

Project: Wells Ranch
Site: A Section 30
Well: Roth A32-790
Wellbore: Roth A32-790
Design: Plan #2

Northern Region - DJ Basin

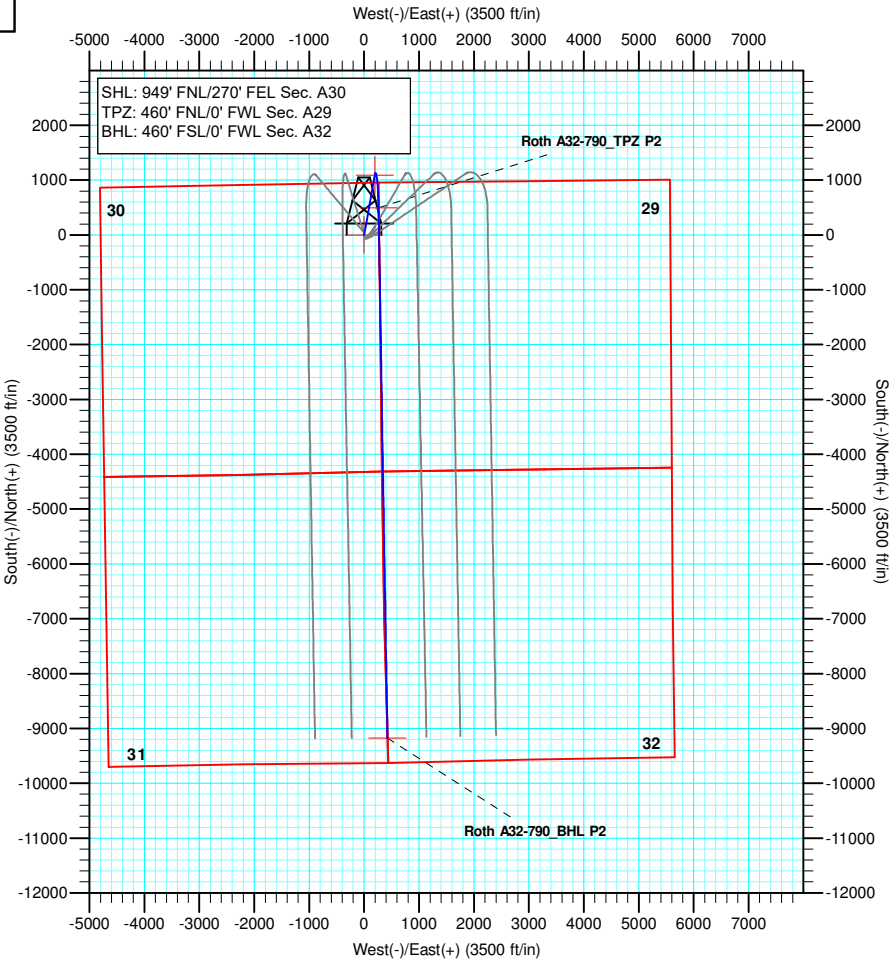
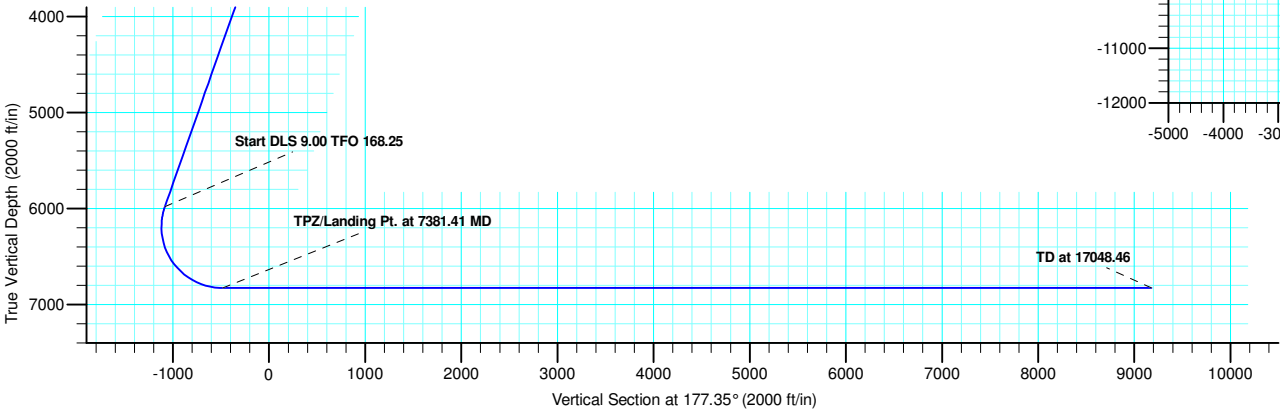
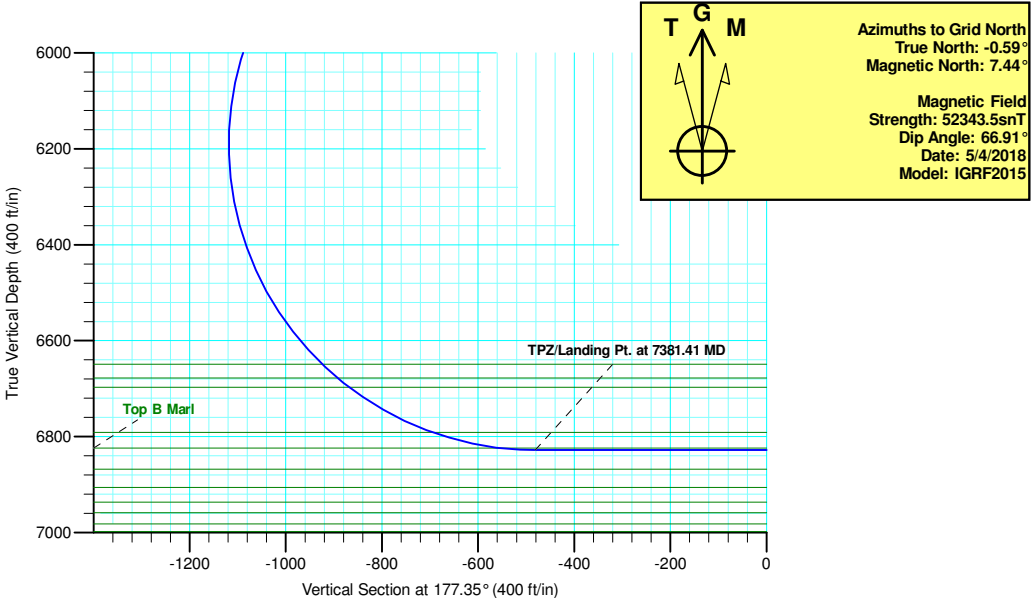
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

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	2400.00	0.00	0.00	2400.00	0.00	0.00	0.00	0.00	0.00	
3	3390.67	19.81	10.12	3371.04	166.95	29.79	2.00	10.12	-165.40	
4	6165.52	19.81	10.12	5981.63	1092.89	194.98	0.00	0.00	-1082.72	
5	7381.41	90.00	179.05	6828.00	493.58	263.50	9.00	168.25	-480.88	Roth A32-790_TPZ P2
6	17048.46	90.00	179.05	6828.00	-9172.13	424.25	0.00	0.00	9181.94	Roth A32-790_BHL P2

WELL DETAILS: Roth A32-790

+N/-S	+E/-W	Northing	Ground Level: Easting	4698.00 Latitude	Longitude	Slot
0.00	0.00	1412319.42	3254695.47	40.4616100	-104.5846600	



Plan: Plan #2 (Roth A32-790/Roth A32-790)

Created By: Shelly Peterkin Date: 11:16, May 11 2020

Northern Region - DJ Basin

**Wells Ranch
A Section 30
Roth A32-790**

Roth A32-790

Plan: Plan #2

Standard Planning Report

11 May, 2020

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-790		
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 A32-790			
Well Position	+N/-S	3,986.12 ft	Northing:	1,412,319.42 usft
	+E/-W	4,268.27 ft	Easting:	3,254,695.47 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Latitude: 40.4616100
				Longitude: -104.5846600
				Ground Level: 4,698.00 ft

Wellbore	Roth A32-790				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/4/2018	8.03	66.91	52,343.48823774

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	177.35

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	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,390.67	19.81	10.12	3,371.04	166.95	29.79	2.00	2.00	0.00	10.12	
6,165.52	19.81	10.12	5,981.63	1,092.89	194.98	0.00	0.00	0.00	0.00	
7,381.41	90.00	179.05	6,828.00	493.58	263.50	9.00	5.77	13.89	168.25	Roth A32-790_TPZ P.
17,048.46	90.00	179.05	6,828.00	-9,172.13	424.25	0.00	0.00	0.00	0.00	Roth A32-790_BHL P.

Noble Energy

Planning Report

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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 A32-790	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-790		
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
413.00	0.00	0.00	413.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
447.00	0.00	0.00	447.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
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
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
2,500.00	2.00	10.12	2,499.98	1.72	0.31	-1.70	2.00	2.00	0.00
2,600.00	4.00	10.12	2,599.84	6.87	1.23	-6.81	2.00	2.00	0.00
2,700.00	6.00	10.12	2,699.45	15.45	2.76	-15.31	2.00	2.00	0.00
2,800.00	8.00	10.12	2,798.70	27.45	4.90	-27.19	2.00	2.00	0.00
2,900.00	10.00	10.12	2,897.47	42.85	7.64	-42.45	2.00	2.00	0.00
3,000.00	12.00	10.12	2,995.62	61.63	11.00	-61.06	2.00	2.00	0.00
3,100.00	14.00	10.12	3,093.06	83.77	14.95	-82.99	2.00	2.00	0.00
3,200.00	16.00	10.12	3,189.64	109.25	19.49	-108.23	2.00	2.00	0.00
3,300.00	18.00	10.12	3,285.27	138.03	24.63	-136.75	2.00	2.00	0.00
3,390.67	19.81	10.12	3,371.04	166.95	29.79	-165.40	2.00	2.00	0.00
Start 2774.85 hold at 3390.67 MD									
3,400.00	19.81	10.12	3,379.82	170.07	30.34	-168.48	0.00	0.00	0.00
3,500.00	19.81	10.12	3,473.90	203.44	36.29	-201.54	0.00	0.00	0.00
3,600.00	19.81	10.12	3,567.98	236.81	42.25	-234.60	0.00	0.00	0.00
3,640.41	19.81	10.12	3,606.00	250.29	44.65	-247.96	0.00	0.00	0.00
Parkman									
3,700.00	19.81	10.12	3,662.06	270.17	48.20	-267.66	0.00	0.00	0.00
3,800.00	19.81	10.12	3,756.14	303.54	54.15	-300.72	0.00	0.00	0.00
3,900.00	19.81	10.12	3,850.22	336.91	60.11	-333.78	0.00	0.00	0.00
4,000.00	19.81	10.12	3,944.30	370.28	66.06	-366.83	0.00	0.00	0.00
4,100.00	19.81	10.12	4,038.38	403.65	72.01	-399.89	0.00	0.00	0.00

Noble Energy
Planning Report

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Project:	Wells Ranch	MD Reference:	KB @ 4728.00ft
Site:	A Section 30	North Reference:	Grid
Well:	Roth A32-790	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-790		
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)
4,200.00	19.81	10.12	4,132.46	437.02	77.97	-432.95	0.00	0.00	0.00
4,210.14	19.81	10.12	4,142.00	440.40	78.57	-436.30	0.00	0.00	0.00
Sussex									
4,300.00	19.81	10.12	4,226.54	470.39	83.92	-466.01	0.00	0.00	0.00
4,400.00	19.81	10.12	4,320.62	503.76	89.87	-499.07	0.00	0.00	0.00
4,500.00	19.81	10.12	4,414.70	537.13	95.83	-532.12	0.00	0.00	0.00
4,600.00	19.81	10.12	4,508.78	570.49	101.78	-565.18	0.00	0.00	0.00
4,700.00	19.81	10.12	4,602.86	603.86	107.73	-598.24	0.00	0.00	0.00
4,800.00	19.81	10.12	4,696.94	637.23	113.69	-631.30	0.00	0.00	0.00
4,900.00	19.81	10.12	4,791.02	670.60	119.64	-664.36	0.00	0.00	0.00
5,000.00	19.81	10.12	4,885.10	703.97	125.59	-697.42	0.00	0.00	0.00
5,046.66	19.81	10.12	4,929.00	719.54	128.37	-712.84	0.00	0.00	0.00
Shannon									
5,100.00	19.81	10.12	4,979.18	737.34	131.55	-730.47	0.00	0.00	0.00
5,200.00	19.81	10.12	5,073.26	770.71	137.50	-763.53	0.00	0.00	0.00
5,300.00	19.81	10.12	5,167.34	804.08	143.45	-796.59	0.00	0.00	0.00
5,400.00	19.81	10.12	5,261.42	837.45	149.41	-829.65	0.00	0.00	0.00
5,500.00	19.81	10.12	5,355.50	870.81	155.36	-862.71	0.00	0.00	0.00
5,600.00	19.81	10.12	5,449.58	904.18	161.31	-895.76	0.00	0.00	0.00
5,700.00	19.81	10.12	5,543.66	937.55	167.27	-928.82	0.00	0.00	0.00
5,800.00	19.81	10.12	5,637.74	970.92	173.22	-961.88	0.00	0.00	0.00
5,900.00	19.81	10.12	5,731.82	1,004.29	179.17	-994.94	0.00	0.00	0.00
6,000.00	19.81	10.12	5,825.90	1,037.66	185.13	-1,028.00	0.00	0.00	0.00
6,100.00	19.81	10.12	5,919.99	1,071.03	191.08	-1,061.06	0.00	0.00	0.00
6,110.65	19.81	10.12	5,930.00	1,074.58	191.71	-1,064.57	0.00	0.00	0.00
Teepee Buttes									
6,165.52	19.81	10.12	5,981.63	1,092.89	194.98	-1,082.72	0.00	0.00	0.00
Start DLS 9.00 TFO 168.25									
6,200.00	16.79	12.30	6,014.36	1,103.51	197.07	-1,093.23	9.00	-8.78	6.34
6,250.00	12.46	17.29	6,062.73	1,115.72	200.21	-1,105.28	9.00	-8.65	9.97
6,300.00	8.32	27.27	6,111.90	1,124.10	203.47	-1,113.49	9.00	-8.28	19.96
6,350.00	4.86	53.46	6,161.57	1,128.58	206.84	-1,117.81	9.00	-6.92	52.38
6,400.00	4.30	111.99	6,211.44	1,129.14	210.28	-1,118.21	9.00	-1.13	117.06
6,450.00	7.33	146.51	6,261.19	1,125.77	213.77	-1,114.69	9.00	6.07	69.04
6,500.00	11.37	158.94	6,310.52	1,118.51	217.31	-1,107.27	9.00	8.09	24.86
6,550.00	15.67	164.77	6,359.13	1,107.39	220.85	-1,096.00	9.00	8.59	11.67
6,600.00	20.05	168.12	6,406.71	1,092.48	224.39	-1,080.94	9.00	8.77	6.70
6,650.00	24.48	170.31	6,452.97	1,073.87	227.90	-1,062.19	9.00	8.85	4.37
6,700.00	28.92	171.86	6,497.63	1,051.68	231.36	-1,039.87	9.00	8.89	3.10
6,750.00	33.38	173.02	6,540.41	1,026.04	234.75	-1,014.10	9.00	8.92	2.33
6,800.00	37.85	173.94	6,581.04	997.12	238.04	-985.06	9.00	8.94	1.84
6,850.00	42.32	174.69	6,619.29	965.09	241.22	-952.92	9.00	8.95	1.50
6,891.44	46.03	175.22	6,649.00	936.33	243.75	-924.07	9.00	8.96	1.28
Sharon Springs									
6,900.00	46.80	175.32	6,654.90	930.15	244.26	-917.87	9.00	8.96	1.18
6,934.77	49.92	175.71	6,678.00	904.25	246.29	-891.90	9.00	8.96	1.11
Top A Chalk									
6,950.00	51.28	175.87	6,687.67	892.51	247.16	-880.14	9.00	8.96	1.04
6,965.14	52.64	176.02	6,697.00	880.61	248.00	-868.21	9.00	8.97	1.00
Top A Marl									
7,000.00	55.77	176.35	6,717.39	852.41	249.88	-839.95	9.00	8.97	0.94
7,050.00	60.25	176.78	6,743.87	810.09	252.41	-797.56	9.00	8.97	0.86
7,100.00	64.74	177.18	6,766.96	765.81	254.75	-753.22	9.00	8.97	0.79

