
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	12,300.00	6,896.24	5,523.63	5,458.95	85.394	SF
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	11,965.20	6,846.00	5,168.59	4,989.64	28.884	CC
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	12,000.00	6,846.00	5,168.71	4,989.54	28.849	ES
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	12,800.00	6,846.00	5,235.57	5,051.69	28.473	SF
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	2,200.00	2,143.00	1,775.39	1,725.58	35.643	CC
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	2,300.00	2,242.98	1,777.13	1,725.28	34.277	ES
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	4,200.00	4,066.25	2,063.43	1,971.49	22.444	SF
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	312.68	247.68	2,002.14	2,000.58	1,285.630	CC
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	2,200.00	2,130.46	2,005.19	1,990.96	140.979	ES
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	9,500.00	6,782.89	2,755.68	2,706.94	56.543	SF
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	930.82	870.84	1,000.36	994.46	169.488	CC
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	2,100.00	2,034.60	1,002.37	988.48	72.164	ES
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	9,100.00	6,836.54	1,310.56	1,262.83	27.461	SF
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	100.00	54.45	1,147.87	1,147.65	5,171.558	CC

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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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>						
A Section 30						
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,949.44	1,152.43	1,139.03	85.990	ES
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	8,600.00	6,854.01	2,050.32	2,004.35	44.596	SF
Roth A31-720 - Roth A31-720 - Plan #2	2,200.00	2,200.00	43.72	29.75	3.131	CC, ES, SF
Roth A31-730 - Roth A31-730 - Plan #2	2,000.00	2,000.00	65.57	52.00	4.832	CC, ES
Roth A31-730 - Roth A31-730 - Plan #2	2,100.00	2,098.22	66.91	52.99	4.807	SF
Roth A32-760 - Roth A32-760 - Plan #2	2,001.52	2,000.52	47.36	33.79	3.489	CC
Roth A32-760 - Roth A32-760 - Plan #2	2,100.00	2,098.89	47.46	33.53	3.408	ES, SF
Roth A32-770 - Roth A32-770 - Plan #2	2,104.49	2,104.49	21.86	7.92	1.569	CC
Roth A32-770 - Roth A32-770 - Plan #2	2,786.68	2,786.71	22.32	7.48	1.504	ES
Roth A32-770 - Roth A32-770 - Plan #2	2,800.00	2,800.01	22.34	7.48	1.503	SF
Roth A32-790 - Roth A32-790 - Plan #2	2,200.00	2,200.00	21.86	7.90	1.566	CC, ES
Roth A32-790 - Roth A32-790 - Plan #2	2,300.00	2,300.02	21.95	7.91	1.564	SF
Sander #1 (PA) - Original Drilling - Original Drilling - As D	11,716.14	6,851.00	5,114.21	4,936.95	28.851	CC, ES
Sander #1 (PA) - Original Drilling - Original Drilling - As D	12,500.00	6,851.00	5,173.94	4,992.06	28.448	SF
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	10,486.60	6,831.14	2,743.34	2,687.82	49.410	CC
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	10,500.00	6,831.18	2,743.37	2,687.78	49.352	ES
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	11,000.00	6,832.60	2,790.96	2,733.21	48.327	SF
Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys	10,772.30	6,914.50	1,323.88	1,266.11	22.917	CC, ES
Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys	10,800.00	6,915.74	1,324.17	1,266.31	22.887	SF
Wolfe 02-30G - Original Drilling - Original Drilling - As Dri						Out of range
A Section 31						
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	15,800.00	10,932.00	1,325.48	1,196.61	10.285	SF
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,397.02	10,932.00	1,183.42	1,084.68	11.985	CC, ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,219.53	6,885.96	5,192.43	5,117.19	69.007	CC, ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	14,700.00	6,918.95	5,399.18	5,315.88	64.816	SF
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	15,916.68	6,975.27	2,628.49	2,531.86	27.201	CC, ES
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	16,200.00	6,991.25	2,643.67	2,545.67	26.977	SF
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	15,846.63	6,814.79	1,677.27	1,581.92	17.590	CC, ES
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	15,900.00	6,813.60	1,678.12	1,582.53	17.556	SF
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	17,037.62	6,915.27	2,907.74	2,802.37	27.597	CC, ES
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	17,234.44	6,919.57	2,914.39	2,807.93	27.375	SF
Marcy 1-31X (PA) - Original Hole - Original Hole	13,114.56	6,918.68	1,398.51	1,322.02	18.284	CC, ES
Marcy 1-31X (PA) - Original Hole - Original Hole	13,200.00	6,921.52	1,401.11	1,324.46	18.280	SF
Marcy 1-31X (PA) - Surface Gyros - Gyros	13,110.21	6,800.00	1,402.84	1,327.23	18.554	CC, ES
Marcy 1-31X (PA) - Surface Gyros - Gyros	13,200.00	6,800.00	1,405.71	1,329.92	18.547	SF
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,301.66	6,818.35	4,409.08	4,325.91	53.012	CC, ES
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	15,200.00	6,812.01	4,499.66	4,411.60	51.093	SF
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	14,452.09	6,838.92	1,541.34	1,451.09	17.079	CC, ES
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,837.93	1,542.08	1,451.64	17.050	SF
