

Project: Wells Ranch
Site: A Section 30
Well: Roth A32-770
Wellbore: Roth A32-770
Design: Plan #2

Northern Region - DJ Basin

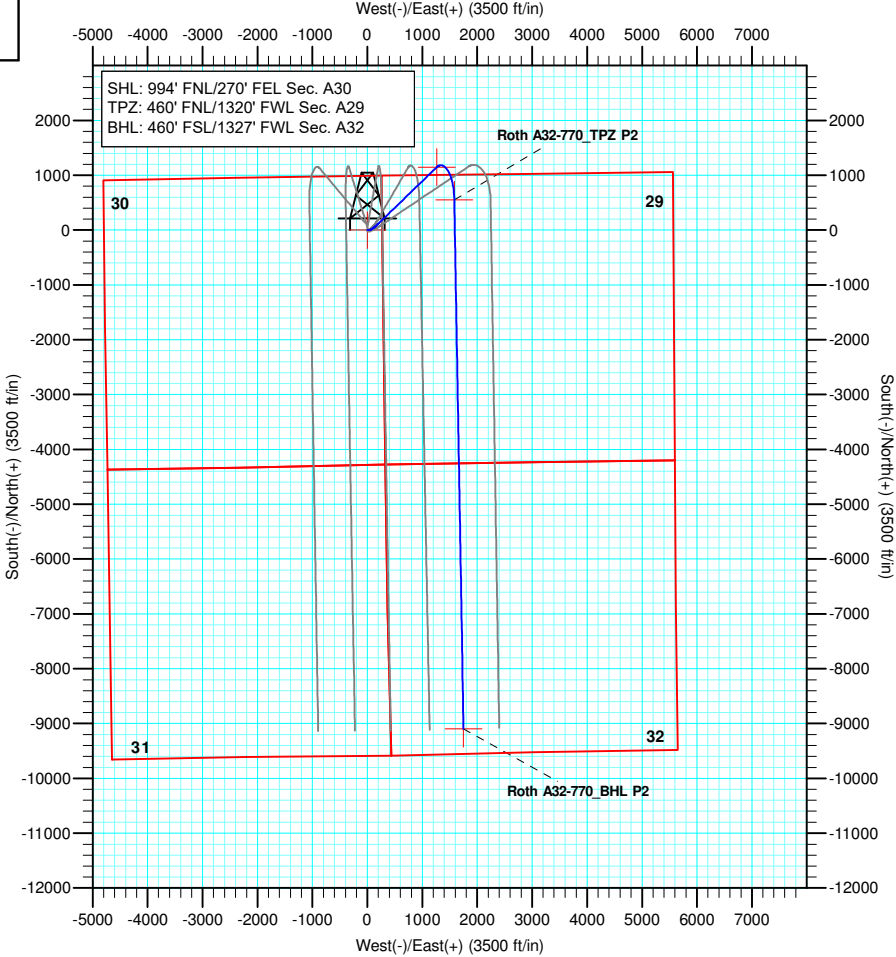
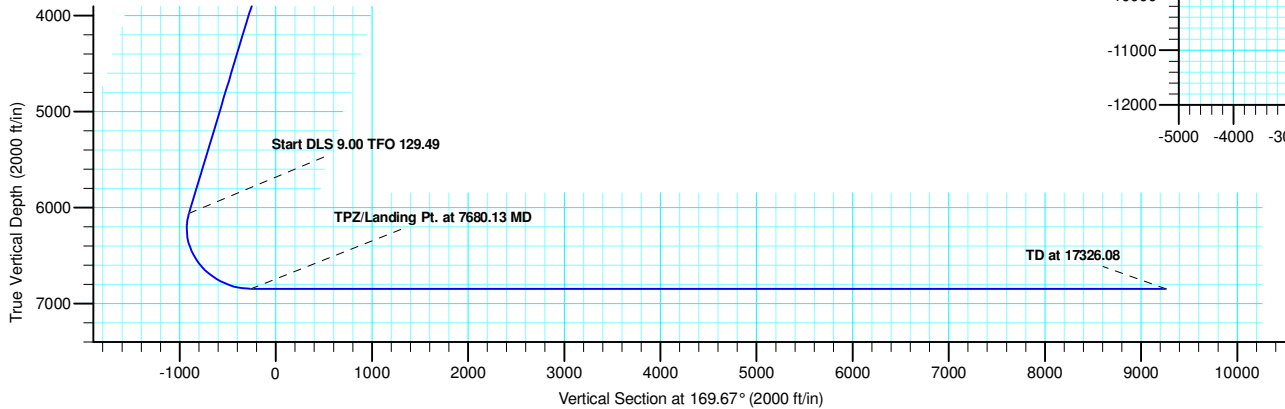
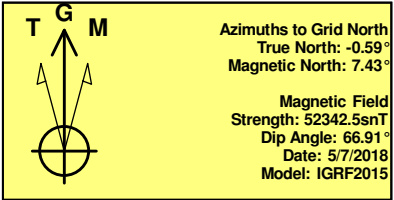
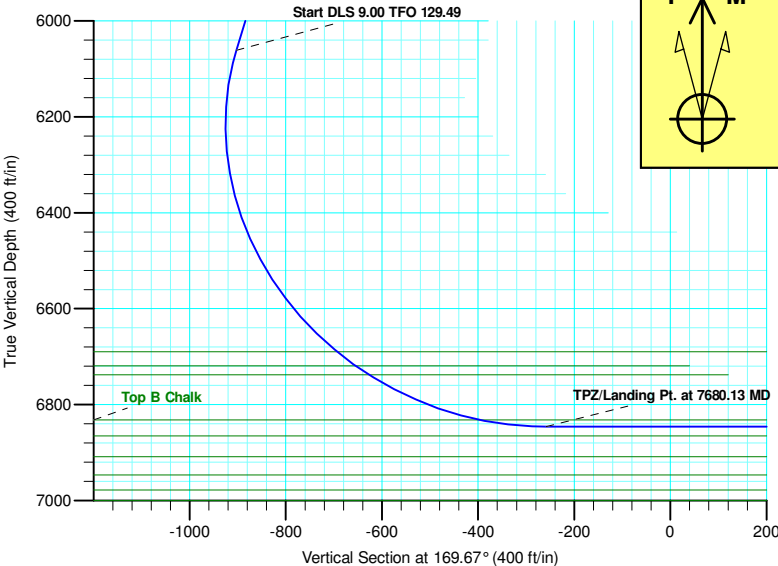
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2100.00	0.00	0.00	2100.00	0.00	0.00	0.00	0.00	0.00	
3	2400.00	6.00	90.00	2399.45	0.00	15.69	2.00	90.00	2.81	
4	2600.00	6.00	90.00	2598.36	0.00	36.60	0.00	0.00	6.56	
5	3413.25	28.37	45.88	3372.25	136.60	220.62	3.00	-53.22	-94.81	
6	6469.49	28.37	45.88	6061.32	1147.71	1263.29	0.00	0.00	-902.50	
7	7680.13	90.00	179.01	6846.00	551.07	1582.98	9.00	129.49	-258.19	Roth A32-770_TPZ P2
8	17326.08	90.00	179.01	6846.00	-9093.43	1749.98	0.00	0.00	9259.85	Roth A32-770_BHL P2

WELL DETAILS: Roth A32-770

+N/-S	+E/-W	Northing	Ground Level: Easting	4698.00 Latitude	Longitude	Slot
0.00	0.00	1412275.71	3254695.92	40.4614900	-104.5846600	



Plan: Plan #2 (Roth A32-770/Roth A32-770)

Created By: Shelly Peterkin Date: 11:43, May 11 2020

Northern Region - DJ Basin

**Wells Ranch
A Section 30
Roth A32-770**

Roth A32-770

Plan: Plan #2

Standard Planning Report

11 May, 2020

Noble Energy
Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-770
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4728.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4728.00ft
Site:	A Section 30	North Reference:	Grid
Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-770		
Design:	Plan #2		

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

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

Well	Roth A32-770			
Well Position	+N/-S	3,942.40 ft	Northing:	1,412,275.71 usft
	+E/-W	4,268.72 ft	Easting:	3,254,695.92 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Latitude: 40.4614900
				Longitude: -104.5846600
				Ground Level: 4,698.00 ft

Wellbore	Roth A32-770				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/7/2018	8.03	66.91	52,342.48815799

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	169.67

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,400.00	6.00	90.00	2,399.45	0.00	15.69	2.00	2.00	0.00	90.00	
2,600.00	6.00	90.00	2,598.36	0.00	36.60	0.00	0.00	0.00	0.00	
3,413.25	28.37	45.88	3,372.25	136.60	220.62	3.00	2.75	-5.43	-53.22	
6,469.49	28.37	45.88	6,061.32	1,147.71	1,263.29	0.00	0.00	0.00	0.00	
7,680.13	90.00	179.01	6,846.00	551.07	1,582.98	9.00	5.09	11.00	129.49	Roth A32-770_TPZ P.
17,326.08	90.00	179.01	6,846.00	-9,093.43	1,749.98	0.00	0.00	0.00	0.00	Roth A32-770_BHL P.

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-770
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4728.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4728.00ft
Site:	A Section 30	North Reference:	Grid
Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-770		
Design:	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
447.00	0.00	0.00	447.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
454.00	0.00	0.00	454.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
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
Upper Pierre Aquifer Base									
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
Start Build 2.00									
2,200.00	2.00	90.00	2,199.98	0.00	1.75	0.31	2.00	2.00	0.00
2,300.00	4.00	90.00	2,299.84	0.00	6.98	1.25	2.00	2.00	0.00
2,400.00	6.00	90.00	2,399.45	0.00	15.69	2.81	2.00	2.00	0.00
Start 200.00 hold at 2400.00 MD									
2,500.00	6.00	90.00	2,498.90	0.00	26.15	4.69	0.00	0.00	0.00
2,600.00	6.00	90.00	2,598.36	0.00	36.60	6.56	0.00	0.00	0.00
Start DLS 3.00 TFO -53.22									
2,700.00	8.16	72.82	2,697.60	2.10	48.61	6.66	3.00	2.16	-17.18
2,800.00	10.72	63.26	2,796.24	8.38	63.70	3.18	3.00	2.57	-9.55
2,900.00	13.47	57.46	2,894.02	18.83	81.83	-3.85	3.00	2.75	-5.80
3,000.00	16.31	53.62	2,990.65	33.43	102.96	-14.42	3.00	2.83	-3.84
3,100.00	19.19	50.90	3,085.88	52.12	127.02	-28.49	3.00	2.88	-2.72
3,200.00	22.10	48.87	3,179.45	74.87	153.95	-46.04	3.00	2.91	-2.03
3,300.00	25.04	47.29	3,271.10	101.60	183.68	-67.01	3.00	2.93	-1.58
3,400.00	27.98	46.03	3,360.58	132.25	216.12	-91.34	3.00	2.95	-1.26
3,413.25	28.37	45.88	3,372.25	136.60	220.62	-94.81	3.00	2.95	-1.13
Start 3056.24 hold at 3413.25 MD									
3,500.00	28.37	45.88	3,448.58	165.30	250.21	-117.74	0.00	0.00	0.00
3,600.00	28.37	45.88	3,536.57	198.38	284.33	-144.16	0.00	0.00	0.00
3,700.00	28.37	45.88	3,624.56	231.46	318.45	-170.59	0.00	0.00	0.00
3,725.51	28.37	45.88	3,647.00	239.90	327.15	-177.33	0.00	0.00	0.00
Parkman									
3,800.00	28.37	45.88	3,712.54	264.55	352.56	-197.02	0.00	0.00	0.00
3,900.00	28.37	45.88	3,800.53	297.63	386.68	-223.45	0.00	0.00	0.00