Noble Energy

Planning Report

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Project:	Wells Ranch	MD Reference:	KB @ 4728.00ft
Site:	A Section 30	North Reference:	Grid
Well:	Roth A32-790	Survey Calculation Method:	Minimum Curvature
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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,150.00	69.23	177.54	6,786.50	719.85	256.86	-707.22	9.00	8.97	0.73
7,163.03	70.39	177.64	6,791.00	707.63	257.38	-694.98	9.00	8.98	0.71
Top B Chalk									
7,200.00	73.71	177.89	6,802.39	672.50	258.75	-659.82	9.00	8.98	0.69
7,250.00	78.20	178.22	6,814.52	624.03	260.40	-611.33	9.00	8.98	0.66
7,300.00	82.69	178.54	6,822.81	574.76	261.79	-562.05	9.00	8.98	0.64
7,309.92	83.58	178.60	6,824.00	564.91	262.04	-552.20	9.00	8.98	0.63
Top B Marl									
7,350.00	87.18	178.85	6,827.23	524.98	262.92	-512.27	9.00	8.98	0.63
7,381.41	90.00	179.05	6,828.00	493.58	263.50	-480.88	9.00	8.98	0.62
TPZ/Landing Pt. at 7381.41 MD									
7,400.00	90.00	179.05	6,828.00	475.00	263.81	-462.30	0.00	0.00	0.00
7,500.00	90.00	179.05	6,828.00	375.01	265.47	-362.35	0.00	0.00	0.00
7,600.00	90.00	179.05	6,828.00	275.03	267.13	-262.39	0.00	0.00	0.00
7,700.00	90.00	179.05	6,828.00	175.04	268.80	-162.43	0.00	0.00	0.00
7,800.00	90.00	179.05	6,828.00	75.05	270.46	-62.48	0.00	0.00	0.00
7,900.00	90.00	179.05	6,828.00	-24.93	272.12	37.48	0.00	0.00	0.00
8,000.00	90.00	179.05	6,828.00	-124.92	273.78	137.44	0.00	0.00	0.00
8,100.00	90.00	179.05	6,828.00	-224.91	275.45	237.39	0.00	0.00	0.00
8,200.00	90.00	179.05	6,828.00	-324.89	277.11	337.35	0.00	0.00	0.00
8,300.00	90.00	179.05	6,828.00	-424.88	278.77	437.30	0.00	0.00	0.00
8,400.00	90.00	179.05	6,828.00	-524.86	280.44	537.26	0.00	0.00	0.00
8,500.00	90.00	179.05	6,828.00	-624.85	282.10	637.22	0.00	0.00	0.00
8,600.00	90.00	179.05	6,828.00	-724.84	283.76	737.17	0.00	0.00	0.00
8,700.00	90.00	179.05	6,828.00	-824.82	285.43	837.13	0.00	0.00	0.00
8,800.00	90.00	179.05	6,828.00	-924.81	287.09	937.09	0.00	0.00	0.00
8,900.00	90.00	179.05	6,828.00	-1,024.79	288.75	1,037.04	0.00	0.00	0.00
9,000.00	90.00	179.05	6,828.00	-1,124.78	290.41	1,137.00	0.00	0.00	0.00
9,100.00	90.00	179.05	6,828.00	-1,224.77	292.08	1,236.95	0.00	0.00	0.00
9,200.00	90.00	179.05	6,828.00	-1,324.75	293.74	1,336.91	0.00	0.00	0.00
9,300.00	90.00	179.05	6,828.00	-1,424.74	295.40	1,436.87	0.00	0.00	0.00
9,400.00	90.00	179.05	6,828.00	-1,524.73	297.07	1,536.82	0.00	0.00	0.00
9,500.00	90.00	179.05	6,828.00	-1,624.71	298.73	1,636.78	0.00	0.00	0.00
9,600.00	90.00	179.05	6,828.00	-1,724.70	300.39	1,736.74	0.00	0.00	0.00
9,700.00	90.00	179.05	6,828.00	-1,824.68	302.05	1,836.69	0.00	0.00	0.00
9,800.00	90.00	179.05	6,828.00	-1,924.67	303.72	1,936.65	0.00	0.00	0.00
9,900.00	90.00	179.05	6,828.00	-2,024.66	305.38	2,036.60	0.00	0.00	0.00
10,000.00	90.00	179.05	6,828.00	-2,124.64	307.04	2,136.56	0.00	0.00	0.00
10,100.00	90.00	179.05	6,828.00	-2,224.63	308.71	2,236.52	0.00	0.00	0.00
10,200.00	90.00	179.05	6,828.00	-2,324.62	310.37	2,336.47	0.00	0.00	0.00
10,300.00	90.00	179.05	6,828.00	-2,424.60	312.03	2,436.43	0.00	0.00	0.00
10,400.00	90.00	179.05	6,828.00	-2,524.59	313.69	2,536.39	0.00	0.00	0.00
10,500.00	90.00	179.05	6,828.00	-2,624.57	315.36	2,636.34	0.00	0.00	0.00
10,600.00	90.00	179.05	6,828.00	-2,724.56	317.02	2,736.30	0.00	0.00	0.00
10,700.00	90.00	179.05	6,828.00	-2,824.55	318.68	2,836.25	0.00	0.00	0.00
10,800.00	90.00	179.05	6,828.00	-2,924.53	320.35	2,936.21	0.00	0.00	0.00
10,900.00	90.00	179.05	6,828.00	-3,024.52	322.01	3,036.17	0.00	0.00	0.00
11,000.00	90.00	179.05	6,828.00	-3,124.50	323.67	3,136.12	0.00	0.00	0.00
11,100.00	90.00	179.05	6,828.00	-3,224.49	325.33	3,236.08	0.00	0.00	0.00
11,200.00	90.00	179.05	6,828.00	-3,324.48	327.00	3,336.04	0.00	0.00	0.00
11,300.00	90.00	179.05	6,828.00	-3,424.46	328.66	3,435.99	0.00	0.00	0.00
11,400.00	90.00	179.05	6,828.00	-3,524.45	330.32	3,535.95	0.00	0.00	0.00
11,500.00	90.00	179.05	6,828.00	-3,624.44	331.99	3,635.90	0.00	0.00	0.00

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-790		
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	179.05	6,828.00	-3,724.42	333.65	3,735.86	0.00	0.00	0.00
11,700.00	90.00	179.05	6,828.00	-3,824.41	335.31	3,835.82	0.00	0.00	0.00
11,800.00	90.00	179.05	6,828.00	-3,924.39	336.97	3,935.77	0.00	0.00	0.00
11,900.00	90.00	179.05	6,828.00	-4,024.38	338.64	4,035.73	0.00	0.00	0.00
12,000.00	90.00	179.05	6,828.00	-4,124.37	340.30	4,135.68	0.00	0.00	0.00
12,100.00	90.00	179.05	6,828.00	-4,224.35	341.96	4,235.64	0.00	0.00	0.00
12,200.00	90.00	179.05	6,828.00	-4,324.34	343.63	4,335.60	0.00	0.00	0.00
12,300.00	90.00	179.05	6,828.00	-4,424.32	345.29	4,435.55	0.00	0.00	0.00
12,400.00	90.00	179.05	6,828.00	-4,524.31	346.95	4,535.51	0.00	0.00	0.00
12,500.00	90.00	179.05	6,828.00	-4,624.30	348.61	4,635.47	0.00	0.00	0.00
12,600.00	90.00	179.05	6,828.00	-4,724.28	350.28	4,735.42	0.00	0.00	0.00
12,700.00	90.00	179.05	6,828.00	-4,824.27	351.94	4,835.38	0.00	0.00	0.00
12,800.00	90.00	179.05	6,828.00	-4,924.26	353.60	4,935.33	0.00	0.00	0.00
12,900.00	90.00	179.05	6,828.00	-5,024.24	355.27	5,035.29	0.00	0.00	0.00
13,000.00	90.00	179.05	6,828.00	-5,124.23	356.93	5,135.25	0.00	0.00	0.00
13,100.00	90.00	179.05	6,828.00	-5,224.21	358.59	5,235.20	0.00	0.00	0.00
13,200.00	90.00	179.05	6,828.00	-5,324.20	360.26	5,335.16	0.00	0.00	0.00
13,300.00	90.00	179.05	6,828.00	-5,424.19	361.92	5,435.12	0.00	0.00	0.00
13,400.00	90.00	179.05	6,828.00	-5,524.17	363.58	5,535.07	0.00	0.00	0.00
13,500.00	90.00	179.05	6,828.00	-5,624.16	365.24	5,635.03	0.00	0.00	0.00
13,600.00	90.00	179.05	6,828.00	-5,724.15	366.91	5,734.98	0.00	0.00	0.00
13,700.00	90.00	179.05	6,828.00	-5,824.13	368.57	5,834.94	0.00	0.00	0.00
13,800.00	90.00	179.05	6,828.00	-5,924.12	370.23	5,934.90	0.00	0.00	0.00
13,900.00	90.00	179.05	6,828.00	-6,024.10	371.90	6,034.85	0.00	0.00	0.00
14,000.00	90.00	179.05	6,828.00	-6,124.09	373.56	6,134.81	0.00	0.00	0.00
14,100.00	90.00	179.05	6,828.00	-6,224.08	375.22	6,234.77	0.00	0.00	0.00
14,200.00	90.00	179.05	6,828.00	-6,324.06	376.88	6,334.72	0.00	0.00	0.00
14,300.00	90.00	179.05	6,828.00	-6,424.05	378.55	6,434.68	0.00	0.00	0.00
14,400.00	90.00	179.05	6,828.00	-6,524.03	380.21	6,534.63	0.00	0.00	0.00
14,500.00	90.00	179.05	6,828.00	-6,624.02	381.87	6,634.59	0.00	0.00	0.00
14,600.00	90.00	179.05	6,828.00	-6,724.01	383.54	6,734.55	0.00	0.00	0.00
14,700.00	90.00	179.05	6,828.00	-6,823.99	385.20	6,834.50	0.00	0.00	0.00
14,800.00	90.00	179.05	6,828.00	-6,923.98	386.86	6,934.46	0.00	0.00	0.00
14,900.00	90.00	179.05	6,828.00	-7,023.97	388.52	7,034.42	0.00	0.00	0.00
15,000.00	90.00	179.05	6,828.00	-7,123.95	390.19	7,134.37	0.00	0.00	0.00
15,100.00	90.00	179.05	6,828.00	-7,223.94	391.85	7,234.33	0.00	0.00	0.00
15,200.00	90.00	179.05	6,828.00	-7,323.92	393.51	7,334.28	0.00	0.00	0.00
15,300.00	90.00	179.05	6,828.00	-7,423.91	395.18	7,434.24	0.00	0.00	0.00
15,400.00	90.00	179.05	6,828.00	-7,523.90	396.84	7,534.20	0.00	0.00	0.00
15,500.00	90.00	179.05	6,828.00	-7,623.88	398.50	7,634.15	0.00	0.00	0.00
15,600.00	90.00	179.05	6,828.00	-7,723.87	400.16	7,734.11	0.00	0.00	0.00
15,700.00	90.00	179.05	6,828.00	-7,823.85	401.83	7,834.07	0.00	0.00	0.00
15,800.00	90.00	179.05	6,828.00	-7,923.84	403.49	7,934.02	0.00	0.00	0.00
15,900.00	90.00	179.05	6,828.00	-8,023.83	405.15	8,033.98	0.00	0.00	0.00
16,000.00	90.00	179.05	6,828.00	-8,123.81	406.82	8,133.93	0.00	0.00	0.00
16,100.00	90.00	179.05	6,828.00	-8,223.80	408.48	8,233.89	0.00	0.00	0.00
16,200.00	90.00	179.05	6,828.00	-8,323.79	410.14	8,333.85	0.00	0.00	0.00
16,300.00	90.00	179.05	6,828.00	-8,423.77	411.80	8,433.80	0.00	0.00	0.00
16,400.00	90.00	179.05	6,828.00	-8,523.76	413.47	8,533.76	0.00	0.00	0.00
16,500.00	90.00	179.05	6,828.00	-8,623.74	415.13	8,633.71	0.00	0.00	0.00
16,600.00	90.00	179.05	6,828.00	-8,723.73	416.79	8,733.67	0.00	0.00	0.00
16,700.00	90.00	179.05	6,828.00	-8,823.72	418.46	8,833.63	0.00	0.00	0.00
16,800.00	90.00	179.05	6,828.00	-8,923.70	420.12	8,933.58	0.00	0.00	0.00
16,900.00	90.00	179.05	6,828.00	-9,023.69	421.78	9,033.54	0.00	0.00	0.00