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,428.27	6,850.37	3,967.03	3,883.41	47.437	CC, ES
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	15,200.00	6,849.65	4,041.40	3,953.71	46.085	SF
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	13,034.85	6,851.52	2,729.98	2,656.45	37.127	CC, ES
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	14,500.00	14,500.00	3,098.22	3,008.35	34.475	SF
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	12,982.36	6,854.71	4,108.96	4,036.06	56.365	CC
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	13,000.00	6,854.84	4,109.00	4,035.98	56.278	ES
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	13,900.00	6,861.75	4,210.17	4,132.43	54.158	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	15,594.00	6,840.50	119.77	26.07	1.278	Level 3, CC, ES, SF
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,977.67	6,832.14	25.06	-79.52	0.240	Level 1, CC, ES, SF
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,821.85	6,796.37	2,547.83	2,452.72	26.789	CC, ES
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	16,200.00	6,794.68	2,575.74	2,477.67	26.264	SF
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,060.97	6,805.38	3,907.36	3,802.76	37.355	CC
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,100.00	6,805.51	3,907.56	3,802.60	37.231	ES
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,234.44	6,805.94	3,911.21	3,805.09	36.856	SF
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,079.53	6,859.95	2,588.08	2,514.20	35.030	CC
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,100.00	6,859.63	2,588.16	2,514.09	34.943	ES
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,600.00	6,851.72	2,639.88	2,562.07	33.924	SF
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,416.51	6,848.07	2,564.44	2,480.40	30.514	CC, ES
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	6,846.81	2,609.62	2,521.95	29.767	SF
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,693.49	6,838.20	192.56	106.19	2.229	CC
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,838.37	192.67	106.12	2.226	ES, SF
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,570.94	6,821.37	1,435.41	1,350.03	16.812	CC
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,600.00	6,821.43	1,435.71	1,350.02	16.755	ES
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,821.63	1,441.20	1,354.62	16.645	SF
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	13,134.73	6,855.21	3,883.81	3,809.49	52.259	CC
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	13,200.00	6,854.76	3,884.36	3,809.48	51.875	ES
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	14,200.00	6,847.84	4,027.25	3,945.40	49.202	SF
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,356.48	6,806.10	3,862.59	3,778.93	46.170	CC
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	6,806.17	3,862.84	3,778.79	45.961	ES
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	15,300.00	6,807.68	3,976.16	3,885.74	43.976	SF
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,657.63	6,833.89	3,460.89	3,382.80	44.318	CC
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,700.00	6,832.49	3,461.15	3,382.68	44.110	ES
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	14,500.00	6,806.98	3,561.82	3,477.69	42.336	SF
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,673.35	6,856.84	880.54	801.98	11.208	CC, ES
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,800.00	6,858.14	889.61	809.94	11.167	SF
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,879.59	6,867.17	1,368.25	1,296.41	19.045	CC
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,867.41	1,368.41	1,296.35	18.992	ES
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	13,100.00	6,869.80	1,385.89	1,312.25	18.820	SF
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,874.94	6,854.00	35.08	-150.72	0.189	Level 1, CC, ES, SF
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,594.62	6,816.05	1,479.05	1,385.70	15.844	CC
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,600.00	6,816.07	1,479.06	1,385.65	15.834	ES
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,700.00	6,816.53	1,482.80	1,388.45	15.716	SF
Webster 14-32 (TA) - Wellbore #1 - Gyro Surveys	17,234.44	6,818.39	1,240.04	1,135.89	11.906	CC, ES, SF
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	16,990.39	6,804.33	2,649.54	2,545.09	25.366	CC
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,000.00	6,804.38	2,649.56	2,545.01	25.344	ES
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,234.44	6,805.64	2,660.76	2,554.24	24.980	SF
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,662.18	6,881.79	3,874.08	3,780.59	41.439	CC
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,882.27	3,874.27	3,780.44	41.292	ES
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	16,500.00	6,892.49	3,963.63	3,864.14	39.840	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	17,234.44	6,799.40	1,228.48	1,180.59	25.650	CC, ES, SF
Ehrlich 5E-323 (PR) - Wellbore #1 - Permitted-PDC	17,234.44	6,580.63	716.72	645.52	10.067	CC, ES, SF
Ehrlich 5E-423 (DG) - Wellbore #1 - Permitted-PDC	17,234.44	6,650.00	816.75	730.22	9.439	CC, ES, SF
Ehrlich 5J-203 (PR) - Wellbore #1 - Permitted-PDC	17,234.44	6,500.00	964.31	878.06	11.180	CC, ES, SF