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-770
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4728.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4728.00ft
Site:	A Section 30	North Reference:	Grid
Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-770		
Design:	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,000.00	28.37	45.88	3,888.51	330.72	420.79	-249.87	0.00	0.00	0.00
4,100.00	28.37	45.88	3,976.50	363.80	454.91	-276.30	0.00	0.00	0.00
4,200.00	28.37	45.88	4,064.49	396.88	489.03	-302.73	0.00	0.00	0.00
4,300.00	28.37	45.88	4,152.47	429.97	523.14	-329.16	0.00	0.00	0.00
4,334.70	28.37	45.88	4,183.00	441.44	534.98	-338.32	0.00	0.00	0.00
Sussex									
4,400.00	28.37	45.88	4,240.46	463.05	557.26	-355.58	0.00	0.00	0.00
4,500.00	28.37	45.88	4,328.45	496.13	591.38	-382.01	0.00	0.00	0.00
4,600.00	28.37	45.88	4,416.43	529.22	625.49	-408.44	0.00	0.00	0.00
4,700.00	28.37	45.88	4,504.42	562.30	659.61	-434.87	0.00	0.00	0.00
4,800.00	28.37	45.88	4,592.40	595.38	693.72	-461.29	0.00	0.00	0.00
4,900.00	28.37	45.88	4,680.39	628.47	727.84	-487.72	0.00	0.00	0.00
5,000.00	28.37	45.88	4,768.38	661.55	761.96	-514.15	0.00	0.00	0.00
5,100.00	28.37	45.88	4,856.36	694.63	796.07	-540.58	0.00	0.00	0.00
5,200.00	28.37	45.88	4,944.35	727.72	830.19	-567.00	0.00	0.00	0.00
5,229.15	28.37	45.88	4,970.00	737.36	840.14	-574.71	0.00	0.00	0.00
Shannon									
5,300.00	28.37	45.88	5,032.33	760.80	864.31	-593.43	0.00	0.00	0.00
5,400.00	28.37	45.88	5,120.32	793.89	898.42	-619.86	0.00	0.00	0.00
5,500.00	28.37	45.88	5,208.31	826.97	932.54	-646.29	0.00	0.00	0.00
5,600.00	28.37	45.88	5,296.29	860.05	966.65	-672.71	0.00	0.00	0.00
5,700.00	28.37	45.88	5,384.28	893.14	1,000.77	-699.14	0.00	0.00	0.00
5,800.00	28.37	45.88	5,472.27	926.22	1,034.89	-725.57	0.00	0.00	0.00
5,900.00	28.37	45.88	5,560.25	959.30	1,069.00	-752.00	0.00	0.00	0.00
6,000.00	28.37	45.88	5,648.24	992.39	1,103.12	-778.42	0.00	0.00	0.00
6,100.00	28.37	45.88	5,736.22	1,025.47	1,137.23	-804.85	0.00	0.00	0.00
6,200.00	28.37	45.88	5,824.21	1,058.55	1,171.35	-831.28	0.00	0.00	0.00
6,300.00	28.37	45.88	5,912.20	1,091.64	1,205.47	-857.71	0.00	0.00	0.00
6,366.83	28.37	45.88	5,971.00	1,113.75	1,228.27	-875.37	0.00	0.00	0.00
Teepee Buttes									
6,400.00	28.37	45.88	6,000.18	1,124.72	1,239.58	-884.14	0.00	0.00	0.00
6,469.49	28.37	45.88	6,061.32	1,147.71	1,263.29	-902.50	0.00	0.00	0.00
Start DLS 9.00 TFO 129.49									
6,500.00	26.71	50.60	6,088.38	1,157.11	1,273.79	-909.86	9.00	-5.47	15.47
6,550.00	24.36	59.53	6,133.51	1,169.48	1,291.37	-918.88	9.00	-4.69	17.86
6,600.00	22.64	69.97	6,179.38	1,178.01	1,309.31	-924.05	9.00	-3.45	20.88
6,650.00	21.68	81.65	6,225.71	1,182.65	1,327.50	-925.35	9.00	-1.92	23.35
6,700.00	21.58	93.87	6,272.21	1,183.37	1,345.82	-922.77	9.00	-0.18	24.45
6,750.00	22.37	105.73	6,318.60	1,180.16	1,364.16	-916.33	9.00	1.57	23.72
6,800.00	23.95	116.46	6,364.59	1,173.06	1,382.42	-906.07	9.00	3.16	21.46
6,850.00	26.18	125.71	6,409.90	1,162.09	1,400.47	-892.04	9.00	4.46	18.49
6,900.00	28.91	133.46	6,454.24	1,147.33	1,418.21	-874.34	9.00	5.46	15.51
6,950.00	32.01	139.91	6,497.35	1,128.88	1,435.52	-853.08	9.00	6.20	12.90
7,000.00	35.38	145.29	6,538.95	1,106.83	1,452.31	-828.38	9.00	6.74	10.76
7,050.00	38.95	149.82	6,578.80	1,081.33	1,468.46	-800.40	9.00	7.15	9.07
7,100.00	42.67	153.69	6,616.64	1,052.54	1,483.88	-769.30	9.00	7.45	7.74
7,150.00	46.51	157.05	6,652.24	1,020.63	1,498.46	-735.30	9.00	7.67	6.71
7,200.00	50.43	160.00	6,685.39	985.80	1,512.14	-698.58	9.00	7.84	5.90
7,207.28	51.01	160.40	6,690.00	980.50	1,514.05	-693.02	9.00	7.93	5.51
Sharon Springs									
7,250.00	54.42	162.63	6,715.88	948.27	1,524.81	-659.38	9.00	7.99	5.22
7,255.39	54.85	162.90	6,719.00	944.07	1,526.11	-655.02	9.00	8.04	4.96
Top A Chalk									

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-770
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4728.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4728.00ft
Site:	A Section 30	North Reference:	Grid
Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-770		
Design:	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)
7,289.58	57.62	164.53	6,738.00	916.79	1,534.07	-626.75	9.00	8.08	4.78
Top A Marl									
7,300.00	58.46	165.01	6,743.52	908.26	1,536.39	-617.95	9.00	8.12	4.59
7,350.00	62.54	167.19	6,768.13	866.03	1,546.83	-574.52	9.00	8.16	4.36
7,400.00	66.65	169.21	6,789.58	821.82	1,556.05	-529.39	9.00	8.22	4.05
7,450.00	70.79	171.11	6,807.72	775.93	1,564.00	-482.81	9.00	8.27	3.80
7,500.00	74.95	172.92	6,822.45	728.62	1,570.63	-435.08	9.00	8.31	3.62
7,541.44	78.40	174.37	6,832.00	688.55	1,575.08	-394.86	9.00	8.34	3.49
Top B Chalk									
7,550.00	79.11	174.66	6,833.67	680.20	1,575.89	-386.50	9.00	8.35	3.43
7,600.00	83.29	176.35	6,841.31	630.95	1,579.75	-337.35	9.00	8.36	3.38
7,650.00	87.48	178.01	6,845.34	581.18	1,582.20	-287.96	9.00	8.37	3.32
7,680.13	90.00	179.01	6,846.00	551.07	1,582.98	-258.19	9.00	8.37	3.30
TPZ/Landing Pt. at 7680.13 MD									
7,700.00	90.00	179.01	6,846.00	531.21	1,583.33	-238.59	0.00	0.00	0.00
7,800.00	90.00	179.01	6,846.00	431.22	1,585.06	-139.91	0.00	0.00	0.00
7,900.00	90.00	179.01	6,846.00	331.24	1,586.79	-41.24	0.00	0.00	0.00
8,000.00	90.00	179.01	6,846.00	231.25	1,588.52	57.43	0.00	0.00	0.00
8,100.00	90.00	179.01	6,846.00	131.27	1,590.25	156.11	0.00	0.00	0.00
8,200.00	90.00	179.01	6,846.00	31.28	1,591.99	254.78	0.00	0.00	0.00
8,300.00	90.00	179.01	6,846.00	-68.70	1,593.72	353.46	0.00	0.00	0.00
8,400.00	90.00	179.01	6,846.00	-168.69	1,595.45	452.13	0.00	0.00	0.00
8,500.00	90.00	179.01	6,846.00	-268.67	1,597.18	550.80	0.00	0.00	0.00
8,600.00	90.00	179.01	6,846.00	-368.66	1,598.91	649.48	0.00	0.00	0.00
8,700.00	90.00	179.01	6,846.00	-468.64	1,600.64	748.15	0.00	0.00	0.00
8,800.00	90.00	179.01	6,846.00	-568.63	1,602.37	846.83	0.00	0.00	0.00
8,900.00	90.00	179.01	6,846.00	-668.61	1,604.10	945.50	0.00	0.00	0.00
9,000.00	90.00	179.01	6,846.00	-768.60	1,605.84	1,044.17	0.00	0.00	0.00
9,100.00	90.00	179.01	6,846.00	-868.58	1,607.57	1,142.85	0.00	0.00	0.00
9,200.00	90.00	179.01	6,846.00	-968.57	1,609.30	1,241.52	0.00	0.00	0.00
9,300.00	90.00	179.01	6,846.00	-1,068.55	1,611.03	1,340.20	0.00	0.00	0.00
9,400.00	90.00	179.01	6,846.00	-1,168.54	1,612.76	1,438.87	0.00	0.00	0.00
9,500.00	90.00	179.01	6,846.00	-1,268.52	1,614.49	1,537.54	0.00	0.00	0.00
9,600.00	90.00	179.01	6,846.00	-1,368.51	1,616.22	1,636.22	0.00	0.00	0.00
9,700.00	90.00	179.01	6,846.00	-1,468.49	1,617.95	1,734.89	0.00	0.00	0.00
9,800.00	90.00	179.01	6,846.00	-1,568.48	1,619.69	1,833.57	0.00	0.00	0.00
9,900.00	90.00	179.01	6,846.00	-1,668.46	1,621.42	1,932.24	0.00	0.00	0.00
10,000.00	90.00	179.01	6,846.00	-1,768.45	1,623.15	2,030.91	0.00	0.00	0.00
10,100.00	90.00	179.01	6,846.00	-1,868.43	1,624.88	2,129.59	0.00	0.00	0.00
10,200.00	90.00	179.01	6,846.00	-1,968.42	1,626.61	2,228.26	0.00	0.00	0.00
10,300.00	90.00	179.01	6,846.00	-2,068.40	1,628.34	2,326.93	0.00	0.00	0.00
10,400.00	90.00	179.01	6,846.00	-2,168.39	1,630.07	2,425.61	0.00	0.00	0.00
10,500.00	90.00	179.01	6,846.00	-2,268.37	1,631.80	2,524.28	0.00	0.00	0.00
10,600.00	90.00	179.01	6,846.00	-2,368.36	1,633.54	2,622.96	0.00	0.00	0.00
10,700.00	90.00	179.01	6,846.00	-2,468.34	1,635.27	2,721.63	0.00	0.00	0.00
10,800.00	90.00	179.01	6,846.00	-2,568.33	1,637.00	2,820.30	0.00	0.00	0.00
10,900.00	90.00	179.01	6,846.00	-2,668.31	1,638.73	2,918.98	0.00	0.00	0.00
11,000.00	90.00	179.01	6,846.00	-2,768.30	1,640.46	3,017.65	0.00	0.00	0.00
11,100.00	90.00	179.01	6,846.00	-2,868.28	1,642.19	3,116.33	0.00	0.00	0.00
11,200.00	90.00	179.01	6,846.00	-2,968.27	1,643.92	3,215.00	0.00	0.00	0.00
11,300.00	90.00	179.01	6,846.00	-3,068.25	1,645.65	3,313.67	0.00	0.00	0.00
11,400.00	90.00	179.01	6,846.00	-3,168.24	1,647.39	3,412.35	0.00	0.00	0.00
11,500.00	90.00	179.01	6,846.00	-3,268.22	1,649.12	3,511.02	0.00	0.00	0.00

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-770
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4728.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4728.00ft
Site:	A Section 30	North Reference:	Grid
Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-770		
Design:	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)
11,600.00	90.00	179.01	6,846.00	-3,368.21	1,650.85	3,609.70	0.00	0.00	0.00
11,700.00	90.00	179.01	6,846.00	-3,468.19	1,652.58	3,708.37	0.00	0.00	0.00
11,800.00	90.00	179.01	6,846.00	-3,568.18	1,654.31	3,807.04	0.00	0.00	0.00
11,900.00	90.00	179.01	6,846.00	-3,668.16	1,656.04	3,905.72	0.00	0.00	0.00
12,000.00	90.00	179.01	6,846.00	-3,768.15	1,657.77	4,004.39	0.00	0.00	0.00
12,100.00	90.00	179.01	6,846.00	-3,868.13	1,659.51	4,103.07	0.00	0.00	0.00
12,200.00	90.00	179.01	6,846.00	-3,968.12	1,661.24	4,201.74	0.00	0.00	0.00
12,300.00	90.00	179.01	6,846.00	-4,068.10	1,662.97	4,300.41	0.00	0.00	0.00
12,400.00	90.00	179.01	6,846.00	-4,168.09	1,664.70	4,399.09	0.00	0.00	0.00
12,500.00	90.00	179.01	6,846.00	-4,268.07	1,666.43	4,497.76	0.00	0.00	0.00
12,600.00	90.00	179.01	6,846.00	-4,368.06	1,668.16	4,596.44	0.00	0.00	0.00
12,700.00	90.00	179.01	6,846.00	-4,468.04	1,669.89	4,695.11	0.00	0.00	0.00
12,800.00	90.00	179.01	6,846.00	-4,568.03	1,671.62	4,793.78	0.00	0.00	0.00
12,900.00	90.00	179.01	6,846.00	-4,668.01	1,673.36	4,892.46	0.00	0.00	0.00
13,000.00	90.00	179.01	6,846.00	-4,768.00	1,675.09	4,991.13	0.00	0.00	0.00
13,100.00	90.00	179.01	6,846.00	-4,867.98	1,676.82	5,089.81	0.00	0.00	0.00
13,200.00	90.00	179.01	6,846.00	-4,967.97	1,678.55	5,188.48	0.00	0.00	0.00
13,300.00	90.00	179.01	6,846.00	-5,067.95	1,680.28	5,287.15	0.00	0.00	0.00
13,400.00	90.00	179.01	6,846.00	-5,167.94	1,682.01	5,385.83	0.00	0.00	0.00
13,500.00	90.00	179.01	6,846.00	-5,267.92	1,683.74	5,484.50	0.00	0.00	0.00
13,600.00	90.00	179.01	6,846.00	-5,367.91	1,685.47	5,583.18	0.00	0.00	0.00
13,700.00	90.00	179.01	6,846.00	-5,467.89	1,687.21	5,681.85	0.00	0.00	0.00
13,800.00	90.00	179.01	6,846.00	-5,567.88	1,688.94	5,780.52	0.00	0.00	0.00
13,900.00	90.00	179.01	6,846.00	-5,667.86	1,690.67	5,879.20	0.00	0.00	0.00
14,000.00	90.00	179.01	6,846.00	-5,767.85	1,692.40	5,977.87	0.00	0.00	0.00
14,100.00	90.00	179.01	6,846.00	-5,867.83	1,694.13	6,076.54	0.00	0.00	0.00
14,200.00	90.00	179.01	6,846.00	-5,967.82	1,695.86	6,175.22	0.00	0.00	0.00
14,300.00	90.00	179.01	6,846.00	-6,067.80	1,697.59	6,273.89	0.00	0.00	0.00
14,400.00	90.00	179.01	6,846.00	-6,167.79	1,699.32	6,372.57	0.00	0.00	0.00
14,500.00	90.00	179.01	6,846.00	-6,267.77	1,701.06	6,471.24	0.00	0.00	0.00
14,600.00	90.00	179.01	6,846.00	-6,367.76	1,702.79	6,569.91	0.00	0.00	0.00
14,700.00	90.00	179.01	6,846.00	-6,467.74	1,704.52	6,668.59	0.00	0.00	0.00
14,800.00	90.00	179.01	6,846.00	-6,567.73	1,706.25	6,767.26	0.00	0.00	0.00
14,900.00	90.00	179.01	6,846.00	-6,667.71	1,707.98	6,865.94	0.00	0.00	0.00
15,000.00	90.00	179.01	6,846.00	-6,767.70	1,709.71	6,964.61	0.00	0.00	0.00
15,100.00	90.00	179.01	6,846.00	-6,867.68	1,711.44	7,063.28	0.00	0.00	0.00
15,200.00	90.00	179.01	6,846.00	-6,967.67	1,713.17	7,161.96	0.00	0.00	0.00
15,300.00	90.00	179.01	6,846.00	-7,067.65	1,714.91	7,260.63	0.00	0.00	0.00
15,400.00	90.00	179.01	6,846.00	-7,167.64	1,716.64	7,359.31	0.00	0.00	0.00
15,500.00	90.00	179.01	6,846.00	-7,267.62	1,718.37	7,457.98	0.00	0.00	0.00
15,600.00	90.00	179.01	6,846.00	-7,367.61	1,720.10	7,556.65	0.00	0.00	0.00
15,700.00	90.00	179.01	6,846.00	-7,467.59	1,721.83	7,655.33	0.00	0.00	0.00
15,800.00	90.00	179.01	6,846.00	-7,567.58	1,723.56	7,754.00	0.00	0.00	0.00
15,900.00	90.00	179.01	6,846.00	-7,667.56	1,725.29	7,852.68	0.00	0.00	0.00
16,000.00	90.00	179.01	6,846.00	-7,767.55	1,727.03	7,951.35	0.00	0.00	0.00
16,100.00	90.00	179.01	6,846.00	-7,867.53	1,728.76	8,050.02	0.00	0.00	0.00
16,200.00	90.00	179.01	6,846.00	-7,967.52	1,730.49	8,148.70	0.00	0.00	0.00
16,300.00	90.00	179.01	6,846.00	-8,067.50	1,732.22	8,247.37	0.00	0.00	0.00
16,400.00	90.00	179.01	6,846.00	-8,167.49	1,733.95	8,346.05	0.00	0.00	0.00
16,500.00	90.00	179.01	6,846.00	-8,267.48	1,735.68	8,444.72	0.00	0.00	0.00
16,600.00	90.00	179.01	6,846.00	-8,367.46	1,737.41	8,543.39	0.00	0.00	0.00
16,700.00	90.00	179.01	6,846.00	-8,467.45	1,739.14	8,642.07	0.00	0.00	0.00
16,800.00	90.00	179.01	6,846.00	-8,567.43	1,740.88	8,740.74	0.00	0.00	0.00
16,900.00	90.00	179.01	6,846.00	-8,667.42	1,742.61	8,839.42	0.00	0.00	0.00