Noble Energy

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Roth A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Wellbore:	Roth A32-790		
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	179.05	6,828.00	-9,123.68	423.44	9,133.50	0.00	0.00	0.00
17,048.46	90.00	179.05	6,828.00	-9,172.13	424.25	9,181.94	0.00	0.00	0.00
TD at 17048.46									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Roth A32-790_SHL - hit/miss target - Shape - Point	0.00	0.01	0.00	0.00	0.00	1,412,319.42	3,254,695.47	40.4616100	-104.5846600
Roth A32-790_KOP P2 - plan hits target center - Point	0.00	0.01	5,981.63	1,092.89	194.98	1,413,412.31	3,254,890.45	40.4646043	-104.5839187
Roth A32-790_BHL P2 - plan hits target center - Point	0.00	0.00	6,828.00	-9,172.13	424.25	1,403,147.31	3,255,119.72	40.4364220	-104.5834761
Roth A32-790_TPZ P2 - plan hits target center - Point	0.00	0.01	6,828.00	493.58	263.50	1,412,813.01	3,254,958.97	40.4629573	-104.5836947

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
413.00	413.00	Pierre				
447.00	447.00	Upper Pierre Aquifer Top				
1,464.00	1,464.00	Upper Pierre Aquifer Base				
3,640.41	3,606.00	Parkman				
4,210.14	4,142.00	Sussex				
5,046.66	4,929.00	Shannon				
6,110.65	5,930.00	Teepee Buttes				
6,891.44	6,649.00	Sharon Springs				
6,934.77	6,678.00	Top A Chalk				
6,965.14	6,697.00	Top A Marl				
7,163.03	6,791.00	Top B Chalk				
7,309.92	6,824.00	Top B Marl				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,400.00	2,400.00	0.00	0.00	Start Build 2.00
3,390.67	3,371.04	166.95	29.79	Start 2774.85 hold at 3390.67 MD
6,165.52	5,981.63	1,092.89	194.98	Start DLS 9.00 TFO 168.25
7,381.41	6,828.00	493.58	263.50	TPZ/Landing Pt. at 7381.41 MD
17,048.46	6,828.00	-9,172.13	424.25	TD at 17048.46