Ehrlich 5J-223 (PR) - Wellbore #1 - Permitted-PDC	17,234.44	6,550.00	1,309.53	1,212.09	13.440	CC, ES, SF
Ehrlich 5J-243 (PR) - Wellbore #1 - Permitted-PDC	17,234.44	6,500.00	735.81	668.68	10.961	CC, ES, SF
Ehrlich 5J-303 (PR) - Wellbore #1 - Permitted-PDC	17,234.44	6,550.00	779.87	705.01	10.418	CC, ES, SF
Ehrlich 5J-323 (PR) - Wellbore #1 - Permitted-PDC	17,234.44	6,567.89	1,110.64	1,017.17	11.882	CC, ES, SF
Ehrlich 5M-243 (PR) - Wellbore #1 - Permitted-PDC	17,234.44	6,730.91	1,750.70	1,646.25	16.760	CC, ES, SF
Ehrlich 5M-343 (PR) - Wellbore #1 - Permitted-PDC	17,234.44	6,660.52	1,501.25	1,399.48	14.752	CC, ES, SF
Mininger Pfeif 41-5 (SI) - Wellbore #1 - Gyro Surveys	17,234.44	6,796.63	4,055.50	3,954.29	40.068	CC, ES, SF
Noffsinger 21-5 (TA) - Wellbore #1 - Gyro Surveys	17,234.44	6,816.79	1,656.81	1,571.86	19.504	CC, ES, SF
Noffsinger 31-5 (TA) - Wellbore #1 - Gyro Surveys	17,234.44	6,777.04	2,728.68	2,629.60	27.543	CC, ES, SF
Snowmass 10N (DG) - Wellbore #1 - Permitted-PDC	17,234.44	7,214.87	3,058.26	2,975.25	36.843	CC, ES, SF
Snowmass 1C (DG) - Wellbore #1 - Permitted-PDC	17,234.44	6,450.00	1,872.78	1,771.50	18.492	CC, ES, SF
Snowmass 2N (DG) - Wellbore #1 - Permitted-PDC	17,234.44	6,420.73	2,001.34	1,902.45	20.237	CC, ES, SF
Snowmass 3N (DG) - Wellbore #1 - Permitted-PDC	17,234.44	6,571.80	1,731.02	1,635.18	18.063	CC, ES, SF
Snowmass 4N (DG) - Wellbore #1 - Permitted-PDC	17,234.44	6,783.37	1,723.17	1,631.25	18.747	CC, ES, SF
Snowmass 5N (DG) - Wellbore #1 - Permitted-PDC	17,234.44	6,676.93	2,061.45	1,969.64	22.453	CC, ES, SF
Snowmass 6N (DG) - Wellbore #1 - Permitted-PDC	17,234.44	6,930.14	2,148.99	2,061.19	24.477	CC, ES, SF
Snowmass 7N (DG) - Wellbore #1 - Permitted-PDC	17,234.44	6,826.26	2,468.06	2,379.80	27.964	CC, ES, SF
Snowmass 8N (DG) - Wellbore #1 - Permitted-PDC	17,234.44	7,050.00	2,540.88	2,455.70	29.829	CC, ES, SF
Snowmass 9N (DG) - Wellbore #1 - Permitted-PDC	17,234.44	6,950.00	2,838.09	2,752.14	33.018	CC, ES, SF
B Section 06						
Webster B6-1 (SI) - Wellbore #1 - Gyro Surveys	17,234.44	6,825.13	2,089.01	1,991.71	21.471	CC, ES, SF
Webster B6-2 (SI) - Wellbore #1 - Gyro Surveys	17,234.44	6,763.76	2,743.76	2,640.85	26.661	CC, ES, SF
B Section 07						
Dunn 7I-201 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,804.00	5,548.28	5,291.53	21.610	CC, ES, SF
Dunn 7I-221 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,773.00	5,149.94	4,892.72	20.022	CC, ES, SF
Dunn 7I-321 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,853.00	5,382.75	5,125.55	20.928	CC, ES, SF
Dunn 7L-201 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,789.00	4,547.95	4,291.62	17.743	CC, ES, SF
Dunn 7L-221 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,878.00	4,077.04	3,822.64	16.026	CC, ES, SF
Dunn 7L-301 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,840.00	4,338.74	4,083.05	16.969	CC, ES, SF
Dunn 7L-341 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,843.00	4,824.15	4,567.44	18.792	CC, ES, SF
Dunn 7Q-221 (PR) - Wellbore #1 - MWD Surveys	17,234.44	17,087.00	3,007.78	2,759.10	12.095	CC, ES, SF
Dunn 7Q-241 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,925.00	3,512.56	3,260.83	13.954	CC, ES, SF
Dunn 7Q-301 (PR) - Wellbore #1 - MWD Surveys	17,234.44	17,027.00	3,277.72	3,026.68	13.056	CC, ES, SF
Dunn 7Q-341 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,864.00	3,755.07	3,502.05	14.841	CC, ES, SF
J Klein 7Q-321 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,410.00	2,859.91	2,616.86	11.767	CC, ES, SF
J Klein 7T-121 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,284.00	1,793.12	1,591.40	8.889	CC, ES, SF
J Klein 7T-201 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,391.00	1,994.58	1,773.78	9.033	CC, ES, SF
J Klein 7T-241 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,310.00	2,463.39	2,227.72	10.453	CC, ES, SF
J Klein 7T-301 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,448.00	2,232.27	2,002.16	9.701	CC, ES, SF
J Klein 7Y-201 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,568.00	1,181.90	1,051.68	9.076	CC, ES, SF
J Klein 7Y-241 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,503.00	1,492.40	1,307.06	8.052	CC, ES, SF
J Klein 7Y-341 (PR) - Wellbore #1 - MWD Surveys	17,234.44	16,596.00	1,325.25	1,161.40	8.088	CC, 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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	1,656.93	1,621.97	9,852.16	9,841.11	891.668	CC
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	1,800.00	1,700.00	9,852.59	9,840.77	833.498	ES
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	3,803.57	3,572.75	9,991.45	9,969.70	459.236	SF
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	2,218.15	2,227.99	8,313.73	8,299.16	570.559	CC, ES
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	10,500.00	6,874.44	9,980.99	9,916.71	155.262	SF
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	6,388.58	6,019.04	7,616.10	7,576.20	190.879	CC
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	6,400.00	6,028.15	7,616.17	7,576.19	190.507	ES
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	7,150.00	6,696.00	7,877.94	7,834.10	179.699	SF
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	5,801.48	5,626.59	6,902.64	6,866.51	191.052	CC