Noble Energy
Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-770
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4728.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4728.00ft
Site:	A Section 30	North Reference:	Grid
Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-770		
Design:	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)
17,000.00	90.00	179.01	6,846.00	-8,767.40	1,744.34	8,938.09	0.00	0.00	0.00
17,100.00	90.00	179.01	6,846.00	-8,867.39	1,746.07	9,036.76	0.00	0.00	0.00
17,200.00	90.00	179.01	6,846.00	-8,967.37	1,747.80	9,135.44	0.00	0.00	0.00
17,300.00	90.00	179.01	6,846.00	-9,067.36	1,749.53	9,234.11	0.00	0.00	0.00
17,326.08	90.00	179.01	6,846.00	-9,093.43	1,749.98	9,259.85	0.00	0.00	0.00
TD at 17326.08									

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 A32-770_SHL - plan hits target center - Point	0.00	0.01	0.00	0.00	0.00	1,412,275.71	3,254,695.92	40.4614900	-104.5846600
Roth A32-770_KOP P2 - plan hits target center - Point	0.00	0.00	6,061.32	1,147.71	1,263.29	1,413,423.42	3,255,959.21	40.4646044	-104.5800774
Roth A32-770_TPZ P2 - plan hits target center - Point	0.00	0.01	6,846.00	551.07	1,582.98	1,412,826.78	3,256,278.90	40.4629576	-104.5789508
Roth A32-770_BHL P2 - plan hits target center - Point	0.00	0.00	6,846.00	-9,093.43	1,749.98	1,403,182.29	3,256,445.90	40.4364803	-104.5787108

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
447.00	447.00	Upper Pierre Aquifer Top				
454.00	454.00	Pierre				
1,464.00	1,464.00	Upper Pierre Aquifer Base				
3,725.51	3,647.00	Parkman				
4,334.70	4,183.00	Sussex				
5,229.15	4,970.00	Shannon				
6,366.83	5,971.00	Teepee Buttes				
7,207.28	6,690.00	Sharon Springs				
7,255.39	6,719.00	Top A Chalk				
7,289.58	6,738.00	Top A Marl				
7,541.44	6,832.00	Top B Chalk				

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-770
Company:	Northern Region - DJ Basin	TVD Reference:	KB @ 4728.00ft
Project:	Wells Ranch	MD Reference:	KB @ 4728.00ft
Site:	A Section 30	North Reference:	Grid
Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-770		
Design:	Plan #2		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,100.00	2,100.00	0.00	0.00	Start Build 2.00
2,400.00	2,399.45	0.00	15.69	Start 200.00 hold at 2400.00 MD
2,600.00	2,598.36	0.00	36.60	Start DLS 3.00 TFO -53.22
3,413.25	3,372.25	136.60	220.62	Start 3056.24 hold at 3413.25 MD
6,469.49	6,061.32	1,147.71	1,263.29	Start DLS 9.00 TFO 129.49
7,680.13	6,846.00	551.07	1,582.98	TPZ/Landing Pt. at 7680.13 MD
17,326.08	6,846.00	-9,093.43	1,749.98	TD at 17326.08

Northern Region - DJ Basin

Wells Ranch

A Section 30

Roth A32-770

Roth A32-770

Plan #2

Anticollision Summary Report

11 May, 2020

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference	Plan #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 5/11/2020			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	2,000.00	Plan #2 (Roth A32-770)	2_Gyro-NS-CT_OWSG	A021Ga: Continuous gyro in casing
2,000.00	17,326.08	Plan #2 (Roth A32-770)	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 -	6,473.36	6,009.73	6,056.24	5,914.85	42.834	CC
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	6,500.00	6,033.38	6,056.69	5,914.70	42.658	ES
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	7,100.00	6,561.64	6,277.89	6,123.66	40.705	SF
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,124.60	5,640.30	4,303.73	4,264.62	110.049	CC
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,469.49	5,986.18	4,305.88	4,263.96	102.719	ES
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,900.00	6,425.20	4,416.70	4,371.73	98.210	SF
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,529.08	5,988.96	3,622.11	3,579.90	85.810	CC, ES
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,950.00	6,473.03	3,740.66	3,695.38	82.611	SF
Luppens 05-19 - Original Drilling - Original Drilling - As D	156.61	108.12	5,952.00	5,951.49	10,000.000	CC
Luppens 05-19 - Original Drilling - Original Drilling - As D	2,000.00	1,918.80	5,955.32	5,942.02	447.823	ES
Luppens 05-19 - Original Drilling - Original Drilling - As D	7,300.00	7,300.00	6,749.18	6,701.11	140.415	SF
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	730.65	674.66	4,215.00	4,210.48	933.592	CC
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	2,113.02	2,070.92	4,222.45	4,208.45	301.455	ES
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	7,300.00	6,714.55	5,030.40	4,980.94	101.698	SF
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	2,100.00	2,046.00	3,372.69	3,324.84	70.473	CC
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	2,200.00	2,145.98	3,374.24	3,324.37	67.653	ES
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	7,300.00	6,689.52	4,574.97	4,419.01	29.335	SF
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	529.55	472.87	4,205.05	4,201.83	1,308.324	CC
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	900.00	800.00	4,207.27	4,201.07	679.017	ES
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	7,300.00	6,830.76	5,390.28	5,339.40	105.947	SF
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	100.00	37.88	4,186.17	4,185.98	10,000.000	CC
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	300.00	200.00	4,186.82	4,185.47	3,103.839	ES
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,950.00	6,601.72	5,580.15	5,532.22	116.442	SF
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	3,100.00	3,336.64	3,557.14	3,536.55	172.813	CC, ES
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	7,550.00	7,550.00	4,755.21	4,706.11	96.842	SF
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	725.91	670.44	4,169.20	4,164.36	861.409	CC
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	1,400.00	1,329.28	4,170.85	4,158.88	348.363	ES
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,850.00	6,500.71	4,485.40	4,432.94	85.512	SF
Roth A19-12 - Original Drilling - Original Drilling - As Drill	1,575.01	1,518.04	4,976.80	4,966.38	477.582	CC
Roth A19-12 - Original Drilling - Original Drilling - As Drill	1,700.00	1,608.70	4,977.25	4,966.07	445.487	ES
Roth A19-12 - Original Drilling - Original Drilling - As Drill	7,350.00	6,859.64	5,954.95	5,908.58	128.427	SF
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	2,100.00	2,039.00	4,656.73	4,609.02	97.591	CC
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	2,200.00	2,138.98	4,658.32	4,608.58	93.663	ES
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	7,350.00	6,707.13	5,875.60	5,719.22	37.572	SF
Roth A31-740 - Roth A31-740 - APD-Rev 0	3,769.84	4,362.59	2,904.85	2,884.16	140.387	CC
Roth A31-740 - Roth A31-740 - APD-Rev 0	3,900.00	4,481.32	2,905.34	2,883.84	135.155	ES

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
A Section 19						
Roth A31-740 - Roth A31-740 - APD-Rev 0	17,326.08	16,956.98	3,332.80	3,160.89	19.387	SF
Roth A31-748 - Roth A31-748 - APD-Rev 0	3,094.72	3,529.30	3,052.98	3,036.41	184.233	CC
Roth A31-748 - Roth A31-748 - APD-Rev 0	3,100.00	3,534.34	3,052.98	3,036.39	184.000	ES
Roth A31-748 - Roth A31-748 - APD-Rev 0	17,326.08	16,828.21	3,856.98	3,685.76	22.526	SF
Roth A31-760 - Roth A31-760 - APD-Rev 0	2,100.00	2,075.00	3,116.33	3,102.50	225.315	CC, ES
Roth A31-760 - Roth A31-760 - APD-Rev 0	17,326.08	16,861.60	4,383.97	4,211.97	25.488	SF
Roth A31-770 - Roth A31-770 - APD-Rev 0	2,000.00	1,975.00	3,137.62	3,124.18	233.559	CC, ES
Roth A31-770 - Roth A31-770 - APD-Rev 0	17,326.08	16,881.76	5,084.79	4,912.79	29.563	SF
Roth A31-780 - Roth A31-780 - APD-Rev 0	2,000.00	1,975.00	3,159.07	3,145.63	235.153	CC, ES
Roth A31-780 - Roth A31-780 - APD-Rev 0	17,326.08	17,042.64	5,723.60	5,551.51	33.261	SF
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	2,000.00	1,975.00	3,180.35	3,166.92	236.736	CC, ES
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	17,326.08	17,248.67	6,407.45	6,235.17	37.192	SF
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	2,100.00	2,051.00	6,961.99	6,914.01	145.128	CC
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	5,400.00	5,071.32	6,972.84	6,855.20	59.271	ES
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	7,150.00	6,603.24	7,279.00	7,124.01	46.966	SF
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,232.92	5,814.42	2,387.99	2,347.77	59.371	CC
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,300.00	5,871.89	2,388.22	2,347.49	58.636	ES
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,750.00	6,274.79	2,446.26	2,402.24	55.575	SF
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	1,367.08	1,313.12	2,465.68	2,456.71	274.923	CC
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,933.54	2,468.37	2,455.00	184.646	ES
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	6,950.00	6,420.17	3,508.62	3,464.52	79.551	SF
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	2,100.00	2,048.00	2,403.93	2,356.03	50.182	CC
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	2,200.00	2,147.98	2,405.28	2,355.36	48.181	ES
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	4,200.00	4,012.49	2,604.15	2,512.80	28.507	SF
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	232.69	210.84	1,859.54	1,858.39	1,617.578	CC
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	300.00	257.41	1,859.90	1,858.35	1,200.898	ES
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,700.00	6,319.76	2,597.44	2,552.31	57.549	SF
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	0.00	0.00	1,853.41			
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	60.87	1,853.60	1,853.37	8,018.806	ES
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	6,800.00	6,667.62	3,350.24	3,297.21	63.177	SF
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,483.64	6,224.68	1,513.22	1,457.35	27.086	CC, ES
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,600.00	6,329.60	1,521.95	1,465.51	26.968	SF
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	74.76	1,853.38	1,853.12	7,253.750	CC
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	200.00	169.10	1,853.63	1,852.74	2,073.362	ES
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	6,750.00	6,600.38	2,536.93	2,471.48	38.762	SF
Winters 10-19 - Original Drilling - Original Drilling - As Dr	241.19	193.19	3,531.64	3,530.52	3,159.995	CC
Winters 10-19 - Original Drilling - Original Drilling - As Dr	500.00	425.21	3,532.51	3,529.68	1,245.592	ES
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,900.00	6,383.16	4,115.86	4,071.09	91.932	SF