Northern Region - DJ Basin

Wells Ranch

A Section 30

Roth A32-790

Roth A32-790

Plan #2

Anticollision Summary Report

11 May, 2020

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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 A32-790)	2_Gyro-NS-CT_OWSG	A021Ga: Continuous gyro in casing
2,000.00	17,048.46	Plan #2 (Roth A32-790)	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 -	6,351.19	6,107.76	5,363.09	5,222.76	38.220	CC, ES
Anderson 03-19 (PA) - Original Drilling - Original Drilling -	6,850.00	6,564.29	5,516.55	5,366.34	36.725	SF
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,348.84	6,088.19	3,625.00	3,585.72	92.296	CC
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,350.00	6,089.47	3,625.00	3,585.72	92.278	ES
Ley 07-19 - Original Drilling - Original Drilling - As Drilled	6,650.00	6,414.60	3,683.52	3,642.52	89.844	SF
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,347.00	6,025.59	3,204.81	3,165.76	82.074	CC
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,350.00	6,028.44	3,204.82	3,165.75	82.033	ES
Ley 08-19 - Original Drilling - Original Drilling - As Drilled	6,650.00	6,416.85	3,270.14	3,229.21	79.898	SF
Luppens 05-19 - Original Drilling - Original Drilling - As D	6,324.06	6,138.91	5,466.61	5,427.18	138.632	CC, ES
Luppens 05-19 - Original Drilling - Original Drilling - As D	7,050.00	6,804.33	5,673.77	5,631.00	132.673	SF
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	6,309.48	6,088.06	3,717.89	3,678.69	94.857	CC, ES
Roth 11-19 - Original Drilling - Original Drilling - As Drilled	7,000.00	6,687.55	3,887.86	3,842.06	84.887	SF
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	5,730.82	5,518.66	3,211.12	3,084.78	25.416	CC
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	6,200.00	5,960.36	3,215.20	3,078.26	23.478	ES
Roth 14-19 (PA) - Original Drilling - Original Drilling - As D	7,050.00	6,689.87	3,319.54	3,166.38	21.674	SF
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	6,260.75	6,123.29	4,036.79	3,992.17	90.475	CC, ES
Roth 19-19 - Original Drilling - Original Drilling - As Drilled	7,000.00	6,780.49	4,173.93	4,125.86	86.837	SF
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	100.00	37.86	4,155.92	4,155.73	10,000.000	CC
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	300.00	200.00	4,156.58	4,155.23	3,081.475	ES
Roth 22-19 - Original Drilling - Original Drilling - As Drilled	6,750.00	6,654.89	4,584.79	4,540.98	104.659	SF
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	4,452.35	3,978.70	3,278.43	3,252.37	125.778	CC
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	6,258.33	6,118.18	3,288.31	3,248.29	82.162	ES
Roth 23-19 - Original Drilling - Original Drilling - As Drilled	6,800.00	6,595.92	3,372.57	3,329.96	79.139	SF
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,337.74	6,224.12	3,506.79	3,458.81	73.089	CC, ES
Roth 25-19 - Original Drilling - Original Drilling - As Drilled	6,600.00	6,480.69	3,542.97	3,493.74	71.968	SF
Roth A19-12 - Original Drilling - Original Drilling - As Drill	6,287.11	6,061.75	4,600.15	4,561.12	117.851	CC
Roth A19-12 - Original Drilling - Original Drilling - As Drill	6,300.00	6,071.42	4,600.21	4,561.10	117.619	ES
Roth A19-12 - Original Drilling - Original Drilling - As Drill	7,000.00	6,744.90	4,746.74	4,704.13	111.389	SF
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	6,171.34	5,926.11	4,496.61	4,360.45	33.026	CC
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	6,250.00	6,001.73	4,497.67	4,359.72	32.603	ES
Roth A19-13 (PA) - Original Drilling - Original Drilling - As	7,100.00	6,705.96	4,625.24	4,471.74	30.133	SF
Roth A31-740 - Roth A31-740 - APD-Rev 0	7,378.63	7,311.53	1,998.67	1,957.89	49.015	CC
Roth A31-740 - Roth A31-740 - APD-Rev 0	17,048.46	16,956.79	2,006.43	1,834.31	11.658	ES, SF
Roth A31-748 - Roth A31-748 - APD-Rev 0	7,176.97	7,063.63	2,423.93	2,384.57	61.583	CC
Roth A31-748 - Roth A31-748 - APD-Rev 0	17,048.46	16,855.68	2,530.58	2,358.82	14.733	ES, SF
Roth A31-760 - Roth A31-760 - APD-Rev 0	5,257.97	5,147.09	2,960.00	2,932.89	109.219	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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 19						
Roth A31-760 - Roth A31-760 - APD-Rev 0	17,048.46	16,861.60	3,057.62	2,885.46	17.760	ES, SF
Roth A31-770 - Roth A31-770 - APD-Rev 0	2,000.00	1,975.00	3,117.68	3,104.25	232.085	CC, ES
Roth A31-770 - Roth A31-770 - APD-Rev 0	17,048.46	16,881.93	3,758.25	3,586.04	21.824	SF
Roth A31-780 - Roth A31-780 - APD-Rev 0	2,000.00	1,975.00	3,139.05	3,125.61	233.673	CC, ES
Roth A31-780 - Roth A31-780 - APD-Rev 0	17,048.46	17,042.23	4,397.13	4,224.89	25.530	SF
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	2,000.00	1,975.00	3,160.24	3,146.81	235.249	CC, ES
Roth State A31-790 - Roth State A31-790 - APD-Rev 0	17,048.46	17,256.43	5,080.87	4,908.33	29.448	SF
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,338.84	6,101.46	6,211.96	6,071.77	44.311	CC
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,350.00	6,112.57	6,212.03	6,071.58	44.231	ES
Weber 04-19 (PA) - Original Drilling - Original Drilling - As	6,900.00	6,605.90	6,379.61	6,228.47	42.209	SF
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,354.09	6,123.50	1,771.74	1,732.35	44.977	CC, ES
Winter 09-19 - Original Drilling - Original Drilling - As Dril	6,500.00	6,273.11	1,787.26	1,747.00	44.394	SF
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	5,967.87	5,709.44	2,271.34	2,234.63	61.861	CC
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	6,000.00	5,733.52	2,271.41	2,234.49	61.519	ES
Winter 15-19 (SI) - Wellbore #1 - Gyro Surveys	6,850.00	6,551.64	2,357.40	2,315.40	56.130	SF
Winter 15-19-0 (PA) - Original Drilling - Original Drilling -	4,157.64	4,040.61	2,203.90	2,112.56	24.129	CC, ES, SF
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,343.88	6,222.47	1,674.03	1,633.76	41.570	CC
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,350.00	6,227.50	1,674.06	1,633.75	41.530	ES
Winter 20-19 (PR) - Wellbore #1 - Gyro Surveys	6,500.00	6,357.62	1,689.00	1,647.84	41.035	SF
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	0.00	0.00	1,812.58			
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	61.16	1,812.77	1,812.53	7,824.241	ES
Winter 24-19 (PR) - Wellbore #1 - Gyro Surveys	6,550.00	6,664.95	2,683.42	2,638.25	59.406	SF
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,394.84	6,339.29	1,049.39	998.82	20.752	CC
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,400.00	6,344.09	1,049.41	998.81	20.740	ES
Winter 39-19 (PR) - Wellbore #1 - Gyro Surveys	6,450.00	6,390.52	1,051.88	1,001.01	20.678	SF
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	100.00	74.90	1,812.36	1,812.11	7,086.183	CC
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	200.00	169.40	1,812.61	1,811.71	2,025.087	ES
Winter 40-19 (PR) - Wellbore #1 - Gyro Surveys	6,500.00	6,593.48	2,254.25	2,203.72	44.613	SF
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,319.04	6,049.72	3,108.88	3,069.57	79.088	CC, ES
Winters 10-19 - Original Drilling - Original Drilling - As Dr	6,650.00	6,394.29	3,164.37	3,123.15	76.770	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	6,709.63	6,471.71	4,698.81	4,657.36	113.376	CC, ES
Foe 16-20 - Original Drilling - Original Drilling - As Drilled	7,200.00	6,782.55	4,736.64	4,693.69	110.274	SF
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,488.57	6,323.28	3,795.81	3,755.39	93.918	CC
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,500.00	6,332.36	3,795.85	3,755.38	93.780	ES
Foe 33-20 - Original Drilling - Original Drilling - As Drilled	6,950.00	6,725.04	3,869.47	3,827.02	91.148	SF
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	6,733.33	6,498.37	3,371.12	3,222.10	22.622	CC
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	6,800.00	6,553.04	3,371.79	3,221.59	22.448	ES
Foe 34-20 (PA) - Original Drilling - Original Drilling - As D	7,150.00	6,758.50	3,402.96	3,248.37	22.013	SF
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,472.72	6,226.63	5,219.07	5,178.98	130.187	CC, ES
Foe 43-20 - Original Drilling - Original Drilling - As Drilled	6,950.00	6,583.71	5,288.56	5,246.50	125.752	SF
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,336.10	6,131.08	1,042.09	1,000.72	25.190	CC
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,350.00	6,144.93	1,042.19	1,000.63	25.078	ES
Linda Rae 1 - Original Drilling - Original Drilling - As Drille	6,600.00	6,390.32	1,076.11	1,031.41	24.078	SF
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	2,000.00	2,009.00	4,394.14	4,380.60	324.366	CC
Rampart A32-721 - Rampart A32-721 - APD-Rev 1	17,048.46	16,906.69	4,508.35	4,336.54	26.241	ES, SF
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,026.36	16,790.15	3,936.67	3,765.83	23.042	CC
Rampart A32-730 - Rampart A32-730 - APD-Rev 0	17,048.46	16,790.15	3,936.74	3,765.71	23.018	ES, SF
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	7,400.00	7,257.45	3,306.57	3,266.69	82.911	CC
Rampart A32-739 - Rampart A32-739 - APD-Rev 1	17,048.46	16,877.36	3,313.66	3,142.15	19.320	ES, SF
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,023.18	16,949.50	2,598.79	2,427.65	15.186	CC
Rampart A32-751 - Rampart A32-751 - APD-Rev 0	17,048.46	16,949.50	2,598.91	2,427.65	15.175	ES, SF
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	2,000.00	2,009.00	4,408.90	4,395.36	325.447	CC, ES
Rampart A33-780 - Rampart A33-780 - APD-Rev 0	17,048.46	17,316.90	5,859.00	5,686.20	33.906	SF
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	2,000.00	2,009.00	4,401.51	4,387.97	324.906	CC, ES
Rampart A33-790 - Rampart A33-790 - APD-Rev 0	17,048.46	17,008.18	5,223.22	5,050.87	30.306	SF
Simmons 42-20D - Original Drilling - Original Drilling - As	6,440.99	6,280.36	5,704.15	5,664.05	142.218	CC
Simmons 42-20D - Original Drilling - Original Drilling - As	6,450.00	6,288.52	5,704.19	5,664.03	142.040	ES
Simmons 42-20D - Original Drilling - Original Drilling - As	6,950.00	6,739.41	5,815.00	5,772.65	137.283	SF
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,627.20	6,467.11	2,092.33	2,051.11	50.756	CC, ES
Snider 1-20EG - Original Drilling - Original Drilling - As D	6,900.00	6,662.88	2,113.66	2,071.38	49.994	SF
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,416.44	6,169.47	2,524.07	2,484.36	63.574	CC, ES
Stump A20-11 - Original Drilling - Original Drilling - As Dr	6,750.00	6,582.58	2,576.40	2,534.77	61.895	SF
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,391.44	6,154.02	2,209.06	2,169.53	55.876	CC
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,400.00	6,164.60	2,209.11	2,169.52	55.794	ES
Stump A20-12 - Original Drilling - Original Drilling - As Dr	6,600.00	6,368.58	2,239.78	2,199.09	55.035	SF
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,462.86	6,251.50	868.66	828.54	21.648	CC, ES
Stump A20-13 - Original Drilling - Original Drilling - As Dr	6,600.00	6,384.06	876.40	835.53	21.443	SF
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,346.53	6,223.67	1,638.24	1,597.85	40.560	CC
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,350.00	6,226.57	1,638.25	1,597.83	40.538	ES
Winter 20-19 - Original Drilling - Original Drilling - As Dril	6,500.00	6,358.83	1,653.15	1,611.89	40.064	SF
Winter 24-19 - Original Drilling - Original Drilling - As Dril	0.00	0.00	1,809.04			
Winter 24-19 - Original Drilling - Original Drilling - As Dril	100.00	61.43	1,809.23	1,809.00	7,789.265	ES
Winter 24-19 - Original Drilling - Original Drilling - As Dril	6,550.00	6,665.44	2,607.42	2,562.07	57.487	SF
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,397.87	6,340.90	939.83	887.68	18.022	CC
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,400.00	6,342.89	939.83	887.67	18.018	ES
Winter 39-19 - Original Drilling - Original Drilling - As Dril	6,450.00	6,389.64	942.05	889.62	17.967	SF
Winter 40-19 - Original Drilling - Original Drilling - As Dril	100.00	76.42	1,803.74	1,803.48	6,978.366	CC
Winter 40-19 - Original Drilling - Original Drilling - As Dril	200.00	171.59	1,803.88	1,802.98	1,997.792	ES
Winter 40-19 - Original Drilling - Original Drilling - As Dril	6,500.00	6,595.37	2,134.38	2,081.08	40.045	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	6,556.82	6,556.82	7,791.86	7,750.40	187.944	CC, ES
Culbreath 23-21 - Original Drilling - Original Drilling - As D	11,400.00	6,876.58	9,951.22	9,894.62	175.818	SF
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	6,589.11	6,386.45	8,792.89	8,646.37	60.012	CC
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	6,650.00	6,442.97	8,793.53	8,645.77	59.511	ES
Culbreath 33-21 (PA) - Original Drilling - Original Drilling	7,250.00	6,804.52	8,871.38	8,715.85	57.038	SF
Harper A21-618 - Harper A21-618 OH - As-Drilled	6,636.65	6,255.00	6,212.02	6,176.45	174.683	CC, ES
Harper A21-618 - Harper A21-618 OH - As-Drilled	11,100.00	6,350.00	7,812.47	7,762.95	157.765	SF
Harper A21-626 - Harper A21-626 OH - As-Drilled	6,541.51	6,182.83	6,278.63	6,243.66	179.559	CC
Harper A21-626 - Harper A21-626 OH - As-Drilled	6,550.00	6,184.79	6,278.64	6,243.65	179.428	ES
Harper A21-626 - Harper A21-626 OH - As-Drilled	10,900.00	6,243.00	7,983.15	7,935.35	166.998	SF
Harper A21-631 - Harper A21-631 OH - As-Drilled	6,493.69	6,149.00	6,336.24	6,301.05	180.037	CC
Harper A21-631 - Harper A21-631 OH - As-Drilled	6,500.00	6,149.00	6,336.25	6,301.04	179.955	ES
Harper A21-631 - Harper A21-631 OH - As-Drilled	10,600.00	6,149.00	8,011.88	7,965.29	171.984	SF
Harper A21-637 - Harper A21-637 OH - As-Drilled	6,536.40	6,280.97	6,425.64	6,389.43	177.438	CC, ES
Harper A21-637 - Harper A21-637 OH - As-Drilled	11,300.00	11,300.00	8,692.79	8,624.92	128.088	SF
Harper A21-643 - Harper A21-643 OH - As-Drilled	6,456.52	6,154.00	6,366.46	6,331.53	182.289	CC, ES
Harper A21-643 - Harper A21-643 OH - As-Drilled	6,900.00	6,198.24	6,427.78	6,392.01	179.668	SF
Harper A21-649 - Harper A21-649 OH - As-Drilled	6,464.80	6,250.00	6,489.37	6,454.15	184.255	CC, ES