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	6,100.00	5,902.98	6,904.09	6,865.78	180.189	ES
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	7,100.00	6,913.94	7,111.71	7,067.05	159.246	SF
Courtney E24-02 - Original Drilling - As Drilled	5,659.21	5,268.31	8,782.76	8,748.48	256.221	CC
Courtney E24-02 - Original Drilling - As Drilled	6,350.00	6,020.88	8,782.84	8,743.10	221.025	ES
Courtney E24-02 - Original Drilling - As Drilled	7,300.00	7,300.00	9,114.88	9,068.91	198.261	SF
Courtney E24-07 - Original Drilling - As Drilled	513.23	464.24	7,999.54	7,996.52	2,653.369	CC
Courtney E24-07 - Original Drilling - As Drilled	2,211.92	2,191.35	8,002.15	7,987.71	554.165	ES
Courtney E24-07 - Original Drilling - As Drilled	7,200.00	6,904.72	8,350.72	8,306.06	187.002	SF
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	0.00	0.00	9,545.26			
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	2,203.81	2,180.38	9,551.65	9,537.25	663.281	ES
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	5,100.00	4,581.48	9,993.12	9,963.53	337.731	SF
Herman E24-05 - Wellbore #1 - Wellbore #1- As Drilled						Out of range
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	2,328.27	2,519.06	6,053.49	6,037.80	385.864	CC, ES
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	7,150.00	6,649.40	6,500.72	6,457.05	148.864	SF
Jessie 1 (DA) - Wellbore #1 - No Surveys	2,200.00	2,146.01	5,630.93	5,581.06	112.907	CC
Jessie 1 (DA) - Wellbore #1 - No Surveys	2,300.00	2,245.99	5,632.62	5,580.71	108.512	ES
Jessie 1 (DA) - Wellbore #1 - No Surveys	4,100.00	3,978.25	5,826.71	5,736.83	64.825	SF
Mackinaw A19-79HNA - Original Drilling - Original Drilling	5,949.79	11,144.00	5,293.09	5,198.30	55.837	CC
Mackinaw A19-79HNA - Original Drilling - Original Drilling	6,000.00	11,144.00	5,293.33	5,198.15	55.613	ES
Mackinaw A19-79HNA - Original Drilling - Original Drilling	6,600.00	11,144.00	5,337.85	5,238.90	53.945	SF
Mackinaw A19-79HNC - Original Drilling - Original Drilling	6,102.20	11,451.00	5,509.44	5,413.06	57.162	CC, ES
Mackinaw A19-79HNC - Original Drilling - Original Drilling	6,700.00	11,451.00	5,550.00	5,450.13	55.575	SF
Miller #33-24 - Original Drilling - As Drilled	2,200.00	2,149.01	7,209.73	7,159.79	144.383	CC
Miller #33-24 - Original Drilling - As Drilled	2,300.00	2,248.99	7,211.34	7,159.37	138.759	ES
Miller #33-24 - Original Drilling - As Drilled	7,350.00	6,826.63	7,859.00	7,701.78	49.987	SF
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	221.08	173.09	6,777.23	6,776.26	6,948.216	CC
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	2,220.11	2,218.55	6,777.51	6,762.98	466.415	ES
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	12,100.00	6,500.00	9,450.89	9,394.33	167.102	SF
Storis E24-72-1HN - Original Drilling - Original Drilling - A	5,954.01	11,309.00	5,754.58	5,659.03	60.227	CC
Storis E24-72-1HN - Original Drilling - Original Drilling - A	6,000.00	11,309.00	5,754.76	5,658.88	60.022	ES
Storis E24-72-1HN - Original Drilling - Original Drilling - A	6,650.00	11,309.00	5,802.88	5,703.24	58.236	SF
Storis E24-73-1HNA - Original Drilling - Original Drilling -	5,508.46	11,685.00	6,665.06	6,562.72	65.129	CC, ES
Storis E24-73-1HNA - Original Drilling - Original Drilling -	6,950.00	11,685.00	6,818.12	6,709.13	62.560	SF
Storis E24-73-1HNC - Original Drilling - Original Drilling -	5,691.70	11,464.00	6,554.08	6,452.47	64.501	CC
Storis E24-73-1HNC - Original Drilling - Original Drilling -	5,700.00	11,464.00	6,554.09	6,452.42	64.467	ES
Storis E24-73-1HNC - Original Drilling - Original Drilling -	6,800.00	11,464.00	6,647.96	6,540.63	61.941	SF
Storis E24-73HC - Original Drilling - Original Drilling - As	5,882.42	11,368.00	6,895.68	6,799.44	71.651	CC
Storis E24-73HC - Original Drilling - Original Drilling - As	5,900.00	11,368.00	6,895.71	6,799.36	71.571	ES
Storis E24-73HC - Original Drilling - Original Drilling - As	6,800.00	11,368.00	6,967.72	6,866.96	69.150	SF
Storis E24-73HN - Original Drilling - Original Drilling	5,678.39	11,262.00	7,064.02	6,968.55	73.998	CC
Storis E24-73HN - Original Drilling - Original Drilling	5,700.00	11,262.00	7,064.05	6,968.46	73.900	ES
Storis E24-73HN - Original Drilling - Original Drilling	6,750.00	11,262.00	7,154.53	7,053.85	71.063	SF
Storis E24-75-1HC - Original Drilling - Original Drilling - A	5,524.38	11,784.00	7,891.97	7,788.10	75.979	CC
Storis E24-75-1HC - Original Drilling - Original Drilling - A	5,600.00	11,784.00	7,892.33	7,788.04	75.678	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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 E24-75-1HC - Original Drilling - Original Drilling - A	7,150.00	11,784.00	8,058.44	7,947.74	72.796	SF
Storis E24-75-1HN - Original Drilling - Original Drilling - A	5,355.21	11,684.00	7,976.80	7,918.50	136.832	CC
Storis E24-75-1HN - Original Drilling - Original Drilling - A	5,400.00	11,684.00	7,976.93	7,918.43	136.366	ES
Storis E24-75-1HN - Original Drilling - Original Drilling - A	10,900.00	11,684.00	9,154.30	9,080.22	123.576	SF
Storis E24-75HN - Original Drilling - Original Drilling - As	5,392.28	11,585.00	8,184.41	8,126.16	140.495	CC
Storis E24-75HN - Original Drilling - Original Drilling - As	5,400.00	11,585.00	8,184.42	8,126.13	140.411	ES