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 20						
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	7,328.00	6,742.67	3,447.20	3,402.16	76.539	CC, ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	7,450.00	6,788.77	3,453.92	3,408.64	76.294	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,982.50	6,553.79	2,766.35	2,722.73	63.427	CC, ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	7,200.00	6,724.97	2,794.56	2,749.97	62.666	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,279.51	6,704.55	2,126.72	1,971.03	13.660	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,300.00	6,715.52	2,126.93	1,971.01	13.641	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,400.00	6,761.58	2,134.32	1,977.43	13.603	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	7,036.36	6,498.41	4,134.94	4,091.20	94.531	CC, ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	7,300.00	6,634.91	4,170.99	4,126.31	93.337	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	4,472.24	4,265.65	1,782.57	1,755.58	66.044	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	4,500.00	4,289.46	1,782.62	1,755.43	65.577	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	7,000.00	6,534.44	2,182.23	2,132.49	43.873	SF
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	17,320.29	16,906.69	3,181.67	3,010.09	18.543	CC
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	17,326.08	16,906.69	3,181.68	3,010.03	18.535	ES, SF
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,312.59	16,799.16	2,610.61	2,439.56	15.262	CC
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,326.08	16,790.15	2,610.62	2,439.47	15.253	ES, SF
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	7,688.56	7,258.47	1,986.57	1,944.24	46.925	CC
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	17,326.08	16,877.36	1,987.02	1,815.62	11.593	ES, SF
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,313.08	16,954.36	1,273.72	1,102.30	7.430	CC
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,326.08	16,949.50	1,273.78	1,102.30	7.428	ES, SF
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	5,187.57	3,300.00	4,056.95	4,034.14	177.852	CC
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	5,200.00	3,300.00	4,056.97	4,034.11	177.523	ES
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	17,326.08	17,316.90	4,532.33	4,359.68	26.253	SF
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	7,202.24	5,689.95	3,830.67	3,791.34	97.381	CC
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	17,326.08	17,008.18	3,896.87	3,724.48	22.604	ES, SF
Simmons 42-20D - Original Drilling - Original Drilling - As	6,921.11	6,508.52	4,777.93	4,734.48	109.967	CC, ES
Simmons 42-20D - Original Drilling - Original Drilling - As	7,250.00	6,776.78	4,841.89	4,796.91	107.633	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	7,016.87	6,550.81	964.34	920.74	22.116	CC, ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	7,100.00	6,609.96	969.44	925.43	22.026	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,790.79	6,359.04	1,825.11	1,782.11	42.443	CC
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,800.00	6,368.60	1,825.18	1,782.11	42.382	ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,950.00	6,546.11	1,843.20	1,799.19	41.880	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,646.47	6,172.55	2,036.40	1,993.46	47.424	CC
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,650.00	6,175.99	2,036.41	1,993.44	47.394	ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,850.00	6,368.72	2,069.63	2,025.26	46.646	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,521.38	6,082.64	539.28	496.75	12.681	CC, ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,600.00	6,154.53	544.31	501.19	12.623	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	232.15	210.92	1,854.13	1,852.98	1,614.964	CC
Winter 20-19 - Original Drilling - Original Drilling - As Dril	300.00	258.30	1,854.46	1,852.91	1,194.774	ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,700.00	6,321.43	2,540.23	2,494.95	56.105	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	0.00	0.00	1,849.89			
Winter 24-19 - Original Drilling - Original Drilling - As Dril	100.00	61.12	1,850.08	1,849.84	7,984.168	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,750.00	6,627.31	3,188.74	3,135.71	60.128	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,472.85	6,210.44	1,397.62	1,341.82	25.048	CC, ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,550.00	6,280.72	1,401.48	1,345.40	24.991	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	100.00	76.31	1,844.72	1,844.47	7,142.570	CC
Winter 40-19 - Original Drilling - Original Drilling - As Dril	200.00	171.33	1,844.87	1,843.97	2,045.274	ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,750.00	6,605.44	2,334.43	2,263.15	32.753	SF

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 21						
Culbreath 23-21 - Original Drilling - Original Drilling - As D	7,215.66	6,712.71	6,603.75	6,559.00	147.567	CC, ES
Culbreath 23-21 - Original Drilling - Original Drilling - As D	7,550.00	6,858.14	6,650.72	6,605.18	146.052	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,274.56	6,719.82	7,577.63	7,421.65	48.579	CC
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,300.00	6,733.52	7,577.89	7,421.61	48.489	ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,550.00	6,823.67	7,607.62	7,449.36	48.070	SF
Harper A21-618 - Harper A21-618 OH - As-Drilled	7,339.33	6,311.43	4,960.63	4,921.51	126.796	CC, ES
Harper A21-618 - Harper A21-631 OH - As-Drilled	9,800.00	6,350.00	5,820.31	5,773.36	123.967	SF
Harper A21-626 - Harper A21-626 OH - As-Drilled	7,242.79	6,243.00	5,063.18	5,024.59	131.201	CC, ES
Harper A21-626 - Harper A21-626 OH - As-Drilled	7,500.00	6,243.00	5,087.01	5,048.04	130.537	SF
Harper A21-631 - Harper A21-631 OH - As-Drilled	7,173.34	6,244.00	5,151.68	5,112.77	132.402	CC, ES
Harper A21-631 - Harper A21-631 OH - As-Drilled	7,450.00	6,244.00	5,181.22	5,141.83	131.547	SF
Harper A21-637 - Harper A21-637 OH - As-Drilled	7,129.76	6,337.00	5,261.63	5,222.07	132.995	CC, ES
Harper A21-637 - Harper A21-637 OH - As-Drilled	11,600.00	11,600.00	7,812.47	7,738.97	106.298	SF
Harper A21-643 - Harper A21-643 OH - As-Drilled	7,035.37	6,199.78	5,259.69	5,221.58	138.020	CC, ES
Harper A21-643 - Harper A21-643 OH - As-Drilled	7,300.00	6,248.00	5,293.09	5,254.31	136.494	SF
Harper A21-649 - Harper A21-649 OH - As-Drilled	7,010.62	6,250.00	5,406.83	5,368.65	141.610	CC, ES
Harper A21-649 - Harper A21-649 OH - As-Drilled	7,300.00	6,250.00	5,448.28	5,409.43	140.238	SF
Harper A21-656 - Harper A21-656 OH - As-Drilled	6,974.71	6,200.23	5,527.66	5,489.35	144.301	CC, ES
Harper A21-656 - Harper A21-656 OH - As-Drilled	10,200.00	10,200.00	7,488.62	7,427.05	121.637	SF
Harper A21-664 - Harper A21-664 OH - As-Drilled	6,936.70	6,222.07	5,733.90	5,694.81	146.670	CC, ES
Harper A21-664 - Harper A21-664 OH - As-Drilled	10,100.00	10,100.00	7,714.88	7,651.59	121.900	SF
Harper A21-669 - Harper A21-669 OH - As-Drilled	6,918.34	6,210.28	5,856.33	5,816.79	148.093	CC, ES
Harper A21-669 - Harper A21-669 OH - As-Drilled	8,600.00	8,600.00	6,758.09	6,704.69	126.546	SF
Harper A21-674 - Harper A21-674 OH - As-Drilled	6,848.46	5,740.99	6,010.62	5,972.07	155.920	CC
Harper A21-674 - Harper A21-674 OH - As-Drilled	6,850.00	5,741.75	6,010.62	5,972.06	155.886	ES
Harper A21-674 - Harper A21-674 OH - As-Drilled	7,300.00	5,897.25	6,112.65	6,072.30	151.467	SF
Harper A21-681 - Harper A21-681 OH - As-Drilled	6,717.19	4,764.73	6,236.40	6,201.36	177.988	CC, ES
Harper A21-681 - Harper A21-681 OH - As-Drilled	10,100.00	10,100.00	8,198.44	8,129.52	118.939	SF
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	7,043.94	12,073.95	393.57	313.26	4.901	CC
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	7,050.00	12,072.04	393.64	312.90	4.876	ES
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	7,100.00	12,056.81	399.55	315.63	4.761	SF
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,977.69	12,351.55	889.83	806.33	10.656	CC
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	7,000.00	12,347.19	890.48	806.27	10.574	ES
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	7,100.00	12,329.56	909.05	822.04	10.447	SF
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,843.48	12,625.33	1,589.10	1,497.11	17.275	CC
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,850.00	12,623.86	1,589.14	1,497.07	17.258	ES
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,950.00	12,601.83	1,601.21	1,507.85	17.151	SF
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,793.56	12,676.37	2,299.24	2,206.18	24.707	CC
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,800.00	12,674.63	2,299.28	2,206.18	24.695	ES
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,850.00	12,660.24	2,302.34	2,208.90	24.641	SF
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,791.22	12,316.81	3,323.50	3,234.63	37.401	CC, ES
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,850.00	12,305.38	3,326.68	3,237.46	37.285	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,758.56	12,565.79	3,957.67	3,865.79	43.074	CC, ES
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,850.00	12,535.62	3,965.14	3,872.92	42.996	SF
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,758.97	13,381.83	4,703.83	4,624.02	58.939	CC, ES
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,900.00	13,365.16	4,721.37	4,640.81	58.606	SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	7,019.70	6,580.88	5,569.04	5,416.35	36.474	CC
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	7,050.00	6,604.80	5,569.51	5,416.29	36.349	ES
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	7,350.00	6,794.13	5,625.58	5,468.12	35.728	SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	6,997.30	6,578.75	7,626.13	7,473.53	49.975	CC
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,000.00	6,580.95	7,626.13	7,473.48	49.959	ES
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,400.00	6,831.58	7,710.14	7,551.86	48.713	SF
McKee 22-21 - Original Drilling - Original Drilling - As Dril	7,074.02	6,591.22	6,847.49	6,803.39	155.267	CC, ES