Harper A21-649 - Harper A21-649 OH - As-Drilled	6,800.00	6,250.00	6,529.67	6,493.82	182.146	SF
Harper A21-656 - Harper A21-656 OH - As-Drilled	6,433.71	6,157.00	6,580.60	6,545.44	187.169	CC, ES
Harper A21-656 - Harper A21-656 OH - As-Drilled	10,300.00	10,300.00	8,649.08	8,590.52	147.716	SF
Harper A21-664 - Harper A21-664 OH - As-Drilled	6,413.02	6,157.00	6,745.85	6,710.01	188.184	CC, ES
Harper A21-664 - Harper A21-664 OH - As-Drilled	10,300.00	10,300.00	8,930.87	8,870.26	147.350	SF
Harper A21-669 - Harper A21-669 OH - As-Drilled	6,410.60	6,198.02	6,849.30	6,812.80	187.665	CC, ES
Harper A21-669 - Harper A21-669 OH - As-Drilled	9,900.00	9,900.00	8,766.91	8,708.25	149.452	SF
Harper A21-674 - Harper A21-674 OH - As-Drilled	6,317.71	5,648.56	6,970.89	6,936.05	200.050	CC, ES
Harper A21-674 - Harper A21-674 OH - As-Drilled	7,350.00	7,350.00	7,332.88	7,289.42	168.751	SF
Harper A21-681 - Harper A21-681 OH - As-Drilled	6,017.81	4,539.00	7,143.80	7,114.02	239.924	CC
Harper A21-681 - Harper A21-681 OH - As-Drilled	6,100.00	4,571.03	7,144.07	7,113.86	236.474	ES
Harper A21-681 - Harper A21-681 OH - As-Drilled	10,000.00	10,000.00	9,164.88	9,101.94	145.613	SF
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,782.14	13,291.12	393.48	304.46	4.420	CC
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,800.00	13,288.98	394.13	303.65	4.356	ES
Kona A19-616 - Kona A19-616 - Kona A19-616 - As Drille	6,850.00	13,282.88	402.73	308.68	4.282	SF
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,696.71	13,573.26	964.12	870.00	10.243	CC
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,700.00	13,573.09	964.14	869.91	10.232	ES
Kona A19-624 - Kona A19-624 - Kona A19-624 - As Drille	6,800.00	13,568.81	977.88	880.64	10.056	SF
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,563.84	13,850.97	1,592.30	1,489.73	15.525	CC, ES
Kona A19-636 - Kona A19-636 - Kona A19-636 - As Drille	6,650.00	13,845.48	1,600.42	1,496.53	15.405	SF
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,530.53	13,678.65	2,287.07	2,185.52	22.521	CC, ES
Kona A19-646 - Original Drilling - Original Drilling - As Dr	6,600.00	13,674.47	2,291.90	2,189.72	22.431	SF
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,502.60	13,607.00	3,320.06	3,219.59	33.046	CC, ES
Kona A19-662 - Original Drilling - Original Drilling - As Dr	6,600.00	13,607.00	3,328.90	3,227.71	32.896	SF
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,462.73	13,949.95	3,998.92	3,894.38	38.252	CC, ES
Kona A19-670 - Kona A19-670 - Original Drilling - As Dril	6,550.00	13,943.43	4,005.83	3,900.77	38.131	SF
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,463.33	14,459.00	4,728.86	4,641.91	54.386	CC, ES
Kona A19-685 - Original Drilling - Original Drilling - As Dr	6,600.00	14,459.00	4,745.39	4,657.72	54.124	SF
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,472.78	6,309.73	6,617.17	6,472.49	45.736	CC
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	6,500.00	6,336.52	6,617.43	6,472.14	45.548	ES
McKee 12-21 (PA) - Original Drilling - Original Drilling - A	7,100.00	6,792.96	6,749.59	6,594.48	43.515	SF
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	6,460.29	6,313.39	8,638.85	8,494.13	59.696	CC
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	6,500.00	6,352.52	8,639.45	8,493.86	59.341	ES
McKee 21-21 (PA) - Original Drilling - Original Drilling - A	7,150.00	6,828.50	8,811.99	8,656.18	56.557	SF
McKee 22-21 - Original Drilling - Original Drilling - As Dril	6,465.92	6,192.47	7,940.69	7,900.70	198.564	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	10,500.00	10,500.00	9,951.61	9,887.11	154.300	SF
McKee 31-21 - Original Drilling - Original Drilling - As Dril	6,516.84	6,757.80	9,749.42	9,707.43	232.173	CC, ES
McKee 31-21 - Original Drilling - Original Drilling - As Dril	7,100.00	7,211.57	9,873.65	9,829.43	223.263	SF
McKee 32-21 - Original Drilling - Original Drilling - As Dril	6,509.79	6,355.36	9,117.58	9,076.92	224.227	CC, ES
McKee 32-21 - Original Drilling - Original Drilling - As Dril	7,150.00	6,814.66	9,227.24	9,184.23	214.551	SF
McKee 41-21 - Original Drilling - Original Drilling - As Dril						Out of range
McKee 42-21 - Original Drilling - Original Drilling - As Dril						Out of range
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	1,903.71	1,931.71	6,823.65	6,810.71	527.416	CC
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	2,000.00	2,000.00	6,823.71	6,810.19	504.993	ES
Rampart A33-730 - Rampart A33-730 - APD-Rev 1	17,048.46	17,720.27	9,187.15	9,012.49	52.601	SF
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	1,903.05	1,932.05	6,801.66	6,788.72	525.759	CC
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	2,000.00	2,000.00	6,801.72	6,788.20	503.365	ES
Rampart A33-740 - Rampart A33-740 - APD-Rev 0	17,048.46	17,515.21	8,540.27	8,366.10	49.033	SF
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	1,903.05	1,932.05	6,779.88	6,766.94	524.075	CC
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	2,000.00	2,000.00	6,779.94	6,766.43	501.753	ES
Rampart A33-750 - Rampart A33-750 - APD-Rev 0	17,048.46	17,093.98	7,868.67	7,694.96	45.298	SF
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	1,903.70	1,931.70	6,758.09	6,745.15	522.347	CC
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	2,000.00	2,000.00	6,758.15	6,744.64	500.139	ES
Rampart A33-760 - Rampart A33-760 - APD-Rev 1	17,048.46	16,956.23	7,233.66	7,060.23	41.709	SF
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,020.78	16,811.58	6,546.05	6,372.55	37.729	CC
Rampart A33-770 - Rampart A33-770 - APD-Rev 0	17,048.46	16,811.58	6,546.11	6,372.37	37.679	ES, SF
Sexton 43-21 (PA) - Original Drilling - Original Drilling - A						Out of range
Wells Trust 13-21 - Original Drilling - Original Drilling - As	6,525.28	6,293.58	6,125.93	6,085.46	151.369	CC
Wells Trust 13-21 - Original Drilling - Original Drilling - As	6,550.00	6,319.79	6,126.05	6,085.44	150.830	ES
Wells Trust 13-21 - Original Drilling - Original Drilling - As	7,250.00	6,828.00	6,240.93	6,197.83	144.800	SF
Wells Trust 14-21 - Original Drilling - Original Drilling - As	6,793.90	6,571.15	5,813.40	5,771.49	138.733	CC
Wells Trust 14-21 - Original Drilling - Original Drilling - As	6,800.00	6,576.12	5,813.40	5,771.47	138.649	ES
Wells Trust 14-21 - Original Drilling - Original Drilling - As	10,000.00	6,813.91	6,836.78	6,785.76	133.983	SF
Wells Trust 24-21 - Original Drilling - Original Drilling - As	6,740.44	6,428.77	6,671.47	6,630.10	161.284	CC
Wells Trust 24-21 - Original Drilling - Original Drilling - As	6,750.00	6,435.07	6,671.48	6,630.07	161.142	ES
Wells Trust 24-21 - Original Drilling - Original Drilling - As	11,100.00	6,708.81	8,217.09	8,161.30	147.279	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	7,457.92	6,792.00	8,487.71	8,332.32	54.622	CC, ES
Ankeney 2-28 (SI) - Wellbore #1 - No Surveys	10,100.00	6,792.00	8,889.42	8,723.95	53.721	SF
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	9,110.19	6,682.44	9,946.25	9,899.26	211.653	CC
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	9,200.00	6,683.16	9,946.65	9,899.20	209.596	ES
Ankeney 28-01 (PA) - Wellbore #1 - Gyro Surveys	10,100.00	6,690.40	9,995.37	9,942.70	189.773	SF
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,260.92	6,787.00	7,208.99	7,042.07	43.189	CC
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	10,300.00	6,787.00	7,209.09	7,041.92	43.124	ES
Art Rohr 1 (PA) - Wellbore #1 - No Surveys	12,200.00	6,787.00	7,465.22	7,285.59	41.559	SF
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	7,375.27	6,701.46	6,194.92	6,152.14	144.815	CC, ES
Danley 1 (TA) - Wellbore #1 - Gyro Surveys	11,300.00	6,777.22	7,334.72	7,276.68	126.374	SF
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	8,957.05	6,731.67	6,021.14	5,974.02	127.780	CC
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	9,000.00	6,733.75	6,021.29	5,973.96	127.204	ES
Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys	12,200.00	6,882.42	6,837.39	6,772.48	105.330	SF
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,279.11	6,671.01	5,973.53	5,919.08	109.699	CC
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	10,300.00	6,671.27	5,973.57	5,918.97	109.419	ES
Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys	13,300.00	13,300.00	6,693.85	6,598.60	70.280	SF
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,625.48	6,672.55	5,946.98	5,883.23	93.284	CC
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	11,700.00	6,674.73	5,947.45	5,883.14	92.476	ES
Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys	14,100.00	6,751.77	6,440.79	6,361.51	81.241	SF
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	7,728.65	6,600.00	7,275.71	7,232.99	170.321	CC, ES
Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys	12,700.00	6,602.56	8,811.93	8,746.56	134.792	SF
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	8,834.70	6,468.03	7,311.40	7,265.73	160.087	CC
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	8,900.00	6,470.04	7,311.69	7,265.71	159.010	ES
Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys	15,000.00	15,000.00	9,560.12	9,453.30	89.500	SF
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,661.50	6,757.08	7,243.16	7,179.06	113.003	CC
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	11,700.00	6,756.96	7,243.26	7,178.88	112.504	ES
Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys	15,000.00	6,746.67	7,975.52	7,890.77	94.108	SF
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	10,772.00	6,557.82	6,756.31	6,698.94	117.766	CC
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	10,800.00	6,558.35	6,756.37	6,698.80	117.362	ES
Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys	14,100.00	6,626.59	7,531.20	7,453.51	96.946	SF
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	11,632.79	6,700.00	9,716.80	9,652.92	152.108	CC
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	11,700.00	6,700.00	9,717.03	9,652.65	150.941	ES
Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys	13,900.00	6,678.43	9,977.77	9,897.83	124.814	SF
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,018.56	6,760.00	9,388.24	9,216.77	54.751	CC
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	11,100.00	6,760.00	9,388.59	9,216.55	54.569	ES
Wardlaw 20-28 - Original Drilling - Original Drilling - As D	14,100.00	6,760.00	9,881.01	9,688.66	51.370	SF
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	10,985.96	6,706.73	9,397.32	9,338.02	158.473	CC
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	11,100.00	6,705.50	9,398.01	9,337.90	156.363	ES
Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys	14,400.00	6,677.51	9,998.21	9,916.16	121.860	SF
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	9,792.30	5,900.00	8,104.67	8,055.85	165.989	CC
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	9,800.00	5,900.00	8,104.68	8,055.80	165.827	ES
Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys	15,100.00	6,134.78	9,681.58	9,601.35	120.679	SF
Webster 09-28 (PR) - Original Drilling - Original Drilling - As D	10,221.01	6,775.00	9,682.10	9,515.68	58.179	CC
Webster 09-28 (PR) - Original Drilling - Original Drilling - As D	10,300.00	6,775.00	9,682.42	9,515.49	58.001	ES
Webster 09-28 (PR) - Original Drilling - Original Drilling - As D	12,700.00	6,775.00	9,994.42	9,811.31	54.581	SF
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,549.82	6,680.59	8,380.11	8,316.89	132.542	CC
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,680.50	8,380.26	8,316.67	131.776	ES
Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys	15,800.00	6,674.76	9,396.29	9,306.86	105.068	SF
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,181.62	6,722.47	9,697.67	9,643.69	179.665	CC
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	10,200.00	6,722.39	9,697.69	9,643.59	179.272	ES
Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys	12,600.00	6,711.48	9,994.66	9,924.44	142.329	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	2,400.00	2,342.00	2,700.20	2,646.30	50.091	CC
Amos 1 (DA) - Wellbore #1 - No Surveys	2,500.00	2,441.98	2,701.56	2,645.59	48.262	ES
Amos 1 (DA) - Wellbore #1 - No Surveys	4,300.00	4,168.54	3,087.60	2,993.27	32.733	SF
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	7,433.60	6,806.54	1,952.79	1,910.69	46.385	CC, ES
Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys	7,500.00	6,806.49	1,953.91	1,911.78	46.375	SF
Andy 29-1 (PA) - Wellbore #1 - No Surveys	8,977.48	6,784.00	2,022.97	1,863.44	12.681	CC, ES
Andy 29-1 (PA) - Wellbore #1 - No Surveys	9,100.00	6,784.00	2,026.67	1,866.52	12.655	SF
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	8,787.76	6,785.54	744.69	698.50	16.122	CC, ES
Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys	8,800.00	6,785.48	744.79	698.53	16.102	SF
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	8,937.90	6,770.69	3,217.64	3,170.51	68.275	CC, ES
Capehart 1 (SI) - Wellbore #1 - Gyro Surveys	10,000.00	6,770.14	3,388.40	3,335.96	64.613	SF
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	7,589.57	6,773.74	3,534.16	3,491.01	81.909	CC, ES
Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys	8,600.00	6,767.37	3,675.76	3,630.13	80.557	SF
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	7,661.30	6,745.73	4,815.96	4,772.80	111.568	CC, ES
Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys	10,100.00	6,729.67	5,398.20	5,346.11	103.629	SF
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,032.61	6,819.35	1,736.85	1,689.12	36.387	CC, ES
Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys	9,300.00	6,820.69	1,757.32	1,708.21	35.789	SF
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,349.39	6,379.60	3,312.12	3,251.25	54.412	CC, ES
Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,200.00	6,345.11	3,419.45	3,353.07	51.512	SF
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,580.07	6,841.59	4,846.36	4,782.58	75.984	CC