Storis E24-75HN - Original Drilling - Original Drilling - As	11,200.00	11,585.00	9,464.55	9,388.81	124.958	SF
Storis E24-76-1HN - Original Drilling - Original Drilling - A	5,407.31	7,257.00	8,364.97	8,324.84	208.464	CC, ES
Storis E24-76-1HN - Original Drilling - Original Drilling - A	11,600.00	7,067.00	9,960.79	9,900.54	165.331	SF
Storis E24-77-1HN - Original Drilling - Original Drilling - A	3,216.56	4,448.04	8,674.52	8,651.92	383.819	CC, ES
Storis E24-77-1HN - Original Drilling - Original Drilling - A	10,400.00	6,308.00	9,971.17	9,922.55	205.095	SF
Storis E24-78-1HN - Original Drilling - Original Drilling - A	2,419.47	3,129.97	9,167.09	9,150.85	564.291	CC, ES
Storis E24-78-1HN - Original Drilling - Original Drilling - A	7,100.00	6,876.00	9,960.17	9,918.12	236.877	SF
Storis E24-79-1HN - Original Drilling - Original Drilling - A	0.00	0.00	9,248.43			
Storis E24-79-1HN - Original Drilling - Original Drilling - A	900.00	817.00	9,252.95	9,247.96	1,852.484	ES
Storis E24-79-1HN - Original Drilling - Original Drilling - A	4,800.00	4,800.00	9,993.83	9,965.69	355.103	SF
Storis E24-79HN - Original Drilling - Original Drilling - As	986.57	942.91	9,269.38	9,264.27	1,813.395	CC
Storis E24-79HN - Original Drilling - Original Drilling - As	1,000.00	947.15	9,269.41	9,264.25	1,793.533	ES
Storis E24-79HN - Original Drilling - Original Drilling - As	4,600.00	2,134.00	9,992.45	9,975.26	581.470	SF
Wake E24-77HN - Original Drilling - Original Drilling	5,155.66	11,040.02	9,444.63	9,351.36	101.266	CC
Wake E24-77HN - Original Drilling - Original Drilling	5,200.00	11,040.02	9,444.73	9,351.22	101.002	ES
Wake E24-77HN - Original Drilling - Original Drilling	6,750.00	11,040.02	9,587.12	9,486.28	95.069	SF

# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	374.80	324.80	9,361.35	9,359.30	4,579.554	CC
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	2,200.95	2,154.15	9,364.80	9,350.50	654.733	ES
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	5,500.00	5,042.70	9,988.92	9,956.27	305.945	SF
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	2,207.69	2,185.92	9,459.38	9,444.97	656.453	CC, ES
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	4,900.00	4,692.24	9,991.37	9,962.20	342.507	SF
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys						Out of range
LDS E25-33D - Original Drilling - Original Drilling - As Dri	100.00	42.72	9,980.16	9,979.96	10,000.000	CC
LDS E25-33D - Original Drilling - Original Drilling - As Dri	1,000.00	1,000.00	9,984.28	9,977.67	1,510.965	ES
LDS E25-33D - Original Drilling - Original Drilling - As Dri	1,600.00	1,164.96	9,997.57	9,988.16	1,062.555	SF
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	11,860.00	6,770.86	6,546.99	6,482.43	101.417	CC
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	11,900.00	6,770.51	6,547.11	6,482.30	101.013	ES
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	6,748.60	7,022.40	6,943.92	89.476	SF
Little Will #10 - Original Drilling - Original Drilling - As Dri	100.00	38.84	5,320.50	5,320.31	10,000.000	CC
Little Will #10 - Original Drilling - Original Drilling - As Dri	2,220.67	2,216.12	5,327.93	5,313.41	366.844	ES
Little Will #10 - Original Drilling - Original Drilling - As Dri	11,300.00	6,663.08	7,243.08	7,188.00	131.510	SF
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	2,200.13	2,138.55	7,142.82	7,128.56	500.908	CC, ES
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	14,400.00	6,783.01	8,726.36	8,650.51	115.050	SF
Little Will #3 (PA) - Original Drilling - No Surveys	2,200.00	2,142.00	5,569.49	5,519.70	111.857	CC
Little Will #3 (PA) - Original Drilling - No Surveys	2,300.00	2,241.98	5,571.19	5,519.37	107.496	ES
Little Will #3 (PA) - Original Drilling - No Surveys	10,400.00	6,859.00	6,553.28	6,385.75	39.116	SF
Little Will #4 - Original Drilling - Original Drilling - As Drille	1,808.33	1,758.35	6,229.56	6,217.50	516.479	CC
Little Will #4 - Original Drilling - Original Drilling - As Drille	2,200.00	2,144.25	6,229.58	6,215.31	436.560	ES
Little Will #4 - Original Drilling - Original Drilling - As Drille	12,500.00	6,542.40	8,464.44	8,403.50	138.905	SF
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	2,235.99	2,244.36	7,628.83	7,614.20	521.387	CC
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,917.61	7,676.08	7,611.43	118.738	ES
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	15,200.00	6,912.43	8,428.99	8,345.69	101.184	SF
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	1,062.70	1,022.31	9,867.94	9,861.08	1,438.473	CC
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	1,200.00	1,121.16	9,868.20	9,860.49	1,280.736	ES
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	3,000.00	2,724.96	9,997.66	9,977.85	504.616	SF
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	100.00	39.70	9,850.01	9,849.82	10,000.000	CC
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	400.00	292.11	9,851.61	9,849.59	4,878.752	ES
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	3,200.00	2,982.04	9,990.37	9,972.03	544.575	SF
Meisner 02-25EG (PA) - Original Drilling - No Surveys	2,200.00	2,162.00	8,144.70	8,094.51	162.276	CC
Meisner 02-25EG (PA) - Original Drilling - No Surveys	2,300.00	2,261.98	8,146.44	8,094.21	155.984	ES
Meisner 02-25EG (PA) - Original Drilling - No Surveys	11,600.00	6,879.00	9,487.80	9,313.26	54.358	SF