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 21						
McKee 22-21 - Original Drilling - Original Drilling - As Dril	10,700.00	10,700.00	8,955.69	8,887.16	130.683	SF
McKee 31-21 - Original Drilling - Original Drilling - As Dril	7,048.69	6,983.84	8,708.67	8,663.54	192.988	CC
McKee 31-21 - Original Drilling - Original Drilling - As Dril	7,050.00	6,984.88	8,708.67	8,663.54	192.962	ES
McKee 31-21 - Original Drilling - Original Drilling - As Dril	7,450.00	7,224.63	8,791.95	8,745.48	189.192	SF
McKee 32-21 - Original Drilling - Original Drilling - As Dril	7,124.72	6,606.35	7,985.44	7,941.16	180.334	CC, ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	10,900.00	6,911.78	9,985.56	9,928.70	175.616	SF
McKee 41-21 - Original Drilling - Original Drilling - As Dril	7,051.88	6,441.80	9,791.69	9,748.11	224.653	CC, ES
McKee 41-21 - Original Drilling - Original Drilling - As Dril	7,550.00	6,648.09	9,904.37	9,859.36	220.072	SF
McKee 42-21 - Original Drilling - Original Drilling - As Dril	7,200.13	6,731.55	9,186.00	9,141.24	205.234	CC, ES
McKee 42-21 - Original Drilling - Original Drilling - As Dril	9,300.00	6,941.07	9,997.18	9,946.60	197.651	SF
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	5,983.76	3,200.00	6,315.84	6,289.68	241.431	CC
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	6,000.00	3,200.00	6,315.86	6,289.64	240.833	ES
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	17,326.08	17,720.27	7,860.65	7,686.02	45.012	SF
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	5,974.49	3,200.00	6,295.16	6,269.04	241.029	CC
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	6,000.00	3,200.00	6,295.21	6,268.99	240.093	ES
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	17,326.08	17,515.21	7,213.60	7,039.58	41.453	SF
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	6,889.44	4,400.64	6,227.44	6,193.46	183.294	CC
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	6,950.00	4,457.89	6,227.59	6,193.23	181.238	ES
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	17,326.08	17,093.98	6,542.25	6,368.54	37.662	SF
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	7,404.77	5,674.75	5,879.96	5,841.01	150.944	CC
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	17,326.08	16,956.23	5,907.11	5,733.76	34.075	ES, SF
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,314.89	16,811.58	5,219.82	5,046.17	30.059	CC
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,326.08	16,811.58	5,219.83	5,046.07	30.040	ES, SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,289.74	6,720.08	8,882.75	8,726.74	56.935	CC
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,300.00	6,725.52	8,882.79	8,726.66	56.893	ES
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A	7,550.00	6,815.67	8,908.74	8,750.64	56.347	SF
Wells Trust 13-21 - Original Drilling - Original Drilling - As	7,168.68	6,643.22	4,956.52	4,912.05	111.467	CC, ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	7,450.00	6,822.81	4,992.16	4,946.77	109.982	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	7,397.85	6,775.64	4,541.39	4,496.14	100.377	CC
Wells Trust 14-21 - Original Drilling - Original Drilling - As	7,400.00	6,776.49	4,541.39	4,496.14	100.368	ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	7,550.00	6,819.17	4,550.94	4,505.48	100.116	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	7,405.11	6,711.35	5,401.32	5,356.20	119.708	CC, ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	9,800.00	6,755.38	6,231.59	6,179.17	118.884	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 28						
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	7,753.37	6,810.00	7,167.68	7,009.51	45.317	CC, ES
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	9,400.00	6,810.00	7,354.39	7,191.38	45.116	SF
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	9,406.89	6,713.51	8,625.33	8,576.60	177.011	CC, ES
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	14,400.00	6,753.69	9,966.24	9,887.10	125.943	SF
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,555.49	6,805.00	5,887.04	5,718.68	34.967	CC
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,600.00	6,805.00	5,887.21	5,718.53	34.903	ES
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	12,000.00	6,805.00	6,061.67	5,883.01	33.930	SF
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	7,676.60	6,751.91	4,875.44	4,829.94	107.171	CC, ES
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	10,400.00	6,795.58	5,588.97	5,533.36	100.496	SF
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	9,252.36	6,770.18	4,700.35	4,651.29	95.824	CC
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	9,300.00	6,772.46	4,700.59	4,651.29	95.360	ES
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,874.19	5,253.02	5,190.19	83.605	SF
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,573.33	6,719.01	4,652.11	4,596.22	83.241	CC
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,600.00	6,719.28	4,652.19	4,596.10	82.952	ES
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	12,600.00	6,741.75	5,074.35	5,004.82	72.985	SF
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,920.37	6,709.61	4,624.54	4,559.84	71.470	CC, ES
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	13,700.00	6,768.70	4,954.81	4,877.37	63.982	SF
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	8,023.31	6,643.99	5,956.51	5,911.10	131.176	CC, ES
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	11,800.00	6,656.57	7,052.89	6,989.88	111.946	SF
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	9,131.96	6,527.75	5,992.62	5,944.51	124.565	CC, ES
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	14,000.00	14,000.00	7,717.27	7,616.78	76.796	SF
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,956.04	6,776.42	5,920.27	5,855.47	91.362	CC
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	12,000.00	6,776.28	5,920.44	5,855.28	90.863	ES
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	14,500.00	6,768.48	6,443.70	6,361.23	78.129	SF
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	11,067.51	6,619.43	5,435.35	5,376.50	92.361	CC
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	11,100.00	6,620.13	5,435.45	5,376.35	91.973	ES
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	13,500.00	6,673.33	5,954.61	5,879.15	78.906	SF
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	11,928.78	6,724.14	8,394.06	8,329.36	129.727	CC
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	12,000.00	6,723.48	8,394.36	8,329.10	128.629	ES
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	16,400.00	6,676.67	9,510.49	9,416.17	100.834	SF
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,314.62	6,778.00	8,065.77	7,893.11	46.714	CC
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,400.00	6,778.00	8,066.23	7,892.92	46.544	ES
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	13,800.00	6,778.00	8,440.01	8,249.27	44.249	SF
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	11,281.78	6,729.69	8,075.00	8,014.71	133.941	CC
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	11,300.00	6,729.50	8,075.02	8,014.60	133.643	ES
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,691.59	9,204.59	9,115.36	103.162	SF
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	10,087.45	5,900.00	6,794.43	6,742.96	132.018	CC
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	10,100.00	5,900.00	6,794.44	6,742.89	131.810	ES
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	14,500.00	6,200.00	8,091.13	8,011.74	101.918	SF
Webster 09-28 (PR) - Original Drilling - Original Drilling -	10,517.27	6,793.00	8,360.18	8,192.29	49.795	CC
Webster 09-28 (PR) - Original Drilling - Original Drilling -	10,600.00	6,793.00	8,360.59	8,192.14	49.633	ES
Webster 09-28 (PR) - Original Drilling - Original Drilling -	13,200.00	6,793.00	8,780.07	8,593.42	47.040	SF
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,845.09	6,708.10	7,057.54	6,993.43	110.081	CC
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,900.00	6,707.76	7,057.75	6,993.21	109.344	ES
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	15,300.00	6,700.00	7,857.80	7,770.39	89.894	SF
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,477.78	6,752.94	8,375.89	8,320.63	151.573	CC
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,500.00	6,752.84	8,375.91	8,320.51	151.171	ES
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	15,500.00	6,730.33	9,766.15	9,679.12	112.211	SF

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 29						
Amos 1 (DA) - Wellbore #1 - No Surveys	2,813.33	2,751.33	2,638.76	2,576.25	42.217	CC
Amos 1 (DA) - Wellbore #1 - No Surveys	2,900.00	2,836.02	2,639.68	2,575.35	41.038	ES
Amos 1 (DA) - Wellbore #1 - No Surveys	4,300.00	4,094.47	2,862.40	2,768.95	30.633	SF
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	7,724.57	6,816.53	632.69	588.19	14.218	CC, ES, SF
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,268.50	6,802.00	701.90	540.34	4.345	CC, ES
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,300.00	6,802.00	702.60	540.75	4.341	SF
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	9,077.80	6,808.05	576.18	528.13	11.991	CC, ES, SF
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	9,229.72	6,794.89	1,896.60	1,847.71	38.789	CC, ES
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	9,700.00	6,794.33	1,954.04	1,902.17	37.678	SF
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	7,881.47	6,798.76	2,214.15	2,168.51	48.510	CC, ES
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	8,100.00	6,797.45	2,224.91	2,178.98	48.444	SF
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	7,954.06	6,779.45	3,496.03	3,450.33	76.507	CC, ES
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	9,300.00	6,772.59	3,746.16	3,695.93	74.577	SF
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,323.34	6,800.50	415.77	366.43	8.426	CC, ES
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,400.00	6,800.12	422.78	372.47	8.403	SF
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,631.32	6,581.21	1,998.31	1,935.05	31.592	CC, ES
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,100.00	6,551.04	2,052.29	1,984.87	30.437	SF
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,872.90	6,838.38	3,523.40	3,459.13	54.824	CC
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,900.00	6,839.48	3,523.50	3,459.00	54.627	ES
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	13,000.00	6,884.06	3,699.00	3,626.49	51.013	SF
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,628.14	6,775.44	1,964.25	1,907.97	34.903	CC, ES
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	11,100.00	6,770.07	2,020.12	1,959.99	33.598	SF
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	10,714.56	6,670.95	3,345.82	3,288.98	58.867	CC, ES
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,676.23	3,517.48	3,452.75	54.340	SF
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,631.92	6,851.18	1,929.90	1,867.30	30.831	CC, ES
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,100.00	6,807.45	1,985.35	1,918.63	29.756	SF
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,783.86	6,793.66	693.82	629.99	10.870	CC, ES, SF
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,530.58	6,799.41	759.79	704.08	13.638	CC, ES, SF
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,961.27	6,825.31	795.65	731.05	12.316	CC, ES
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	12,100.00	6,817.97	807.62	741.27	12.172	SF
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,312.45	6,789.55	167.71	107.09	2.766	CC, ES, SF
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,865.18	6,814.68	859.55	801.74	14.868	CC, ES
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	11,000.00	6,815.72	870.06	810.67	14.651	SF

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 30						
Blehm 30-01 (PR) - Wellbore #1 - Gyro Surveys	11,907.87	6,819.58	3,295.61	3,230.61	50.707	CC, ES
Blehm 30-01 (PR) - Wellbore #1 - Gyro Surveys	12,500.00	6,858.45	3,348.31	3,280.70	49.520	SF
Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys	11,812.43	6,776.51	2,005.65	1,941.73	31.376	CC, ES
Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys	12,000.00	6,773.34	2,014.40	1,949.96	31.259	SF
Fairmeadows 03-30 - Original Drilling - Original Drilling -						Out of range
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	2,119.25	2,071.28	3,728.93	3,714.92	266.079	CC, ES
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	6,854.30	4,823.92	4,763.30	79.574	SF
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	11,772.92	6,665.26	4,428.15	4,365.13	70.258	CC
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,665.38	4,428.24	4,365.06	70.095	ES
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	12,900.00	6,670.31	4,569.34	4,501.04	66.907	SF
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	100.00	20.83	4,690.98	4,690.82	10,000.000	CC
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,900.00	4,697.81	4,684.58	354.967	ES
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	12,900.00	6,733.53	5,615.19	5,547.67	83.162	SF
J&L Farms 32-30 - Original Drilling - Original Drilling - As						Out of range
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	100.00	25.62	2,998.26	2,998.09	10,000.000	CC
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	2,119.10	2,075.16	3,011.03	2,997.01	214.698	ES
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	7,650.00	6,821.82	4,563.30	4,516.09	96.655	SF
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	2,100.00	2,043.00	1,778.10	1,730.31	37.205	CC
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	2,200.00	2,142.98	1,779.83	1,730.02	35.733	ES
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	4,200.00	4,007.49	2,261.85	2,170.81	24.844	SF
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	100.00	33.73	4,286.16	4,285.98	10,000.000	CC
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,912.45	4,293.26	4,279.99	323.561	ES
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	10,200.00	6,644.15	6,355.82	6,305.85	127.200	SF
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	2,100.00	2,042.00	4,262.34	4,214.57	89.223	CC
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	2,200.00	2,141.98	4,264.07	4,214.28	85.641	ES
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	4,200.00	4,006.49	4,712.28	4,621.21	51.744	SF
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	2,101.73	2,035.85	3,454.73	3,440.86	248.994	CC, ES
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	10,100.00	6,746.85	5,264.60	5,214.08	104.205	SF
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	100.00	37.30	4,252.80	4,252.61	10,000.000	CC
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	2,000.00	1,911.72	4,258.08	4,244.81	320.948	ES
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	11,600.00	6,728.82	6,131.29	6,073.10	105.355	SF
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	2,269.73	2,379.23	3,200.36	3,185.10	209.635	CC, ES
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	10,800.00	6,775.08	4,593.35	4,538.84	84.259	SF
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	2,040.93	2,005.94	527.01	513.35	38.570	CC
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	2,100.00	2,063.69	527.09	513.12	37.731	ES
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	3,200.00	3,140.75	640.48	621.57	33.880	SF
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	2,127.47	2,090.86	1,607.59	1,593.52	114.283	CC, ES
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	8,400.00	6,876.42	3,241.48	3,195.10	69.884	SF
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	2,122.74	2,092.31	4,847.54	4,833.46	344.310	CC, ES
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	12,700.00	6,829.74	6,216.76	6,150.94	94.445	SF
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	2,100.00	2,029.00	5,713.94	5,666.42	120.227	CC
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	12,100.00	6,775.00	5,795.99	5,618.01	32.565	ES
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	13,000.00	6,775.00	5,869.45	5,686.52	32.087	SF
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	2,100.00	2,043.00	1,778.10	1,730.31	37.205	CC
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	2,200.00	2,142.98	1,779.83	1,730.02	35.733	ES
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	4,200.00	4,007.49	2,261.85	2,170.81	24.844	SF
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	312.71	247.71	1,991.17	1,989.61	1,278.418	CC
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	2,100.00	2,028.93	1,994.06	1,980.21	143.977	ES
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	9,800.00	6,694.69	3,412.63	3,362.93	68.666	SF
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	929.87	869.88	980.15	974.25	166.254	CC
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	2,100.00	2,034.81	982.21	968.32	70.710	ES
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	9,300.00	6,749.85	1,948.59	1,900.14	40.213	SF
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	100.00	54.32	1,139.94	1,139.72	5,142.325	CC