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,842.40	4,846.41	4,782.48	75.810	ES
Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys	13,200.00	6,907.27	5,109.51	5,035.63	69.162	SF
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	10,336.55	6,748.01	3,286.12	3,231.03	59.652	CC, ES
Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys	11,300.00	6,736.37	3,424.43	3,363.59	56.284	SF
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	10,421.05	6,566.98	4,665.83	4,610.74	84.697	CC, ES
Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	14,900.00	6,467.49	6,364.69	62.915	SF
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	11,337.10	6,881.66	3,252.36	3,190.00	52.155	CC, ES
Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys	12,200.00	6,801.55	3,363.87	3,296.35	49.816	SF
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,493.96	6,776.79	628.99	565.86	9.964	CC
Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys	11,500.00	6,776.73	629.02	565.84	9.957	ES, SF
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,240.48	6,821.29	562.11	507.50	10.294	CC, ES
Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys	10,300.00	6,821.08	565.25	510.25	10.278	SF
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	11,667.74	6,871.50	2,117.88	2,053.15	32.721	CC, ES
Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys	12,000.00	6,853.92	2,143.71	2,076.89	32.081	SF
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,022.12	6,771.80	1,490.19	1,430.41	24.928	CC, ES
Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys	11,200.00	6,768.59	1,500.77	1,439.80	24.617	SF
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,574.16	6,767.69	2,181.71	2,125.00	38.467	CC
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	10,600.00	6,767.54	2,181.87	2,124.97	38.346	ES
Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys	11,000.00	6,765.18	2,222.88	2,163.53	37.449	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	11,617.13	6,776.25	1,973.06	1,909.01	30.804	CC, ES
Blehm 30-01 (PR) - Wellbore #1 - Gyro Surveys	11,900.00	6,794.99	1,993.16	1,927.49	30.352	SF
Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys	11,523.58	6,757.67	682.85	619.64	10.802	CC, ES, SF
Fairmeadows 03-30 - Original Drilling - Original Drilling -						Out of range
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	10,046.64	6,834.34	3,305.21	3,251.70	61.777	CC, ES
Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys	10,900.00	6,817.16	3,413.55	3,355.56	58.866	SF
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	11,485.46	6,676.69	3,105.31	3,042.64	49.552	CC
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	11,500.00	6,676.77	3,105.34	3,042.58	49.473	ES
Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys	12,200.00	6,680.36	3,186.45	3,119.68	47.717	SF
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	10,844.12	6,738.00	4,006.84	3,948.35	68.505	CC, ES
Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys	12,000.00	6,727.46	4,170.21	4,105.16	64.103	SF
J&L Farms 32-30 - Original Drilling - Original Drilling - As						Out of range
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	100.00	25.72	2,994.16	2,993.99	10,000.000	CC
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	2,900.00	2,883.12	2,999.56	2,982.10	171.803	ES
Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys	7,600.00	6,781.86	3,241.38	3,196.86	72.801	SF
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	2,400.00	2,343.00	1,772.95	1,719.05	32.892	CC
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	3,000.00	2,938.62	1,779.11	1,712.62	26.757	ES
Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As	4,200.00	4,075.46	1,862.21	1,770.06	20.207	SF
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	100.00	33.77	4,282.00	4,281.82	10,000.000	CC
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	2,000.00	1,912.37	4,289.17	4,275.90	323.256	ES
Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys	9,300.00	6,654.46	4,901.40	4,854.04	103.488	SF
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	2,400.00	2,342.00	4,255.85	4,201.97	78.984	CC
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	3,200.00	3,131.64	4,262.07	4,191.36	60.280	ES
Roth #4-30P (PA) - Original Drilling - Original Drilling - As	4,100.00	3,980.38	4,293.07	4,203.12	47.726	SF
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	2,532.37	2,515.19	3,457.85	3,442.09	219.397	CC, ES
Roth #5 (SI) - Wellbore #1 - Gyro Surveys	9,300.00	6,737.94	3,849.96	3,802.10	80.431	SF
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	100.00	37.31	4,265.25	4,265.07	10,000.000	CC
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	2,000.00	1,911.85	4,270.47	4,257.20	321.870	ES
Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys	10,700.00	6,727.26	4,677.12	4,621.46	84.029	SF
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	9,192.34	6,762.94	3,078.30	3,030.12	63.882	CC
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	9,200.00	6,762.93	3,078.31	3,030.09	63.835	ES
Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys	10,000.00	6,761.21	3,182.49	3,130.57	61.292	SF
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	3,310.35	3,254.42	486.95	467.46	24.995	CC, ES
Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys	7,600.16	6,799.87	766.15	722.91	17.719	SF
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	2,414.50	2,363.23	1,599.97	1,584.84	105.714	CC
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	2,500.00	2,443.54	1,600.28	1,584.80	103.397	ES
Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys	7,900.00	6,824.73	1,909.55	1,865.85	43.696	SF
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	10,232.21	6,815.64	4,499.83	4,445.21	82.385	CC, ES
Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,802.01	4,765.11	4,701.88	75.368	SF
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	11,787.35	6,757.00	4,472.94	4,296.03	25.284	CC
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	11,800.00	6,757.00	4,472.96	4,295.96	25.272	ES
Roth 14-30 (PA) - Original Drilling - Original Drilling - As D	12,500.00	6,757.00	4,529.36	4,347.84	24.952	SF
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	2,400.00	2,343.00	1,772.95	1,719.05	32.892	CC
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	3,000.00	2,938.62	1,779.11	1,712.62	26.757	ES
Roth 2-30-0 (PA) - Wellbore #1 - No Surveys	4,200.00	4,075.46	1,862.21	1,770.05	20.207	SF
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	312.65	247.65	2,013.28	2,011.72	1,292.954	CC
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	8,851.23	6,715.03	2,027.10	1,980.76	43.753	ES
Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys	9,200.00	6,711.53	2,056.88	2,009.15	43.095	SF
Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys	8,839.72	6,757.88	619.99	573.40	13.307	CC, ES, SF
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	100.00	54.59	1,156.16	1,155.94	5,202.342	CC
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	2,500.00	2,471.98	1,161.99	1,146.40	74.566	ES
Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys	8,400.00	6,773.25	1,365.58	1,320.75	30.459	SF
Roth A31-720 - Roth A31-720 - Plan #2	2,200.00	2,200.00	21.86	7.90	1.566	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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 30						
Roth A31-730 - Roth A31-730 - Plan #2	2,000.00	2,000.00	43.71	30.14	3.221	CC, ES, SF
Roth A32-760 - Roth A32-760 - Plan #2	2,005.90	2,004.90	69.22	55.62	5.091	CC
Roth A32-760 - Roth A32-760 - Plan #2	2,100.00	2,098.87	69.29	55.37	4.977	ES, SF
Roth A32-770 - Roth A32-770 - Plan #2	2,105.97	2,105.97	43.72	29.78	3.137	CC, ES
Roth A32-770 - Roth A32-770 - Plan #2	2,200.00	2,199.94	43.77	29.81	3.135	SF
Roth A32-779 - Roth A32-779 - Plan #2	2,204.49	2,204.49	21.86	7.89	1.565	CC, ES
Roth A32-779 - Roth A32-779 - Plan #2	2,300.00	2,299.95	21.95	7.91	1.564	SF
Sander #1 (PA) - Original Drilling - Original Drilling - As D	11,538.14	6,762.00	4,419.28	4,244.08	25.225	CC, ES
Sander #1 (PA) - Original Drilling - Original Drilling - As D	12,200.00	6,762.00	4,468.57	4,289.10	24.899	SF
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	10,301.54	6,751.71	2,051.36	1,996.48	37.374	CC, ES
Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys	10,600.00	6,752.51	2,072.96	2,016.50	36.712	SF
Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys	10,587.28	6,792.13	634.97	578.19	11.183	CC, ES
Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys	10,600.00	6,791.65	635.10	578.27	11.176	SF
Wolfe 02-30G - Original Drilling - Original Drilling - As Dri						Out of range
A Section 31						
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,000.00	10,932.00	513.94	387.19	4.055	SF
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,100.00	10,932.00	482.29	369.70	4.283	ES
Cervi 13-31H (PR) - Wellbore #1 - MWD Surveys	16,207.66	10,932.00	470.12	371.00	4.743	CC
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,039.29	6,786.97	4,493.64	4,418.90	60.124	CC
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	13,100.00	6,788.31	4,494.05	4,418.86	59.772	ES
Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys	14,200.00	6,815.27	4,641.04	4,559.23	56.732	SF
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	15,724.15	6,855.22	1,927.99	1,831.96	20.078	CC, ES
Jason 1 (SI) - Wellbore #1 - Gyro Surveys	15,900.00	6,854.68	1,935.96	1,838.97	19.959	SF
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	15,661.09	6,727.57	970.55	875.57	10.219	CC, ES
Jason 2 (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,726.42	971.33	876.15	10.206	SF
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	16,849.89	6,805.89	2,200.14	2,095.34	20.995	CC, ES
Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys	17,048.46	6,811.73	2,209.07	2,103.11	20.847	SF
Marcy 1-31X (PA) - Original Hole - Original Hole	12,922.00	6,822.69	701.28	625.30	9.231	CC, ES, SF
Marcy 1-31X (PA) - Surface Gyros - Gyros	12,921.50	6,800.00	701.33	625.42	9.239	CC, ES, SF
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,122.24	6,769.89	3,706.60	3,623.62	44.671	CC, ES
Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys	14,900.00	6,775.38	3,787.32	3,699.73	43.240	SF
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	14,265.68	6,747.93	838.78	749.30	9.374	CC, ES
Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys	14,300.00	6,747.22	839.49	749.84	9.364	SF
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,247.03	6,759.38	3,264.55	3,181.17	39.150	CC, ES
Peak 1 (SI) - Wellbore #1 - Gyro Surveys	14,800.00	6,758.86	3,311.05	3,224.35	38.191	SF
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	12,848.61	6,758.73	2,031.76	1,958.65	27.789	CC, ES
Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys	13,100.00	6,762.41	2,047.25	1,972.70	27.461	SF
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	12,800.75	6,763.38	3,410.70	3,337.92	46.864	CC, ES
Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys	13,500.00	6,768.76	3,481.64	3,404.73	45.269	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	15,393.15	6,728.57	583.15	490.21	6.275	CC
Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys	15,400.00	6,729.14	583.19	490.18	6.270	ES, SF
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,787.55	6,728.08	682.58	578.56	6.562	CC
Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys	16,800.00	6,727.70	682.70	578.56	6.556	ES, SF
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	15,622.09	6,718.54	3,253.37	3,158.70	34.365	CC, ES
Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys	16,200.00	6,716.20	3,304.30	3,205.87	33.567	SF
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	16,856.67	6,713.71	4,617.32	4,512.87	44.209	CC
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	16,900.00	6,713.85	4,617.52	4,512.72	44.060	ES
Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys	17,048.46	6,714.33	4,621.30	4,515.33	43.609	SF
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	12,880.65	6,776.94	3,287.58	3,214.18	44.787	CC
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,776.64	3,287.64	3,214.08	44.695	ES
Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys	13,600.00	6,765.56	3,365.34	3,287.29	43.115	SF
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	14,216.70	6,748.77	3,267.84	3,184.20	39.072	CC, ES
Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys	16,800.00	16,800.00	4,165.57	4,041.29	33.517	SF
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,497.62	6,727.87	893.87	808.03	10.414	CC
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	6,727.91	893.87	808.01	10.411	ES
Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys	14,600.00	6,729.90	899.71	813.27	10.408	SF
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,373.87	6,731.83	2,137.38	2,052.54	25.195	CC
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	6,731.88	2,137.54	2,052.49	25.132	ES
Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys	14,600.00	6,732.32	2,149.31	2,062.87	24.864	SF
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	12,931.39	6,764.25	4,583.10	4,509.34	62.130	CC
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	13,000.00	6,763.87	4,583.62	4,509.32	61.690	ES
Larsen 1 (PR) - Wellbore #1 - Gyro Surveys	14,300.00	6,757.31	4,783.08	4,700.63	58.012	SF
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,152.70	6,742.63	4,564.93	4,481.81	54.916	CC
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	14,200.00	6,742.56	4,565.18	4,481.67	54.670	ES
Larsen 2 (PR) - Wellbore #1 - Gyro Surveys	15,300.00	6,741.02	4,706.90	4,616.31	51.955	SF
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,457.70	6,745.08	4,161.33	4,083.85	53.707	CC
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	13,500.00	6,743.85	4,161.55	4,083.73	53.480	ES
Larson A32-17 (PR) - Wellbore #1 - MWD Surveys	14,500.00	6,716.18	4,289.78	4,205.60	50.961	SF