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	1,234.41	1,159.44	8,857.34	8,849.38	1,112.254	CC
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	2,200.00	2,068.30	8,862.01	8,845.27	529.279	ES
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,823.01	9,917.89	9,805.19	88.001	SF
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	211.78	146.78	8,399.57	8,398.72	9,874.059	CC
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	400.00	276.55	8,400.14	8,398.18	4,283.081	ES
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	14,500.00	7,033.00	9,966.67	9,888.31	127.186	SF
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	2,200.00	2,147.00	9,781.40	9,731.50	196.050	CC
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	2,300.00	2,246.98	9,783.07	9,731.15	188.397	ES
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	3,600.00	3,521.46	9,982.20	9,902.83	125.767	SF
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	100.00	35.76	9,529.08	9,528.89	10,000.000	CC
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	2,100.00	2,000.00	9,534.62	9,520.86	693.181	ES
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	4,500.00	4,527.80	9,985.67	9,958.46	367.019	SF
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	100.00	33.70	9,785.91	9,785.73	10,000.000	CC
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,900.00	9,789.61	9,776.39	740.474	ES
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	12,600.00	6,399.80	9,999.87	9,931.81	146.915	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	9,734.41	17,966.68	6,224.08	6,162.82	101.595	CC, ES
Bear E26-650 - Bear E26-650 - Plan #1	15,100.00	17,966.68	8,217.59	8,083.23	61.161	SF
Bear E26-660 - Bear E26-660 - Plan #1	9,074.40	17,652.10	6,219.38	6,163.99	112.280	CC, ES
Bear E26-660 - Bear E26-660 - Plan #1	14,600.00	17,652.10	8,319.44	8,186.29	62.485	SF
Bear E26-670 - Bear E26-670 - Plan #1	5,309.54	17,547.99	6,153.08	6,097.71	111.118	CC, ES
Bear E26-670 - Bear E26-670 - Plan #1	14,100.00	17,547.99	8,422.34	8,290.17	63.723	SF
Bear E26-680 - Bear E26-680 - Plan #1	5,488.50	17,404.52	6,048.49	6,000.89	127.076	CC
Bear E26-680 - Bear E26-680 - Plan #1	5,500.00	17,404.52	6,048.50	6,000.88	127.017	ES
Bear E26-680 - Bear E26-680 - Plan #1	13,500.00	17,404.52	8,459.44	8,329.21	64.960	SF
Bear E26-690 - Bear E26-690 - Plan #1	5,767.58	17,453.70	6,034.63	5,989.16	132.707	CC, ES
Bear E26-690 - Bear E26-690 - Plan #1	13,000.00	17,453.70	8,564.90	8,435.36	66.115	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	11,424.66	11,387.00	6,301.09	6,234.37	94.429	CC
Resolute E25-63-1HN - Original Drilling - Original Drilling	11,500.00	11,387.00	6,301.54	6,233.96	93.240	ES
Resolute E25-63-1HN - Original Drilling - Original Drilling	16,200.00	11,387.00	7,906.18	7,765.46	56.186	SF
Resolute E25-63HC - Original Drilling - Original Drilling -	11,101.97	11,166.00	6,297.16	6,230.03	93.814	CC
Resolute E25-63HC - Original Drilling - Original Drilling -	11,200.00	11,166.00	6,297.92	6,229.60	92.183	ES
Resolute E25-63HC - Original Drilling - Original Drilling -	15,700.00	11,166.00	7,797.18	7,661.59	57.505	SF
Resolute E25-63HN - Original Drilling - Original Drilling -	11,262.55	11,151.00	6,308.71	6,242.58	95.393	CC
Resolute E25-63HN - Original Drilling - Original Drilling -	11,300.00	11,151.00	6,308.82	6,242.26	94.778	ES
Resolute E25-63HN - Original Drilling - Original Drilling -	16,000.00	11,151.00	7,889.44	7,751.11	57.032	SF
Resolute State E25-62-1HN - Original Drilling - Original D	12,097.61	11,410.00	6,306.93	6,236.72	89.830	CC
Resolute State E25-62-1HN - Original Drilling - Original D	12,100.00	11,410.00	6,306.93	6,236.71	89.816	ES
Resolute State E25-62-1HN - Original Drilling - Original D	16,900.00	11,410.00	7,927.19	7,788.88	57.315	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	13,686.97	11,279.00	6,324.24	6,237.85	73.200	CC
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	13,800.00	11,279.00	6,325.25	6,237.14	71.786	ES
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	17,234.44	11,279.00	7,251.24	7,107.90	50.585	SF
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	15,673.05	7,091.44	5,215.88	5,111.34	49.893	CC
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	15,700.00	7,091.01	5,215.95	5,111.18	49.786	ES
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	16,900.00	7,070.70	5,358.20	5,245.54	47.560	SF
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	16,972.55	7,026.86	5,201.20	5,095.44	49.179	CC
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,000.00	7,026.74	5,201.28	5,095.32	49.089	ES
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,234.44	7,025.65	5,207.79	5,100.25	48.423	SF
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,691.07	7,449.32	4,006.81	3,898.80	37.097	CC
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,700.00	7,449.18	4,006.82	3,898.70	37.060	ES
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	16,700.00	7,431.84	4,131.84	4,013.98	35.059	SF
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,043.42	7,267.10	3,977.11	3,867.95	36.436	CC, ES
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,234.44	7,267.37	3,981.69	3,871.26	36.057	SF