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 30						
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,949.41	1,144.89	1,131.48	85.430	ES
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	8,800.00	6,779.41	2,690.77	2,643.85	57.357	SF
Roth A31-720 - Roth A31-720 - Plan #2	2,100.00	2,100.00	65.57	51.65	4.709	CC
Roth A31-720 - Roth A31-720 - Plan #2	2,101.85	2,101.85	65.57	51.65	4.709	ES
Roth A31-720 - Roth A31-720 - Plan #2	2,200.00	2,199.98	65.62	51.65	4.700	SF
Roth A31-730 - Roth A31-730 - Plan #2	2,000.00	2,000.00	87.43	73.86	6.443	CC, ES
Roth A31-730 - Roth A31-730 - Plan #2	2,100.00	2,097.65	88.75	74.84	6.378	SF
Roth A32-760 - Roth A32-760 - Plan #2	2,007.05	2,006.05	25.50	11.90	1.875	CC
Roth A32-760 - Roth A32-760 - Plan #2	2,100.00	2,098.90	25.66	11.73	1.843	ES, SF
Roth A32-779 - Roth A32-779 - Plan #2	2,100.00	2,100.00	21.86	7.93	1.570	CC
Roth A32-779 - Roth A32-779 - Plan #2	2,800.00	2,799.89	22.34	7.48	1.503	ES, SF
Roth A32-790 - Roth A32-790 - Plan #2	2,100.00	2,100.00	43.72	29.79	3.139	CC
Roth A32-790 - Roth A32-790 - Plan #2	2,100.45	2,100.45	43.72	29.79	3.139	ES
Roth A32-790 - Roth A32-790 - Plan #2	2,200.00	2,200.02	43.77	29.81	3.135	SF
Sander #1 (PA) - Original Drilling - Original Drilling - As D	2,100.00	2,034.00	5,507.53	5,459.91	115.643	CC
Sander #1 (PA) - Original Drilling - Original Drilling - As D	2,200.00	2,133.98	5,508.83	5,459.18	110.968	ES
Sander #1 (PA) - Original Drilling - Original Drilling - As D	12,800.00	6,780.00	5,824.33	5,642.88	32.098	SF
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	100.00	28.31	3,025.94	3,025.76	10,000.000	CC
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	2,200.00	2,171.92	3,033.93	3,019.53	210.702	ES
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	11,300.00	6,762.98	3,447.37	3,388.73	58.789	SF
Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys	10,874.26	6,846.68	1,955.62	1,897.41	33.595	CC, ES
Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys	11,000.00	6,842.74	1,959.66	1,901.13	33.482	SF
Wolfe 02-30G - Original Drilling - Original Drilling - As Dri						Out of range
A Section 31						
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	15,600.00	10,932.00	2,007.48	1,879.17	15.645	SF
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,496.97	10,932.00	1,795.95	1,697.00	18.149	CC, ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,326.44	6,808.44	5,817.37	5,742.19	77.378	CC
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,400.00	6,810.38	5,817.83	5,742.19	76.908	ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	15,000.00	6,856.02	6,053.14	5,969.18	72.101	SF
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	16,017.90	6,941.27	3,250.28	3,153.47	33.574	CC, ES
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	16,400.00	6,962.77	3,272.59	3,174.09	33.222	SF
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	15,949.49	6,747.32	2,296.16	2,201.09	24.151	CC, ES
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	16,100.00	6,743.09	2,301.09	2,205.51	24.074	SF
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	17,139.74	6,865.78	3,525.68	3,420.46	33.508	CC, ES
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	17,326.08	6,872.75	3,530.59	3,424.37	33.239	SF
Marcy 1-31X (PA) - Original Hole - Original Hole	13,212.89	6,863.47	2,024.44	1,947.85	26.431	CC, ES
Marcy 1-31X (PA) - Original Hole - Original Hole	13,300.00	6,866.64	2,026.31	1,949.50	26.380	SF
Marcy 1-31X (PA) - Surface Gyros - Gyros	13,210.66	6,800.00	2,025.14	1,948.99	26.593	CC, ES
Marcy 1-31X (PA) - Surface Gyros - Gyros	13,300.00	6,800.00	2,027.11	1,950.75	26.549	SF
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,409.23	6,753.47	5,031.21	4,948.12	60.555	CC, ES
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	15,500.00	6,761.17	5,148.09	5,059.50	58.112	SF
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	14,554.29	6,769.56	2,163.42	2,073.61	24.089	CC, ES
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,766.53	2,168.32	2,078.04	24.020	SF
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,534.42	6,781.11	4,589.17	4,505.58	54.899	CC, ES
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	15,400.00	6,780.30	4,670.09	4,582.21	53.145	SF
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	13,137.23	6,784.04	3,355.36	3,281.79	45.605	CC, ES
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	13,700.00	6,792.29	3,402.22	3,326.22	44.764	SF
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	13,088.23	6,786.01	4,734.31	4,661.16	64.720	CC
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	13,100.00	6,786.10	4,734.33	4,661.11	64.659	ES
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	14,200.00	6,794.55	4,863.09	4,784.54	61.910	SF

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A Section 32						
Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys	15,687.99	6,789.16	741.06	647.49	7.920	CC, ES, SF
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	17,076.30	6,776.46	643.07	538.69	6.161	CC, ES, SF
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,913.91	6,766.19	1,928.03	1,833.04	20.296	CC, ES
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	16,200.00	6,767.48	1,949.14	1,851.45	19.952	SF
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,149.54	6,736.63	3,290.93	3,186.50	31.513	CC
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,200.00	6,736.80	3,291.32	3,186.38	31.363	ES
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,326.08	6,737.20	3,295.66	3,189.52	31.049	SF
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,172.42	6,815.84	1,963.74	1,889.93	26.605	CC
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,200.00	6,816.27	1,963.93	1,889.82	26.497	ES
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,500.00	6,779.15	1,990.87	1,914.06	25.921	SF
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,508.50	6,764.17	1,943.11	1,859.30	23.184	CC, ES
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,800.00	6,762.64	1,964.85	1,878.27	22.692	SF
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,788.96	6,780.49	430.11	343.73	4.979	CC, ES, SF
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,665.04	6,761.22	812.88	727.66	9.538	CC, ES
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,700.00	6,761.30	813.64	727.87	9.486	SF
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	13,224.08	6,780.10	3,259.28	3,185.12	43.949	CC, ES
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	14,100.00	6,774.85	3,374.92	3,293.87	41.636	SF
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,445.44	6,756.06	3,240.32	3,156.94	38.864	CC
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,755.98	3,240.77	3,156.86	38.620	ES
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	15,200.00	6,755.00	3,327.01	3,237.56	37.193	SF
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,749.63	6,763.63	2,837.20	2,759.36	36.449	CC
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,800.00	6,762.12	2,837.65	2,759.30	36.219	ES
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	14,400.00	6,744.72	2,910.73	2,827.51	34.976	SF
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,767.90	6,783.47	257.27	178.98	3.286	CC, ES
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,800.00	6,783.93	259.26	180.20	3.279	SF
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,973.05	6,790.44	743.57	671.65	10.339	CC, ES
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	13,100.00	6,791.96	754.33	680.86	10.267	SF
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,972.24	6,783.00	590.28	405.79	3.200	CC, ES, SF
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,688.35	6,748.04	859.11	765.99	9.226	CC
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,700.00	6,748.13	859.18	765.87	9.208	ES
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,800.00	6,748.95	866.33	771.87	9.171	SF
Webster 14-32 (TA) - Wellbore #1 - Gyro Surveys	17,326.08	6,744.40	624.90	521.32	6.033	CC, ES, SF
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,081.67	6,745.71	2,032.90	1,928.85	19.538	CC
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,100.00	6,745.77	2,032.98	1,928.72	19.499	ES
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,326.08	6,746.55	2,047.54	1,941.14	19.245	SF
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,750.01	6,800.97	3,256.03	3,162.75	34.907	CC
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,800.00	6,801.61	3,256.41	3,162.63	34.726	ES
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	16,400.00	6,809.29	3,320.26	3,221.70	33.688	SF

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
B Section 05						
Ehrlich 1 (TA) - Wellbore #1 - Gyro Surveys	17,326.08	6,728.29	1,389.16	1,315.80	18.937	CC, ES, SF
Ehrlich 5E-323 (PR) - Wellbore #1 - Permitted-PDC	17,326.08	6,550.00	1,064.49	969.73	11.233	CC, ES, SF
Ehrlich 5E-423 (DG) - Wellbore #1 - Permitted-PDC	17,326.08	6,613.68	1,280.03	1,178.99	12.669	CC, ES, SF
Ehrlich 5J-203 (PR) - Wellbore #1 - Permitted-PDC	17,326.08	6,472.35	692.17	627.28	10.665	CC, ES, SF
Ehrlich 5J-223 (PR) - Wellbore #1 - Permitted-PDC	17,326.08	6,513.53	841.29	758.13	10.117	CC, ES, SF
Ehrlich 5J-243 (PR) - Wellbore #1 - Permitted-PDC	17,326.08	6,470.75	840.11	758.65	10.314	CC, ES, SF
Ehrlich 5J-303 (PR) - Wellbore #1 - Permitted-PDC	17,326.08	6,500.00	692.51	622.71	9.922	CC, ES, SF
Ehrlich 5J-323 (PR) - Wellbore #1 - Permitted-PDC	17,326.08	6,531.95	704.67	633.30	9.874	CC, ES, SF
Ehrlich 5M-243 (PR) - Wellbore #1 - Permitted-PDC	17,326.08	6,700.00	1,198.81	1,098.95	12.004	CC, ES, SF
Ehrlich 5M-343 (PR) - Wellbore #1 - Permitted-PDC	17,326.08	6,624.44	973.52	880.38	10.452	CC, ES, SF
Mininger Pfeif 41-5 (SI) - Wellbore #1 - Gyro Surveys	17,326.08	6,727.97	3,470.96	3,372.24	35.160	CC, ES, SF
Noffsinger 21-5 (TA) - Wellbore #1 - Gyro Surveys	17,326.08	6,747.55	1,263.55	1,199.09	19.602	CC, ES, SF
Noffsinger 31-5 (TA) - Wellbore #1 - Gyro Surveys	17,326.08	6,711.90	2,164.53	2,070.36	22.984	CC, ES, SF
Snowmass 10N (DG) - Wellbore #1 - Permitted-PDC	17,326.08	7,328.45	2,914.13	2,842.48	40.671	CC, ES, SF
Snowmass 1C (DG) - Wellbore #1 - Permitted-PDC	17,326.08	6,500.00	1,315.50	1,218.99	13.631	CC, ES, SF
Snowmass 2N (DG) - Wellbore #1 - Permitted-PDC	17,326.08	6,465.10	1,493.14	1,402.07	16.396	CC, ES, SF
Snowmass 3N (DG) - Wellbore #1 - Permitted-PDC	17,326.08	6,661.06	1,339.77	1,258.27	16.440	CC, ES, SF
Snowmass 4N (DG) - Wellbore #1 - Permitted-PDC	17,326.08	6,900.00	1,437.49	1,363.95	19.547	CC, ES, SF
Snowmass 5N (DG) - Wellbore #1 - Permitted-PDC	17,326.08	6,767.07	1,751.54	1,675.90	23.154	CC, ES, SF
Snowmass 6N (DG) - Wellbore #1 - Permitted-PDC	17,326.08	7,041.37	1,930.80	1,859.28	26.995	CC, ES, SF
Snowmass 7N (DG) - Wellbore #1 - Permitted-PDC	17,326.08	6,918.62	2,220.44	2,147.66	30.509	CC, ES, SF
Snowmass 8N (DG) - Wellbore #1 - Permitted-PDC	17,326.08	7,170.43	2,361.80	2,290.58	33.163	CC, ES, SF
Snowmass 9N (DG) - Wellbore #1 - Permitted-PDC	17,326.08	7,050.00	2,628.32	2,556.50	36.595	CC, ES, SF
B Section 06						
Webster B6-1 (SI) - Wellbore #1 - Gyro Surveys	17,326.08	6,761.23	2,634.15	2,531.76	25.727	CC, ES, SF
Webster B6-2 (SI) - Wellbore #1 - Gyro Surveys	17,326.08	6,696.52	3,327.83	3,223.17	31.798	CC, ES, SF
B Section 07						
Dunn 7I-201 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,804.00	6,160.10	5,902.97	23.957	CC, ES, SF
Dunn 7I-221 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,773.00	5,761.04	5,503.28	22.350	CC, ES, SF
Dunn 7I-321 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,853.00	5,994.54	5,736.89	23.266	CC, ES, SF
Dunn 7L-201 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,789.00	5,157.52	4,900.31	20.052	CC, ES, SF
Dunn 7L-221 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,878.00	4,685.12	4,429.43	18.324	CC, ES, SF
Dunn 7L-301 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,840.00	4,948.99	4,692.25	19.276	CC, ES, SF
Dunn 7L-341 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,843.00	5,435.38	5,177.95	21.114	CC, ES, SF
Dunn 7Q-221 (PR) - Wellbore #1 - MWD Surveys	17,326.08	17,087.00	3,609.96	3,358.07	14.331	CC, ES, SF
Dunn 7Q-241 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,925.00	4,118.43	3,864.65	16.228	CC, ES, SF
Dunn 7Q-301 (PR) - Wellbore #1 - MWD Surveys	17,326.08	17,027.00	3,883.60	3,630.08	15.319	CC, ES, SF
Dunn 7Q-341 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,864.00	4,363.36	4,108.68	17.133	CC, ES, SF
J Klein 7Q-321 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,410.00	3,448.26	3,200.22	13.902	CC, ES, SF
J Klein 7T-121 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,284.00	2,317.98	2,094.15	10.356	CC, ES, SF
J Klein 7T-201 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,391.00	2,549.69	2,314.55	10.843	CC, ES, SF
J Klein 7T-241 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,310.00	3,039.77	2,796.27	12.483	CC, ES, SF
J Klein 7T-301 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,448.00	2,802.16	2,561.74	11.655	CC, ES, SF
J Klein 7Y-201 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,568.00	1,598.95	1,406.74	8.319	CC, ES, SF
J Klein 7Y-241 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,503.00	1,996.13	1,778.51	9.173	CC, ES, SF
J Klein 7Y-341 (PR) - Wellbore #1 - MWD Surveys	17,326.08	16,596.00	1,799.11	1,590.88	8.640	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