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,477.02	6,772.15	1,581.49	1,503.46	20.269	CC
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,500.00	6,772.49	1,581.66	1,503.44	20.222	ES
QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys	13,600.00	6,773.96	1,586.26	1,507.34	20.099	SF
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,681.92	6,784.47	2,067.29	1,995.68	28.868	CC
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	12,700.00	6,784.68	2,067.37	1,995.61	28.810	ES
Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys	13,000.00	6,788.27	2,091.61	2,017.91	28.379	SF
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,682.10	6,765.00	733.32	549.60	3.991	CC, ES
Rubix A 32-04 (SI) - Wellbore #1 - No Surveys	12,700.00	6,765.00	733.54	549.66	3.989	SF
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,396.92	6,715.04	2,184.32	2,091.47	23.525	CC
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,400.00	6,715.08	2,184.33	2,091.45	23.518	ES
Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys	15,700.00	6,718.30	2,205.25	2,110.41	23.254	SF
Webster 14-32 (TA) - Wellbore #1 - Gyro Surveys	17,048.46	6,732.84	1,951.16	1,847.04	18.739	CC, ES, SF
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	16,789.67	6,728.81	3,359.28	3,255.27	32.300	CC
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	16,800.00	6,728.84	3,359.29	3,255.20	32.274	ES
Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys	17,048.46	6,729.53	3,369.23	3,263.27	31.798	SF
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,457.27	6,803.72	4,581.65	4,488.28	49.072	CC
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	15,500.00	6,804.27	4,581.85	4,488.13	48.893	ES
Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys	16,500.00	6,817.08	4,698.79	4,598.65	46.925	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	17,048.46	6,695.23	1,398.11	1,330.87	20.792	CC, ES, SF
Ehrlich 5E-323 (PR) - Wellbore #1 - Permitted-PDC	17,048.46	6,550.00	792.48	712.31	9.886	CC, ES, SF
Ehrlich 5E-423 (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,613.13	625.30	558.55	9.368	CC, ES, SF
Ehrlich 5J-203 (PR) - Wellbore #1 - Permitted-PDC	17,048.46	6,474.10	1,504.10	1,405.08	15.190	CC, ES, SF
Ehrlich 5J-223 (PR) - Wellbore #1 - Permitted-PDC	17,048.46	6,515.46	1,920.41	1,817.50	18.660	CC, ES, SF
Ehrlich 5J-243 (PR) - Wellbore #1 - Permitted-PDC	17,048.46	6,472.39	1,078.93	987.89	11.852	CC, ES, SF
Ehrlich 5J-303 (PR) - Wellbore #1 - Permitted-PDC	17,048.46	6,500.00	1,259.25	1,162.76	13.051	CC, ES, SF
Ehrlich 5J-323 (PR) - Wellbore #1 - Permitted-PDC	17,048.46	6,532.87	1,706.43	1,604.70	16.774	CC, ES, SF
Ehrlich 5M-243 (PR) - Wellbore #1 - Permitted-PDC	17,048.46	6,700.00	2,399.02	2,292.79	22.583	CC, ES, SF
Ehrlich 5M-343 (PR) - Wellbore #1 - Permitted-PDC	17,048.46	6,625.42	2,142.33	2,037.34	20.405	CC, ES, SF
Mininger Pfeif 41-5 (SI) - Wellbore #1 - Gyro Surveys	17,048.46	6,704.94	4,739.32	4,636.17	45.948	CC, ES, SF
Noffsinger 21-5 (TA) - Wellbore #1 - Gyro Surveys	17,048.46	6,729.60	2,238.69	2,142.65	23.310	CC, ES, SF
Noffsinger 31-5 (TA) - Wellbore #1 - Gyro Surveys	17,048.46	6,681.28	3,400.94	3,298.90	33.332	CC, ES, SF
Snowmass 10N (DG) - Wellbore #1 - Permitted-PDC	17,048.46	7,100.00	3,328.57	3,229.32	33.538	CC, ES, SF
Snowmass 1C (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,400.00	2,515.20	2,411.96	24.363	CC, ES, SF
Snowmass 2N (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,350.00	2,608.24	2,505.61	25.415	CC, ES, SF
Snowmass 3N (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,473.67	2,258.16	2,155.07	21.904	CC, ES, SF
Snowmass 4N (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,673.64	2,179.27	2,075.47	20.995	CC, ES, SF
Snowmass 5N (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,578.25	2,515.90	2,412.85	24.415	CC, ES, SF
Snowmass 6N (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,819.68	2,526.11	2,423.21	24.550	CC, ES, SF
Snowmass 7N (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,726.18	2,853.78	2,751.62	27.935	CC, ES, SF
Snowmass 8N (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,950.00	2,863.90	2,762.44	28.226	CC, ES, SF
Snowmass 9N (DG) - Wellbore #1 - Permitted-PDC	17,048.46	6,850.00	3,176.78	3,075.85	31.473	CC, ES, SF
B Section 06						
Webster B6-1 (SI) - Wellbore #1 - Gyro Surveys	17,048.46	6,723.66	1,529.81	1,445.88	18.228	CC, ES, SF
Webster B6-2 (SI) - Wellbore #1 - Gyro Surveys	17,048.46	6,689.23	2,089.52	1,991.57	21.333	CC, ES, SF
B Section 07						
Dunn 7I-201 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,804.00	4,841.44	4,585.43	18.911	CC, ES, SF
Dunn 7I-221 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,773.00	4,443.61	4,187.29	17.336	CC, ES, SF
Dunn 7I-321 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,853.00	4,676.29	4,419.90	18.239	CC, ES, SF
Dunn 7L-201 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,789.00	3,843.16	3,588.15	15.071	CC, ES, SF
Dunn 7L-221 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,878.00	3,374.36	3,121.88	13.365	CC, ES, SF
Dunn 7L-301 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,840.00	3,636.44	3,382.41	14.315	CC, ES, SF
Dunn 7L-341 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,843.00	4,119.67	3,864.14	16.122	CC, ES, SF
Dunn 7Q-221 (PR) - Wellbore #1 - MWD Surveys	17,048.46	17,087.00	2,315.94	2,072.82	9.526	CC, ES, SF
Dunn 7Q-241 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,925.00	2,814.24	2,565.75	11.326	CC, ES, SF
Dunn 7Q-301 (PR) - Wellbore #1 - MWD Surveys	17,048.46	17,027.00	2,583.71	2,336.87	10.467	CC, ES, SF
Dunn 7Q-341 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,864.00	3,056.26	2,805.92	12.208	CC, ES, SF
J Klein 7Q-321 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,410.00	2,199.13	1,966.75	9.464	CC, ES, SF
J Klein 7T-121 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,284.00	1,269.38	1,125.44	8.819	CC, ES, SF
J Klein 7T-201 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,391.00	1,407.87	1,224.16	7.664	CC, ES, SF
J Klein 7T-241 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,310.00	1,823.43	1,605.63	8.372	CC, ES, SF
J Klein 7T-301 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,448.00	1,615.95	1,411.11	7.889	CC, ES, SF
J Klein 7Y-201 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,568.00	983.73	908.78	13.125	CC, ES, SF
J Klein 7Y-241 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,503.00	1,053.97	956.41	10.803	CC, ES, SF
J Klein 7Y-341 (PR) - Wellbore #1 - MWD Surveys	17,048.46	16,596.00	991.82	927.37	15.388	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	5,424.15	5,157.74	9,750.76	9,718.08	298.369	CC
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	5,500.00	5,200.01	9,750.99	9,717.89	294.548	ES
Anderson E24-12 - Wellbore #1 - Wellbore #1- As Drilled	7,200.00	6,841.08	9,908.51	9,865.37	229.679	SF
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	2,887.17	2,840.50	8,307.43	8,290.13	480.114	CC
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	3,900.00	3,828.40	8,311.69	8,288.09	352.140	ES
Anderson E24-14 (PA) - Wellbore #1 - Gyro Surveys	11,600.00	6,771.65	9,991.96	9,922.31	143.454	SF
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	6,321.35	6,030.83	7,175.65	7,136.63	183.914	CC, ES
Courtney BC E24-01 - Wellbore #1 - Wellbore #1- As Dri	7,000.00	6,567.75	7,393.20	7,351.32	176.517	SF
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	6,304.55	6,075.34	6,418.03	6,378.87	163.883	CC, ES
Courtney BC E24-08 - Wellbore #1 - Wellbore #1- As Dri	6,850.00	6,776.46	6,522.05	6,479.45	153.074	SF
Courtney E24-02 - Original Drilling - As Drilled	6,311.03	6,061.46	8,308.51	8,269.42	212.499	CC, ES
Courtney E24-02 - Original Drilling - As Drilled	7,000.00	7,000.00	8,497.90	8,454.46	195.603	SF
Courtney E24-07 - Original Drilling - As Drilled	6,302.83	6,155.79	7,603.56	7,564.14	192.904	CC, ES
Courtney E24-07 - Original Drilling - As Drilled	7,050.00	6,826.30	7,767.36	7,724.42	180.882	SF
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	0.00	0.00	9,541.40			
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	2,600.00	2,536.90	9,547.82	9,531.93	600.670	ES
Feit 02-24EG - Wellbore #1 - Wellbore #1- As Drilled	8,500.00	6,912.94	9,997.67	9,952.18	219.797	SF
Herman E24-05 - Wellbore #1 - Wellbore #1- As Drilled						Out of range
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	6,230.19	5,973.30	5,756.33	5,717.77	149.285	CC
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	6,250.00	5,989.73	5,756.43	5,717.74	148.793	ES
Jessie #02 - Wellbore #1 - Wellbore #1- As Drilled	6,800.00	6,542.11	5,827.90	5,786.07	139.330	SF
Jessie 1 (DA) - Wellbore #1 - No Surveys	4,150.69	4,032.08	5,607.67	5,516.53	61.526	CC, ES, SF
Mackinaw A19-79HNA - Original Drilling - Original Drilling	6,503.71	11,144.00	4,766.00	4,668.38	48.822	CC, ES
Mackinaw A19-79HNA - Original Drilling - Original Drilling	6,600.00	11,144.00	4,767.54	4,669.77	48.760	SF
Mackinaw A19-79HNC - Original Drilling - Original Drilling	6,619.15	11,451.00	4,964.39	4,865.99	50.456	CC, ES
Mackinaw A19-79HNC - Original Drilling - Original Drilling	6,700.00	11,451.00	4,965.49	4,867.02	50.427	SF
Miller #33-24 - Original Drilling - As Drilled	6,211.19	5,974.11	7,053.36	6,916.09	51.386	CC
Miller #33-24 - Original Drilling - As Drilled	6,250.00	6,011.74	7,053.66	6,915.51	51.056	ES
Miller #33-24 - Original Drilling - As Drilled	7,200.00	6,751.40	7,223.33	7,068.90	46.777	SF
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	4,280.58	4,219.32	6,731.02	6,705.55	264.280	CC
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	4,400.00	4,300.00	6,731.45	6,705.32	257.604	ES
Miller 34-24 (PA) - Wellbore #1 - Gyro Surveys	11,300.00	6,471.78	8,527.30	8,472.57	155.825	SF
Storis E24-72-1HN - Original Drilling - Original Drilling - A	6,551.07	11,309.00	5,223.57	5,125.26	53.133	CC, ES
Storis E24-72-1HN - Original Drilling - Original Drilling - A	6,700.00	11,309.00	5,226.99	5,128.47	53.055	SF
Storis E24-73-1HNA - Original Drilling - Original Drilling -	6,505.25	11,626.90	6,180.32	6,074.19	58.232	CC
Storis E24-73-1HNA - Original Drilling - Original Drilling -	6,550.00	11,632.84	6,180.47	6,074.10	58.104	ES
Storis E24-73-1HNA - Original Drilling - Original Drilling -	6,900.00	11,685.00	6,190.89	6,082.98	57.374	SF
Storis E24-73-1HNC - Original Drilling - Original Drilling -	6,696.27	11,464.00	6,041.57	5,935.43	56.921	CC
Storis E24-73-1HNC - Original Drilling - Original Drilling -	6,700.00	11,464.00	6,041.57	5,935.42	56.917	ES
Storis E24-73-1HNC - Original Drilling - Original Drilling -	6,950.00	11,464.00	6,046.69	5,940.21	56.786	SF
Storis E24-73HC - Original Drilling - Original Drilling - As	6,605.87	11,368.00	6,364.56	6,265.31	64.126	CC, ES
Storis E24-73HC - Original Drilling - Original Drilling - As	6,850.00	11,368.00	6,372.38	6,272.65	63.898	SF
Storis E24-73HN - Original Drilling - Original Drilling	6,494.44	11,262.00	6,555.49	6,456.41	66.158	CC
Storis E24-73HN - Original Drilling - Original Drilling	6,500.00	11,262.00	6,555.50	6,456.39	66.145	ES
Storis E24-73HN - Original Drilling - Original Drilling	6,850.00	11,262.00	6,570.66	6,470.79	65.794	SF
Storis E24-75-1HC - Original Drilling - Original Drilling - A	6,594.20	6,594.20	7,391.59	7,368.17	315.705	CC
Storis E24-75-1HC - Original Drilling - Original Drilling - A	6,700.00	11,703.81	7,392.85	7,285.45	68.838	ES
Storis E24-75-1HC - Original Drilling - Original Drilling - A	7,300.00	11,784.00	7,427.93	7,317.91	67.513	SF
Storis E24-75-1HN - Original Drilling - Original Drilling - A	6,470.05	11,684.00	7,501.26	7,438.79	120.078	CC
Storis E24-75-1HN - Original Drilling - Original Drilling - A	6,500.00	11,684.00	7,501.33	7,438.77	119.905	ES
Storis E24-75-1HN - Original Drilling - Original Drilling - A	10,300.00	11,684.00	8,352.68	8,280.15	115.165	SF
Storis E24-75HN - Original Drilling - Original Drilling - As	6,486.43	11,187.83	7,699.62	7,639.74	128.590	CC
Storis E24-75HN - Original Drilling - Original Drilling - As	6,650.00	11,553.00	7,702.30	7,639.68	123.000	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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 E24-75HN - Original Drilling - Original Drilling - As	10,600.00	11,585.00	8,661.89	8,587.71	116.770	SF
Storis E24-76-1HN - Original Drilling - Original Drilling - A	6,419.98	7,324.00	7,877.82	7,834.52	181.930	CC, ES
Storis E24-76-1HN - Original Drilling - Original Drilling - A	12,300.00	7,019.00	9,862.13	9,796.88	151.142	SF
Storis E24-77-1HN - Original Drilling - Original Drilling - A	4,442.11	4,835.28	8,521.48	8,494.09	311.096	CC
Storis E24-77-1HN - Original Drilling - Original Drilling - A	4,500.00	4,847.46	8,521.64	8,494.02	308.515	ES
Storis E24-77-1HN - Original Drilling - Original Drilling - A	11,700.00	6,260.00	9,963.96	9,907.53	176.569	SF
Storis E24-78-1HN - Original Drilling - Original Drilling - A	3,153.93	3,365.00	9,127.44	9,109.20	500.530	CC, ES
Storis E24-78-1HN - Original Drilling - Original Drilling - A	10,300.00	6,307.00	9,967.95	9,918.33	200.920	SF
Storis E24-79-1HN - Original Drilling - Original Drilling - A	0.00	0.00	9,245.34			
Storis E24-79-1HN - Original Drilling - Original Drilling - A	900.00	817.00	9,249.86	9,244.86	1,851.867	ES
Storis E24-79-1HN - Original Drilling - Original Drilling - A	7,050.00	6,214.00	9,998.90	9,959.53	254.008	SF
Storis E24-79HN - Original Drilling - Original Drilling - As	986.65	942.89	9,266.30	9,261.19	1,812.712	CC
Storis E24-79HN - Original Drilling - Original Drilling - As	1,000.00	947.10	9,266.34	9,261.17	1,792.976	ES
Storis E24-79HN - Original Drilling - Original Drilling - As	4,800.00	4,800.00	9,778.88	9,750.02	338.889	SF
Wake E24-77HN - Original Drilling - Original Drilling	6,379.86	11,040.02	8,983.13	8,884.12	90.727	CC
Wake E24-77HN - Original Drilling - Original Drilling	6,400.00	11,040.02	8,983.17	8,884.09	90.665	ES
Wake E24-77HN - Original Drilling - Original Drilling	6,800.00	11,040.02	8,998.64	8,898.74	90.069	SF