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys						Out of range
LDS F 01-27 (SI) - Wellbore #1 - Gyro Surveys	17,234.44	6,888.00	7,102.10	6,995.84	66.839	CC, ES, SF
LDS F 01-28D (SI) - Wellbore #1 - Gyro Surveys	17,234.44	7,046.83	8,372.45	8,265.30	78.137	CC, ES, SF
LDS F 01-29 (SI) - Wellbore #1 - Inc Only Surveys	17,234.44	6,832.66	9,765.56	9,537.32	42.787	CC, ES, SF
LDS F 01-30D (TA) - Wellbore #1 - MWD Surveys						Out of range
Mansfield E36-65HN - Original Drilling - Original Drilling	15,099.55	7,500.02	9,999.19	9,907.81	109.414	CC
Mansfield E36-65HN - Original Drilling - Original Drilling	15,200.00	7,500.02	9,999.70	9,907.59	108.558	ES, SF
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	15,011.03	11,178.00	6,323.10	6,230.52	68.297	CC
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	15,100.00	11,178.00	6,323.73	6,230.48	67.816	ES
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	17,234.44	11,178.00	6,702.63	6,579.80	54.570	SF
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	12,911.14	7,006.82	9,060.71	8,987.30	123.422	CC
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	13,000.00	7,008.39	9,061.15	8,987.11	122.383	ES
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	17,100.00	7,081.05	9,981.86	9,884.34	102.355	SF
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,084.30	6,809.93	7,839.49	7,734.32	74.539	CC
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,100.00	6,810.16	7,839.51	7,734.22	74.456	ES
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,234.44	6,812.15	7,840.93	7,734.65	73.776	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	12,937.64	7,065.29	6,526.62	6,453.40	89.149	CC
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	13,000.00	7,066.59	6,526.91	6,453.28	88.639	ES
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	15,200.00	7,076.00	6,907.54	6,821.72	80.489	SF
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,765.20	6,832.00	7,744.99	7,537.27	37.286	CC
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,800.00	6,832.00	7,745.07	7,537.10	37.241	ES
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	17,234.44	6,832.00	7,883.12	7,665.90	36.291	SF
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,650.83	6,828.00	8,970.91	8,764.17	43.393	CC
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,700.00	6,828.00	8,971.04	8,763.94	43.318	ES
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	17,234.44	6,828.00	9,109.61	8,892.24	41.908	SF
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	16,785.44	6,827.00	9,073.00	8,857.27	42.058	CC
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	16,900.00	6,827.00	9,073.72	8,857.15	41.896	ES
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	17,234.44	6,827.00	9,084.10	8,865.11	41.481	SF
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,084.30	6,809.93	7,839.49	7,744.78	82.768	CC
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,100.00	6,810.15	7,839.51	7,744.68	82.666	ES
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,234.44	6,812.14	7,840.93	7,745.11	81.831	SF
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,177.73	6,832.06	6,499.22	6,393.70	61.592	CC
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,234.44	6,832.57	6,499.47	6,393.54	61.357	ES, SF
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	13,019.86	6,946.48	7,957.41	7,883.37	107.470	CC
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	13,100.00	6,947.25	7,957.81	7,883.21	106.669	ES

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# Noble Energy

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Roth A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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 E36-2 (PR) - Wellbore #1 - Gyro Surveys	16,300.00	6,978.12	8,606.90	8,514.13	92.773	SF
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	16,220.66	7,502.00	9,594.58	9,490.47	92.155	CC
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	16,300.00	7,502.00	9,594.91	9,490.21	91.644	ES
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	17,234.44	7,502.00	9,647.99	9,536.77	86.751	SF
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys						Out of range
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,325.26	6,842.00	9,104.43	8,907.80	46.303	CC
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,400.00	6,842.00	9,104.74	8,907.57	46.177	ES
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	16,600.00	6,842.00	9,384.30	9,172.98	44.408	SF
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,573.00	6,835.00	7,760.44	7,562.02	39.112	CC
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,600.00	6,835.00	7,760.48	7,561.87	39.074	ES
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	16,200.00	6,835.00	7,929.15	7,720.31	37.967	SF
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,569.32	6,805.17	6,281.82	6,196.58	73.697	CC
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,600.00	6,805.50	6,281.89	6,196.44	73.511	ES
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	16,400.00	6,824.77	6,543.10	6,447.49	68.430	SF
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	15,914.19	6,839.00	6,471.52	6,262.48	30.958	CC
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	16,000.00	6,839.00	6,472.08	6,262.43	30.871	ES