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
E Section 24						
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	1,656.95	1,621.98	9,858.70	9,847.65	892.253	CC
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	1,800.00	1,700.00	9,859.13	9,847.31	834.050	ES
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	3,300.00	3,300.01	9,994.04	9,974.36	507.734	SF
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	2,115.38	2,117.30	8,318.64	8,304.47	587.402	CC, ES
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	7,550.00	6,819.76	9,774.76	9,717.61	171.055	SF
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	100.00	40.90	7,828.67	7,828.47	10,000.000	CC
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	2,100.00	2,028.80	7,834.14	7,820.27	564.911	ES
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	7,400.00	7,400.00	8,472.40	8,423.93	174.797	SF
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	2,140.20	2,169.24	6,928.68	6,914.33	482.832	CC, ES
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	6,800.00	6,800.00	7,476.12	7,430.46	163.736	SF
Courtney E24-02 - Original Drilling - As Drilled	2,143.40	2,202.19	8,823.03	8,808.57	609.936	CC, ES
Courtney E24-02 - Original Drilling - As Drilled	7,250.00	7,250.00	9,565.36	9,517.49	199.796	SF
Courtney E24-07 - Original Drilling - As Drilled	512.75	463.76	8,011.17	8,008.16	2,660.180	CC
Courtney E24-07 - Original Drilling - As Drilled	2,105.13	2,068.40	8,014.05	8,000.06	572.863	ES
Courtney E24-07 - Original Drilling - As Drilled	7,200.00	6,789.41	8,874.61	8,828.48	192.384	SF
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	0.00	0.00	9,549.17			
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	2,110.00	2,106.92	9,555.78	9,541.65	676.387	ES
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	4,100.00	3,630.98	9,976.54	9,953.42	431.523	SF
Herman E24-05 - Wellbore #1 - Wellbore #1- As Drilled						Out of range
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	2,232.58	2,431.60	6,067.64	6,052.30	395.416	CC, ES
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	6,550.00	6,550.00	6,811.36	6,767.84	156.506	SF
Jessie 1 (DA) - Wellbore #1 - No Surveys	2,100.00	2,046.01	5,636.79	5,588.93	117.792	CC
Jessie 1 (DA) - Wellbore #1 - No Surveys	2,200.00	2,145.99	5,638.47	5,588.60	113.060	ES
Jessie 1 (DA) - Wellbore #1 - No Surveys	4,200.00	4,010.50	6,027.50	5,936.29	66.089	SF
Mackinaw A19-79HNA - Original Drilling - Original Drilling	5,168.94	11,144.00	5,684.23	5,594.87	63.608	CC
Mackinaw A19-79HNA - Original Drilling - Original Drilling	5,200.00	11,144.00	5,684.31	5,594.67	63.406	ES
Mackinaw A19-79HNA - Original Drilling - Original Drilling	6,600.00	11,144.00	5,863.38	5,763.13	58.488	SF
Mackinaw A19-79HNC - Original Drilling - Original Drilling	5,290.89	11,451.00	5,920.19	5,829.31	65.147	CC
Mackinaw A19-79HNC - Original Drilling - Original Drilling	5,300.00	11,451.00	5,920.19	5,829.24	65.088	ES
Mackinaw A19-79HNC - Original Drilling - Original Drilling	6,650.00	11,451.00	6,077.19	5,976.10	60.117	SF
Miller #33-24 - Original Drilling - As Drilled	2,100.00	2,049.01	7,218.26	7,170.34	150.644	CC
Miller #33-24 - Original Drilling - As Drilled	2,200.00	2,148.99	7,219.87	7,169.94	144.588	ES
Miller #33-24 - Original Drilling - As Drilled	7,450.00	6,756.73	8,469.57	8,312.15	53.801	SF
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	220.94	172.95	6,782.43	6,781.45	6,960.534	CC
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	2,126.89	2,140.95	6,783.52	6,769.28	476.395	ES
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	12,200.00	6,439.33	9,957.81	9,901.66	177.345	SF
Storis E24-72-1HN - Original Drilling - Original Drilling - A	5,109.54	11,309.00	6,142.12	6,052.14	68.259	CC
Storis E24-72-1HN - Original Drilling - Original Drilling - A	5,200.00	11,309.00	6,142.79	6,052.03	67.682	ES
Storis E24-72-1HN - Original Drilling - Original Drilling - A	6,650.00	11,309.00	6,335.41	6,234.45	62.751	SF
Storis E24-73-1HNA - Original Drilling - Original Drilling -	4,549.18	11,685.00	6,983.97	6,887.62	72.488	CC
Storis E24-73-1HNA - Original Drilling - Original Drilling -	4,600.00	11,685.00	6,984.15	6,887.41	72.195	ES
Storis E24-73-1HNA - Original Drilling - Original Drilling -	6,400.00	11,685.00	7,225.05	7,116.72	66.698	SF
Storis E24-73-1HNC - Original Drilling - Original Drilling -	4,747.59	11,464.00	6,899.61	6,803.99	72.158	CC
Storis E24-73-1HNC - Original Drilling - Original Drilling -	4,800.00	11,464.00	6,899.81	6,803.77	71.846	ES
Storis E24-73-1HNC - Original Drilling - Original Drilling -	6,650.00	11,464.00	7,158.42	7,050.39	66.263	SF
Storis E24-73HC - Original Drilling - Original Drilling - As	4,880.86	11,368.00	7,262.53	7,172.14	80.345	CC
Storis E24-73HC - Original Drilling - Original Drilling - As	4,900.00	11,368.00	7,262.56	7,172.02	80.219	ES
Storis E24-73HC - Original Drilling - Original Drilling - As	6,700.00	11,368.00	7,491.27	7,389.51	73.621	SF
Storis E24-73HN - Original Drilling - Original Drilling	4,654.42	11,262.00	7,400.49	7,310.88	82.592	CC
Storis E24-73HN - Original Drilling - Original Drilling	4,700.00	11,262.00	7,400.63	7,310.70	82.294	ES
Storis E24-73HN - Original Drilling - Original Drilling	6,650.00	11,262.00	7,667.79	7,566.21	75.481	SF
Storis E24-75-1HC - Original Drilling - Original Drilling - A	4,392.83	11,784.00	8,200.77	8,103.16	84.022	CC
Storis E24-75-1HC - Original Drilling - Original Drilling - A	4,400.00	11,784.00	8,200.77	8,103.12	83.980	ES

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

Noble Energy
Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
E Section 24						
Storis E24-75-1HC - Original Drilling - Original Drilling - A	7,250.00	11,784.00	8,677.90	8,565.75	77.381	SF
Storis E24-75-1HN - Original Drilling - Original Drilling - A	4,212.33	11,684.00	8,261.06	8,207.30	153.679	CC, ES
Storis E24-75-1HN - Original Drilling - Original Drilling - A	11,300.00	11,684.00	9,852.35	9,776.96	130.691	SF
Storis E24-75HN - Original Drilling - Original Drilling - As	4,220.76	11,585.00	8,471.93	8,418.40	158.258	CC, ES
Storis E24-75HN - Original Drilling - Original Drilling - As	11,200.00	11,585.00	9,985.55	9,909.93	132.052	SF
Storis E24-76-1HN - Original Drilling - Original Drilling - A	4,203.86	7,257.00	8,650.60	8,614.25	237.936	CC, ES
Storis E24-76-1HN - Original Drilling - Original Drilling - A	10,500.00	7,114.00	9,996.96	9,942.58	183.835	SF
Storis E24-77-1HN - Original Drilling - Original Drilling - A	2,835.37	4,353.29	8,703.61	8,682.00	402.757	CC, ES
Storis E24-77-1HN - Original Drilling - Original Drilling - A	7,000.00	6,688.00	9,852.47	9,809.25	227.952	SF
Storis E24-78-1HN - Original Drilling - Original Drilling - A	2,331.67	3,080.00	9,177.68	9,161.72	574.949	CC, ES
Storis E24-78-1HN - Original Drilling - Original Drilling - A	5,400.00	5,168.78	9,971.09	9,939.29	313.499	SF
Storis E24-79-1HN - Original Drilling - Original Drilling - A	0.00	0.00	9,251.57			
Storis E24-79-1HN - Original Drilling - Original Drilling - A	900.00	817.00	9,256.10	9,251.10	1,853.110	ES
Storis E24-79-1HN - Original Drilling - Original Drilling - A	4,200.00	2,319.00	9,955.92	9,939.30	598.838	SF
Storis E24-79HN - Original Drilling - Original Drilling - As	986.64	942.97	9,272.51	9,267.39	1,813.872	CC
Storis E24-79HN - Original Drilling - Original Drilling - As	1,000.00	947.19	9,272.54	9,267.37	1,794.100	ES
Storis E24-79HN - Original Drilling - Original Drilling - As	4,100.00	2,001.74	9,971.90	9,956.42	644.279	SF
Wake E24-77HN - Original Drilling - Original Drilling	3,805.50	11,040.02	9,685.20	9,599.20	112.628	CC
Wake E24-77HN - Original Drilling - Original Drilling	3,900.00	11,040.02	9,685.66	9,599.10	111.900	ES
Wake E24-77HN - Original Drilling - Original Drilling	6,200.00	11,040.02	9,976.81	9,877.11	100.068	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
E Section 25						
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	375.00	325.01	9,362.03	9,359.98	4,576.674	CC
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	2,108.52	2,086.50	9,365.63	9,351.58	666.586	ES
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	4,500.00	4,100.00	9,975.35	9,949.26	382.348	SF
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	2,117.45	2,127.67	9,457.40	9,443.22	666.557	CC, ES
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	4,100.00	3,940.32	9,969.50	9,945.37	413.131	SF
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys						Out of range
LDS E25-33D - Original Drilling - Original Drilling - As Dri	100.00	42.70	9,975.96	9,975.77	10,000.000	CC
LDS E25-33D - Original Drilling - Original Drilling - As Dri	1,000.00	1,000.00	9,980.08	9,973.47	1,510.332	ES
LDS E25-33D - Original Drilling - Original Drilling - As Dri	1,700.00	1,235.36	9,997.37	9,987.30	992.969	SF
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	1,079.39	1,008.42	6,685.49	6,678.60	969.400	CC
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	1,700.00	1,582.97	6,687.35	6,676.28	604.221	ES
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	14,900.00	6,657.81	7,748.00	7,668.41	97.355	SF
Little Will #10 - Original Drilling - Original Drilling - As Dri	100.00	38.82	5,321.68	5,321.49	10,000.000	CC
Little Will #10 - Original Drilling - Original Drilling - As Dri	2,100.00	2,052.97	5,329.27	5,315.34	382.598	ES
Little Will #10 - Original Drilling - Original Drilling - As Dri	11,800.00	6,598.20	7,986.55	7,930.24	141.843	SF
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	2,114.01	2,085.01	7,135.92	7,121.86	507.644	CC, ES
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	6,725.74	9,463.72	9,386.77	122.987	SF
Little Will #3 (PA) - Original Drilling - No Surveys	2,100.00	2,042.00	5,565.25	5,517.47	116.494	CC
Little Will #3 (PA) - Original Drilling - No Surveys	2,200.00	2,141.98	5,566.96	5,517.17	111.807	ES
Little Will #3 (PA) - Original Drilling - No Surveys	10,600.00	6,788.00	7,192.06	7,025.16	43.094	SF
Little Will #4 - Original Drilling - Original Drilling - As Drille	1,808.42	1,758.44	6,229.41	6,217.35	516.437	CC
Little Will #4 - Original Drilling - Original Drilling - As Drille	2,103.07	2,059.77	6,229.47	6,215.52	446.332	ES
Little Will #4 - Original Drilling - Original Drilling - As Drille	13,100.00	6,474.73	9,258.63	9,196.31	148.559	SF
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	2,134.72	2,140.16	7,619.20	7,604.95	534.966	CC, ES
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	13,100.00	13,100.00	8,400.37	8,306.71	89.686	SF
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	1,055.71	1,015.29	9,867.16	9,860.35	1,448.899	CC
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	1,200.00	1,119.17	9,867.44	9,859.74	1,281.872	ES
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	2,800.00	2,494.86	9,983.01	9,964.83	549.113	SF
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	100.00	39.73	9,848.78	9,848.59	10,000.000	CC
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	400.00	292.28	9,850.38	9,848.36	4,876.696	ES
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	3,000.00	2,745.02	9,985.82	9,968.63	580.842	SF
Meisner 02-25EG (PA) - Original Drilling - No Surveys	2,100.00	2,062.00	8,142.58	8,094.41	169.032	CC
Meisner 02-25EG (PA) - Original Drilling - No Surveys	2,200.00	2,161.98	8,144.31	8,094.12	162.271	ES
Meisner 02-25EG (PA) - Original Drilling - No Surveys	11,300.00	6,808.00	9,988.48	9,817.48	58.411	SF
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	1,235.75	1,160.78	8,848.32	8,840.35	1,109.822	CC
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	2,100.00	1,968.43	8,852.34	8,836.45	556.929	ES
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	14,200.00	6,740.34	9,992.27	9,888.77	96.541	SF
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	211.69	146.69	8,393.56	8,392.71	9,874.611	CC
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	400.00	276.57	8,394.13	8,392.17	4,279.822	ES
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	12,900.00	7,030.41	9,994.39	9,924.85	143.733	SF
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	2,100.00	2,047.00	9,775.64	9,727.76	204.196	CC
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	2,200.00	2,146.98	9,777.32	9,727.42	195.971	ES
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	3,300.00	3,218.10	9,980.16	9,907.45	137.269	SF
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	100.00	35.67	9,523.32	9,523.13	10,000.000	CC
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	2,100.00	2,000.00	9,528.86	9,515.10	692.764	ES
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	3,900.00	3,919.13	9,973.70	9,950.28	425.886	SF
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	100.00	33.71	9,777.35	9,777.17	10,000.000	CC
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	2,000.00	1,900.00	9,781.03	9,767.81	739.829	ES
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	3,300.00	3,211.33	9,996.00	9,976.60	515.425	SF