Noble Energy

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Roth A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	374.59	324.60	9,360.72	9,358.67	4,582.459	CC
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	2,500.00	2,439.20	9,364.71	9,349.25	605.680	ES
Fran E25-4 (PR) - Wellbore #1 - Gyro Surveys	10,100.00	6,811.99	9,993.61	9,940.71	188.911	SF
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	2,300.25	2,253.28	9,461.72	9,447.05	644.566	CC
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	2,400.00	2,331.97	9,461.85	9,446.84	630.421	ES
Fran H25-5 (SI) - Wellbore #1 - Gyro Surveys	11,300.00	7,155.12	9,978.85	9,917.68	163.138	SF
LDS E25-32 (SI) - Wellbore #1 - Gyro Surveys						Out of range
LDS E25-33D - Original Drilling - Original Drilling - As Dri	100.00	42.74	9,984.40	9,984.20	10,000.000	CC
LDS E25-33D - Original Drilling - Original Drilling - As Dri	1,000.00	1,000.00	9,988.53	9,981.92	1,511.605	ES
LDS E25-33D - Original Drilling - Original Drilling - As Dri	1,500.00	1,100.00	9,998.06	9,989.28	1,138.453	SF
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	11,686.85	6,687.61	5,850.65	5,786.42	91.097	CC
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	11,700.00	6,687.47	5,850.66	5,786.35	90.967	ES
Little Will #1 (PR) - Wellbore #1 - Gyro Surveys	13,900.00	6,664.18	6,255.21	6,177.97	80.983	SF
Little Will #10 - Original Drilling - Original Drilling - As Dri	100.00	38.86	5,319.41	5,319.22	10,000.000	CC
Little Will #10 - Original Drilling - Original Drilling - As Dri	2,600.00	2,575.40	5,326.00	5,309.98	332.455	ES
Little Will #10 - Original Drilling - Original Drilling - As Dri	10,700.00	6,614.99	6,436.60	6,383.01	120.095	SF
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	10,183.67	6,743.79	7,040.11	6,986.07	130.275	CC
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	10,200.00	6,743.68	7,040.13	6,985.99	130.033	ES
Little Will #2 (SI) - Wellbore #1 - Gyro Surveys	13,800.00	6,719.77	7,914.56	7,840.26	106.518	SF
Little Will #3 (PA) - Original Drilling - No Surveys	2,400.00	2,342.00	5,573.81	5,519.93	103.443	CC
Little Will #3 (PA) - Original Drilling - No Surveys	2,600.00	2,541.84	5,576.45	5,518.41	96.077	ES
Little Will #3 (PA) - Original Drilling - No Surveys	10,100.00	6,770.00	5,854.49	5,689.51	35.485	SF
Little Will #4 - Original Drilling - Original Drilling - As Drille	1,808.23	1,758.26	6,229.80	6,217.73	516.527	CC
Little Will #4 - Original Drilling - Original Drilling - As Drille	2,300.00	2,227.46	6,230.07	6,215.47	426.829	ES
Little Will #4 - Original Drilling - Original Drilling - As Drille	11,900.00	6,500.00	7,654.52	7,594.86	128.302	SF
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	11,547.15	11,547.15	6,981.18	6,901.05	87.115	CC
Little Will #9 (SI) - Wellbore #1 - Gyro Surveys	11,600.00	11,600.00	6,981.38	6,900.69	86.517	ES, SF
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	1,070.07	1,029.72	9,868.77	9,861.86	1,427.632	CC
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	1,200.00	1,123.17	9,869.00	9,861.29	1,279.598	ES
Lutz E25-30D (PR) - Wellbore #1 - MWD Surveys	3,700.00	3,626.58	9,993.29	9,966.37	371.210	SF
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	100.00	39.68	9,851.28	9,851.09	10,000.000	CC
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	400.00	291.94	9,852.88	9,850.86	4,880.833	ES
Lutz E25-31 (PR) - Wellbore #1 - Gyro Surveys	4,000.00	3,759.29	9,997.92	9,974.88	433.933	SF
Meisner 02-25EG (PA) - Original Drilling - No Surveys	2,400.00	2,362.00	8,146.88	8,092.60	150.084	CC
Meisner 02-25EG (PA) - Original Drilling - No Surveys	2,600.00	2,561.84	8,148.87	8,090.43	139.438	ES
Meisner 02-25EG (PA) - Original Drilling - No Surveys	11,200.00	6,790.00	8,762.97	8,591.16	51.004	SF
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	11,537.24	6,715.18	8,382.11	8,293.75	94.868	CC
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	11,600.00	6,715.53	8,382.34	8,293.54	94.394	ES
Noffsinger #1-25EG (SI) - Wellbore #1 - Gyro Surveys	15,100.00	6,734.95	9,107.83	8,997.32	82.417	SF
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	10,182.64	6,972.70	8,372.62	8,318.10	153.571	CC
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	10,200.00	6,972.75	8,372.64	8,318.01	153.269	ES
Noffsinger #8-25EG (SI) - Wellbore #1 - Gyro Surveys	14,900.00	6,985.65	9,610.10	9,528.85	118.266	SF
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	10,419.80	6,775.00	9,721.04	9,553.33	57.963	CC
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	10,500.00	6,775.00	9,721.37	9,553.14	57.786	ES
Noffsinger E25-12 (PA) - Original Drilling - No Surveys	12,700.00	6,775.00	9,984.88	9,802.17	54.647	SF
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	10,337.88	6,650.59	9,479.84	9,425.15	173.345	CC
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	10,400.00	6,647.75	9,480.04	9,424.97	172.130	ES
Noffsinger E25-12X (SI) - Wellbore #1 - Gyro Surveys	11,100.00	11,100.00	9,510.39	9,434.99	126.142	SF
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	11,694.99	6,347.06	9,273.68	9,210.72	147.300	CC
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	11,800.00	6,347.13	9,274.27	9,210.56	145.565	ES
Noffsinger E25-13 (SI) - Wellbore #1 - Gyro Surveys	15,400.00	6,348.67	9,986.40	9,899.74	115.240	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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
E Section 26						
Bear E26-650 - Bear E26-650 - Plan #1	9,559.61	17,966.68	5,535.37	5,475.03	91.727	CC, ES
Bear E26-650 - Bear E26-650 - Plan #1	14,300.00	17,966.68	7,287.78	7,155.10	54.928	SF
Bear E26-660 - Bear E26-660 - Plan #1	8,899.59	17,652.10	5,531.55	5,477.22	101.820	CC
Bear E26-660 - Bear E26-660 - Plan #1	8,900.00	17,652.10	5,531.55	5,477.22	101.820	ES
Bear E26-660 - Bear E26-660 - Plan #1	13,800.00	17,652.10	7,390.00	7,258.37	56.143	SF
Bear E26-670 - Bear E26-670 - Plan #1	8,239.56	17,547.99	5,528.84	5,478.86	110.627	CC, ES
Bear E26-670 - Bear E26-670 - Plan #1	13,300.00	17,547.99	7,495.07	7,364.34	57.331	SF
Bear E26-680 - Bear E26-680 - Plan #1	7,579.54	17,404.52	5,524.98	5,477.27	115.807	CC, ES
Bear E26-680 - Bear E26-680 - Plan #1	12,700.00	17,404.52	7,532.90	7,404.06	58.467	SF
Bear E26-690 - Bear E26-690 - Plan #1	6,770.33	17,453.70	5,513.66	5,467.16	118.569	CC, ES
Bear E26-690 - Bear E26-690 - Plan #1	12,100.00	17,453.70	7,571.70	7,444.60	59.575	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	11,250.07	11,387.00	5,607.39	5,540.79	84.189	CC
Resolute E25-63-1HN - Original Drilling - Original Drilling	11,300.00	11,387.00	5,607.61	5,540.38	83.403	ES
Resolute E25-63-1HN - Original Drilling - Original Drilling	15,400.00	11,387.00	6,976.01	6,837.69	50.434	SF
Resolute E25-63HC - Original Drilling - Original Drilling -	10,927.37	11,166.00	5,605.74	5,538.80	83.748	CC
Resolute E25-63HC - Original Drilling - Original Drilling -	11,000.00	11,166.00	5,606.21	5,538.29	82.541	ES
Resolute E25-63HC - Original Drilling - Original Drilling -	15,000.00	11,166.00	6,928.97	6,794.87	51.671	SF
Resolute E25-63HN - Original Drilling - Original Drilling -	11,087.99	11,151.00	5,614.30	5,548.23	84.979	CC
Resolute E25-63HN - Original Drilling - Original Drilling -	11,200.00	11,151.00	5,615.42	5,547.85	83.108	ES
Resolute E25-63HN - Original Drilling - Original Drilling -	15,200.00	11,151.00	6,959.10	6,823.14	51.187	SF
Resolute State E25-62-1HN - Original Drilling - Original D	11,923.04	11,410.00	5,611.50	5,541.45	80.115	CC, ES
Resolute State E25-62-1HN - Original Drilling - Original D	16,200.00	11,410.00	7,055.58	6,918.44	51.445	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	13,512.44	11,279.00	5,623.27	5,536.71	64.968	CC
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	13,600.00	11,279.00	5,623.95	5,535.92	63.888	ES
Bill E36-67HN - Original Drilling - Original Drilling - As Dr	17,048.46	11,279.00	6,642.63	6,495.38	45.111	SF
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	15,497.01	7,003.19	4,510.23	4,405.93	43.243	CC
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	15,500.00	7,003.13	4,510.23	4,405.90	43.232	ES
Cattleman 13-31D (PR) - Wellbore #1 - MWD Surveys	16,500.00	6,987.00	4,620.37	4,508.72	41.383	SF
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	16,795.32	6,947.41	4,494.28	4,388.89	42.644	CC
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	16,800.00	6,947.38	4,494.28	4,388.86	42.629	ES
Cattleman 14-31D (SI) - Wellbore #1 - MWD Surveys	17,048.46	6,945.81	4,501.41	4,394.15	41.969	SF
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,511.87	7,365.42	3,303.10	3,195.34	30.653	CC
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	15,600.00	7,363.66	3,304.28	3,195.31	30.324	ES
Cattleman 23-31D (PR) - Wellbore #1 - MWD Surveys	16,300.00	7,349.52	3,395.78	3,279.07	29.096	SF
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	16,861.95	7,181.29	3,269.47	3,160.65	30.046	CC
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	16,900.00	7,181.35	3,269.69	3,160.58	29.968	ES
Cattleman 24-31D (TA) - Wellbore #1 - MWD Surveys	17,048.46	7,181.56	3,274.78	3,164.59	29.717	SF
LDS E 36-33 (SI) - Wellbore #1 - Gyro Surveys						Out of range
LDS F 01-27 (SI) - Wellbore #1 - Gyro Surveys	17,048.46	6,793.32	6,392.16	6,286.01	60.220	CC, ES, SF
LDS F 01-28D (SI) - Wellbore #1 - Gyro Surveys	17,048.46	6,954.49	7,662.44	7,555.66	71.756	CC, ES, SF
LDS F 01-29 (SI) - Wellbore #1 - Inc Only Surveys	17,048.46	6,745.46	9,054.89	8,829.83	40.233	CC, ES, SF
LDS F 01-30D (TA) - Wellbore #1 - MWD Surveys						Out of range
Mansfield E36-65HN - Original Drilling - Original Drilling	14,935.59	7,500.02	9,293.66	9,202.09	101.494	CC
Mansfield E36-65HN - Original Drilling - Original Drilling	15,000.00	7,500.02	9,293.88	9,201.82	100.959	ES
Mansfield E36-65HN - Original Drilling - Original Drilling	17,048.46	7,500.02	9,530.81	9,424.70	89.827	SF
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	14,836.49	11,178.00	5,617.29	5,524.56	60.578	CC
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	14,900.00	11,178.00	5,617.65	5,524.40	60.244	ES
Mansfield E36-65HN - Sidetrack #1 - Sidetrack #1	17,048.46	11,178.00	6,037.12	5,910.76	47.778	SF
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	12,742.69	6,905.27	8,364.10	8,291.22	114.762	CC
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	12,800.00	6,906.28	8,364.30	8,290.99	114.095	ES
Sinjin E 36-3 (PA) - Wellbore #1 - Gyro Surveys	16,500.00	6,971.66	9,169.03	9,073.35	95.825	SF
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	16,913.27	6,714.07	7,128.79	7,023.86	67.937	CC
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,000.00	6,714.53	7,129.32	7,023.71	67.507	ES
Sinjin E26-15 (PA) - Wellbore #1 - Gyro Surveys	17,048.46	6,714.79	7,130.07	7,024.09	67.277	SF
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled	12,811.65	6,800.00	9,707.47	9,634.46	132.968	CC
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled	12,900.00	6,800.00	9,707.87	9,634.21	131.785	ES
Sinjin E36-04 (SI) - Sinjin E36-04 Gyros - As-Drilled	15,200.00	6,800.00	9,996.96	9,907.45	111.683	SF
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled	12,813.14	6,956.84	9,706.36	9,632.34	131.139	CC
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled	12,900.00	6,957.69	9,706.75	9,632.08	130.000	ES
Sinjin E36-04 (SI) - Sinjin E36-04 OH - As-Drilled	15,200.00	6,980.10	9,995.50	9,904.86	110.288	SF
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	12,761.36	6,952.82	5,831.61	5,758.82	80.117	CC
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	12,800.00	6,953.62	5,831.74	5,758.67	79.809	ES
Sinjin E36-1 (SI) - Wellbore #1 - Gyro Surveys	14,700.00	6,992.88	6,145.28	6,060.84	72.777	SF
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,594.75	6,743.00	7,038.39	6,832.41	34.170	CC
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	15,600.00	6,743.00	7,038.39	6,832.37	34.163	ES
Sinjin E36-10(SI) - Wellbore #1 - No Surveys	17,000.00	6,743.00	7,177.30	6,961.81	33.306	SF
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,483.92	6,739.00	8,264.63	8,059.60	40.311	CC
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	15,500.00	6,739.00	8,264.64	8,059.49	40.286	ES
Sinjin E36-11 (SI) - Wellbore #1 - No Surveys	17,048.46	6,739.00	8,411.41	8,195.46	38.951	SF
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys	15,662.49	6,917.93	9,760.01	9,663.94	101.594	CC
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys	15,700.00	6,918.52	9,760.08	9,663.71	101.283	ES
Sinjin E36-12 (SI) - Wellbore #1 - Gyro Surveys	17,048.46	6,939.72	9,857.90	9,751.57	92.709	SF
Sinjin E36-13 (TA) - Wellbore #1 - Gyro Surveys	16,593.27	7,031.00	9,771.73	9,667.86	94.077	CC
Sinjin E36-13 (TA) - Wellbore #1 - Gyro Surveys	16,700.00	7,031.00	9,772.31	9,667.61	93.334	ES
Sinjin E36-13 (TA) - Wellbore #1 - Gyro Surveys	17,048.46	7,031.00	9,782.32	9,674.96	91.115	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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 E36-14 (PA) - Wellbore #1 - No Surveys	16,618.82	6,738.00	8,363.45	8,149.40	39.071	CC
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	16,700.00	6,738.00	8,363.85	8,149.16	38.958	ES
Sinjin E36-14 (PA) - Wellbore #1 - No Surveys	17,048.46	6,738.00	8,374.48	8,157.15	38.533	SF
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	16,913.27	6,714.07	7,128.79	7,034.06	75.257	CC
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,000.00	6,714.53	7,129.32	7,033.91	74.729	ES
SINJIN E36-15 (PA) - SINJIN E36-15 - Wellbore #1 - As	17,048.46	6,714.79	7,130.07	7,034.30	74.447	SF
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,002.89	6,742.91	5,788.59	5,682.91	54.772	CC
Sinjin E36-16 (PA) - Wellbore #1 - Gyro Surveys	17,048.46	6,743.32	5,788.77	5,682.74	54.592	ES, SF
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	12,849.09	6,848.52	7,259.96	7,186.47	98.791	CC
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,849.01	7,260.14	7,186.27	98.287	ES
Sinjin E36-2 (PR) - Wellbore #1 - Gyro Surveys	15,800.00	6,876.91	7,836.71	7,745.42	85.845	SF
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	16,055.55	7,505.45	8,895.39	8,791.50	85.616	CC
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	16,100.00	7,506.35	8,895.51	8,791.26	85.330	ES
Sinjin E36-25 (SI) - Wellbore #1 - Gyro Surveys	17,048.46	7,525.64	8,950.62	8,839.32	80.424	SF
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys	14,354.88	7,052.00	9,683.25	9,597.32	112.692	CC
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys	14,400.00	7,052.00	9,683.36	9,597.08	112.241	ES
Sinjin E36-5 (PR) - Wellbore #1 - Gyro Surveys	16,800.00	7,052.00	9,987.19	9,884.49	97.243	SF
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,158.74	6,753.00	8,401.97	8,207.11	43.118	CC
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	14,200.00	6,753.00	8,402.07	8,206.89	43.049	ES
Sinjin E36-6 (SI) - Wellbore #1 - No Surveys	16,200.00	6,753.00	8,646.38	8,437.63	41.421	SF
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,402.61	6,746.00	7,057.27	6,860.64	35.891	CC
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	14,500.00	6,746.00	7,057.94	6,860.57	35.760	ES
Sinjin E36-7 (PA) - Wellbore #1 - No Surveys	15,900.00	6,746.00	7,214.37	7,007.62	34.894	SF
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,394.10	6,748.34	5,578.41	5,493.35	65.582	CC
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	14,400.00	6,748.38	5,578.41	5,493.31	65.547	ES
Sinjin E36-8 (SI) - Wellbore #1 - Gyro Surveys	16,000.00	6,758.02	5,804.95	5,710.16	61.239	SF
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	15,740.08	6,750.00	5,764.49	5,557.21	27.810	CC
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	15,800.00	6,750.00	5,764.80	5,557.06	27.750	ES
Sinjin E36-9 (SI) - Wellbore #1 - No Surveys	16,700.00	6,750.00	5,843.87	5,630.13	27.341	SF
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	13,559.21	7,091.00	9,078.16	8,998.30	113.675	CC
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	13,600.00	7,091.00	9,078.25	8,998.08	113.240	ES
Sinjin State E36-19 - Wellbore #1 - Gyro Surveys	17,048.46	7,091.00	9,725.63	9,623.80	95.512	SF
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	14,782.84	7,061.00	8,998.67	8,909.29	100.681	CC
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	14,900.00	7,061.00	8,999.43	8,909.16	99.688	ES
Sinjin State E36-20 (SI) - Wellbore #1 - Gyro Surveys	17,048.46	7,061.00	9,279.50	9,174.77	88.606	SF
Trex E35-618 - Trex E35-618 - Plan #1	16,678.75	6,874.22	4,969.35	4,861.57	46.106	CC
Trex E35-618 - Trex E35-618 - Plan #1	16,700.00	6,875.49	4,969.40	4,861.45	46.036	ES
Trex E35-618 - Trex E35-618 - Plan #1	17,048.46	6,900.00	4,982.68	4,872.19	45.096	SF
Trex E35-628 - Trex E35-628 - Plan #1	16,141.31	6,600.00	5,123.49	5,022.83	50.897	CC
Trex E35-628 - Trex E35-628 - Plan #1	16,200.00	6,600.00	5,123.83	5,022.72	50.678	ES
Trex E35-628 - Trex E35-628 - Plan #1	17,048.46	6,650.00	5,200.70	5,093.99	48.739	SF
Trex E35-638 - Trex E35-638 - Plan #1	15,517.54	6,400.00	4,936.46	4,843.02	52.831	CC, ES
Trex E35-638 - Trex E35-638 - Plan #1	16,700.00	6,450.00	5,075.40	4,974.66	50.380	SF
Trex E35-659 - Trex E35-659 - Plan #1	14,302.05	6,277.31	4,937.87	4,855.30	59.805	CC, ES
Trex E35-659 - Trex E35-659 - Plan #1	15,600.00	6,250.00	5,105.75	5,015.16	56.359	SF
Trex E35-671 - Trex E35-671 - Plan #1	13,485.14	6,500.00	4,923.98	4,846.12	63.246	CC
Trex E35-671 - Trex E35-671 - Plan #1	13,500.00	6,500.00	4,924.00	4,846.03	63.153	ES
Trex E35-671 - Trex E35-671 - Plan #1	14,900.00	6,450.00	5,121.42	5,034.81	59.135	SF
Trex E35-682 - Trex E35-682 - Plan #1	12,923.81	6,621.57	4,929.27	4,854.34	65.787	CC, ES
Trex E35-682 - Trex E35-682 - Plan #1	14,500.00	6,550.00	5,165.76	5,081.12	61.034	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 A32-790
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 A32-790	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Roth A32-790	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	17,048.46	6,738.90	7,168.88	7,063.24	67.863	CC, ES, SF
BJB 3(PA) - Wellbore #1 - No Surveys	17,048.46	6,728.00	7,551.94	7,414.68	55.018	CC, ES, SF
BJB 4 - Wellbore #1 - Gyro Surveys	17,048.46	6,649.13	6,227.88	6,096.29	47.329	CC, ES, SF
BJB 5 - Wellbore #1 - Gyro Surveys	17,048.46	6,831.83	6,549.06	6,445.41	63.180	CC, ES, SF
BJB 6I - Wellbore #1 - As Drilled	17,048.46	6,867.00	7,882.76	7,775.56	73.537	CC, ES, SF
CDOT F 1-10(SI) - Wellbore #1 - Inc Only Surveys	17,048.46	6,724.32	8,032.51	7,825.38	38.781	CC, ES, SF
DPG Bird Farm 1-14H5(SI) - Wellbore #1 - Gyro Surveys	17,048.46	17,048.46	9,515.72	9,383.17	71.788	CC, ES, SF
DPG Bird Farm 1-15H5(SI) - Wellbore #1 - No Surveys	17,048.46	6,704.00	8,552.73	8,425.06	66.994	CC, ES, SF
DPG Bird Farm 1-16H5 - Wellbore #1 - Gyro Surveys	17,048.46	6,958.36	7,615.06	7,524.40	83.998	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	17,048.46	6,707.00	9,516.51	9,294.77	42.917	CC, ES, SF
DPG F 12-29(AL) - Wellbore #1 - No Surveys						Out of range
DPG F 1-23(SI) - Wellbore #1 - No Surveys	17,048.46	6,702.00	7,866.10	7,736.47	60.680	CC, ES, SF
DPG F 1-24(SI) - Wellbore #1 - Inc Only Surveys	17,048.46	6,712.55	8,730.44	8,529.97	43.549	CC, ES, SF
DPG F 1-25(SI) - Wellbore #1 - Inc Only Surveys						Out of range
DPG F 1-33(SI) - Wellbore #1 - As Drilled						Out of range
Gatewood 11-1 - Wellbore #1 - Gyro Surveys	17,048.46	6,480.11	9,116.47	9,016.67	91.346	CC, ES, SF
Gatewood 3-1 - Wellbore #1 - Gyro Surveys	17,048.46	6,655.40	8,226.99	8,121.90	78.280	CC, ES, SF
Gatewood 4-1(SI) - Wellbore #1 - Gyro Surveys	17,048.46	6,828.51	9,954.38	9,849.35	94.775	CC, ES, SF
Gatewood 5(SI) - Wellbore #1 - No Surveys	17,048.46	6,740.00	9,237.57	9,097.06	65.743	CC, ES, SF
Gatewood 6-1 - Wellbore #1 - Gyro Surveys	15,500.00	15,500.00	9,056.83	8,956.79	90.534	SF
Gatewood 6-1 - Wellbore #1 - Gyro Surveys	17,048.46	6,652.97	8,560.14	8,475.81	101.505	CC, ES
Gatewood F 1-12(SI) - Wellbore #1 - Inc Only Surveys						Out of range
LDS 1U-234 - Wellbore #1 - As Drilled	17,048.46	6,174.00	5,273.28	5,170.67	51.396	CC, ES, SF
LDS 1U-304 - Wellbore #1 - As Drilled	17,048.46	6,077.00	5,227.15	5,124.26	50.801	CC, ES, SF
LDS 1V-204 - Wellbore #1 - As Drilled	17,048.46	6,192.00	5,522.86	5,417.99	52.666	CC, ES, SF
LDS 1V-214 - Wellbore #1 - Permitted-PDC	17,048.46	6,150.00	5,369.08	5,266.14	52.155	CC, ES, SF
LDS 1V-234 - Wellbore #1 - MWD Surveys	17,048.46	6,057.00	5,681.52	5,584.40	58.501	CC, ES, SF
LDS 1V-304 - Wellbore #1 - As Drilled	17,048.46	6,193.00	5,420.82	5,317.10	52.267	CC, ES, SF
LDS 1V-314 - Wellbore #1 - As Drilled	17,048.46	6,171.00	5,317.75	5,215.23	51.866	CC, ES, SF
LDS 1V-334 - Wellbore #1 - As Drilled	17,048.46	6,195.13	5,589.23	5,490.17	56.422	CC, ES, SF
LDS 1W-234 - Wellbore #1 - As Drilled	17,048.46	6,057.00	5,668.58	5,571.34	58.297	CC, ES, SF
LDS 1W-314 - Wellbore #1 - As Drilled	17,048.46	6,076.00	5,765.01	5,668.73	59.879	CC, ES, SF
LDS 1W-414 - Wellbore #1 - As Drilled	17,048.46	6,146.00	5,896.65	5,801.45	61.939	CC, ES, SF
LDS F 1-5(AL) - Wellbore #1 - No Surveys						Out of range
Noffsinger 1 (PA) - Wellbore #1 - No Surveys	17,048.46	6,734.00	5,857.88	5,641.65	27.090	CC, ES, SF
Weld County 1-9H5 - Wellbore #1 - No Surveys	17,048.46	6,703.00	7,008.65	6,877.86	53.588	CC, ES, SF