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	17,000.00	6,839.00	6,561.97	6,346.08	30.395	SF
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	13,723.81	7,091.00	9,775.80	9,695.82	122.218	CC
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	13,800.00	7,091.00	9,776.10	9,695.57	121.393	ES
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	15,800.00	7,091.00	9,993.84	9,900.05	106.556	SF
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	14,947.65	7,061.00	9,700.15	9,610.73	108.479	CC
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	15,000.00	7,061.00	9,700.29	9,610.49	108.018	ES
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	17,234.44	7,061.00	9,966.05	9,861.64	95.448	SF
Trex E35-618 - Trex E35-618 - Plan #1	16,855.52	6,874.79	5,684.48	5,577.27	53.020	CC
Trex E35-618 - Trex E35-618 - Plan #1	16,900.00	6,877.14	5,684.65	5,577.11	52.863	ES
Trex E35-618 - Trex E35-618 - Plan #1	17,234.44	6,900.00	5,696.77	5,586.93	51.861	SF
Trex E35-628 - Trex E35-628 - Plan #1	16,317.35	6,600.00	5,837.10	5,737.01	58.317	CC, ES
Trex E35-628 - Trex E35-628 - Plan #1	17,234.44	6,650.00	5,906.51	5,800.50	55.719	SF
Trex E35-638 - Trex E35-638 - Plan #1	15,694.13	6,400.00	5,648.41	5,555.56	60.836	CC
Trex E35-638 - Trex E35-638 - Plan #1	15,700.00	6,400.00	5,648.41	5,555.52	60.809	ES
Trex E35-638 - Trex E35-638 - Plan #1	17,100.00	6,450.00	5,819.86	5,718.92	57.652	SF
Trex E35-659 - Trex E35-659 - Plan #1	14,478.60	6,277.99	5,646.35	5,564.35	68.855	CC
Trex E35-659 - Trex E35-659 - Plan #1	14,500.00	6,277.83	5,646.39	5,564.24	68.728	ES
Trex E35-659 - Trex E35-659 - Plan #1	16,100.00	6,250.00	5,874.65	5,783.47	64.428	SF
Trex E35-671 - Trex E35-671 - Plan #1	13,661.75	6,500.00	5,629.91	5,552.52	72.742	CC
Trex E35-671 - Trex E35-671 - Plan #1	13,700.00	6,500.00	5,630.04	5,552.37	72.488	ES
Trex E35-671 - Trex E35-671 - Plan #1	15,400.00	6,450.00	5,890.23	5,802.98	67.506	SF
Trex E35-682 - Trex E35-682 - Plan #1	13,115.64	6,622.71	5,633.75	5,559.15	75.527	CC, ES
Trex E35-682 - Trex E35-682 - Plan #1	14,900.00	6,550.00	5,904.99	5,820.20	69.642	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 A32-779
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	KB @ 4728.00ft
<b>Reference Site:</b>	A Section 30	<b>MD Reference:</b>	KB @ 4728.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Roth A32-779	<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 A32-779	<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	17,234.44	6,828.39	7,875.76	7,769.73	74.280	CC, ES, SF
BJB 3(PA) - Wellbore #1 - No Surveys	17,234.44	6,817.00	8,225.16	8,085.25	58.790	CC, ES, SF
BJB 4 - Wellbore #1 - Gyro Surveys	17,234.44	6,731.27	6,929.50	6,796.29	52.019	CC, ES, SF
BJB 5 - Wellbore #1 - Gyro Surveys	17,234.44	6,931.48	7,238.20	7,133.03	68.822	CC, ES, SF
BJB 6I - Wellbore #1 - As Drilled	17,234.44	6,903.81	8,579.58	8,471.23	79.179	CC, ES, SF
CDOT F 1-10(SI) - Wellbore #1 - Inc Only Surveys	17,234.44	6,813.12	8,672.67	8,461.33	41.037	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	17,234.44	6,793.00	9,141.89	9,009.55	69.076	CC, ES, SF
DPG Bird Farm 1-16H5 - Wellbore #1 - Gyro Surveys	17,234.44	7,031.00	8,178.20	8,082.71	85.645	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	17,234.44	6,791.00	8,473.71	8,339.67	63.219	CC, ES, SF
DPG F 1-24(SI) - Wellbore #1 - Inc Only Surveys	17,234.44	6,799.86	9,350.70	9,145.24	45.512	CC, ES, SF
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	17,234.44	6,521.24	9,782.13	9,680.30	96.062	CC, ES, SF
Gatewood 3-1 - Wellbore #1 - Gyro Surveys	17,234.44	6,738.14	8,933.94	8,828.38	84.636	CC, ES, SF
Gatewood 4-1(SI) - Wellbore #1 - Gyro Surveys						Out of range
Gatewood 5(SI) - Wellbore #1 - No Surveys	17,234.44	6,829.00	9,938.38	9,796.30	69.949	CC, ES, SF
Gatewood 6-1 - Wellbore #1 - Gyro Surveys	17,234.44	6,747.16	9,254.06	9,168.31	107.924	CC, ES, SF
Gatewood F 1-12(SI) - Wellbore #1 - Inc Only Surveys						Out of range
LDS 1U-234 - Wellbore #1 - As Drilled	17,234.44	6,174.00	5,982.10	5,879.32	58.207	CC, ES, SF
LDS 1U-304 - Wellbore #1 - As Drilled	17,234.44	6,077.00	5,939.54	5,836.76	57.791	CC, ES, SF
LDS 1V-204 - Wellbore #1 - As Drilled	17,234.44	6,192.00	6,204.16	6,097.85	58.360	CC, ES, SF
LDS 1V-214 - Wellbore #1 - Permitted-PDC	17,234.44	6,150.00	6,065.94	5,962.25	58.502	CC, ES, SF
LDS 1V-234 - Wellbore #1 - MWD Surveys	17,234.44	6,057.00	6,345.65	6,246.48	63.985	CC, ES, SF
LDS 1V-304 - Wellbore #1 - As Drilled	17,234.44	6,193.00	6,110.99	6,006.21	58.326	CC, ES, SF
LDS 1V-314 - Wellbore #1 - As Drilled	17,234.44	6,171.00	6,019.49	5,916.44	58.411	CC, ES, SF
LDS 1V-334 - Wellbore #1 - As Drilled	17,234.44	6,197.93	6,260.98	6,160.01	62.012	CC, ES, SF
LDS 1W-234 - Wellbore #1 - As Drilled	17,234.44	6,057.00	6,333.71	6,234.45	63.810	CC, ES, SF
LDS 1W-314 - Wellbore #1 - As Drilled	17,234.44	6,076.00	6,421.70	6,323.14	65.154	CC, ES, SF
LDS 1W-414 - Wellbore #1 - As Drilled	17,234.44	6,146.00	6,539.29	6,441.36	66.774	CC, ES, SF
LDS F 1-5(AL) - Wellbore #1 - No Surveys						Out of range
Noffsinger 1 (PA) - Wellbore #1 - No Surveys	17,234.44	6,823.00	6,557.91	6,338.99	29.955	CC, ES, SF
Weld County 1-9H5 - Wellbore #1 - No Surveys	17,234.44	6,792.00	7,627.34	7,492.24	56.457	CC, ES, SF