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
E Section 26						
Bear E26-650 - Bear E26-650 - Plan #1	4,041.99	17,966.68	6,733.55	6,663.07	95.539	CC, ES
Bear E26-650 - Bear E26-650 - Plan #1	15,800.00	17,966.68	9,081.24	8,944.59	66.456	SF
Bear E26-660 - Bear E26-660 - Plan #1	4,197.88	17,652.10	6,534.26	6,473.05	106.756	CC
Bear E26-660 - Bear E26-660 - Plan #1	4,200.00	17,652.10	6,534.26	6,473.05	106.750	ES
Bear E26-660 - Bear E26-660 - Plan #1	15,300.00	17,652.10	9,183.98	9,048.72	67.898	SF
Bear E26-670 - Bear E26-670 - Plan #1	4,477.85	17,547.99	6,450.83	6,396.86	119.515	CC, ES
Bear E26-670 - Bear E26-670 - Plan #1	14,800.00	17,547.99	9,288.72	9,154.52	69.215	SF
Bear E26-680 - Bear E26-680 - Plan #1	4,639.02	17,404.52	6,372.13	6,323.61	131.326	CC, ES
Bear E26-680 - Bear E26-680 - Plan #1	14,200.00	17,404.52	9,326.41	9,194.23	70.559	SF
Bear E26-690 - Bear E26-690 - Plan #1	4,896.98	17,453.70	6,395.86	6,347.52	132.320	CC, ES
Bear E26-690 - Bear E26-690 - Plan #1	13,700.00	17,453.70	9,433.24	9,301.84	71.787	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	11,535.88	11,387.00	6,929.78	6,862.44	102.915	CC
Resolute E25-63-1HN - Original Drilling - Original Drilling	11,600.00	11,387.00	6,930.07	6,862.07	101.901	ES
Resolute E25-63-1HN - Original Drilling - Original Drilling	16,700.00	11,387.00	8,642.34	8,500.91	61.106	SF
Resolute E25-63HC - Original Drilling - Original Drilling -	11,213.18	11,166.00	6,927.37	6,859.51	102.081	CC
Resolute E25-63HC - Original Drilling - Original Drilling -	11,300.00	11,166.00	6,927.92	6,859.08	100.645	ES
Resolute E25-63HC - Original Drilling - Original Drilling -	16,300.00	11,166.00	8,594.43	8,456.96	62.518	SF
Resolute E25-63HN - Original Drilling - Original Drilling -	11,373.79	11,151.00	6,936.86	6,870.13	103.950	CC
Resolute E25-63HN - Original Drilling - Original Drilling -	11,500.00	11,151.00	6,938.01	6,869.89	101.841	ES
Resolute E25-63HN - Original Drilling - Original Drilling -	16,600.00	11,151.00	8,685.24	8,545.22	62.027	SF
Resolute State E25-62-1HN - Original Drilling - Original D	12,208.84	11,410.00	6,934.28	6,863.63	98.159	CC, ES
Resolute State E25-62-1HN - Original Drilling - Original D	17,326.08	11,410.00	8,618.02	8,479.79	62.346	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

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
E Section 36						
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	13,798.24	11,279.00	6,947.41	6,860.67	80.092	CC
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	13,900.00	11,279.00	6,948.15	6,859.98	78.803	ES
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	17,326.08	11,279.00	7,791.80	7,651.58	55.565	SF
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	15,783.05	7,029.97	5,835.58	5,731.13	55.870	CC
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	15,800.00	7,029.66	5,835.60	5,731.02	55.800	ES
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	17,200.00	7,004.42	6,005.08	5,891.98	53.092	SF
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,081.57	6,992.13	5,819.38	5,713.62	55.024	CC
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,100.00	6,992.05	5,819.41	5,713.53	54.961	ES
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,326.08	6,991.07	5,824.52	5,717.19	54.267	SF
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,798.19	7,408.38	4,627.58	4,519.47	42.804	CC
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,800.00	7,408.35	4,627.58	4,519.45	42.796	ES
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	17,000.00	7,386.67	4,781.02	4,662.45	40.322	SF
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,149.44	7,222.49	4,594.90	4,485.81	42.119	CC
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,200.00	7,222.56	4,595.18	4,485.77	41.999	ES
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,326.08	7,222.75	4,598.30	4,488.11	41.732	SF
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys						Out of range
LDS F 01-27 (SI) - Wellbore #1 - Gyro Surveys	17,326.08	6,821.92	7,718.31	7,612.08	72.659	CC, ES, SF
LDS F 01-28D (SI) - Wellbore #1 - Gyro Surveys	17,326.08	6,978.73	8,988.29	8,881.31	84.015	CC, ES, SF
LDS F 01-29 (SI) - Wellbore #1 - Inc Only Surveys						Out of range
LDS F 01-30D (TA) - Wellbore #1 - MWD Surveys						Out of range
Mansfield E36-65HN - Original Drilling - Original Drilling						Out of range
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	15,122.28	11,178.00	6,942.48	6,849.79	74.901	CC
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	15,200.00	11,178.00	6,942.92	6,849.68	74.465	ES
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	17,326.08	11,178.00	7,283.87	7,163.64	60.581	SF
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	100.00	13.92	9,487.37	9,487.23	10,000.000	CC
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	500.00	346.22	9,488.89	9,486.33	3,709.157	ES
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	15,500.00	6,991.53	9,997.68	9,908.80	112.485	SF
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,198.11	6,728.19	8,455.35	8,350.51	80.652	CC
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,300.00	6,728.89	8,455.96	8,350.41	80.111	ES
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,326.08	6,729.07	8,456.31	8,350.58	79.978	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	13,048.32	7,016.00	7,153.88	7,080.33	97.259	CC
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	13,100.00	7,017.07	7,154.07	7,080.18	96.827	ES
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	15,600.00	7,068.79	7,595.15	7,508.13	87.278	SF
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,879.58	6,761.00	8,363.98	8,157.65	40.536	CC
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,900.00	6,761.00	8,364.01	8,157.53	40.508	ES
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	17,326.08	6,761.00	8,488.14	8,272.78	39.412	SF
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,767.90	6,757.00	9,590.15	9,384.77	46.695	CC
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,800.00	6,757.00	9,590.20	9,384.60	46.644	ES
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	17,326.08	6,757.00	9,715.91	9,500.42	45.087	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	16,902.73	6,756.00	9,689.75	9,475.43	45.211	CC
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	17,000.00	6,756.00	9,690.24	9,475.22	45.068	ES
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	17,326.08	6,756.00	9,698.99	9,481.72	44.639	SF
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,198.11	6,728.19	8,455.35	8,360.75	89.385	CC
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,300.00	6,728.89	8,455.96	8,360.65	88.722	ES
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,326.08	6,729.07	8,456.31	8,360.83	88.558	SF
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,288.73	6,761.44	7,115.14	7,009.58	67.402	CC
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,326.08	6,761.77	7,115.24	7,009.42	67.241	ES, SF
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	2,112.65	2,065.21	8,557.27	8,543.28	611.451	CC
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	13,200.00	6,884.69	8,583.57	8,509.04	115.169	ES

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

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
E Section 36						
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	16,800.00	6,919.33	9,333.32	9,239.41	99.385	SF
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys						Out of range
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,442.63	6,771.00	9,726.58	9,531.23	49.790	CC
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,500.00	6,771.00	9,726.75	9,531.00	49.690	ES
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	16,700.00	6,771.00	9,985.09	9,775.63	47.670	SF
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,687.42	6,764.00	8,382.04	8,184.95	42.527	CC
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,700.00	6,764.00	8,382.05	8,184.87	42.509	ES
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	16,500.00	6,764.00	8,575.79	8,367.66	41.205	SF
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,680.03	6,758.94	6,903.20	6,817.99	81.021	CC
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,700.00	6,759.05	6,903.23	6,817.89	80.895	ES
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	16,800.00	6,771.27	7,221.37	7,124.86	74.828	SF
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	16,025.77	6,768.00	7,090.18	6,882.56	34.149	CC
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	16,100.00	6,768.00	7,090.57	6,882.44	34.069	ES
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	17,200.00	6,768.00	7,186.76	6,972.10	33.479	SF
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys						Out of range
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Trex E35-618 - Trex E35-618 - Plan #1	16,952.32	6,850.00	6,291.84	6,185.09	58.936	CC
Trex E35-618 - Trex E35-618 - Plan #1	17,000.00	6,850.00	6,292.02	6,184.96	58.769	ES
Trex E35-618 - Trex E35-618 - Plan #1	17,326.08	6,900.00	6,302.31	6,192.87	57.586	SF
Trex E35-628 - Trex E35-628 - Plan #1	16,427.47	6,600.00	6,445.31	6,345.41	64.512	CC
Trex E35-628 - Trex E35-628 - Plan #1	16,500.00	6,600.00	6,445.72	6,345.34	64.211	ES
Trex E35-628 - Trex E35-628 - Plan #1	17,326.08	6,650.00	6,506.69	6,401.17	61.668	SF
Trex E35-638 - Trex E35-638 - Plan #1	15,803.82	6,400.00	6,256.71	6,164.03	67.510	CC, ES
Trex E35-638 - Trex E35-638 - Plan #1	17,326.08	6,422.47	6,438.81	6,337.96	63.849	SF
Trex E35-659 - Trex E35-659 - Plan #1	14,590.28	6,250.00	6,257.04	6,175.29	76.539	CC
Trex E35-659 - Trex E35-659 - Plan #1	14,600.00	6,250.00	6,257.05	6,175.23	76.478	ES
Trex E35-659 - Trex E35-659 - Plan #1	16,400.00	6,250.00	6,513.50	6,422.01	71.195	SF
Trex E35-671 - Trex E35-671 - Plan #1	13,771.43	6,500.00	6,244.45	6,167.06	80.692	CC
Trex E35-671 - Trex E35-671 - Plan #1	13,800.00	6,500.00	6,244.51	6,166.94	80.497	ES
Trex E35-671 - Trex E35-671 - Plan #1	15,700.00	6,450.00	6,532.53	6,444.93	74.569	SF
Trex E35-682 - Trex E35-682 - Plan #1	13,234.62	6,600.00	6,248.44	6,173.91	83.834	CC
Trex E35-682 - Trex E35-682 - Plan #1	13,300.00	6,600.00	6,248.78	6,173.82	83.356	ES
Trex E35-682 - Trex E35-682 - Plan #1	15,300.00	6,550.00	6,577.41	6,491.88	76.903	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-770
Project:	Wells Ranch	TVD Reference:	KB @ 4728.00ft
Reference Site:	A Section 30	MD Reference:	KB @ 4728.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Roth A32-770	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-770	Database:	EDMP
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
F Section 01						
BJB 1 (PA) - Wellbore #1 - Gyro Surveys	17,326.08	6,757.82	8,488.69	8,382.44	79.896	CC, ES, SF
BJB 3(PA) - Wellbore #1 - No Surveys	17,326.08	6,746.00	8,813.23	8,672.82	62.766	CC, ES, SF
BJB 4 - Wellbore #1 - Gyro Surveys	17,326.08	6,654.37	7,537.03	7,404.25	56.765	CC, ES, SF
BJB 5 - Wellbore #1 - Gyro Surveys	17,326.08	6,869.72	7,840.36	7,734.51	74.072	CC, ES, SF
BJB 6I - Wellbore #1 - As Drilled	17,326.08	6,867.00	9,183.94	9,075.10	84.381	CC, ES, SF
CDOT F 1-10(SI) - Wellbore #1 - Inc Only Surveys	17,326.08	6,742.32	9,235.84	9,023.82	43.560	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	17,326.08	6,722.00	9,665.67	9,531.22	71.889	CC, ES, SF
DPG Bird Farm 1-16H5 - Wellbore #1 - Gyro Surveys	17,326.08	7,016.92	8,688.21	8,589.34	87.869	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	17,326.08	6,720.00	9,012.43	8,876.55	66.325	CC, ES, SF
DPG F 1-24(SI) - Wellbore #1 - Inc Only Surveys	17,326.08	6,730.55	9,898.87	9,692.70	48.013	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						Out of range
Gatewood 3-1 - Wellbore #1 - Gyro Surveys	17,326.08	6,661.73	9,545.53	9,439.82	90.300	CC, ES, SF
Gatewood 4-1(SI) - Wellbore #1 - Gyro Surveys						Out of range
Gatewood 5(SI) - Wellbore #1 - No Surveys						Out of range
Gatewood 6-1 - Wellbore #1 - Gyro Surveys	17,326.08	6,665.35	9,855.98	9,769.96	114.577	CC, ES, SF
Gatewood F 1-12(SI) - Wellbore #1 - Inc Only Surveys						Out of range
LDS 1U-234 - Wellbore #1 - As Drilled	17,326.08	6,174.00	6,581.88	6,479.00	63.977	CC, ES, SF
LDS 1U-304 - Wellbore #1 - As Drilled	17,326.08	6,077.00	6,539.28	6,436.59	63.677	CC, ES, SF
LDS 1V-204 - Wellbore #1 - As Drilled	17,326.08	6,192.00	6,784.40	6,677.14	63.247	CC, ES, SF
LDS 1V-214 - Wellbore #1 - Permitted-PDC	17,326.08	6,150.00	6,656.93	6,552.75	63.901	CC, ES, SF
LDS 1V-234 - Wellbore #1 - MWD Surveys	17,326.08	6,057.00	6,912.42	6,811.84	68.725	CC, ES, SF
LDS 1V-304 - Wellbore #1 - As Drilled	17,326.08	6,193.00	6,697.86	6,592.39	63.503	CC, ES, SF
LDS 1V-314 - Wellbore #1 - As Drilled	17,326.08	6,171.00	6,614.27	6,510.87	63.970	CC, ES, SF
LDS 1V-334 - Wellbore #1 - As Drilled	17,326.08	6,147.00	6,836.12	6,734.15	67.037	CC, ES, SF
LDS 1W-234 - Wellbore #1 - As Drilled	17,326.08	6,057.00	6,901.18	6,800.54	68.572	CC, ES, SF
LDS 1W-314 - Wellbore #1 - As Drilled	17,326.08	6,076.00	6,983.88	6,883.76	69.751	CC, ES, SF
LDS 1W-414 - Wellbore #1 - As Drilled	17,326.08	6,146.00	7,092.79	6,992.98	71.063	CC, ES, SF
LDS F 1-5(AL) - Wellbore #1 - No Surveys						Out of range
Noffsinger 1 (PA) - Wellbore #1 - No Surveys	17,326.08	6,752.00	7,166.12	6,948.22	32.887	CC, ES, SF
Weld County 1-9H5 - Wellbore #1 - No Surveys	17,326.08	6,721.00	8,175.55	8,038.74	59.758	CC, ES, SF

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